Smarter
Digital City

AI for Everyone

Google

KPMG

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01 Foreword

Who could have predicted the dramatic turn of events that have unfolded over the course of 2020?

When I sat down to write last year's foreword, for our third and final *Smarter Digital City* whitepaper, I anticipated continued improvement of Hong Kong's digital economy, and a relative acceleration of digital transformation across the city. However, the team and I did not anticipate that technology would become such a lifeline for millions, and that digital would rise to the top of the priority list for almost every business across the globe, including those here in Hong Kong.

COVID-19 has affected every element of business, from financial markets to supply chains to customer demand, rapidly accelerating the adoption of digital solutions through necessity rather than strategy.

When the pandemic has passed what legacy will rapid technology adoption leave for Hong Kong? For certain, we have proven that studying and working from home is a viable alternative to classrooms and offices. However, as schools and businesses slowly resume normal daily operations over the coming weeks and months, new online habits have emerged that business and government agencies will need to adapt to.

A sustained digital transformation should mean more than just equipping your employees to work from home. It should mean adapting to new consumer mindsets, and customers who now want to be assured that your products and services are clean and contactless, convenient and connected.

This timely new report, *AI for Everyone*, commissioned by Google and conducted by KPMG, outlines how realising the benefits of AI among Hong Kongers and Hong Kong businesses will assist the city's recovery post COVID-19. Artificial intelligence (AI) is already embedded in many business productivity tools (such as video conferencing, smart assistants and chatbots) and digital marketing platforms (such as Search, YouTube and Analytics), which have been widely adopted by enterprises in Hong Kong.

AI can help businesses to mitigate risks, improve efficiency, enhance products and services, and deliver experiences that align with changing customer requirements. However, Small-Medium Businesses (SMBs) still need support on the journey to digitalisation. This theme is echoed in this year's research which shows that SMBs are in particular need of help in visualising the benefits of AI.

This research report sets a new benchmark to help understand AI adoption, barriers and benefits across four key sectors - Finance, Retail, Travel & Logistics and Technology & Innovation. We have examined the current level of understanding and adoption of AI, identified barriers to adoption, and uncovered future opportunities to accelerate AI development in Hong Kong post-COVID-19.

Interestingly, our report concludes that both Hong Kong businesses and Hong Kongers are optimistic about the potential of AI to help people and improve lives. Why? Well, you'll just have to read on to find out more.

Once again I need to thank a small army of people who have made this whitepaper possible. One hundred pages does not do justice to the hard (socially-distant) work of our research team from KPMG and Google, nor to the significant contributions of key business and government stakeholders and opinion leaders. To everyone involved, a sincere thank you for everything that you have contributed to *AI for Everyone*.

We look forward to working with you to bring AI to life for your organisation.

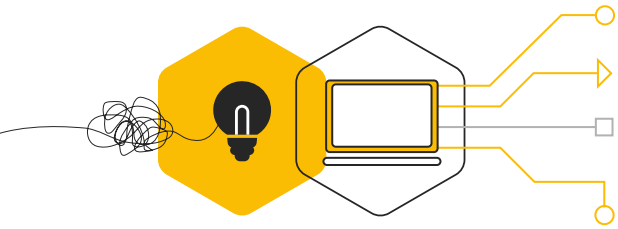
Sincerely,

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

02
Research Background

From 2017 through 2019, Google Hong Kong's annual *Smarter Digital City*[1] research explored themes and provided recommendations relating to the question: "How can Hong Kong become a Smarter Digital City?"

In the *Smarter Digital City* program the topic of artificial intelligence (AI) and machine learning came to the fore. Over the course of three years, we observed a significant increase in the number of larger businesses in Hong Kong interested in applying AI and machine learning, as well as a sizeable proportion of Hong Kong residents keen to learn more about AI and machine-learning technologies.



***Artificial intelligence (AI)** is the simulation of human intelligence processes by machines, especially computer systems. AI has great potential to empower people for generations and serve the common good.*

As we enter a new decade, AI remains top of mind for policymakers, businesses and individuals, with COVID-19 accelerating everyone's adoption of digitalisation. Now more than ever, the practical usefulness of technology and innovation is apparent. AI provides new ways of approaching problems and meaningfully improves many facets of people's lives, from helping mitigate the impact of natural disasters, to protecting habitats and improving healthcare.[2] It also enables organisations to operate more efficiently while delivering better products and services to their customers. AI will help businesses of all kinds and sizes be more innovative and efficient. A successful embrace of AI is essential to ensure Hong Kong upholds its competitiveness and remains a magnet for industry, investment and talent.

1 Google Hong Kong's Smarter Digital City research: www.thinkwithgoogle.com/intl/en-apac/consumer-insights/smarter-hk-collection/
2 Google's AI for Social Good: https://ai.google/social-good/

Recent research has revealed that Hong Kong lags behind other APAC economies in terms of AI readiness.[3]

In 2020, Google Hong Kong embarked on a new three-year program of longitudinal research delving specifically into the topic of AI development adoption in Hong Kong, building on three years of *Smarter Digital City* research. This report covers the first wave of this *Smarter Digital City - AI for Everyone* program, which was conducted in May through June 2020.

In the first year, this program aims to:

- Examine the current level of understanding and take-up of AI within both the resident population and Hong Kong businesses;
- Identify triggers for and barriers to AI deployment; and
- Uncover opportunities and strategies to accelerate AI development in Hong Kong and contribute to its recovery post-COVID-19.

To ensure a representative view of all stakeholder groups, interviews were conducted via different methodologies with a wide range of constituents in Hong Kong: businesses of all sizes and sectors, policymakers, and residents.

Further details of the research methodologies and sample composition can be found in the Reference section.

Throughout this report, "Index" scores are provided for residents and businesses. These refer to the Google Hong Kong AI Readiness Index, an overall benchmark for the maturity of AI adoption. The Index is based on five components:

1. **Know-how:** familiarity with AI; attitudes towards and interest in training; nurturing AI expertise and talent (for businesses)

2. **Confidence:** overall perceptions of AI and technology; attitudes towards governance and data privacy

3 "Artificial Intelligence in Asia: Preparedness and Resilience" published by The Asia Business Council in 2017: www.asiabusinesscouncil.org/docs/AI_briefing.pdf - Hong Kong ranked seventh out of eight Asian markets in terms of 'AI preparedness'.

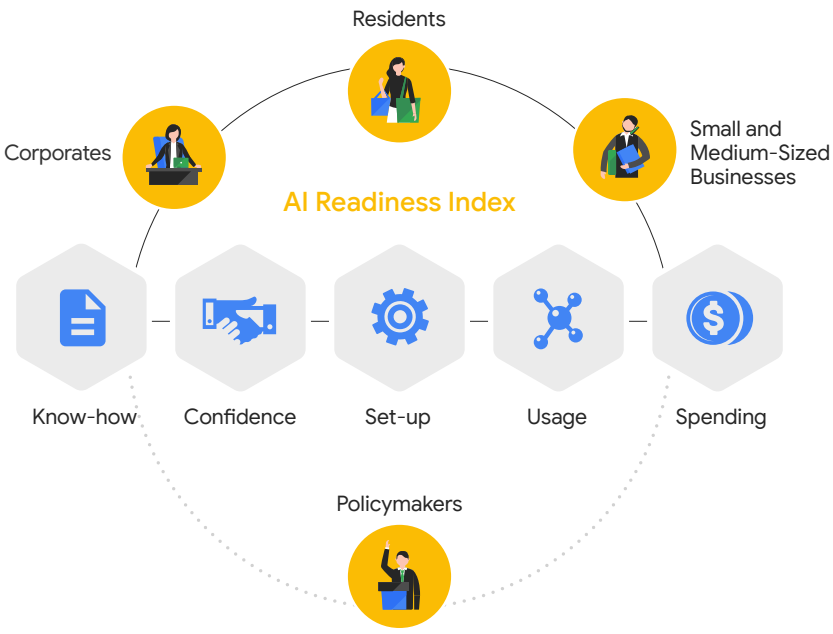
3. **Set-up:** current usage of device-based and cloud-based services; attitudes towards sharing data; organisational readiness (for businesses)

4. **Usage:** openness to AI and recognition of its benefits; current and future adoption of AI technologies

5. **Spending:** expected future spending on AI-powered services (for residents); importance of AI talent to business success (for businesses)

The index score ranges from 0 (least ready to adopt AI) to 100 (most ready to adopt AI), and is reported in aggregate form and by segment, where meaningful differences between segments exist.

For more details of how the AI Readiness Index is calculated, please visit the Reference section.



03
Key Findings

If the past year has taught us anything, it is that disruption can hit hard, force us to ask tough questions and drastically alter how we do business and live our lives. COVID-19 laid bare the need to embrace digital innovation to adapt to commercial and personal headwinds, regardless of one's industry or livelihood.

Hong Kong's progress on this transformation journey in recent years had gathered pace, as our *Smarter Digital City*[4] research has documented. Now COVID-19 has heightened the sense of urgency in Hong Kong, affecting every resident and business, sparing nobody. What's more, COVID-19 has spurred more residents to flock to online channels, prompting businesses to act quickly to meet new and evolving demands. In short, the case for digital transformation in general and AI in particular has never been stronger.

Residents' View

Optimistic about AI, but education is needed to accelerate adoption

COVID-19 has sped up digitalisation and demand for AI adoption. The pandemic has highlighted the critical role that AI-embedded products and services play in daily life, and made digitalisation an even more urgent necessity for the people and businesses of Hong Kong.

Hong Kongers are optimistic about the potential of AI to help people and improve lives. The majority of Hong Kongers believe AI is a positive force for society, with only 2 percent of residents perceiving AI as a threat to people (such as through job loss).

However this optimism does not yet translate into high levels of actual usage of AI services. The onus is on providers to improve residents' awareness of AI's benefits. Convenience, efficiency and cost savings will all prove compelling, particularly as Hong Kongers seek to manage the impact of COVID-19 on their daily lives.

Residents are keen to experience what AI can offer and excited about how it can improve their lives, but first need reassurance that their data will be protected. As residents become more knowledgeable about the benefits of AI and more trusting of organisations to protect their privacy, they will be more open to sharing their data.

4 Google Hong Kong's Smarter Digital City research: www.thinkwithgoogle.com/intl/en-apac/consumer-insights/smarter-hk-collection/

Therefore, educating the public about AI must be a strategic priority. It presents an opportunity for Hong Kong's AI ecosystem players to work together to increase residents' AI knowledge.

Businesses' View

See AI's potential and keen to invest, but their journey has just begun

Since COVID-19 has profoundly altered the business landscape, companies of all shapes and sizes face an imperative to transform in order to survive.

Hong Kong businesses prize quality, efficiency and customer relationships: all areas in which AI can play an enormous role. However, while most businesses express optimism about AI's potential, actual deployment is in its relative infancy.

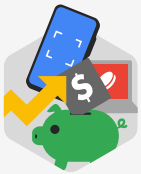
Optimism about the future application of AI runs high, based on a strong belief in its business potential. Even amid difficult economic conditions, businesses recognise the value of investing in AI.

To date, businesses are mostly still in exploration mode, experimenting with different use cases. They have yet to roll out their AI processes at scale, with most AI projects confined to specific teams rather than distributed across functions or the enterprise.

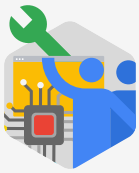
Building expertise and nurturing talent are critically important to accelerating AI deployment. Businesses of all shapes and sizes will benefit from bringing in external expertise via partnerships, and training staff in technical topics and how AI can be applied to the business to achieve demonstrable benefits.

Furthermore, businesses in Hong Kong are generally slow to adopt cloud, and few are fully utilising their data potential. The technology and data infrastructure are notably lacking for some, particularly in the Travel & Logistics and Retail sectors.

Corporates are further ahead than SMBs in AI adoption. Yet AI is as relevant and accessible to SMBs as it is to corporations. With many SMBs having been hard-hit by COVID-19, their adoption of digital technologies is especially important.



Smarter
Finance



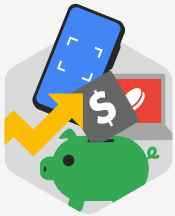
Smarter
Technology & Innovation

Smarter
Travel & Logistics

Smarter
Retail

Finance and Technology & Innovation businesses are further along the AI journey, but there is ample room for development across all sectors

An examination of businesses across different sectors reveals telling differences. Finance and Technology & Innovation businesses have better-developed infrastructures for capturing data, although they are not yet set up to realise the full value of the data they collect. The Travel & Logistics and Retail sectors are further behind: transformation is needed for these businesses to progress on their AI journey. SMBs in these sectors in particular are at the very start of embracing AI, yet these businesses have as much to gain as Corporates do.



Smarter Finance

Strong on compliance and control, but must overcome fear of failure and embrace innovation

Businesses in the Finance sector[5] are technologically sophisticated and accustomed to operating in highly regulated environments. Finance businesses are the most AI-ready among the four featured sectors in this report, as they are already highly data-driven and have advanced technology infrastructures.

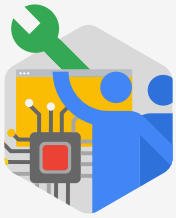
There is vast room for advancement within Finance businesses to harness the power of data to improve operations and deliver better customer experiences. Businesses in this sector understand the application of data and already spend extensively on automation to help with compliance and enhance customer interactions.

Across the enterprise, AI can be applied to data-heavy, volume-driven processes to improve speed and accuracy, bringing benefits to each business component: from customer retention in the front office, to risk and compliance management in the middle office, to workforce, capital and profitability management in the back office.

Use cases in this sector largely target operational efficiency and regulatory compliance. Examples include machine learning and analytics for identifying financial crime, processing claims, and extracting information from unstructured documents to detect fraud.

To accelerate adoption, this sector should continue to nurture a culture of innovation and agility through leadership, communication and by promoting initiatives such as hackathons.

5 Types of organisations within the Finance sector include banks, insurers, asset management firms, private equity, payments providers and fintech.



Smarter Technology & Innovation

Agile, innovative and customer-centric, but yet to fully embrace the rigours of regulation and compliance

The Technology & Innovation sector[6] has embraced AI as a market disruptor, convinced that its future rests with pioneering technologies.

Businesses in this sector place a high priority on improving products and services as well as enhancing customer experience. Some examples of AI technologies that will be especially valuable include identifying patterns and sentiments through social media analytics, offering product recommendations for online channels, and enlisting chatbots for customer service.

With AI visibly embedded in a wide range of products and services, Technology & Innovation brands are at the forefront of popularising AI for Hong Kong residents.

This sector has the ambition and the infrastructure in place but is a relative newcomer to the regulatory environment. To accelerate AI progress, businesses in this sector should build their capability to both effectively deal with regulatory requirements and communicate transparently with relevant stakeholders so as to inspire confidence in AI applications.

6 The Technology & Innovation sector includes electronics and devices, telecommunications, software and hardware, game development and engineering as well as information technology services.

Smarter Travel & Logistics

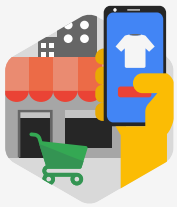
Practical, outcome-focused businesses that need to see the benefits before investing

Travel & Logistics businesses[7] are pragmatic organisations that need to see practical application and real value from AI investments. They have been initially slow to adopt, but once the value from use cases is made tangible, they quickly implement.

AI services that help Travel & Logistics businesses operate faster and more efficiently will be highly sought. Examples include intelligent automation, intelligent forecasting and inventory management, AI-powered smart warehouses that integrate with the Internet of Things, demand planning, and route optimisation using AI.

Travel & Logistics is at an encouraging juncture with AI: hopeful of its promise and ready to scale up its investment and usage.

7 The Travel & Logistics sector includes airlines and travel agencies as well as storage, shipping, postal and courier services.



Smarter Retail

Customer-focused and needing help with infrastructure and expertise

The Retail sector[8] is fast-moving, competitive, and exceptionally focused on its customers. Highly attuned to the marketplace, Retail's priorities centre around continuously improving offerings, attracting and retaining customers, and staying ahead of competitors.

Retail businesses understand AI's potential, but compared with other sectors, lag further behind in their technology capability and infrastructure. There are also gaps in understanding use cases and the ability to demonstrate ROI, but this has not deterred them from wanting to invest.

To begin their AI journey, retailers can focus on data strategy and management, and start to build use cases regardless of their legacy or business size. Given their customer focus, use cases in digital marketing and advertising as well as customer analytics are likely to yield helpful results.

8 Types of organisations in the Retail sector include department stores, grocery stores, supermarkets, FMCG, fashion, cosmetics retailers and e-commerce.

04
The Importance of AI for Hong Kong

Google Hong Kong's *Smarter Digital City*[9] research examined the keys to sustaining Hong Kong's competitiveness and equipping Hong Kong residents with the skills required in the digital economy. The report reached an optimistic conclusion, noting the city has strong fundamentals in place for businesses and residents to flourish.

One year on, Hong Kong, along with the rest of the world, is dealing with the unprecedented challenges and disruption caused by COVID-19. The pandemic changed residents' behaviour, prompting more people to rely on digital tools. This has highlighted both the need and opportunity to explore new operating models and ways of working. It is therefore vital that businesses adopt AI or risk becoming redundant.

COVID-19 has affected every element of business - from financial markets to supply chains to customer preferences and behaviours - rapidly accelerating the adoption of digital solutions. Organisations that successfully navigate the current environment are responding to COVID-19 with high levels of innovation, including greater digital access to their products and services. Hong Kong residents are keen for this to continue.

COVID-19 has accelerated consumers' embrace of AI

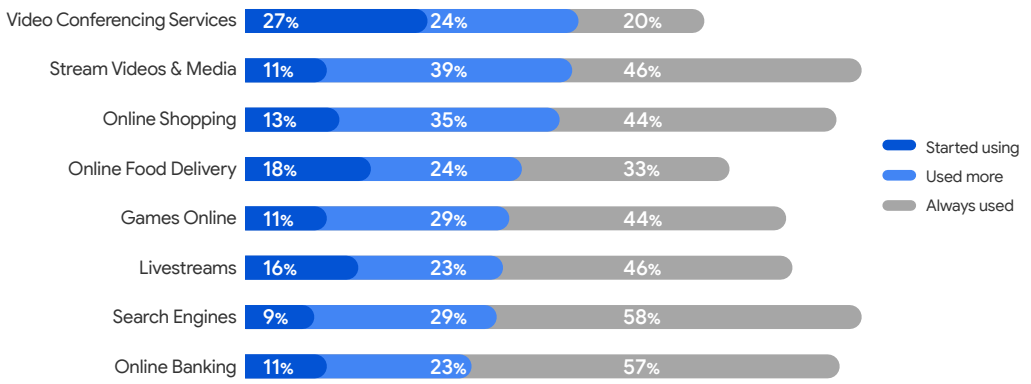
AI is embedded in a wide variety of digital tools that residents rely upon. From smart search recommendations to e-commerce platforms to food delivery apps, AI is now a mainstay of daily life. As COVID-19 restricts mobility, a growing number of Hong Kong residents are turning to AI.

Fifty-nine percent of Hong Kongers say the amount of time they spend online has increased since the onset of COVID-19.[10] Time spent online has increased from an average of 3.5 hours to 5 hours per day. In particular, online shopping and banking have surged. Average weekly search interest in online shopping in Hong Kong grew 26 percent after the outbreak of COVID-19,[11] and 91 percent of residents now use online banking.

9 Google Hong Kong's Smarter Digital City research: www.thinkwithgoogle.com/intl/en-apac/consumer-insights/smarter-hk-collection/
10 Google/Qualtrics, Hong Kong Recovery Study, May 2020 (base: Hong Kong residents, n=512)
11 Google Trends, https://trends.google.com/trends/, 1st July 2019 - 1st June 2020

In a further sign of AI's significance, as banks and shops closed or limited their opening hours, migration to digital channels accelerated among groups that historically were slower to adopt. For example, 93 percent of Hong Kong residents aged 45-64 use online banking, and one-third of them started using online banking since the onset of COVID-19.

HONG KONG RESIDENTS INCREASING TIME ONLINE SINCE COVID-19



Source: Google/ Qualtrics, Google Hong Kong Recovery Study, May 2020
Base: Hong Kong residents, n=512

Hong Kong residents of all ages and backgrounds interact with organisations using multiple devices and platforms, expecting seamless, secure omnichannel experiences. Since the onset of COVID-19, trust has become more pivotal in residents' decision-making. Hong Kongers are turning to brands and propositions that help them save money and time, simplify their lives, and feel safer and more confident in uncertain times.

Realigning businesses and operating models

The COVID-19 pandemic has upended business as usual, requiring Hong Kong enterprises to realign their business operating models or else risk being irrelevant.

AI is integral to digitalisation and business transformation. It is being used to make lives simpler and more efficient, putting the customer in the centre of everything businesses do. Some of the ways in which AI is being applied are listed below:

- Predictive analytics and machine learning that help identify lucrative customer segments, make products and services more personalised and businesses more efficient
- Automation of data-intensive and repetitive work tasks, freeing up teams to take on more interesting and creative work
- Identity and access management services that keep people and their data safe
- Tools such as smart navigation and machine-learning enabled translation for the convenience of consumers
- Chatbots and other types of intelligent agents which are revolutionising how people interact with brands, enabling organisations to better manage customer demand and deliver superior experiences

In short, AI is of rising importance to residents and businesses alike. Its technologies touch all aspects of residents' lives, making their consumer transactions and personal tasks more convenient to carry out. For businesses, AI is a formidable tool to stay competitive and favourably respond to economic disruption.

05
The View From Hong Kong Residents

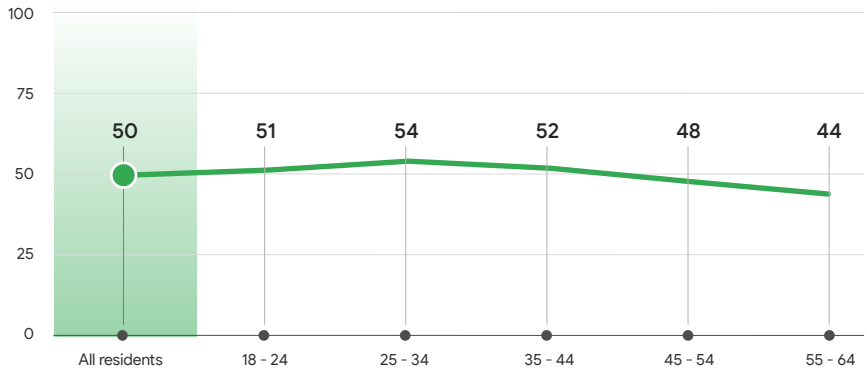
COVID-19 has sped up digitalisation and demand for AI adoption

COVID-19 has highlighted the critical role that AI-embedded products and services play in daily life, and made digitalisation a more urgent necessity.

For years public awareness has steadily risen in Hong Kong regarding chatbots, translation and route mapping. The mainstream adoption of such services has helped to educate the public on AI's capacity to enrich their lives.

In 2020, an overall AI Readiness Index score of **50** out of 100 was observed for Hong Kong residents. The possible range for individual scores is zero to one hundred: the mean for Residents sits exactly in the middle, meaning that while Hong Kongers are well advanced along the AI journey, there is substantial room for further growth.

HONG KONG RESIDENTS AI READINESS INDEX



Residents AI Readiness Index: A measure of Hong Kong residents' readiness to adopt AI
Base: Hong Kong residents, n=1000; aged 18-24, n=150; 25-34, n=200; 35-44, n=200; 45-54, n=250; 55-64, n=200

AI Readiness is the highest among people aged 25-34, and the reason is clear: this cohort is in its prime career-building years where professional experience and technological savvy intersect.

Residents aged 18-24 are highly familiar with technology, but have not yet accrued the years of workplace experience. Building knowledge at school about AI's practical applications will help them lay a solid foundation to apply it in the workplace.

Those aged 35-44 are at a comparable level of readiness to 18-24s, but for different reasons. They have amassed considerable professional experience and been exposed to the benefits of technology in the workplace.

In contrast, 45-54 year-olds grew up in a mostly analogue environment and as such are typically slower to adopt advanced technologies. Mature (55+) residents can also benefit from AI to make their daily lives easier, more convenient and more efficient.

Residents are seduced by AI's promise, but lack knowledge

Hong Kong residents already exhibit a high degree of **Confidence** in AI's ability to improve lives, seeing far more benefits (54 percent) than disadvantages (7 percent).

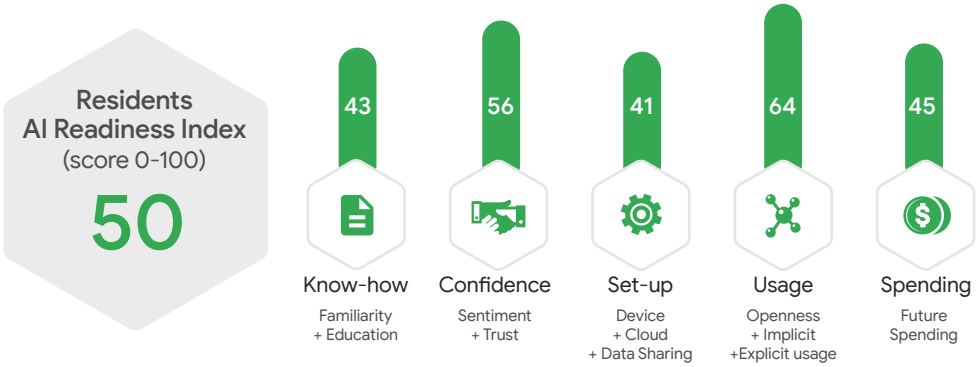
Usage is also relatively high, revealing that residents in Hong Kong are adopting AI-powered products and services to a substantial extent.

However, widespread usage is not yet fully translating into **Spending**, i.e., direct revenue to providers, and as yet some residents are reluctant to pay for AI services.

Know-how (AI familiarity and knowledge) and **Set-up** (device and cloud usage, and willingness to share data) tally relatively lower. These scores indicate room for growth that can be remedied in part by more explicit, rather than implicit, usage of AI technologies.

Residents see the potential of AI, but they need to be convinced. They are hungry for further knowledge and need reassurance from organisations that their data will be protected. More knowledge is correlated with higher openness to using AI, suggesting that helping residents expand their knowledge of AI will increase their adoption.

USAGE AND CONFIDENCE LEAD, WHILE KNOW-HOW AND SET-UP LAG



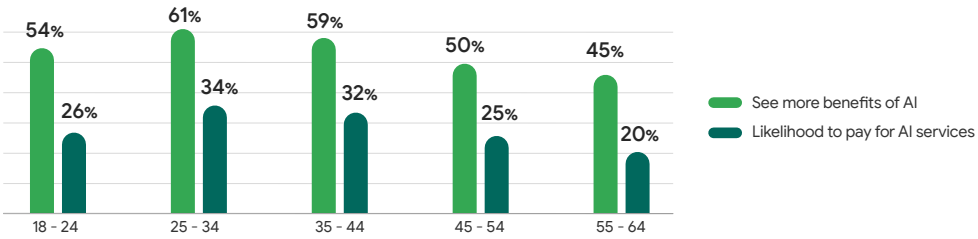
Residents AI Readiness Index: A measure of Hong Kong residents' readiness to adopt AI
Base: Hong Kong residents, n=1,000

High confidence bodes well for future potential

The high levels of confidence exhibited by Hong Kong residents indicate widespread optimism about the potential of AI to help people and improve lives. About two-thirds (65 percent) of residents agree that new technology and AI help to improve Hong Kong society.

Residents aged 25-44 are the most likely to recognise the benefits of AI and the most willing to pay for AI services. They represent a core customer segment for providers of AI-powered services.

RESIDENTS AGED 25-44 MOST LIKELY TO RECOGNISE AI'S BENEFITS AND PAY FOR IT



Question: In your opinion, does usage of AI give you more disadvantages or benefits?
Question: Please let us know how likely you would be to pay to use the following AI supported services?
Base: Hong Kong residents, n=1,000; aged 18-24 n=150; 25-34 n=200; 35-44 n=200; 45-54 n=250; 55-64 n=200

Implicit usage of AI services more widespread than explicit usage

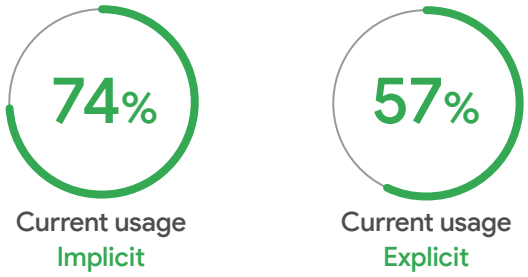
To help understand the gap between higher usage and lower spending, it is useful to draw out the difference between 'explicit' and 'implicit' AI adoption.

Explicit usage involves AI-powered products and services that are specifically chosen by residents due to the benefits that AI offers. An example is a chatbot that provides answers to customer-service enquiries, services that deploy virtual or augmented reality, and text recognition.

Implicit usage refers to products and services in which AI is less obvious to users. The decision to use these products and services is not specifically tied to the inclusion of AI technologies. An example could be a streaming-video service that recommends shows for the user to watch, or navigation services that have personalised predictions built in.

Hong Kong now has more implicit than explicit usage of AI technologies. On average, residents use 74 percent of different implicit services, compared with 57 percent of explicit ones. To accelerate explicit usage, providers need to improve awareness of the benefits of explicit services. Wider adoption of cloud services and devices are also needed for residents to have access to the core technology infrastructure.

IMPLICIT VERSUS EXPLICIT USAGE OF AI

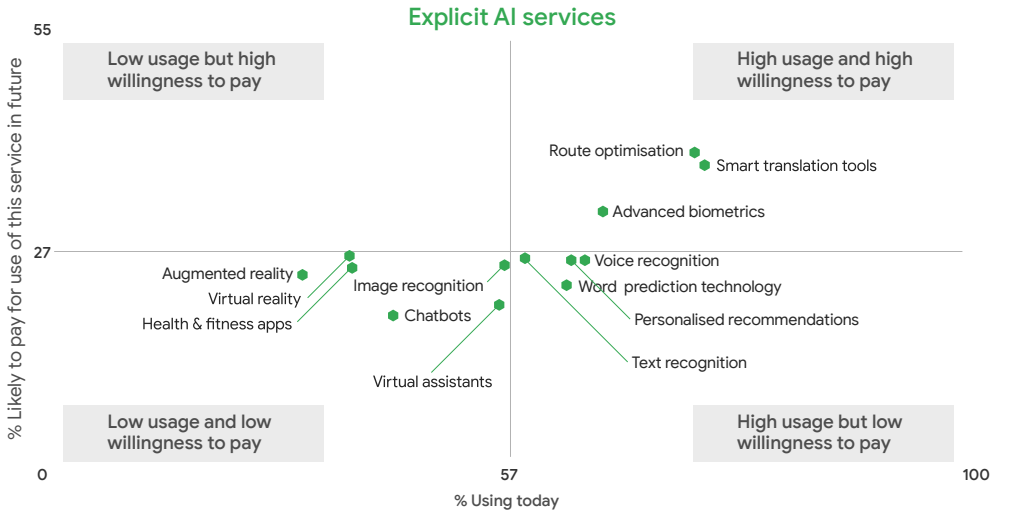


Question: Implicit Use: Which of these do you use?
Question: Explicit Use: Which of these do you use?
Base: Hong Kong residents, n=1,000

Of the various AI-powered products and services currently available, the two types residents most frequently use are smart translation (80 percent) and route optimisation (79 percent). These represent 'mainstream' use cases of AI for the Hong Kong general public. With Hong Kong residents being avid travellers, such services will continue to gain popularity especially as COVID-19 restrictions ease.

Planning and navigating journeys on foot and by car in Hong Kong and overseas are examples of explicit AI usage that are poised to increase. AI enables routes to be updated in real time with live traffic data, delivering the convenience and time-saving benefits that Hong Kongers value highly.

CURRENT USAGE VERSUS FUTURE SPENDING ON EXPLICIT AI SERVICES



Question: Below are a number of new services that use technology. Which of these do you use?
Question: Please let us know how likely you would be to pay to use the following AI supported services?
Base: Hong Kong residents, n=1,000

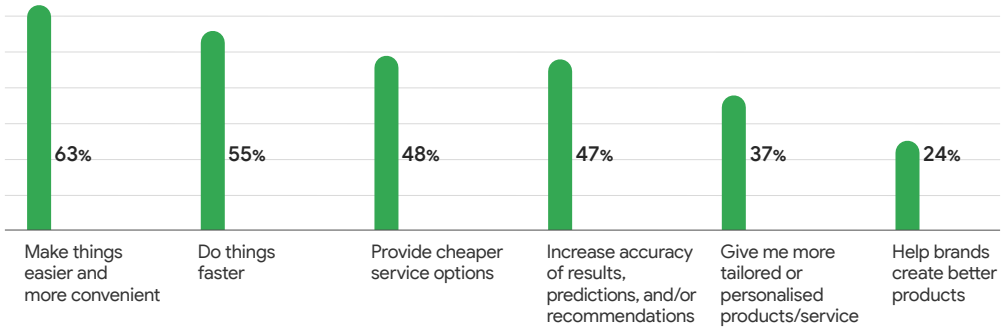
Biometrics, virtual reality and smart health and fitness services (which personalise recommendations for each individual) are examples of explicit AI applications for residents that have yet to become mainstream but are expected to grow rapidly.

Raising awareness of core AI benefits

To build know-how among Hong Kong residents, propositions and messaging should highlight the most salient benefits: convenience (63 percent) and efficiency (55 percent). As COVID-19 prompted more people to stay home to carry out more of their activities online, the favourable perception of these benefits is primed to remain high.

Cost savings do not feature at the very top of the benefit list, so residents could be willing to pay a premium for AI-powered services that are convenient and efficient. Indeed, revenues for providers are set to increase, with 60 percent of residents reporting they expect to spend on at least one AI-powered service in the future.

CONVENIENCE AND EFFICIENCY ARE TOP MOTIVATORS FOR AI ADOPTION



Question: What sort of AI service benefits would make you more interested in using them?
Base: Hong Kong residents, n=1,000

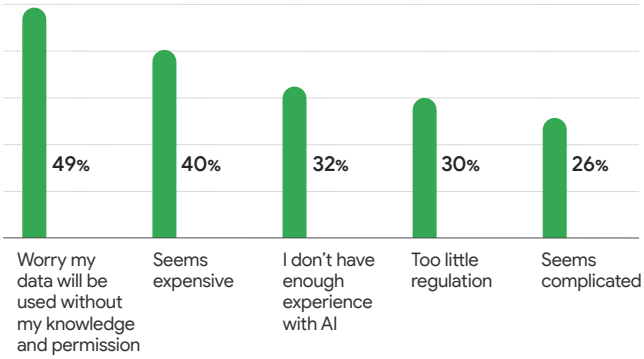
Transparent data policies essential to building public trust

Forty-seven percent of Hong Kong residents are already open to using AI in daily life while a further 44 percent are neutral. By educating residents about good data policies and demonstrating responsible data-management practices, organisations build residents' trust in AI. Such practices make clear AI is a force for good and accelerate the adoption of its technologies.

> *"With proper safeguards, such as penalising unauthorised re-identification of data, sharing of data is win-win to consumers and organisations. More open data will facilitate innovation, which will improve service quality and profitability."*
>
> **Stephen Kai-Yi Wong, Barrister, the then Privacy Commissioner for Personal Data**

Data privacy is the largest barrier to AI adoption, cited by 49 percent of residents. Only 26 percent of residents agree that 'companies are doing enough to protect residents' privacy rights in Hong Kong'. However, just 2 percent of Hong Kongers perceive AI as a "threat to people", with the majority seeing AI as a positive force for society.

BARRIERS TO USING AI



ONLY

think AI is a threat to humans

Question: What do you think might hold people like yourself back from using more AI services/ products?
Question: In your opinion, what are the disadvantages of AI use?
Base: Hong Kong residents, n=1,000

> *"Apart from data privacy and security concerns, the hard-to-explain 'black box' operation of AI also makes consumers worry."*

Dr. Winnie Tang, JP, Smart City Consortium

The following strategies are suggested for organisations looking to build trust:

- Prominently publish privacy and data policies
- Make concerted efforts across the industry to help users understand how data is shared and used, and the corresponding benefits
- Strengthen overall brand equity as a trustworthy organisation

> *"All in all, trust is pivotal in a data-driven economy, in particular in the development and use of AI. In a fast-changing, data-driven world, the flexibility and higher moral standard of ethics also serve to bridge the gap between legal requirements and stakeholders' expectations."*
>
> Stephen Kai-Yi Wong, Barrister, the then Privacy Commissioner for Personal Data

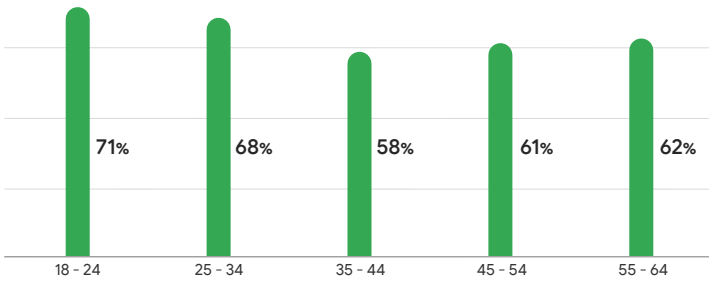
Residents must be convinced of the benefits before they will share their data

As residents become more knowledgeable about AI's benefits and more trusting of organisations to protect their privacy, they are more willing to share their data.

Overall, 34 percent of Hong Kong residents are willing to share their personal data while a further 45 percent are undecided. Residents aged 25-44 are the most likely to share their data, which is consistent with findings described above that reveal this cohort to be the most aware and knowledgeable of AI's benefits. Businesses can consider targeting this cohort with AI-powered products and services aimed at bringing convenience to their lives.

> *"Personal data has market value. If the public can control where their transaction data would be transmitted and for what purposes, their personal data privacy concerns would be greatly reduced. This would certainly make AI more accepted and popular."*
>
> Dr. Winnie Tang, JP, Smart City Consortium

YOUNGER RESIDENTS ARE MOST AWARE OF PRIVACY CONCERNS



Question: Please indicate how much you agree with it on a 5 point scale: "I'm concerned with how many new online services are using my personal information"
Base: Hong Kong residents, aged 18-24, n=150; 25-34, n=200; 35-44, n=200; 45-54, n=250; 55-64, n=200

> *Relatively, Hong Kong has high awareness of data privacy. However, residents may not be aware of the methods of data collection, such as background collection and sharing of data via apps. Further guidance around personal data privacy is required to safeguard residents' rights.*

Albert Wong, Hong Kong Science and Technology Parks Corporation

The importance of education and training

There is an immense appetite among residents to learn more about the use cases and benefits of AI and to be trained and educated about related topics. Residents expect the government and businesses to play a pivotal role, and most believe the two could do more on this front.

> *AI stakeholders should not work in silos, and should collaborate with each other to build an AI ecosystem. They can work together to promote AI development to residents, businesses and public bodies.*

Ted Suen, Hong Kong Computer Society

RESIDENTS EXPECT BUSINESSES AND GOVERNMENT TO DRIVE AI EDUCATION

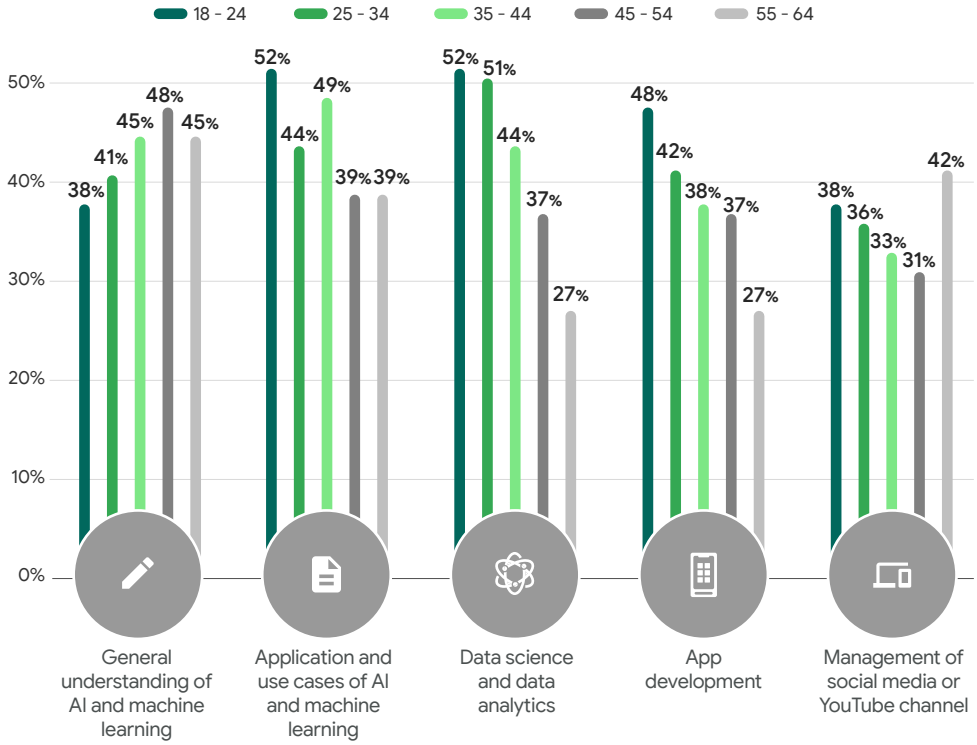
Question: How important do you think it is to be trained up in AI?
Question: How interested are you to learn more about AI?
Question: How important are the roles of the following in educating the public about AI?
Question: How sufficiently do you feel the government/businesses is/are providing support in terms of technology and AI education?
Base: Hong Kong residents, n=1,000

The topics residents would like to learn about vary by age. Training for residents aged 45 and above should focus on building a foundational understanding of AI as well as illustrating how technology or AI is beneficial in their daily lives, for example, by building awareness of AI-powered services. Younger residents are particularly receptive to technical topics such as data science, analytics and app development.

> *"In addition to learning coding (i.e., computer programming) from primary school and strengthening STEM education, there should be specific educational priorities at different stages of primary and secondary education to meet future challenges."*

Dr. Winnie Tang, JP, Smart City Consortium

AI TOPICS RESIDENTS SEEK TO LEARN ABOUT, BY AGE GROUP



Question: Which of the following areas would you be interested in learning about AI and technology?
Base: Hong Kong residents who are interested in learning more about AI, aged 18-24, n=87; 25-34, n=144; 35-44, n=133; 45-54, n=155; 55-64, n=110

Given Hong Kong residents' widespread receptivity to learning, educating them about AI should be a strategic priority. It is an opportunity for members of Hong Kong's AI ecosystem, including stakeholders from the public and private sectors, to boost residents' knowledge and invest in future growth.

> *We need to explain the application of AI further and not just the technological concepts, such as by highlighting how solutions using AI and big data are different from others. If understanding of these applications were better, it would be much easier for the public to accept AI and would lead to deeper adoption.*

Peter Yan, Hong Kong Cyberport

Hong Kong residents are more aware than ever of the critical role that AI-embedded products and services play in daily life. They want to know more about its potential as they seek assurance their data is being protected. Educating the public and building public trust is therefore a top priority that will pave the way for more extensive AI adoption over time. In the next section we examine how businesses in particular view and deploy AI.

06

The View from Hong Kong Businesses

Businesses are optimistic about AI's potential, but their journey has just begun

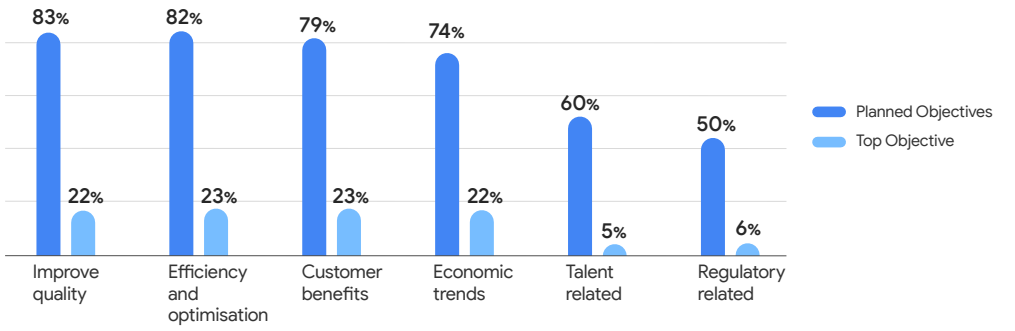
Google Hong Kong's *Smarter Digital City*[12] research revealed strong momentum in Hong Kong businesses' adoption of digital technologies, with corporates[13] leading the way in terms of digital investments and innovation.

Since COVID-19 has profoundly altered the business landscape, companies of all shapes and sizes are faced with the need to transform their business and operating models to survive. What may have been a 'nice-to-have' strategy prior to the pandemic has now become a 'must-have'.

At the core of business transformation lies AI. As *Smarter Digital City* showed, Hong Kong businesses have come a long way in gathering and storing data. For businesses to extract and capture value from this data, AI is required.

AI deployment is well suited to the priorities of Hong Kong businesses. At the top of the priority list is quality: better products and services, reduced errors and agility. Other priorities include efficiency (process streamlining for better optimisation) and customer-related benefits include improved targeting, customer retention, and personalisation.

HONG KONG BUSINESSES PRIZE QUALITY, EFFICIENCY AND CUSTOMER RELATIONSHIPS



Question: Which of the following would you like to achieve in the next 12 months?
Question: Which one of these is most aligned with your business objectives?
Base: Hong Kong businesses, n=449

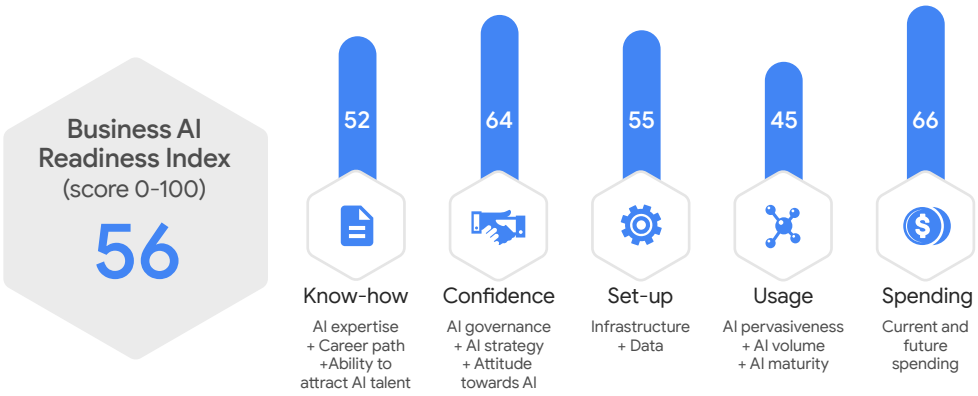
12 Google Hong Kong's Smarter Digital City research: www.thinkwithgoogle.com/intl/en-apac/consumer-insights/smarter-hk-collection/
13 Corporates are defined as businesses with 100 or more employees in Hong Kong

Businesses are ambitious, but capability and expertise gaps exist

For this first wave of the three-year *Smarter Digital City - AI for Everyone* research, an overall AI Readiness Index score of **56** out of 100 was tallied for Hong Kong businesses.

Same as for Residents, the "AI Readiness Index" for businesses comprises five pillars: Know-how, Confidence, Set-up, Usage and Spending.[14]

CONFIDENCE AND SPENDING ARE HIGHEST AMONG READINESS PILLARS



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Hong Kong businesses, n=449

Among the pillars, confidence and spending scores rank highest. Optimism about the future application of AI runs high based on a strong belief in its business potential. Even amid difficult economic conditions, businesses recognise the value of investing in AI.

14 For further details on how the index and its constituent pillars were evaluated and scored, please visit the Reference section.

Yet actual usage of AI today in the Hong Kong business world is low. The high scores for spending reflect future intention rather than current activity. The discrepancy between aspiration and reality is reflected in the finding that 78 percent of businesses believe AI is beneficial and will bring improvements, but only 39 percent say they have a culture to support it.

So far, businesses are mostly still in exploration mode, experimenting with different use cases. They have yet to roll out their AI processes to scale, with most AI projects confined to specific teams rather than distributed across functions. The roadmap will not be the same for all: as illustrated later, different sectors will have their own context and use cases, but an holistic AI strategy and vision are important to all businesses.

The lower score for know-how represents businesses' expertise in AI and their ability to attract AI talent. It reveals the gap between capability and ambition. As businesses begin to adopt AI, momentum will accelerate when they attract more talent and build capability. Building know-how is critically important to accelerating AI deployment.

Set-up, which embodies technology infrastructure and how businesses manage, control, govern their data, is also vital. Businesses in Hong Kong are generally slow to adopt cloud, and few are fully utilising their data potential.

> *"Whether talent is home-grown or not, more exchanges and interactions with overseas talent are needed to drive innovation. This is how we develop talent. We can't do this in silos away from other economies."*
>
> **Peter Yan, Hong Kong Cyberport**

Still early days

While most businesses express optimism about AI's potential, actual deployment is in its relative infancy and lags behind other digital technologies such as online marketing and cashless payments (as evidenced in *Smarter Digital City*). In fact, half of all businesses are still in the proof-of-concept stage of AI deployment.

> *"I don't see that businesses have a singular corporate strategy. Companies seem to focus on specific problems or requirements, and deploy AI as a one-off decision rather than a holistic solution. Without vision, AI's long-term benefits won't be clear."*
>
> **Hon. Charles Mok, JP, Legislative Councillor (IT)**

51%
of Hong Kong businesses are still at proof-of-concept stage with AI

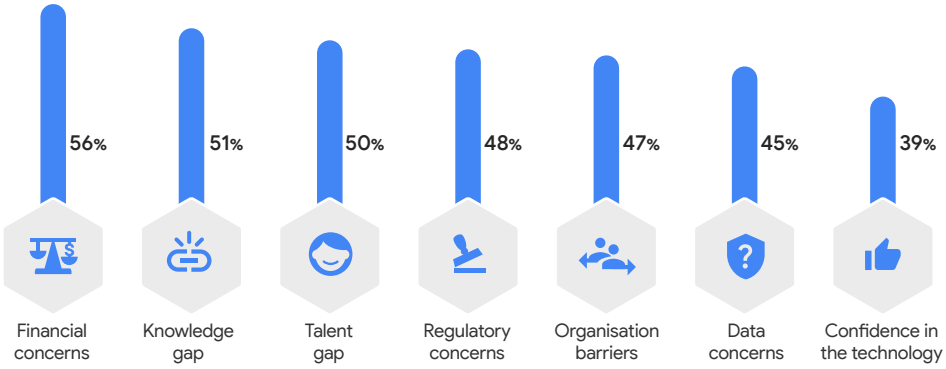
62%
of Hong Kong businesses expect to increase AI investments in future

Question: Which of the following best describes how your organisation views AI?
Base: Hong Kong businesses, n=449

As they embark on their AI journey, businesses experience barriers to progress. The most common of which include financial concerns (lack of capital, uncertain ROI) as well as insufficient AI expertise.

Some barriers are more applicable to specific sectors - this is explored further in later sections of this report.

COST, KNOWLEDGE AND TALENT GAPS ARE TOP BARRIERS TO AI PROGRESS



Question: What are the barriers for AI adoption?
Base: Hong Kong businesses, n=449

Developing strong data capabilities essential to improving set-up

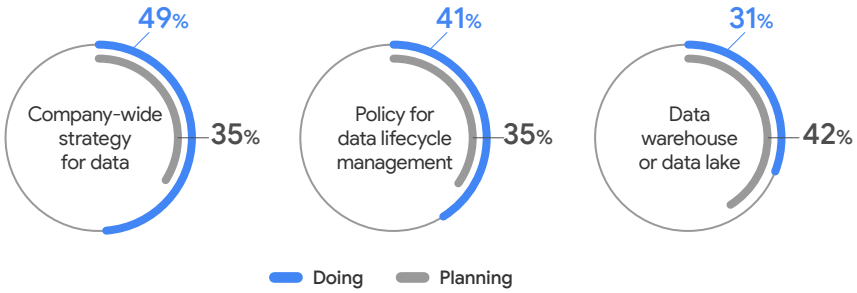
Set-up requires that businesses develop their capabilities in collecting, storing and analysing data.

While 51 percent of Hong Kong's businesses are collecting customer data and have some applications of data analytics in place, only 31 percent currently operate an in-house data lake/warehouse or seek to enrich data from third-party sources.

> *"We want to have clear data privacy guidance for businesses, this way we know what we can and what we can't do with AI and data, so that we can get the best value out of it."*
>
> **Lily Lai, Hong Kong Airport Authority**

A majority of businesses have already deployed cloud technology. For these businesses, the core infrastructure is in place to start building data competencies. However, there are still a large number of businesses that have not yet deployed cloud and must first establish their technology baseline before AI deployment can progress in earnest.

MANY BUSINESSES HAVE STILL TO ESTABLISH CORE DATA INFRASTRUCTURE



Question: Which of the following have you done or are planning to do in your organisation related to data?
Base: Hong Kong businesses, n=449

Building know-how by luring talent and boosting training

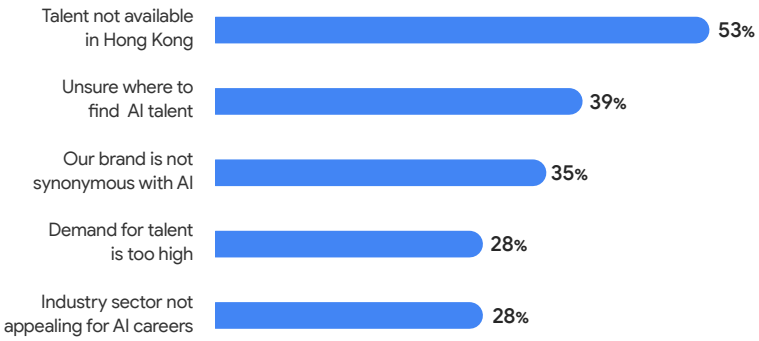
When it comes to AI capabilities, most companies rate themselves 'average'. Finance and Technology and Innovation businesses currently have the largest pool of AI talent, with Retail and Travel & Logistics some way behind.

> *"Businesses need to understand that AI talent will not appear from thin air. Domain knowledge is important. Academic institutions can only train AI skills, not talent. Enterprises need to take charge to train AI talent, and teach them how to bring value to their enterprise."*
>
> **Dr. David Chung, JP, Innovation and Technology Bureau**

Over half of businesses (53 percent) cite that the availability of local AI talent is not sufficient, and 39 percent of businesses are unsure where to attract AI talent. In addition to fostering local talent, within the specialised field of AI it will be especially valuable to bring in expertise through either recruitment or knowledge exchanges.

> *"The talent shortage is not for a specific group only. The middle layer (engineers) don't stay in the industry long after graduation. Those with domain knowledge and expertise don't require heavy technical skills, but they need to be trained in basic AI knowledge in order to reap the benefit of such technology. Finally, data processors and collectors in Hong Kong are lacking. Therefore, we need to improve not only the top-tier AI talent such as PhD students but the level of AI knowledge for everyone."*
>
> **Albert Wong, Hong Kong Science and Technology Parks**

BUSINESSES CITE DIFFICULTY FINDING LOCAL AI TALENT



Question: As you mentioned you find attracting AI talent challenging, what are the key challenges? Please select all that apply.
Base: Hong Kong businesses, n=449

> *"There's currently a lack of talent in the market, but we are committed to developing local talent and learning from our global counterparts in efforts to upskill analytics capabilities for our team in Hong Kong."*

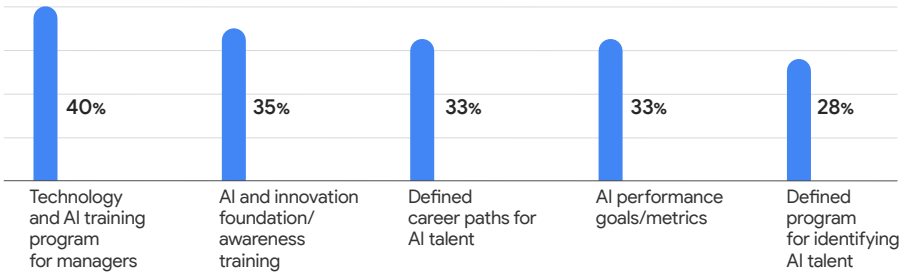
Jacqueline Chiu, Sony Interactive Entertainment (PlayStation)

In addition to the challenge of attracting talent, relatively few businesses have put into place programs to hone AI skills. Only a third have defined AI career paths or incorporated AI related topics in performance reviews. Forty percent of businesses currently offer AI training for managers, although many more are planning to do so in future.

> *Gaps in technical knowledge are easy to close, but gaps in AI business acumen are more difficult to bridge. The most challenging part is tying these two types of knowledge together.*

Lily Lai, Hong Kong Airport Authority

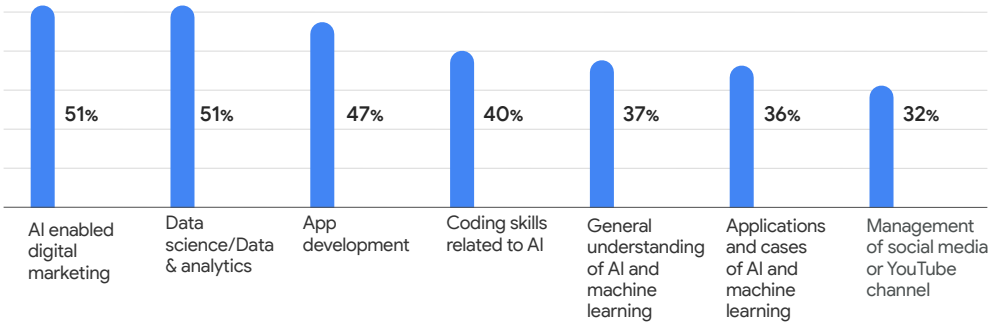
ONLY A MINORITY OF BUSINESSES HAVE DEFINED SCHEMES FOR NURTURING AI TALENT



Question: Which of the following types of programs have you implemented in your organisation?
Base: Hong Kong businesses, n=449

Businesses prioritise the following topics for in-house and external training: AI in digital marketing, data science and data analytics, and app development. These topics clearly link back to business goals described earlier in this whitepaper, particularly relating to targeting and retaining customers, and offering more personalised services.

MOST POPULAR TOPICS FOR TRAINING

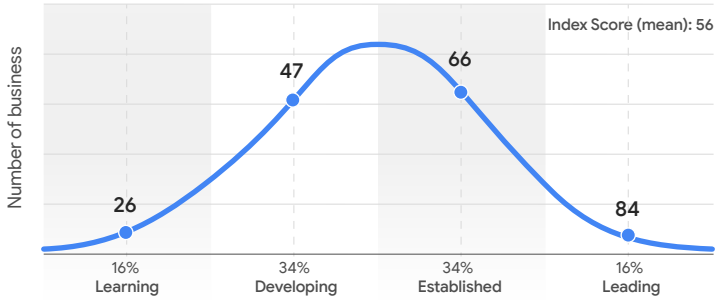


Question: Which of the following training courses have you implemented or planning to implement?
Base: n=374 businesses who implemented or plan to implement training courses

As businesses become more AI ready, priorities evolve

The distribution of AI Readiness Index scores for individual businesses forms a bell curve, with the bulk being relatively close to the median and fewer scores observed at the extremes.[15]

BUSINESSES GROUPED INTO FOUR READINESS STAGES



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Hong Kong businesses, n=449; n=69 Learning; n=151 Developing; n=158 Established; n=73 Leading

15 For more information on the Business AI Readiness Framework and definitions of readiness segments, please visit the Reference section.

Based on their AI Readiness Index scores, businesses belong to one of four groups:

Leading businesses deploy AI across the organisation for a broad array of business needs. They possess dedicated AI leadership and investments focused on improving employees' and customers' lives. For AI talent, they are aspirational places to work.

Established businesses have multiple live AI projects. These businesses are driven by a coherent AI strategy and have moved from proofs of concept to live AI use cases. They are able to attract AI talent due to their capability and training programs.

Developing businesses explore AI's potential and have begun experimenting with proofs of concept within individual departments. Their AI strategy is not yet fully realised across the organisation. They have started to put in place general guidelines on the use of AI.

Learning businesses are the last to adopt AI. They are trying to understand AI and the potential benefits for their organisations. No clear direction or AI strategy is in place, and they lack enabling data and infrastructure.

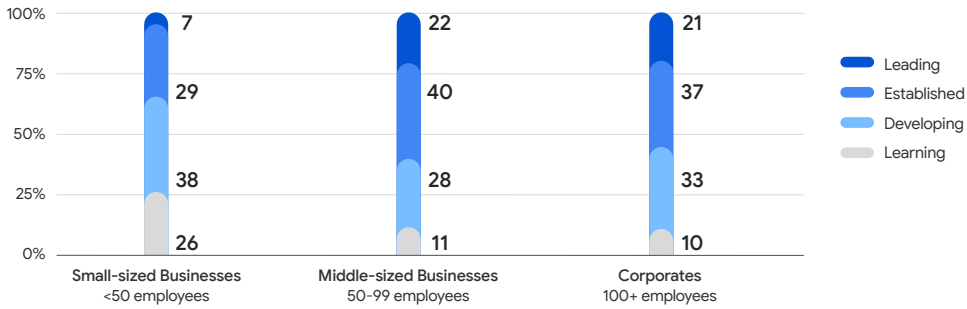
STEP-WISE EVOLUTION OF AI READINESS

	From Learning to Developing	From Developing to Established	From Established to Leading
Know-how	• AI training limited to IT • Minimal in-house AI know-how • Leveraging AI as a service and knowledge from partners	• Structured AI training program across the enterprise • In-house AI expertise leveraging partner products	• True AI specialist career path in place • AI talent embedded in business • Enterprise-wide technical education in place • R&D time built into business model
Confidence	• AI vision with no governance	• AI vision with clearly defined governance	• AI is part of the core business strategy • Enterprise-wide AI governance
Set-up	• Cloud exploration • Basic data strategy	• Hybrid cloud and on-premises infrastructure • Data lifecycle management in pockets	• Enterprise-wide cloud • Enterprise-wide data life cycle management • High data availability and quality
Usage	• AI proofs of concepts and pilots • Use cases from the business	• AI implementation - focus on efficiency and customer experience • Formal use-case ideation process • AI model evolution	• Enterprise-wide AI implementations • Focus on emerging AI technology • Dedicated AI development capability • Use of partner products
Spending	• Siloed budgets	• AI investment linked to business goals but controlled through projects	• AI spend part of normal budget

Larger businesses further ahead in AI readiness than smaller ones

Significant differences in AI readiness exist between larger and smaller businesses. Corporates (100+ employees) and Middle-sized businesses (50-99 employees) are more likely to be in the Leading stage, while small businesses (less than 50 employees) are more likely to be in the Learning and Developing stages. Yet AI is as relevant and accessible to small businesses as it is to corporates. With many small businesses having been hard-hit by COVID-19, their adoption of digital technologies is especially important to recover and secure long-term competitiveness.

AI READINESS BY BUSINESS SIZE



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Hong Kong businesses, n=449; Small-sized business with less than 50 employee, n=148; Middle-sized business with 50-99 employees, n=91; Corporates with more than 100 employees, n=210

Smarter Digital City illustrated that SMBs need support in their journey to digitalisation. It is a point echoed in this year's research, which shows that SMBs especially need help in visualising the benefits of AI.

Huge potential for AI to help SMBs on the road to recovery

Despite Corporates overall being more mature in AI adoption, 7 percent of Leading businesses are SMBs.

Many AI services are relevant for Hong Kong's SMBs. SMBs look for immediate ROI on AI investments, as they lack the investment power of larger companies: 31 percent of SMBs cite 'insufficient financial means' as a barrier to AI adoption, compared with 21 percent of Corporates.

This opens an opportunity for AI solutions that are turnkey and do not impose large upfront investments. Examples are direct marketing services that use AI to help SMBs identify new business prospects. Another way AI can support customer acquisition is through intelligent digital marketing, such as personalised recommendations delivered at the right moment on a customer journey to maximise conversions.

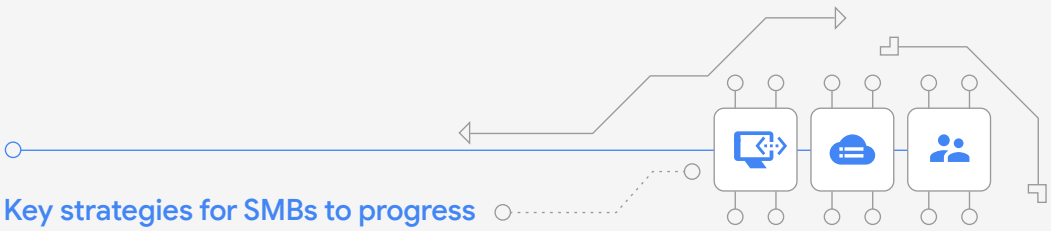
AI also helps SMBs improve operational efficiency, for example, using analytics to understand fast-changing customer behaviours to help optimise product and stock mix, and manage the supply chain. Examples include a restaurant that employs robots,[16] an education company that uses AI and machine learning to match learners and teachers[17] and a trade-financing platform for e-commerce sellers that uses AI for credit assessment.[18]

Automation tools powered by machine learning enable employees to focus on higher-value work. Smart translation can help SMBs broaden their reach into overseas customers, while image recognition can help improve online catalogues.

Examples like these show there is ample opportunity for SMBs to profit from implementing AI solutions.

16 Hestia Kitchen: www.hestia.kitchen/
17 Preface Coding: https://uk.finance.yahoo.com/news/preface-coding-ai-pioneer-transforms-015516348.html
18 Qupital: www.qupital.com/technology

> *“AI solution providers need to be able to explain the benefits of AI applications to potential clients. For example, AI can be used to greatly enhance predictive analytics. This will bridge the gap between AI solution providers and firms that embrace traditional mindsets.”*
>
> Peter Yan, Hong Kong Cyberport



Key strategies for SMBs to progress in their AI capabilities include:

- Identifying the AI applications that will be valuable in the near future as well as the longer term
- Defining a data strategy and putting it at the core of the business: what data is required and how it can support the aims of the business
- Leveraging appropriate technology infrastructure to enable the data strategy, e.g., migrating to cloud
- Deploying tools to analyse data and extract insights
- Partnering with external providers to quickly summon expertise and help in implementation

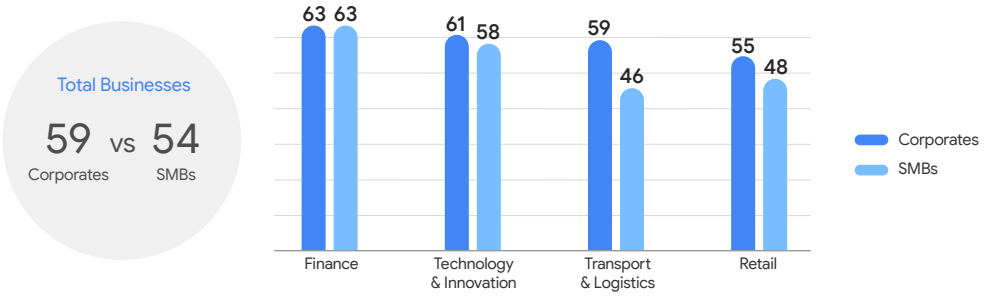
Although consumer spending has been reduced during the pandemic amid economic headwinds and general uncertainty, residents have gravitated towards local brands they trust to help them through this difficult period. Over one-fifth of residents consider local brands to be important when choosing a product post-COVID-19.[19] Some local shops have successfully weathered the economic storm by providing delivery services, while working from home has also encouraged residents to spend money locally.

SMBs lag behind Corporates in Travel & Logistics as well as Retail sectors

Overall, finance SMBs are as well developed as Corporates in terms of AI readiness. In Technology & Innovation, the gap in AI readiness between larger and smaller organisations is small. AI is more established in these sectors, and use cases are better understood. In the case of Finance, AI has been widely adopted as a means of streamlining processes to meet regulation and compliance requirements.

In Retail and Travel & Logistics, however, the readiness gap between Corporates and SMBs is greater.

READINESS GAP BETWEEN CORPORATES AND SMBS LARGER IN TRAVEL AND LOGISTICS, RETAIL SECTORS



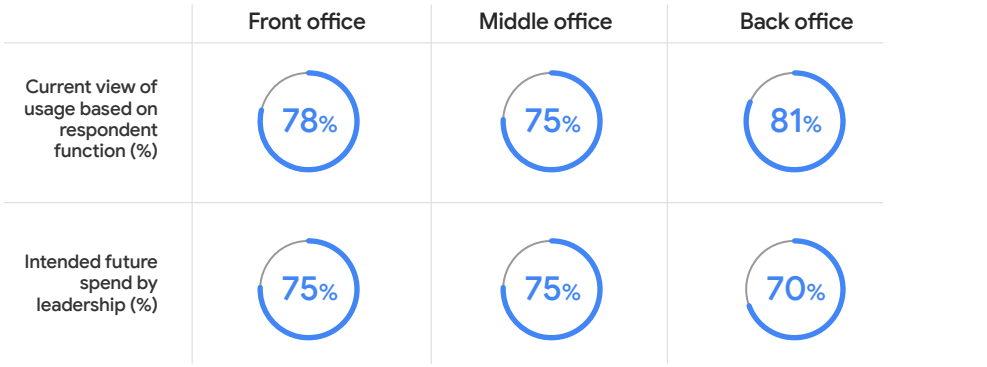
Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Hong Kong businesses, n=449; Corporates with >100 employees, n=210; SMBs with <100 employees, n=239; Finance: Corporates n=56, SMBs n=48; Technology & Innovation: Corporates n=46, SMBs n=71; Travel & Logistics: Corporates n=57, SMBs n=50; Retail: Corporates n=51, SMBs n=70

19 Consumers and the new reality, KPMG International, June 2020
https://assets.kpmg/content/dam/kpmg/cn/pdf/en/2020/07/consumers-and-the-new-reality.pdf

AI starts in back office, then moves to customer-facing functions

AI adoption within Hong Kong organisations is stronger within back-office functions than in the front or middle office as that is where it typically starts. But our analysis reveals the front and middle offices are indeed trying to realise value from AI deployments as well. Use cases in the back office are perceived as less risky, as there is usually more flexibility to make changes. As successes in the back office are achieved over time, investments in the middle and front office ramp up.

LARGER PROPORTION OF BACK-OFFICE USERS HAVE SEEN AI DEPLOYMENT



Question: Below is a list of technologies used by businesses. Please let us know to what extent is your organisation implementing each of these technologies?
Base: All businesses adopting AI across respective functions, Front office n=134; Middle office n=101; Back office n=205
Question: In what ways do you anticipate spending on AI investment to change in the next 12 months in [Department]?
Base: Hong Kong businesses, n=449

Back office is defined as the administrative backbone of the organisation including horizontal support functions such as HR, Finance and Procurement. Back-office processes are generally rule-based, with a focus on controlling costs and improving efficiencies. AI technologies for the back office include cloud, image recognition and predictive analytics. Use cases involve the extraction of unstructured data from documents and then applying business rules to help organise and find patterns.

Middle office is the part of the organisation where the core business operations of making, processing or delivering happen. Middle-office processes are specific to the sector and typically rule-based, involving some judgement and decision-making.

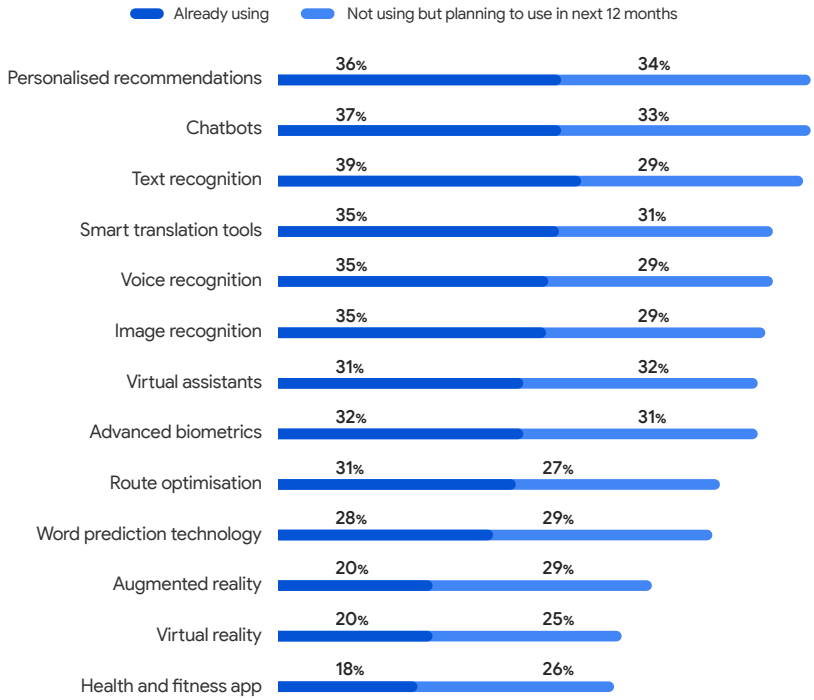
Front office is the part of the organisation that interfaces with the customer and is focused on revenue generation. Front-office processes entail a high degree of judgement and decision-making. AI technologies for the front office include predictive analytics and natural-language processing to support customer interactions. These technologies are used to reach and attract new customers while improving customer journeys, making them more intuitive, simple and frictionless.

Bigger front-office AI investment coming to drive familiarity

Consumers are embracing AI services that make their lives easier, as evidenced by the widespread adoption of smart translation (used by 80 percent of residents) and route optimisation in mapping tools (used by 79 percent of residents). Consequently corporates are looking to augment existing products and services with AI, to increase convenience and speed of delivery to consumers. This is driving an increase in investment in front-office applications.

Front-office use cases that are most widely deployed and with the greatest growth potential include text recognition, chatbots, image recognition and personalised recommendations. Businesses use front-office technologies to ensure that their propositions, messages and content are tailored to their target audience and presented at the most opportune times. Predictive analytics, machine learning and intelligent agents help customers to make decisions and reduce journey friction, maximising customers' satisfaction and their successful transaction completion.

CURRENT AND FUTURE DEPLOYMENT OF CONSUMER-FACING TECHNOLOGIES

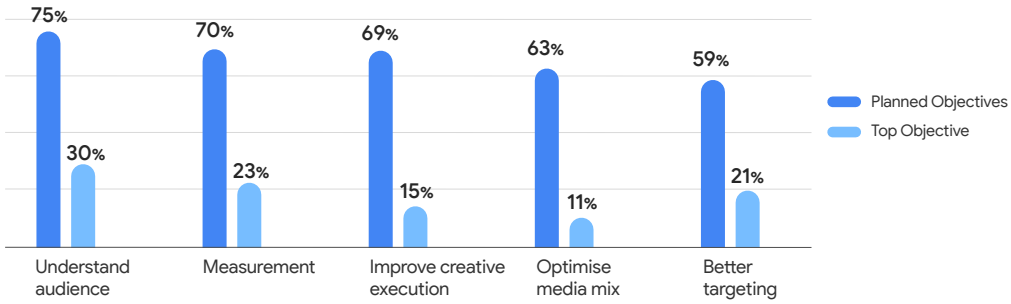


Question: Below is a list of consumer-facing technologies that businesses are using. To what extent is your organisation implementing each of these technologies in your customer facing products / services?
Base: Hong Kong businesses, n=449

Improving marketing effectiveness a key use case

Businesses of all kinds and sizes place a high priority on being able to stay abreast of their customer base and reach them effectively with the right messages at the right time. An array of AI use cases exists to support these aims, residing within the middle office: data-driven attribution, content personalisation, and campaign optimisation to name but a few.

AUDIENCE UNDERSTANDING, TARGETING AND CAMPAIGN MEASUREMENT ARE PRIORITIES FOR THE MAJORITY OF BUSINESSES



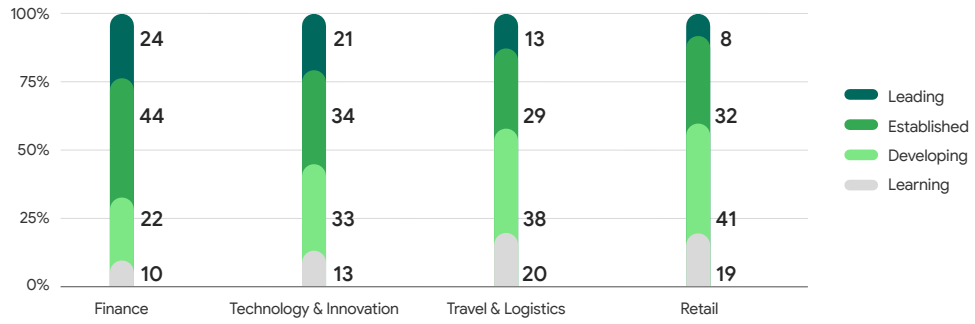
Question: Within your company, which aspects related to sales and marketing would you like to address in the next 12 months?
Question: Which one of these objectives would you like to address most?
Base: Hong Kong businesses respondents in sales and marketing role, n=110

There are many consistent factors that apply to all businesses in Hong Kong looking to progress on the AI journey. Nonetheless, individual sectors exhibit different levels of readiness and have their own unique characteristics and roadmaps.

07
A Closer Look by Sector

Finance businesses are more likely than other sectors to be Leading or Established, with Technology and Innovation businesses the next most advanced in AI readiness. Travel & Logistics businesses and Retail businesses are comparatively less AI-ready on the whole.

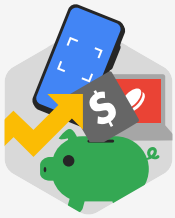
FINANCE AND TECHNOLOGY AND INNOVATION BUSINESSES FURTHER ON IN THEIR AI JOURNEY



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Finance businesses in Hong Kong, n=104; Technology & Innovation businesses in Hong Kong, n=117; Travel & Logistics businesses in Hong Kong, n=107; Retail businesses in Hong Kong, n=121

> *"AI is not an industry; AI needs to be applied throughout an industry in order to truly be able to deploy "AI". As such, we need to focus on the "democratisation", and allow industries to understand the application of AI and the value of their own data."*
>
> **Albert Wong, Hong Kong Science and Technology Parks**

In the following sections we take a closer look at each of the industry sectors and the strategies for them to accelerate AI readiness.

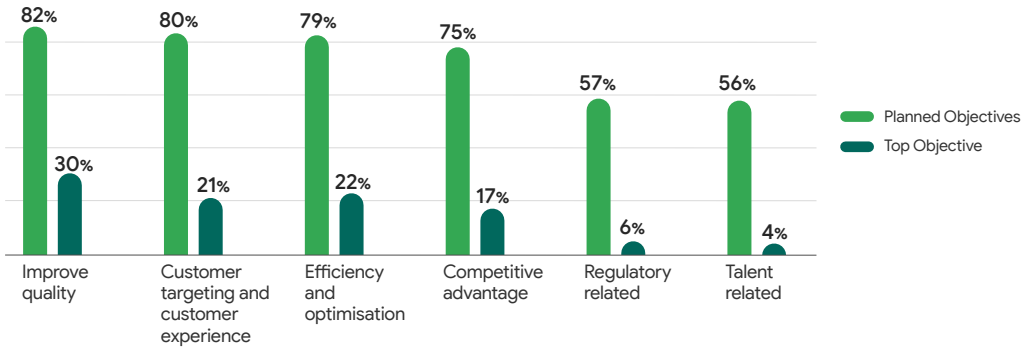


Smarter Finance

Strong on compliance and control, but must overcome fear of failure and embrace innovation

Businesses in the Finance sector[20] are technologically sophisticated and data-driven. Accustomed to operating in highly regulated environments, the technology deployments within these businesses have historically focused on risk and compliance. Newly emerging priorities include enhanced products and services as well as customer targeting and customer experience.

IMPROVING PRODUCTS AND OPERATIONAL EFFICIENCY, CUSTOMER TARGETING AND CUSTOMER EXPERIENCE ARE TOP PRIORITIES

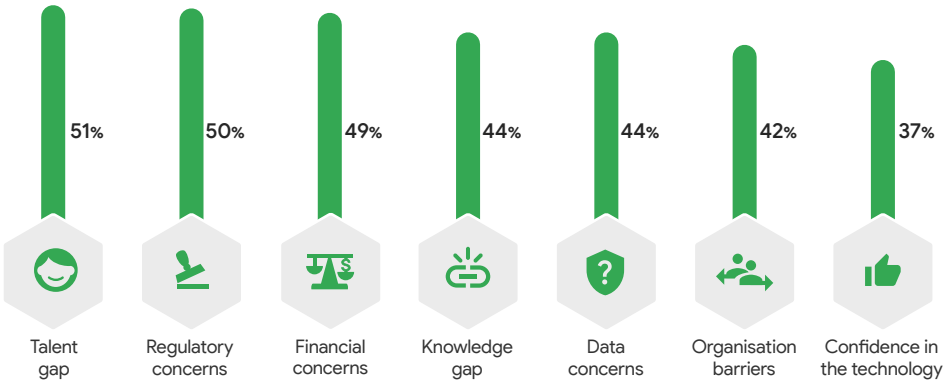


Question: Which of the following would you like to achieve in the next 12 months?
Question: Which one of these is most aligned with your business objectives?
Base: Finance businesses in Hong Kong, n=104

20 Types of organisations within the Finance sector include banks, insurers, asset management firms, private equity, payments providers and fintech.

That said, there is vast room for advancement within Finance businesses to harness the power of AI and data to improve operations, analyse customer preferences and deliver better customer experiences. While doing so, it is also important for these businesses to select the right set of data points and metrics to measure the success of such efforts and course correct as required. AI applications are still fairly basic, and Finance businesses are exploring the potential of AI. But lack of expertise is seen as the leading barrier to progress in AI deployment: 16 percent of Finance businesses have no AI expertise at all.

TALENT GAP CITED AS THE BIGGEST BARRIER IN FINANCE



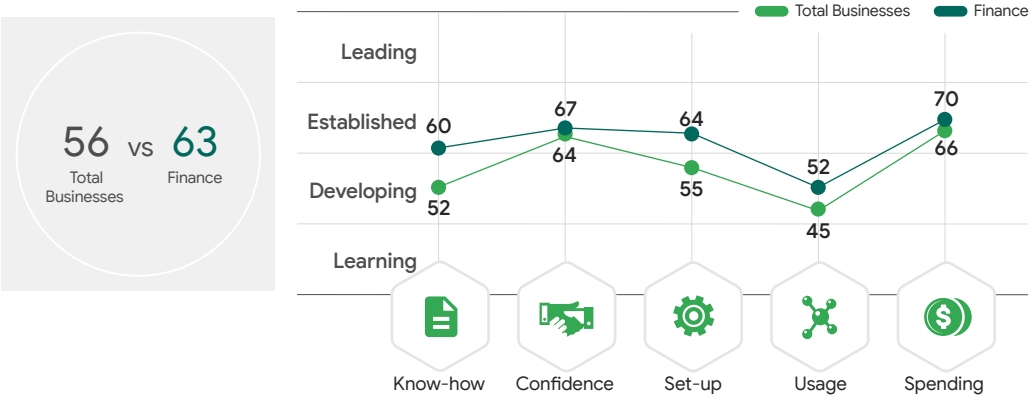
Question: What are the barriers for AI adoption?
Base: Finance businesses in Hong Kong, n=104

Ahead of other sectors thanks to good infrastructure, Finance businesses still have a way to go on their AI journey

The AI Readiness Index score for the Finance sector is **63** out of 100, seven points higher than the overall average for Hong Kong businesses.

Finance businesses do not lack the ambition and budget to be able to advance in AI. Confidence and spending are strong. Businesses in this sector understand the application of data and already spend extensively on automation to help with compliance and enhance customer interactions.

WELL-DEVELOPED INFRASTRUCTURE AND DATA CAPABILITIES, BUT LACKING AI KNOW-HOW



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Hong Kong businesses, n=449; Finance businesses, n=104

Meanwhile, set-up and know-how, while stronger than in other sectors, are still comparatively weak. Finance businesses have been dealing with vast quantities of data for a long time, building corresponding data infrastructure and governance procedures. However, massive legacy IT environments make it difficult and expensive to harness and extract value from the collected data. Regulatory concerns, including uncertainties with existing regulatory requirements, prevent full use of the data and have slowed the embrace of cloud. These are significant challenges that Finance businesses must face head on.

> *We believe the HKMA's Open API Framework will further encourage collaboration between banks and the fintech industry. API has an economy within it, and collaboration will lead to mutual benefits, give rise to innovative products and services, and ultimately enhance customer experience.*

Nelson Chow, Hong Kong Monetary Authority

Harnessing the power of data that they already collect will continue to be a core theme for the Finance sector. Competitive advantage comes from businesses' ability to capture and store data in usable formats and to create value from their data through analysis and visualisation.

Training is a promising way forward as interest is high, with 87 percent of Finance businesses offering AI training or planning to do so. Trained AI talent are people who understand the business and where AI can be applied, so they should be given an opportunity to work across the enterprise. Currently AI expertise resides in pockets rather than being spread across the organisation.

> *There are paths going into AI, however, that's often a specialised technical role. It would be preferable to see people go into broader leadership and commercialisation, rather than just the technical area.*

Anonymous (leading insurer)

As for usage, this pillar is low relative to aspiration. Fear of failure and risk-averse cultures are barriers. On the one hand, foundational principles of AI such as explainability, transparency and human centricity all involve an element of judgement, and Finance businesses are afraid of getting it wrong. On the other hand, Finance businesses may be uncertain about compliance requirements in relation to AI applications and are concerned about financial penalties and other consequences of non-compliance. That said, Hong Kong regulators are becoming more open to digitalisation including the use of AI. There will be more opportunities for open dialogues between businesses and regulators, which will help with AI adoption.

> *"Banks are already actively deploying AI technology in areas ranging from customer onboarding to risk management. We foresee that in the future, AI will be used by banks more widely and extensively to further streamline operations and offer more innovative products and solutions."*
>
> **Nelson Chow, Hong Kong Monetary Authority**

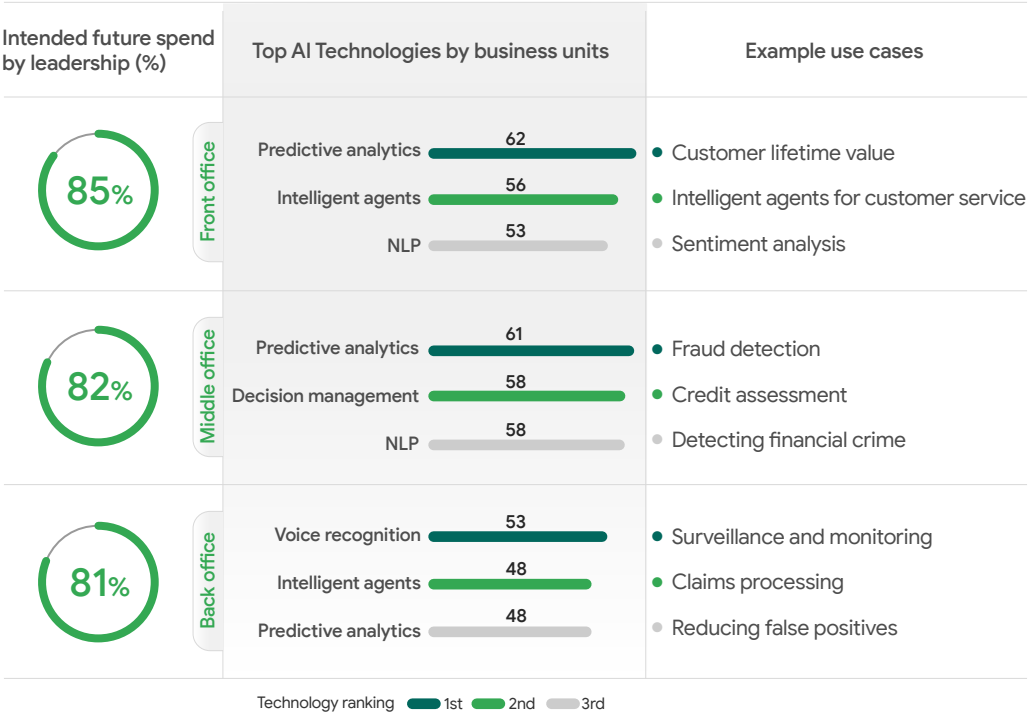
When it comes to structure and control, Finance businesses excel. To progress, they must evolve their view of innovation and allow for trial and error in the development of AI in a way that meets regulatory requirements.

> *"It's important to work in an agile way to bring a minimum viable product to business users as soon as possible, as this is the proof of how we can use AI to solve the problem. If you wait until the perfect solution to deploy it, it will be too late. Business moves and the opportunity will have changed."*
>
> **Yusuf Demiral, HSBC**

Numerous applications of AI in the Finance sector

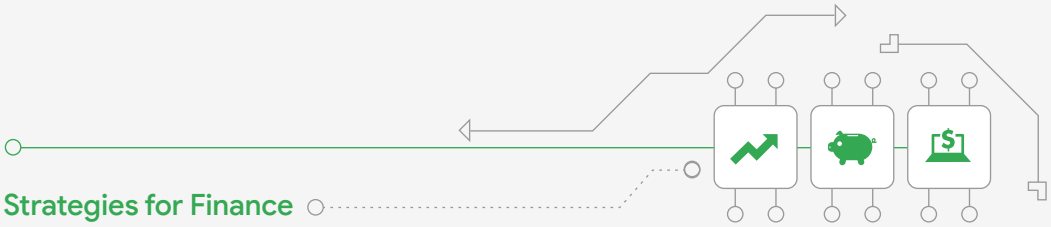
The finance sector has seen broad-based application of AI to achieve strategic as well as short-term tactical goals. These range from building financial institutions of the future by leveraging data, AI and digital platforms to building products and services to gain the first mover advantage in certain lines of business. Some common use cases with demonstrable benefits include the usage of machine learning and analytics for identifying financial crime, processing claims, and extracting information from unstructured documents to detect fraud. Increasingly finance businesses are looking at AI to improve growth and customer interaction as well. As a result we expect to see a considerable increase in the application of AI in the front and middle offices.

AI USE CASES PRESENT ACROSS THE FINANCE ENTERPRISE



Question: In what ways do you anticipate spending on AI investment to change in the next 12 months in [DEPARTMENT]?
Question: Below is a list of technologies used by businesses. Please let us know to what extent is your organisation implementing each of these technologies?
Base: Finance businesses adopting AI across respective functions, n=34 Front office; Front office, n=34; Middle office, n=31; Back office, n=60

Finance businesses contain the ingredients for AI success between their technological sophistication and being accustomed to meeting regulatory requirements as a highly regulated sector. The task is now about advancing standard operating procedures to unleash the potential of data. This can best be achieved by a bolder approach to innovation, underpinned by an organisational cultural change.



Strategies for Finance

- Leverage learnings from industry players and foster sharing of knowledge with other members of the ecosystem to help overcome fear of failure and build a culture of innovation
- Evolve data management capabilities to be able to locate, manage and store data in a way that allows the application of AI, via cloud
- Educate all parts of the business with a basic understanding of AI and identify use cases

CASE STUDY

HSBC

Yusuf Demiral
Regional Head of Data & Analytics
(Wealth and Personal Banking, ASP)

Introduction

HSBC, officially known as The Hong Kong and Shanghai Banking Corporation Limited, is the largest bank in Hong Kong, and operates branches and offices throughout the Asia Pacific region and around the world. HSBC's Wealth and Personal Banking (WPB) unit is the result of the Group Retail Banking and Wealth Management and Global Private Banking units merging in 2020. The unit offers a range of services from personal banking, mortgages and loans to investment, savings and wealth management products to support individuals, families, business owners, investors and entrepreneurs around the world.

The term artificial intelligence (AI) was first introduced in the 1950s. Over the years, the pace and evolution of technology as well as the availability of data have fuelled an investment climate for change and accelerating AI adoption. Solutions that utilise AI make lives easier with better service, higher convenience, relevance and efficiency. Like many big businesses, HSBC has access to vast amounts of data. It is now embracing the potential of its data and emerging data technologies to improve the services provided to customers, and manage the business more effectively and efficiently.

Key drivers to adopt AI and D&A to build the 'bank of the future'

HSBC WPB partners with Google Cloud Platform via the 'Intelligence Hub' program to enable Cloud-based AI solutions for better customer service

Data and analytics (D&A), plays a significant role in HSBC's strategy to focus on investing in digital capabilities and building the 'bank of the future'. For the most part, HSBC sees AI as an opportunity to understand customers' needs better, hear their voice, and alleviate the risk that its customers and the bank might be exposed to.

Using information wisely can make a customer's experience smoother and more secure. With the help of machine learning and advanced data analytics, HSBC is delivering these outcomes in four major ways:

- **Design more personalised products and services for customers:** HSBC is able to better understand customers' needs and present and suggest the right products and services. For example, the adaptive learning capability in HSBC's internet banking platform can help expose the most relevant information to the customers in real time.

- **Improve customers' experience and journey:** The bank uses AI solutions in the customer journey, and implements technology that enhances efficiencies and reduces friction across customer touchpoints. In Hong Kong, HSBC built an algorithm to make it easier to apply for a basic life insurance product. The algorithm analyses a range of data, including credit transaction information to rate a customer's eligibility for the product. This saves some customers from having to answer application questions.

- **Protect customers, the bank and the community:** HSBC uses AI to predict different types of risk, such as fraud risk or financial crime risk, using thousands of data signals to protect the customers and financial community.

- **Improve the bank's operational efficiency:** Behind the scenes, data analytics can speed up processes such as the following:
  - HSBC's collaboration with Google Cloud Platform allows the bank to automate sales quality checks using voice-to-text, natural language processing and various other machine learning algorithms resulting in better service for customers involving a more cost-efficient process.

The key however, is to strike the right balance between what technology and data can do to meet customers' expectations – with the need to actively address risks to their wellbeing – as well as protecting the financial system.

The keys to successful AI adoption

To successfully deploy AI and reap benefits, HSBC believes certain core principles must be followed.

Focusing on business outcomes

Deploying AI and machine learning is a tool, not the final objective. Hence, at HSBC, business functions are embedded with data and analytics specialists. This structure enables the data and analytics team to stay close to the business, and work hand in glove with them to identify solutions to business problems. The D&A specialists act as 'business translators', converting data into insights. These tools are then used to identify opportunities for serving customers better, making the bank more efficient and minimising risk.

Breaking data silos

Data storage is always the main challenge in deploying AI and machine learning. There is an exponential value in joining up data assets from a variety of data sources. As such, breaking down data silos and gaining customers' trust underpinned by consent and responsible use of their data are critical in implementing AI and machine learning today.

At HSBC, once the data needed for certain business problems has been identified, its teams can always locate it efficiently thanks to the adoption of cloud solutions. Data silos that have been built up over the decades can be broken down and connected to unleash potential insights to serve customers better.

Agile ways of working

The best way to produce a solution is to work in an agile manner. It is important to bring a minimum viable product to business units to prove the value of AI to drive buy-in from business units. From there, an end-to-end solution around the product can be built, and the solution can be embedded into business processes.

What's next for AI

Looking ahead, AI and D&A continue to be a central part of HSBC and the banking industry's focus on investing in digital capabilities to better serve customers.

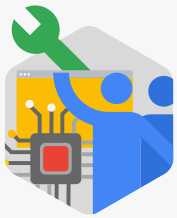
Conversational banking

In the next 12 months, the bank will shift from monitoring transactions to serving banking customers through a concept called 'conversational banking'. HSBC is merging human and digital channels to help customers get the assistance they need more quickly and at a lower cost. Customers can begin a conversation in the HSBC mobile app via an AI chatbot, which is capable of answering the simple questions immediately, effectively automating up to 50 percent of the incoming chat volume. More complex questions are then handed off to frontline colleagues.

Ethical use of AI

As the adoption of digital banking accelerates, customers are entrusting banks with more of their data. Cognisant of this reality, the bank is championing investment in the ethical use of big data and AI. HSBC has developed core principles to guide all staff and contractors when making decisions about implementation at HSBC. Whether protecting data privacy, ensuring a defined purpose, or addressing unfair bias and decision-making, these principles help HSBC to meet emerging needs and contribute to the development of best practices in the ethical use of big data and AI.

HSBC also works closely with local markets and regulators to make sure that the bank not only complies with regulations but also contributes positively to how information is collected, presented, to how it is explained to customers.

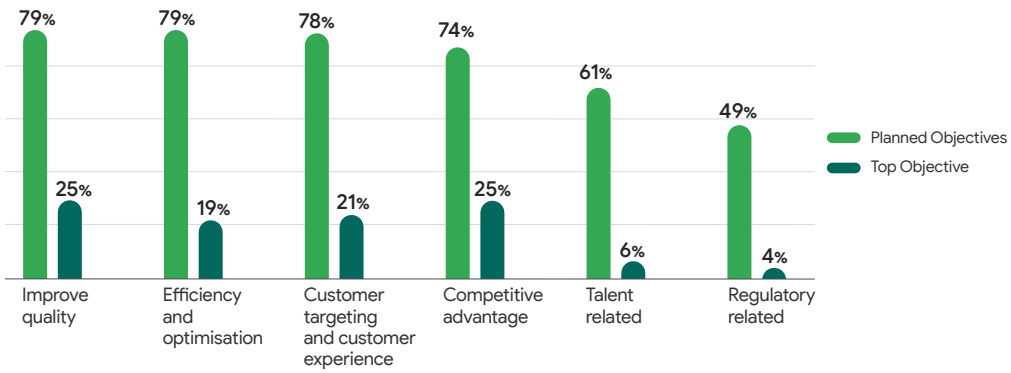


Smarter Technology & Innovation

Agile, innovative and customer-centric, but yet to fully embrace the rigours of regulation and compliance

The Technology & Innovation sector[21] has embraced AI as a market disruptor, resolute in belief that its future rests with pioneering technologies. This is an exceptionally competitive sector whose priority is to gain competitive advantage by constantly improving products and services, reaching the right customers, and delivering superior customer experiences.

PRIMARY GOAL IS TO GAIN COMPETITIVE ADVANTAGE THROUGH SUPERIOR PRODUCTS AND CUSTOMER EXPERIENCES



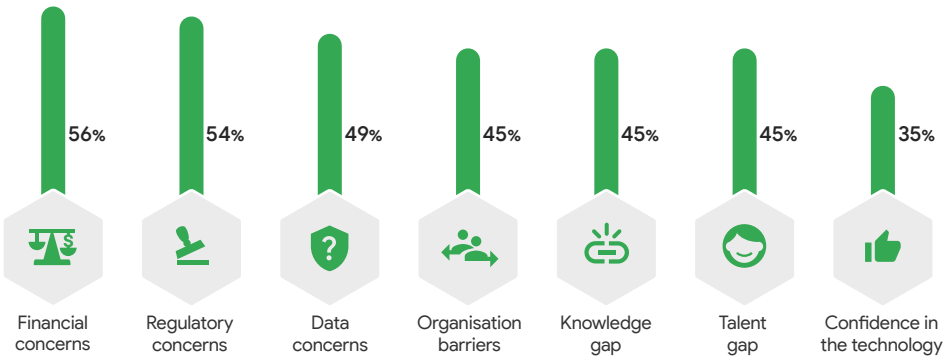
Question: Which of the following would you like to achieve in the next 12 months?
Question: Which one of these is most aligned with your business objectives?
Base: Technology & Innovation businesses in Hong Kong, n=117

21 The Technology & Innovation sector includes electronics and devices, telecommunications, software and hardware, game development, and engineering as well as information technology services.

Aware of evolving compliance needs, Technology & Innovation businesses are more likely than any other sector to cite regulatory concerns (54 percent) and data concerns (49 percent) as barriers to progress on the AI journey. And while this sector is noted for its customer-centricity, the lack of clear ROI for AI use cases is still a common barrier just as it is for other types of businesses.

> *"AI needs clearer ROI and a concrete business case before the firm is committed to investing into it."*
>
> Jacqueline Chiu, Sony Interactive Entertainment (PlayStation)

REGULATORY CONCERNS HIGH ON LIST OF BARRIERS TO AI ADOPTION



Question: What are the barriers for AI adoption?
Base: Technology & Innovation businesses in Hong Kong, n=117

> *With innovation at our core, we always welcome all technology solutions. We are quick to embrace the latest technologies and our teams are keen to take a test and learn approach. With all-new technology to market, the only way to garner its success is trial and error.*

Deric Wong, Omnicom Media Group Hong Kong

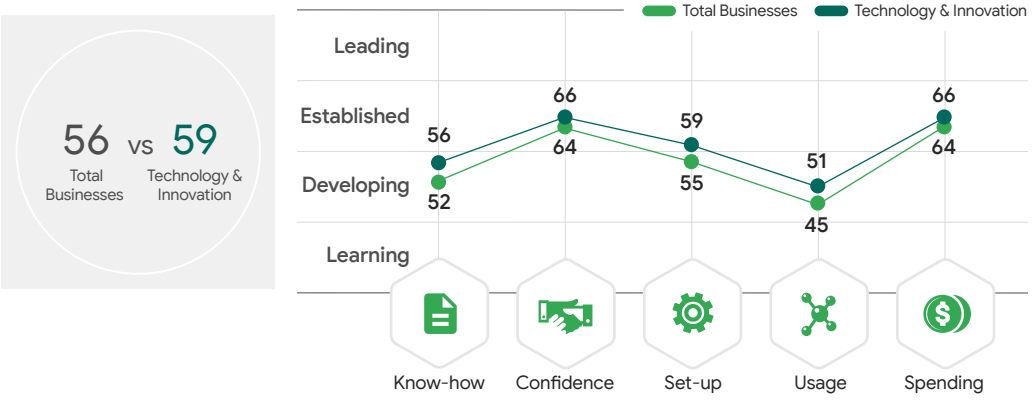
The goal for businesses in this sector is to manage regulatory oversight and compliance whilst retaining their innovative, agile culture.

Ahead of the average, but need to progress beyond proof of concept

The AI Readiness Index score for the Technology & Innovation sector is **59** out of 100, three points higher than the overall average for Hong Kong businesses.

The Technology & Innovation sector has embraced AI as a market disruptor, and is betting on it as an integral part of a future that is enabled by their industry. As with other sectors, confidence and spending are high.

TECHNOLOGY & INNOVATION READINESS AHEAD OF AVERAGE ACROSS PILLARS



Business AI Readiness Index: A measure of Hong Kong business' readiness to adopt AI
Base: Hong Kong businesses, n=449; Technology & Innovation businesses in Hong Kong, n=117

Technology & Innovation businesses need to build capability and credibility in data governance to create a sense of trust. With COVID-19 accelerating consumers' shift to online channels, this is an urgent priority.

Usage is comparatively low, with 55 percent of Technology & Innovation businesses still in the proof-of-concept stage. This is due to the trust gap: customers will use AI once they see the benefits and are comfortable that their data is secure. As usage increases with the enhanced trust of customers, so will future spending as Technology & Innovation businesses invest to meet customer demand.

Set-up is notably stronger than the average for all businesses. Many Technology & Innovation businesses are well advanced on the journey to digitalisation, already capturing and storing a vast amount of data. Much of the infrastructure required for AI, such as cloud, has already been adopted as part of these businesses' core activities.

Know-how within Technology & Innovation stands out as being ahead of the average for all sectors. There is still substantial scope for progress, as existing know-how in the main comprises technical expertise (knowledge of software, hardware and systems) rather than domain knowledge (understanding how AI can benefit the business). Currently 80 percent of those in the sector see revenue benefits in the use of AI, but only 18 percent see AI as the driving force.

Upskilling teams on enterprise-wide AI use cases will help Technology & Innovation businesses move beyond proofs of concept. Building knowledge around AI-specific topics such as data science and application development will strengthen capability.

> *Sometimes, the results of AI and machine learning are not immediately what you expect, other times it requires a lot of effort to get it right. Organisations need to learn how to embrace the results when they fall short of expectations. So to have an engagement approach involving different levels of teammates in embracing the mindset of 'fail fast, learn fast, and succeed sooner' culture is of utmost importance. This requires an organisational and cultural change. Top management has to give full commitment and to be persistent in order to successfully reshape the operations.*
>
> **Helen Sou, Viu**

AI features heavily in products and services

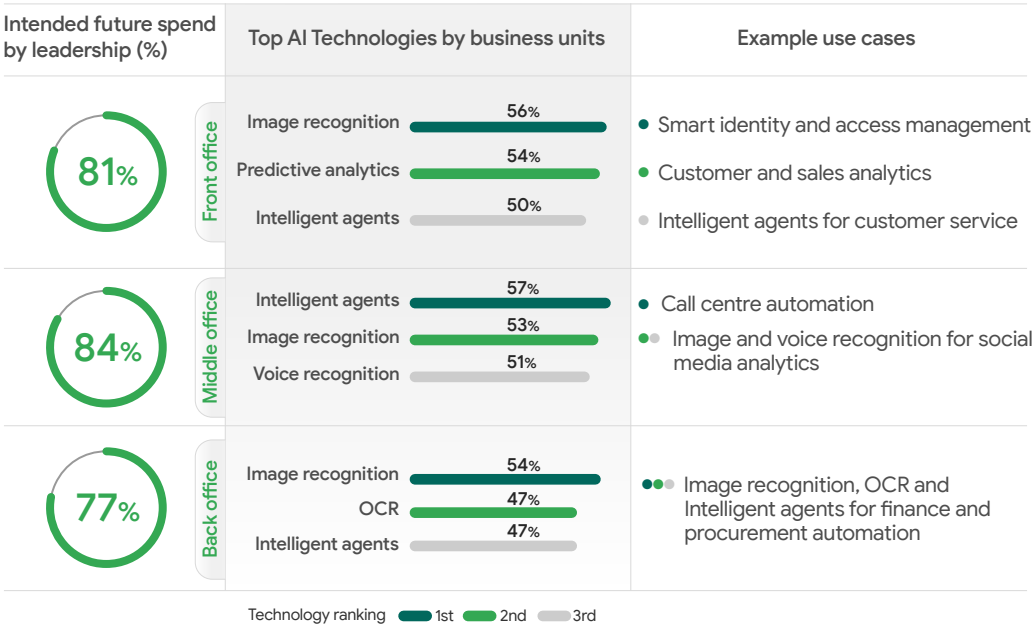
In this sector, use cases are aimed at improving products and services as well as enhancing customer experience. Examples include the application of AI for intelligent agents, identifying patterns and sentiments, offering product recommendations for online channels, and enlisting chatbots for customer service.

There is a particularly strong focus on AI in the front office in the Technology & Innovation sector. The potential to deploy AI to target the most valued customers as well as deliver to them superior experiences is especially important in this highly competitive, fast-moving sector. This coupled with the right measurement strategy is vital to improve existing products and services while creating new ones to bridge any gaps in the current product or service portfolio.

“As an organisation, seeking the right partnership is vital for us to grow as a business. When it comes to technology providers, we pursue companies who can best integrate with our service offerings in the area of data value and AI capabilities for our clients.”

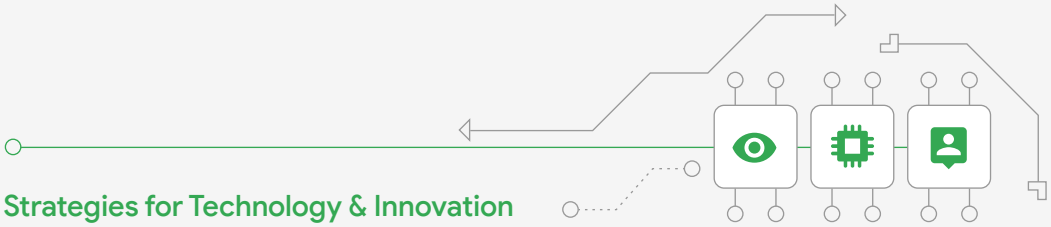
Deric Wong, Omnicom Media Group Hong Kong

TECHNOLOGY & INNOVATION AI ADOPTION IS STRONG IN THE FRONT OFFICE



Question: In what ways do you anticipate spending on AI investment to change in the next 12 months in [Department]?
Question: Below is a list of technologies used by businesses. Please let us know to what extent is your organisation implementing each of these technologies?
Base: Technology & Innovation businesses adopting AI across respective functions: Front office, n=52; Middle office, n=53; Back office, n=57

With AI visibly embedded in a wide range of products and services, Technology & Innovation brands are at the forefront of popularising AI for Hong Kong residents.



Strategies for Technology & Innovation

- Deliver the vision by building trust: enhance AI governance including transparency of data usage, and build the capacity to innovate while fulfilling regulatory requirements
- Drive readiness through data strategy and management: focus on execution of data lifecycle management across the enterprise
- Ramp up customer centricity: identify more demand-driven use cases that are focused on ROI and customer value, and enhance brand equity through human-centric applications of AI

Nowhere is the potential for AI stronger than in the Technology & Innovation sector. To succeed, greater clarity of regulatory and compliance requirements is required, while retaining an innovative and customer-focused culture.

CASE STUDY

Viu

Helen Sou
Chief Business Officer, Asia, Viu

Introduction

Viu is a leading pan-regional OTT service from PCCW media group. Based in Hong Kong and launched in 2015, Viu now serves over 36 million monthly active users across Asia, Africa, and the Middle East.

Viu's success largely stems from its 'audience-centric' approach, prioritising consumer needs and working closely with partners to create an ecosystem. Yet Viu understands that growth would be limited if it adhered solely to traditional business practices. This is why it embraced data analytics and artificial intelligence (AI). The data-driven approach supports Viu in offering highly relevant experiences to engage consumers and achieve impactful business performance.

Triggers: scale, relevance, decision-making, automation

From its inception, Viu's ambition was never to be just a local service, but a pan-regional OTT service. Viu understands that data analytics helps to translate consumer data insights into relevant offerings. The AI journey can be traced back to four triggers.

Scale

Scaling up is significantly easier with AI and data analytics. Processing data manually would be nearly impossible and a huge drain on manpower working across 16 markets. Data analytics solutions are the only viable way to **scale** while allowing employees to focus their efforts on value-adding work.

Relevance

Offerings must be personalised to drive user engagement. Without powerful digital tools, Viu would be unable to harness the power of the vast volume of data it collects. This data is transformed into **relevance** by converting users along different touchpoints of the customer journey through viewer-centric solutions.

Decision-making

Data-driven decisions are critical for success. Viu believes that businesses should not base decisions on intuition: each decision needs to have business results and impact. Accordingly, Viu began to draw insights from data analytics for content acquisition and operations that empowered teams to make smart and timely decisions. Viu turned to data for clear communication and objective **decision-making.**

Automation

As a large-scale digital company, Viu sees **automation** as vital for achieving operational efficiency and consumer engagement. Automation allows Viu to be more effective in its decision-making, data gathering, and data analysis. Automation also mitigates human errors and operational risks as well as increases efficiency. For example, Viu uses automated dashboards to reduce human error for data input and enables the team to refine strategies based on latest data.

Approaches to deploying AI

In tandem with responding to these triggers, Viu understands that a forward-thinking organisational culture valuing AI and data analytics is key to successful adoption.

Culture

When it comes to realising AI's potential, Viu's results-driven culture practices engagement rather than a top-down approach. Its management addresses failure constructively: fail fast, learn faster, and succeed sooner. Viu believes each staff member is a continuously improving work in progress.

Consistent with its constructive culture, Viu seeks talent that demonstrates a positive mindset as well as a commitment to learning new skills and delivering results.

Within the organisation, Viu has deployed internal upskilling programs through:

- Setting up guilds to share experiences
- Regular trainings and Q&A workshops
- Standardisation of dashboards to expand access to the entire organisation
- Bi-weekly insights sharing key findings
- Dedicated training programs to explain and demystify collected data

Data collection to data utilisation

As for how Viu tackles data utilisation and AI usage throughout the organisation, it believes in a systematic four-step approach.

Step 1: Data collection

The first step takes a broad view in prioritising and aligning business objectives: identifying data requirements, deciding on data collection methods, and organising a collection plan that synthesises the most important aspects of business objectives.

Data collection: Before beginning, the organisation must align objectives: determining what data and KPIs are needed so that the desired outcomes can be accurately measured.

Data definition: To gather information, it is first important to ensure collected data follows the market's standard definition of knowing 'where we are' to conduct a deep analysis, and enable a competitive analysis. Poorly defined data cannot interface with either global standards or third-party solutions, and limits opportunities to scale.

Data organisation: Data needs to be acquired and processed in real time; this can be done via restructuring existing infrastructure and enhancing the Extract-Load-Transform solutions to process large volumes of data efficiently. Low-value data should be regularly cleared to reduce loading and processing times as well as data outliers.

Step 2: Data exploration and insights

The second step requires a detective mindset to uncover patterns and trends. This entails different data mining and analytics tools (e.g., cohort analysis, predictive analytics, clustering, etc.). Advanced analytics also supports the integration of data from disparate sources to streamline processing and analysis. With large amounts of data, Viu can quickly derive data-driven insights and develop better strategies.

Step 3: Data presentation

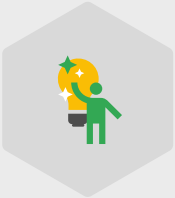
The next step focuses on how data should be communicated. Captured data needs to be presentable to all stakeholders and should never be limited to the data team. Therefore, a visualisation solution must be user-friendly rather than complex, and loading times should be fast.

Step 4: Data utilisation

The final step addresses how to make the most of the data. With all teams being able to access these tools, the entire organisation can use the data, and this prevents siloing in one or two business units.

Business growth

Viu's use cases cover a broad spectrum. One involves machine learning for audience clustering to deal with a vast customer base that has diverse behaviour and interests. Another use case targets customers with higher predicted lifetime value driving incremental pay subscriptions without increasing marketing spend. Yet another develops strategies to prevent churn, i.e., identifying audience members who have a high potential of dropping out.



Innovation

Viu's 'happy advertisement experience' combines AI and human intelligence as it employs scene-targeting. Specifically, Viu analyses behaviour to track where viewers pause, rewind, or fast-forward to understand which scenes resonate with them. Once the most popular scenes are identified, Viu can target partners for an associated ad, such as dental care products for intimate kissing scenes.

Closing words for a successful AI journey

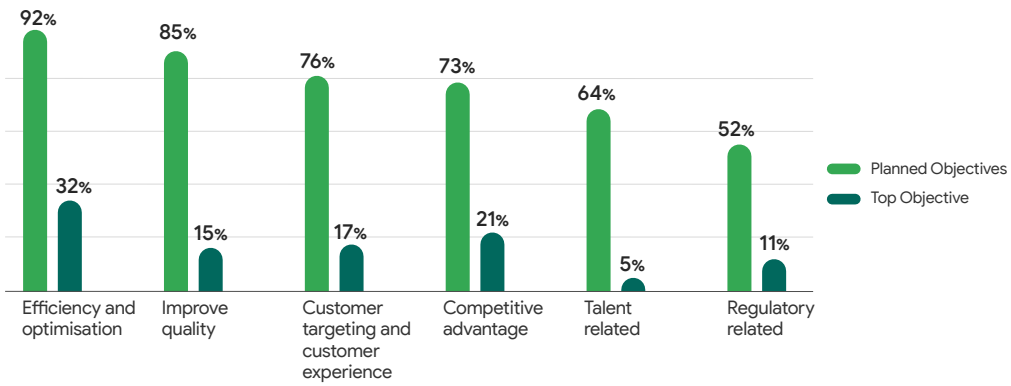
- Create a clear and compelling vision. To be successful, **an organisation needs to be results-driven**, originating from management and cascading throughout the entire group.
- Recognise the unique role data plays. It is instrumental, **but is not your CEO**. Data cannot make an organisation's decisions; however, it can lead the business to lucid, accurate and in-depth insights to make better ones.
- Bear in mind that how things happen matters as much as what happens. **Focus on an engaged approach** rather than one that is top-down, as this is better for organisational buy-in and investment over the short and long term.
- Be ready for a multitude of outcomes, especially failure. In any new journey, there are bound to be missteps. Useful as it is, data analytics might not always yield the result that is expected right away, so be prepared to **fail fast, learn fast, and succeed sooner.**

Smarter Travel & Logistics

Practical, outcome-focused businesses that need to see the benefits before investing

The Travel & Logistics sector[22] is characterised by its single-minded focus on value. The leaders of these businesses are no-nonsense and pragmatic, needing to see technology in action and appreciate its benefits before they will adopt. Yet once the use cases are proven and real value is demonstrated, they will be quick to invest.

EFFICIENCY AND PROCESS OPTIMISATION TOP OF THE AGENDA FOR TRAVEL & LOGISTICS

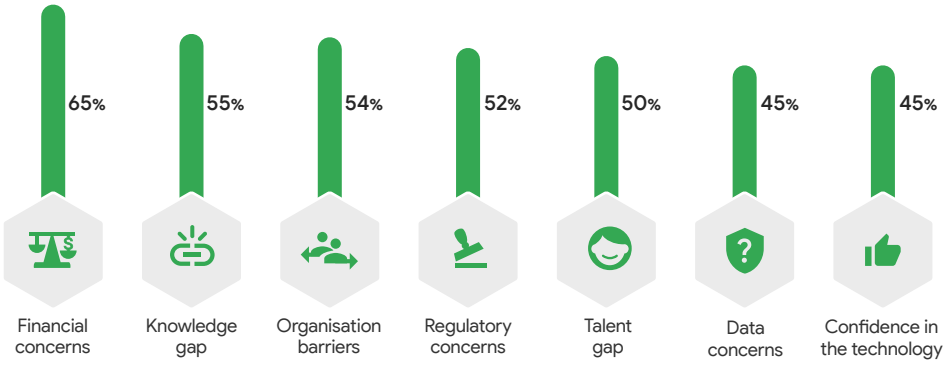


Question: Which of the following would you like to achieve in the next 12 months?
Question: Which one of these is most aligned with your business objectives?
Base: Travel & Logistics businesses in Hong Kong, n=107

22 The Travel & Logistics sector includes airlines and travel agencies as well as storage, shipping, postal and courier services.

Financial concerns such as cost and lack of clear ROI are the biggest barriers to AI adoption, cited by 56 percent of Corporates and 76 percent of SMBs.

COST AND LACK OF PROVEN ROI, THE TOP BARRIER TO AI ADOPTION



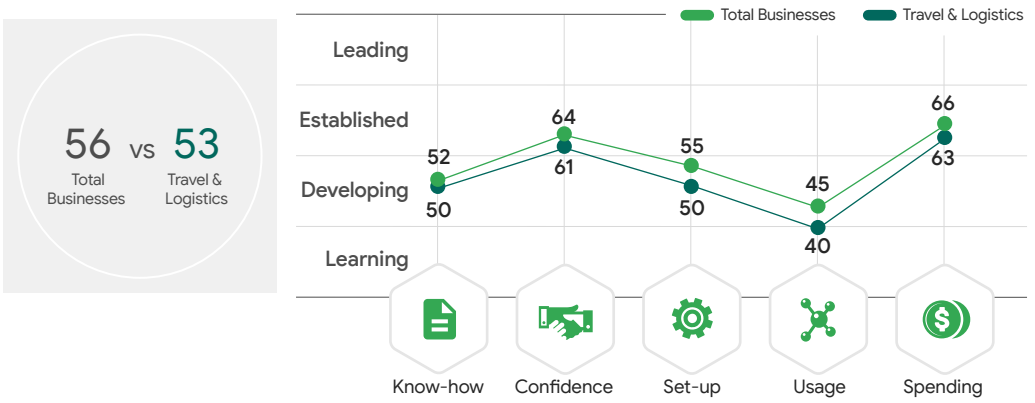
Question: What are the barriers for AI adoption?
Base: Travel & Logistics businesses in Hong Kong, n=107

Confident in the future, but needing help today

The AI Readiness Index score for the Travel & Logistics sector is **53** out of 100, three points lower than the overall average for Hong Kong businesses.

As with other sectors, confidence and spending are high for Travel & Logistics businesses. Businesses recognise AI's potential and they understand that they need to invest to retain their competitive edge.

SPENDING AND CONFIDENCE ARE HIGH, BUT USAGE IS LOW



Business AI Readiness Index: A measure of Hong Kong business' readiness to adopt AI
Base: Hong Kong businesses, n=449; Travel & Logistics businesses, n=107

However, a gap exists between the promise of AI and day-to-day reality. AI is perceived as more for the future than for today. Know-how, set-up and usage are lower, with many Travel & Logistics businesses having yet to see AI's practical benefits. As a result they have not built robust business cases for AI investment.

Compared with other sectors, Travel & Logistics businesses are still relatively analogue. Data is not necessarily seen as a strategic asset, and Travel & Logistics businesses tend not to be first movers to adopting cloud. While this is beginning to change, businesses must first start to upgrade long-established legacy environments before they can start to realise the benefits of data and analytics and AI. They should also consider measurement strategies which intersect at the right touchpoints along the consumer journey to ensure continuous improvement of business outcomes.

Speed and efficiency are prized, but expertise must first be nurtured

AI services that help Travel & Logistics businesses operate faster and more efficiently will be highly prized. Technologies such as intelligent automation and machine learning will be at the forefront of their journey. Such capabilities have the potential to transform supply-chain forecasting, workforce engagement and management, as well as risk and compliance.

Currently the most established AI technologies for Travel & Logistics businesses are text recognition (40 percent) and smart translation (38 percent), and both are used in process automation and efficiency. Other services showing strong potential are predictive analytics, image recognition, routing, and paperless confirmation of customer orders.

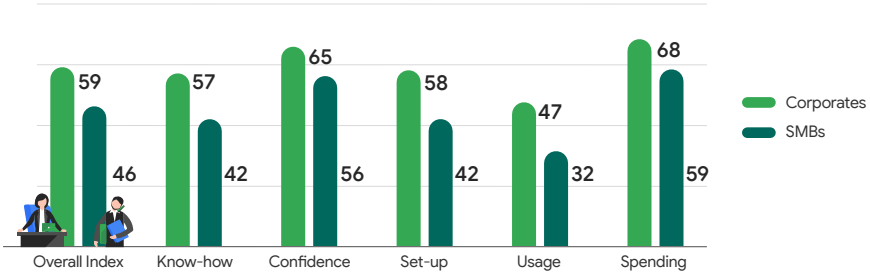
Travel & Logistics businesses are the least likely of the four sectors to have AI specialists across the organisation (2 percent), meaning the AI expertise that exists is siloed within departments. Furthermore, Travel & Logistics businesses are the least likely to believe AI is a positive disruptor to their industry (62 percent), albeit a clear majority still see its benefits.

> *"It is difficult to hire innovation related talent for the travel and logistics industry... Many people that come onboard will need to do innovation and R&D work on top of business as usual work, which isn't very attractive to aspiring talent."*
>
> **Wilson Lee, Kerry Logistics Network**

SMBs lag behind Corporates across all pillars, particularly know-how, set-up and usage

Knowledge gaps, which include a lack of understanding how AI can be deployed in the business and difficulty in defining roadmaps, are the second-highest barrier to AI adoption, at 55 percent overall and 64 percent for SMBs.

TRAVEL & LOGISTICS SMBS LAG CORPORATES IN AI READINESS



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Travel & Logistics businesses in Hong Kong, n=107; Corporates with >100 employees, n=57; SMBs with <100 employees, n=50

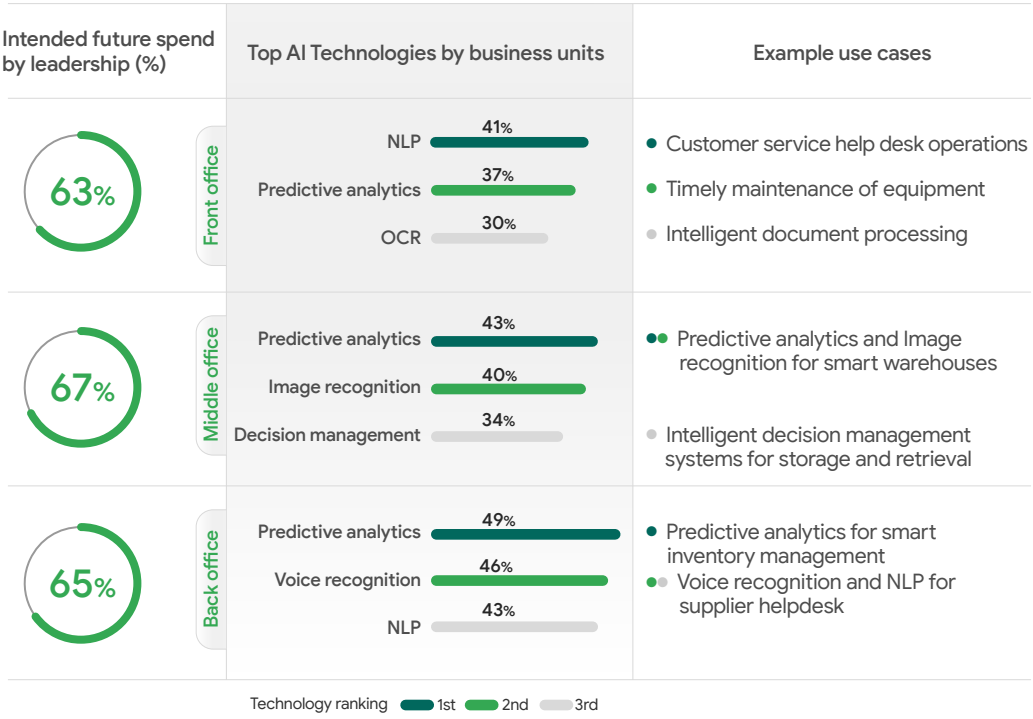
The low readiness scores for SMBs across all pillars are evidence that within smaller firms, analogue business culture and traditional ways of working remain the norm. To accelerate AI adoption, small-business owners will need to be convinced to be more open to new ways of working and bring in partners to help them embark on the transformation journey. Once the journey is begun, many SMBs do enjoy an advantage over Corporates as they are less encumbered by legacy.

Focus on efficiency and then move to the front

Use cases in this sector target operational efficiencies, cost savings and agility across the supply chain. Examples include intelligent forecasting and inventory management, AI-powered smart warehouses that integrate with the Internet of Things, demand planning, and route optimisation using AI.

As 92 percent of Travel & Logistics businesses cite efficiency as an objective, it is not surprising that the focus of AI adoption in this sector starts in the back and middle offices. AI technologies are first established here: as their value gets recognised and capability is built, they will then begin to appear in customer channels.

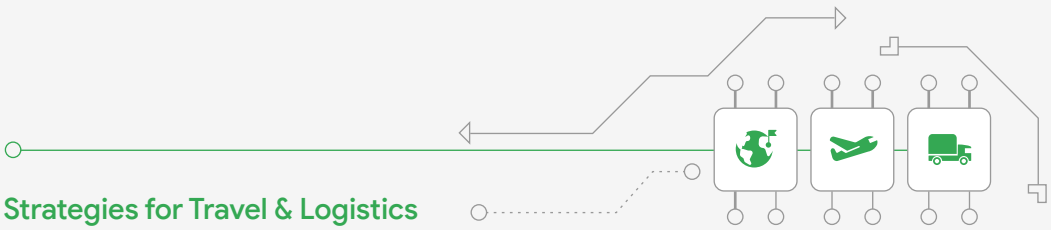
AI ADOPTION STRONGEST IN THE MIDDLE AND BACK OFFICES



Question: In what ways do you anticipate spending on AI investment to change in the next 12 months in [Department]?
Question: Below is a list of technologies used by businesses. Please let us know to what extent is your organisation implementing each of these technologies?
Base: Travel & Logistics businesses adopting AI across respective functions: Front office, n=27 (small base); Middle office, n=35; Back office, n=35

Travel & Logistics is at an encouraging juncture with AI: hopeful of its promise and ready to scale up its investment and usage. As the sector withstands the impact of COVID-19, it sees firsthand that traditional ways of doing business must give way to new ways of working which can help them realise AI's full potential.

> *"In the aviation industry, we have seen a change in the ecosystem. There are now more opportunities to grow together through data exchange with other partners if the mutual benefits of data sharing are clear."*
>
> **Lily Lai, Hong Kong Airport Authority**



Strategies for Travel & Logistics

- Appoint AI champions to drive progress across the organisation, not just within departments
- Define use cases that bring immediate and tangible benefits, and showcase them to promote cultural change
- Collaborate with partners to understand and start to trial AI technologies and build momentum

CASE STUDY

Lalamove
Jason Zhang
Chief Technology Officer (Lalamove Asia)

Introduction

Lalamove is a technology and logistics company that provides on-demand and advance-order delivery services by matching delivery drivers with users. Launched in 2013, Lalamove operates in 21 cities across Asia and Latin America connecting more than 7 million users with a pool of over 700,000 driver-partners.

Lalamove's mission of making local deliveries fast and simple is achieved with innovations such as instant order matching, real-time GPS vehicle tracking, 24/7 services and a driver rating system.

Focusing on the best user-driver matching experience

The key to Lalamove's platform is how it matches users to drivers. This is why algorithms that make order allocations as efficient as possible have driven the company's data analytics, machine learning and AI. Initially the algorithm matching drivers and users was developed manually, then upgraded to a rule-based system, and finally moved to machine learning and AI. Results are measured through customer experience KPIs including calls per order, income per hour, and response rate.

Culture, set-up, and trigger

Without these digital approaches, app development is staggered due to the lack of scalability of rule-based algorithms. On-demand delivery services are fiercely competitive with all companies deploying similar technologies. For the team at Lalamove, therefore, it proved natural to embrace change and improve their app in a similar manner, or else risk being phased out of the competition. In light of COVID-19, it is essential to continuously improve user experience.

A key to Lalamove's successful move to AI was a push for change from its management and technology teams. With the support of both, the first course of action to drive Lalamove's adoption of AI and machine learning was to build a team of engineers to develop solutions to improve the efficiency of existing operations. However, the team faced a few challenges: the main one being hiring AI talent in Hong Kong, specifically those specialising in data science or infrastructure. To close the gap, Lalamove sought talent from other regions, and successfully deployed AI solutions to protect its position as a leading on-demand delivery service provider.

AI solutions to challenges

Lalamove incentivises repeat business through rebates and coupons. However, this system has possible loopholes that can be exploited. Using AI solutions, Lalamove has managed to reduce fraud significantly.

Risk management

Through coupons and subsidies, Lalamove encourages users and drivers alike to patronise its platform. In a scheme titled 'Lalastars', drivers get bonus earnings based on completed orders. However, this can be abused by drivers and users pairing with one another if they collude on orders that never truly occurred and log false orders. Other cases include hackers hijacking orders to sell to other drivers or platforms.

Using machine learning, Lalamove finds the true identity of drivers and users via device fingerprinting. Lalamove is able to pinpoint whether users and drivers have been pairing with each other more than usual, and thus identify fraudulent orders. Through tech identification, Lalamove is able to accurately blacklist users and drivers that act in bad faith. This led to fraudulent cases being reduced to single digits among completed orders - a significant risk management success for Lalamove.

Path optimisation

The core of Lalamove's offering is how it matches users and drivers. Drawing inspiration from ride-hailing giants, Lalamove sought to improve path optimisation and user matching of its platform through AI and machine-learning solutions.

After moving from a manual matching of drivers and users, Lalamove adopted a rule-based method. However, the shortest distance does not automatically mean the briefest travel time. Other considerations must be accounted for, such as traffic conditions, difficult routes, inaccessible roads, and unforeseen factors. For a time, the cancellation rate among users that had been matched with drivers was higher than acceptable.

Lalamove is now able to predict the likelihood of a driver cancelling by using machine learning to incorporate drivers' previous ratings. The algorithm calculates a driver's level of familiarity with the market, customer and route. With the implementation of machine learning, the overall cancellation rate fell 5 percent within a few months.

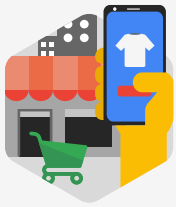
To address the issue of rule-based matching, Lalamove incorporates global optimisation rather than local optimisation through machine learning. Local optimisation is route planning by finding the local minima or maxima, whereas global optimisation looks at finding the minimum or maximum outputs over a given set. The resulting output is that more time is saved overall across all drivers and users.

To close the feedback loop, Lalamove incorporates A-B testing for cancellation rates to better refine its algorithms.

Future ambitions for AI

Lalamove has significantly improved its operational efficiency and deployed successful AI solutions. Now considerably deep into the AI and data journey, Lalamove believes that it is crucial to adhere to its current strategy for the next three years:

- Digitalisation of the road, trucks, and cargo: continuing to invest in tools to optimise routes, truck efficiency, and cargo space management built on affordable IoT and 5G solutions.
- Vendor partnerships: work with map vendors to further enhance route optimisation, efficiency and experience.
- Analyse historical data: review user preferences, routing, and event tracking to identify patterns and trends that can isolate weaknesses as well as opportunities to improve.



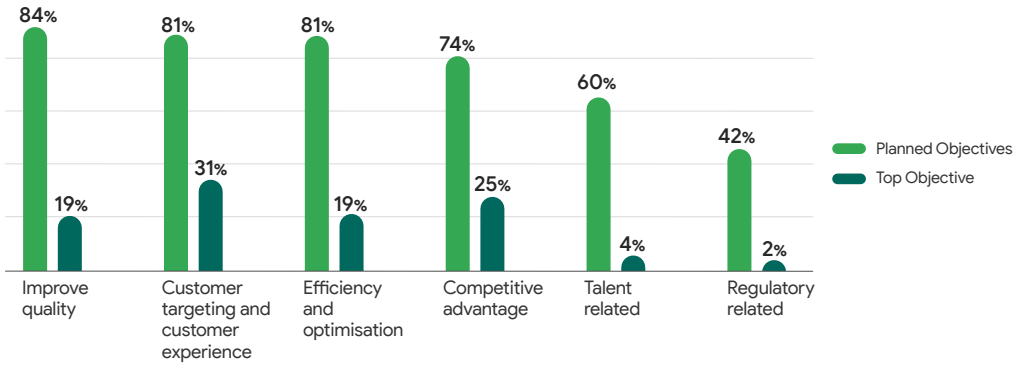
Smarter Retail

Customer-focused and needing help with infrastructure and expertise

The Retail sector[23] is fast-moving, competitive, and exceptionally focused on its customers. COVID-19 has proved a catalyst to drive retailers to embrace advanced technology. Compared with other types of businesses, however, retailers are not as far along the transformation journey in terms of AI adoption and digitalisation in general.

Retail businesses aim to be highly attuned to the marketplace: their priorities centre around continuously improving their offerings, attracting and retaining customers, and staying ahead of competitors.

RETAILERS' PRIORITIES ARE EXTERNALLY FOCUSED



Question: Which of the following would you like to achieve in the next 12 months?
Question: Which one of these is most aligned with your business objectives?
Base: Retail businesses in Hong Kong, n=121

23 Types of organisations in the Retail sector include department stores, grocery stores, supermarkets, FMCG, fashion, cosmetics retailers and e-commerce.

Compared with other sectors, Retail operations are relatively traditional, with some businesses operating in the same manner for decades. Many retailers find themselves at the very start of their digital and AI journey. More than half have no dedicated AI strategy (53 percent) and no dedicated AI leadership (62 percent).

MAJORITY OF RETAILERS CITE KNOWLEDGE GAPS AND COST/ROI CONCERNS

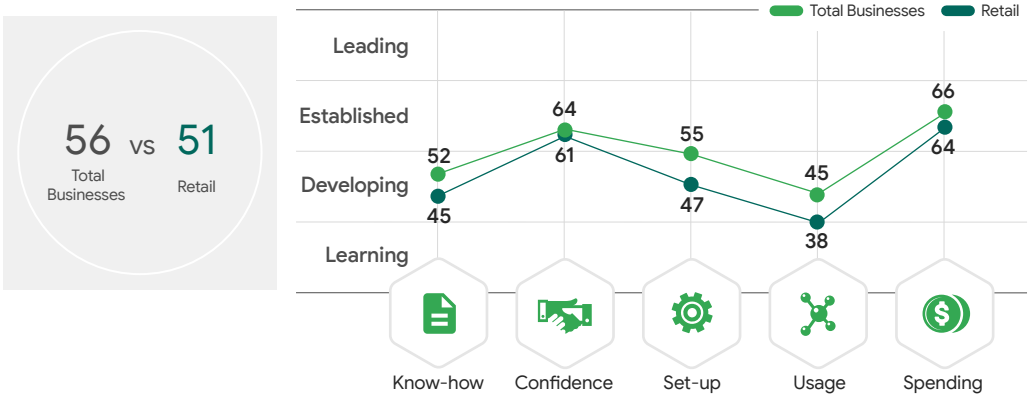
Question: What are the barriers for AI adoption?
Base: Retail businesses in Hong Kong, n=121

To overcome these barriers, retailers need people who understand the business and can translate the use of AI into tangible results. In the highly competitive market for AI talent, recruitment may be challenging if businesses are seen as lagging.

Lagging behind other sectors in AI readiness, many Retailers still operate in traditional ways

The AI Readiness Index score for the Retail sector is **51** out of 100, five points lower than the overall average score.

AMBITION IS STRONG BUT A LONG TRANSFORMATION JOURNEY AWAITS



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Hong Kong businesses, n=449; Retail businesses, n=121

As with other sectors, confidence and spending are high. Retailers see the potential of AI and have a strong desire to invest. At present this represents aspiration rather than reality, but retailers' willingness to spend matches that of other sectors.

In order to achieve return on their spending, retailers need to progress their set-up and know-how. With an AI readiness score of 51, retailers tend to be less advanced in their AI transformation journey than businesses in other sectors, and will especially benefit from the help of partners to identify use cases and develop strategies.

Specifically, retailers require people who understand not only the technology but how it can be applied to benefit the business.

> *“It’s hard to find talent that ‘connects all the dots’, understands technical aspects of AI, and can connect it back to marketing like a project manager would. Perhaps digital marketers need to be trained in AI.”*
>
> **Winnie Chan, Kimberly-Clark**

Set-up will be transformational for the Retail sector. Most retailers today lack connected data systems and data capabilities. Often legacy point-of-sale systems are antiquated and unable to join up data from disparate sources.

Adopting cloud is critical, as is a focus on getting the basics right in terms of architecture and customer relationship management (CRM) systems to build a durable and future-proofed platform on which AI applications may be deployed.

For bricks-and-mortar businesses that lack omnichannel experiences, capturing data can be difficult as many shoppers in physical stores leave little trace. Retailers with an online presence are further ahead on their digital journey, with COVID-19 accelerating digitalisation for everyone.

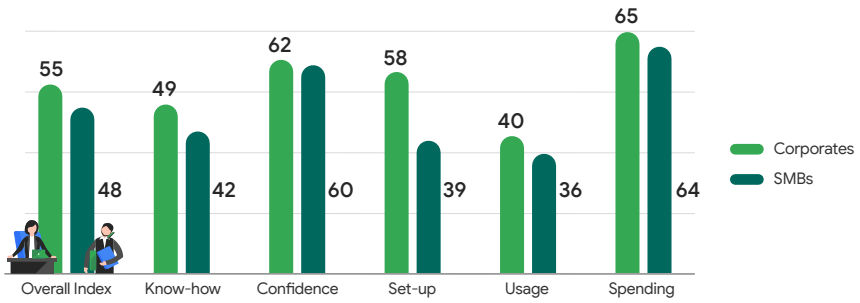
> *“It is imperative for retailers to leverage the wealth of consumer information they have collected through their e-commerce platforms to develop better products and services and provide a personalised experience. An open approach to data sharing and collaboration will stand the retail industry in good stead.”*
>
> **Winnie Chan, Kimberly-Clark**

As Retailers tend to be less advanced in their AI transformational journey than businesses in other sectors, they especially need partners who can help them identify use cases and develop strategies that dovetail with their pronounced focus on customers. Set-up is a crucial area for upgrading data systems and maximising AI capabilities.

Retail SMBs lag behind Corporates due to lower know-how and set-up

Smaller retailers match larger counterparts in terms of ambition, yet their lack of knowledge and infrastructure makes it hard for them to start.

RETAIL SMBS BEHIND CORPORATES IN AI READINESS



Business AI Readiness Index: A measure of Hong Kong businesses' readiness to adopt AI
Base: Retail businesses in Hong Kong, Corporates with >100 employees, n=51; SMBs with <100 employees, n=70

To begin their AI journey, retailers can focus on data strategy and management, and start to build use cases regardless of their legacy or business size. Given their customer focus, use cases in digital marketing and advertising as well as customer analytics are likely to yield helpful results. The success of these use cases should be measured against KPI's (key performance indicators) that focus on customer engagement across online/offline channels and other touchpoints that contribute to business growth. Bringing partners like third-party AI service providers, start-ups and leveraging off-the-shelf AI products and services will help overcome expertise and systems constraints.

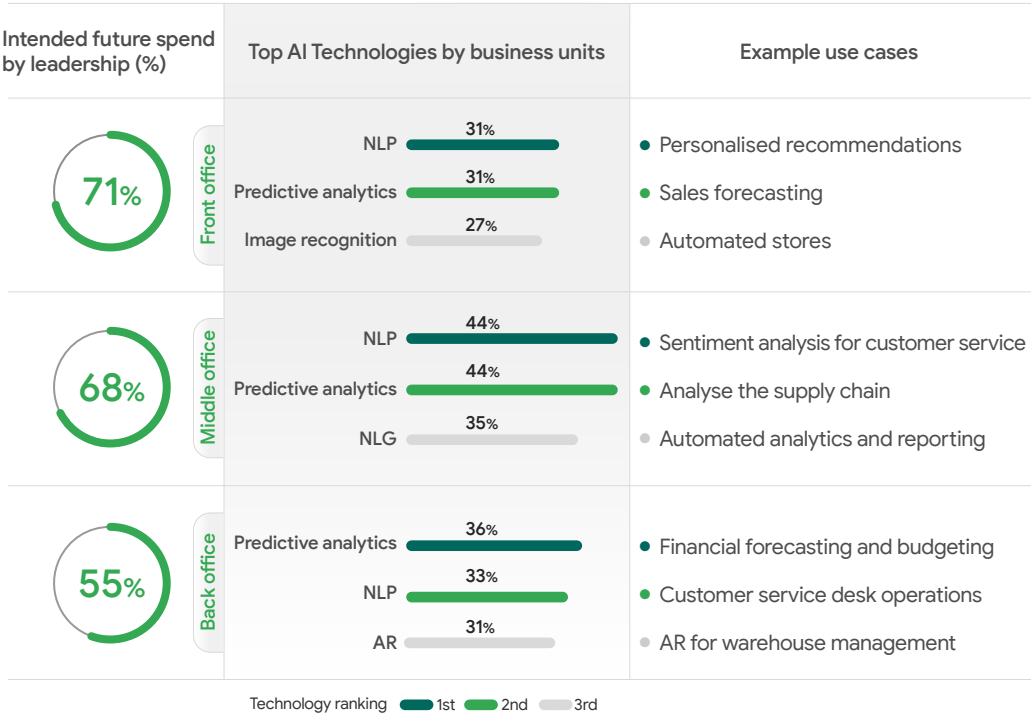
> *"To deploy AI, we first focus on smaller projects, so that you can focus on building things with definite ROI to prove to stakeholders the worth of the solution."*
>
> **Danny Shum, Ztore**

Front office will play a key role in Retail AI applications

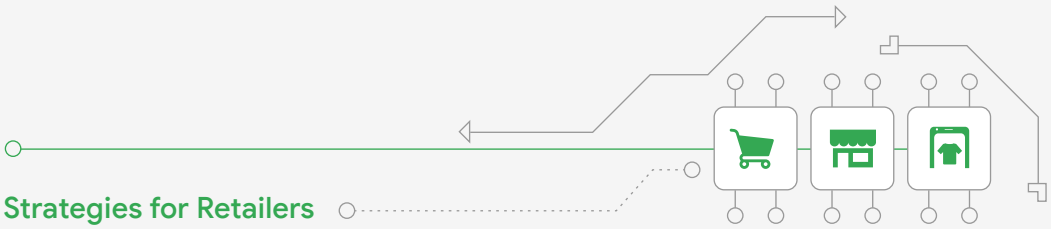
Use cases in this sector involve improving the customer experience, optimising marketing spending, driving online/offline integration and creating new products. Examples include automated stock-taking and replenishment using pattern recognition, AI deployment to drive personalised marketing campaigns, customer analytics through online stores, and analytics to predict customer churn.

Retailers' external focus is evident in the emphasis on front-office applications for AI investment. These include direct digital channels, digital marketing, customer analytics, personalisation and sales forecasting. Given retailers' focus on the front office, they will play an important role in building awareness of AI's benefits to residents.

STRONG EMPHASIS ON THE FRONT OFFICE IN RETAIL



Question: In what ways do you anticipate spending on AI investment to change in the next 12 months in [Department]?
Question: Below is a list of technologies used by businesses. Please let us know to what extent is your organisation implementing each of these technologies?
Base: Retail businesses adopting AI across respective functions; Front office, n=51; Middle office, n=34; Back office, n=36



Strategies for Retailers

- Educate managers and leaders to enable them to formulate an AI strategy with clear objectives
- Develop a technology roadmap and define a data strategy including desired outcomes
- Start with smaller projects to establish use cases and ROI
- Focus on AI use cases enhancing customer experience and promoting brand loyalty to protect and increase market share, mindful of the ‘new normal’
- Use partners to help drive the broader transformation and increase expertise

CASE STUDY

Sun Hung Kai Properties
Vincent Ma
Chief Digital Officer

Introduction

Sun Hung Kai Properties Limited ('SHKP'), publicly listed since 1972, is one of the largest property companies in Hong Kong. SHKP specialises in developing premium-quality residential projects and owns an extensive network of shopping malls and offices as well as a hotel portfolio and sizeable land bank. In addition to its property businesses, SHKP invests in telecommunications, information technology, infrastructure, transportation and other businesses. All of these are closely related to important aspects of daily life and generate strong synergies with its core business.

A clear vision: digital transformation

SHKP espouses a forward-looking vision of adopting innovative technologies in different areas of its business to enhance products, services, and customer experience. To leverage its portfolio of customer touchpoints, the company has accelerated digitalisation, increasing the use of data relating to customers and the operations. SHKP regards this approach as vital to its transformation journey.

Digitalisation to overcome legacy processes and systems

Similar to other established conglomerates, SHKP identifies siloed systems and manual processes as some of its key challenges to tackle to become a more digitally-driven company:

- Data gaps and workflow improvements especially require attention during the digitalisation process

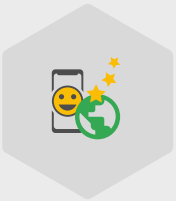
- Linking up the silos and automating manual processes through innovative technologies such as AI to achieve operational efficiency

Using technology to improve businesses

Innovations to improve workflow

Innovative technology and solutions are meant to significantly improve SHKP's operations, specifically tools like AI or Internet of Things, which need to be seen as a means to achieve business goals. SHKP has an extensive network of technology partners that can be leveraged when the organisation seeks solutions and use cases. For example, SHKP and SmarTone jointly developed SmartWorks to enhance worksite management efficiency, occupational safety and worker health. In addition, the company leverages its experience with 5G to further optimise operational workflow. SHKP touts SmartWorks as an award-winning solution that boosts construction safety and operational efficiency. Based on the cloud and the Internet of Things technology, it is a smart-site management system employing image analysis, AI and machine learning.

In addition, the use of smart helmets, designed by SmarTone, monitors the real-time health of workers via sensors such as heart-rate monitors and temperature sensors. Data found to be outside of a normal range is flagged to supervisors so they can send help, and the data that is sent to the system is integrated into a big data model to further improve accuracy. These solutions illustrate how technology can enhance health and safety and that SHKP clearly prioritises them.



Digital initiatives to drive customer experience

SHKP is deploying innovative technology across its different business units to improve business outcomes. 'The Point by SHKP' is a new phase of the SHKP mall app integrating the loyalty programs of its major malls intended to offer a new customer experience.

By applying technological innovations such as image recognition and contactless parking solutions, 'The Point' is meant to elevate customers' experience in shopping malls. In integrating what was previously independent segregated customer data across more than 20 malls, The Point now boasts one of the largest consumer loyalty platforms in Hong Kong, providing distinctive customer experience and benefits through cross-mall loyalty points earning and redemption. The program enables SHKP to strengthen its digitalised management and acquire a more comprehensive understanding of shoppers' needs and preferences. The insights in turn support the formulation of more effective promotion strategies and planning for the company's future retail projects.

Future ambitions

Despite some initial successes such as SmartWorks and The Point, SHKP still considers itself at an early stage of its AI adoption. Momentum is expected to gather in different facets of the business as the company explores opportunities to build on innovations. SHKP has also started to take a more holistic view in designing its data and AI strategies. The company is breaking down silos, for example, by linking data between businesses to personalise recommendations for customers. In the process, it is building a better customer experience and improving its understanding of it. By identifying and addressing relevant business problems and use cases across the organisation, SHKP aspires to orchestrate a more collaborative effort in growing in AI maturity and continuing to build value by implementing solutions swiftly.

08 Recommendations

Hong Kongers are beginning to incorporate AI into their daily lives, recognising the benefits of AI in saving time, money and improving experiences with products, services and brands.

COVID-19 has triggered a sudden and immense increase in residents' demand for digital services. For providers, innovations that were previously 'nice-to-have' have become table stakes as Hong Kongers of all ages rapidly embrace digital, including people who previously spent little time online.

Now Hong Kongers have been exposed to the world's best digital providers, and the experience has heightened their expectations: every provider is now expected to offer a seamless, omnichannel experience. Not doing so is no longer an option.

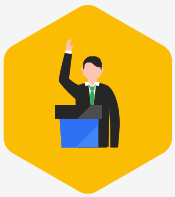
Personalisation has emerged as an important frontier within customer experience. For organisations to deliver, they must be capable of capturing, storing and harnessing their customers' data.

Certain fundamentals need to be in place for this to happen. Residents must be reassured that their personal data are kept safe and their privacy is ensured. Businesses must embrace cloud and use data effectively and efficiently, according to a clearly defined data strategy and architecture. Expertise must be on hand to identify value-driven use cases taking them from idea to design and implement.

In light of the economic headwinds that COVID-19 has wrought, businesses of all sizes and SMBs in particular must expand their digital footprint to stay connected with customers and therefore be competitive. They must embrace AI for long-term success.

Hong Kong businesses tend to begin their AI journeys in the back office (focusing on efficiency and automation), and once they have established capability and ROI in operations they will roll out to customer-facing functions. Among both corporates and SMBs, there is huge ambition and recognition of AI's potential, but a lack of talent and technology infrastructure holds many businesses back from moving ideas into implementation.

Amid this backdrop, policymakers, businesses and other stakeholders can seize significant opportunities to come together and support one another. Accelerating AI's adoption and development in Hong Kong can only be made possible through partnerships and collaboration across the entire ecosystem.



For Policymakers

Policymakers exert tremendous influence over the development of the AI ecosystem and play a crucial role in boosting confidence in using AI. As businesses seek more guidance on key topics such as data management, it is critical to have channels of open dialogue between regulators and businesses. These help businesses seek greater clarity of the regulatory and compliance requirements associated with AI applications and become more confident in embracing AI. This will in turn lead to reassurance that residents' AI experiences will be safe and productive.

Knowledge exchange and talent development are indispensable pillars of AI development. Policymakers can play a role in creating opportunities and platforms for stakeholders from both the public and private sectors to share knowledge and collaborate on AI applications.

An holistic education and reskilling strategy should be devised to address the AI talent gaps reported by businesses. Computer science should be brought into the classrooms for students of all ages, whereas AI, data and analytics should be incorporated into the curriculum so that Hong Kong will have the talent it needs to be competitive in the long term. Other training and reskilling programs will also elevate Hong Kongers' future career prospects in an increasingly digital local and global economy.

Economy

1. Overcome businesses' uncertainty with regulatory requirements

Businesses, particularly those in the Finance and Technology & Innovation sectors, reported that they lack confidence in embracing AI partly due to uncertainties with regulatory requirements. To help build businesses' confidence around regulatory matters, policymakers and businesses can engage in open two-way dialogues to address areas of uncertainty and share input and feedback. These dialogues may be conducted with individual businesses or through industry associations and trade bodies.

Policymakers, including regulators, may also share best practices and case studies of how businesses can successfully embrace new technologies while fulfilling regulatory and compliance requirements. This will be an opportunity for policymakers to affirm their belief and commitment in AI as a positive force that will benefit businesses and Hong Kongers.

2. Support collaboration among stakeholders to facilitate strategy development

As some businesses reported a lack of direction and applicable use cases of AI, Hong Kong will benefit from the relevant government bureaux/departments and regulators working closer together to develop an holistic AI strategy to guide the future adoption and deployment of AI. Senior-level steering will ensure that the required inter-departmental inputs and coordination can be secured.

Representatives from the business community should be invited to identify potential public-private partnerships and provide advice on how businesses can better collaborate with the government's facilitation. The strategy that is formulated should be promoted not just to the business community but also all Hong Kong residents, so that more people are informed and more confident in joining the AI journey.

3. Promote principles for personal data protection

Residents' privacy concerns are a major barrier to AI adoption, and policymakers can help businesses address them through offering guidance and promoting principles and best practices for personal data protection. The Privacy Commissioner for Personal Data has established programs on data privacy such as the Privacy Management Program[24] and the Ethical Accountability Framework.[25] These can instruct businesses on how to build trust with their customers on the use of personal data in AI-related applications.

Ecosystem

1. Nurture exchange programs for businesses and academics

Hong Kong talent and businesses need to learn from other successful regions like Singapore to incorporate best practices, and gain insights on overcoming common challenges in AI adoption and deployment. To bolster the finite pool of local talent, exchanges with businesses in other regions will accelerate growth in AI expertise.

In addition to riding on existing funding programs such as the Innovation and Technology Fund to attract AI/R&D talent to Hong Kong, talent exchange programs should be put in place to enable local talent to broaden their horizons and bring back valuable expertise to support the AI ecosystem in Hong Kong. The HKSAR government has identified a number of sectors where AI expertise will be especially valuable, such as legal services and scientific research.

24 Privacy Management Programme: www.pcpd.org.hk/pmp/pmp.html
25 Ethical Accountability Framework: www.pcpd.org.hk/misc/files/Ethical_Accountability_Framework.pdf

2. Promote collaboration between businesses

AI expertise exists in silos in organisations and across the business community as a whole. More sharing of knowledge will confer benefits for all, even for businesses that are already leading in AI readiness. This will help Hong Kong bounce back from the pandemic and stay competitive long term.

To this end, policymakers can seek to encourage sharing between start-up firms and established businesses, and between corporates and SMBs. For example, HKSTP and Cyberport can play a stronger role in bridging the gap through matching potential partners and appropriate bilateral incentives.

Various platforms like AI Plug[26] do exist to facilitate communication between businesses. However, with in-person conferences curtailed by COVID-19, there is room for new approaches.

3. Provide targeted R&D funding to support long-term basic research for future technology advancement

Although the government is not necessarily the primary driver of business innovation, policymakers play a critical role in providing R&D funding to support long-term basic research driving future technological breakthroughs.[27] Examples include the Innovation and Technology Fund supporting R&D projects and dedicated funding for a research cluster for AI and robotics. Cross-fertilisation will continue to take place with similar initiatives aimed to attract the world's top scientific research institutions and technology enterprises to Hong Kong to collaborate with local universities and scientific research institutions.

Moreover, the Hong Kong government can support AI development by procuring AI-powered services for government programs, as well as coordinating interdepartmental AI investments. Riding on the experience of the Smart Government Innovation Lab with initiatives such as digital parking solutions and chatbots,[28] the government may continue to bridge demand for AI applications in the public sector with AI-driven solutions in the private sector.

26 AI Plug: www.hkstp.org/innovate-with-us/labs-and-technology-services/ai-plug/
27 HKSAR government press release: www.hketosf.gov.hk/sf/whatsnew/2018/hkboostrd.htm
28 Smart Government Innovation Lab: https://www2.smartlab.gov.hk/en/index.xhtml

Education

1. Incentivise non-AI professionals to upskill and promote retraining to support economic recovery

Hong Kong is blessed with a large, diverse and well-educated talent pool. At the same time COVID-19 has highlighted the importance of staying competitive and up to date with one's skills in a highly competitive jobs market. Given the digital transformation underway across the business world, skills in AI, data and analytics will confer an advantage for jobseekers today and many years to come.

Financial incentives such as subsidies or tax allowances will encourage residents to attend retraining programs. Policymakers may make reference to or leverage similar programs already in place, such as the Innovation and Technology Fund's Reindustrialisation and Technology Training Program[29] and the Employees Retraining Board's We Love Upgrading Scheme.[30]

2. Promote a life-long learning culture for residents

Technology evolves, and staying up to date benefits Hong Kongers in multiple ways.

Being aware of AI and technology innovations ensures that residents take advantage of the benefits that AI services can bring to make their lives easier and more enriched. The government can play an important role in promoting this awareness through communication campaigns for residents.

29 The Innovation and Technology Fund: www.itf.gov.hk/en/funding-programmes/nurturing-talent/rttp/index.html
30 The Employees Retraining Board: www.erb.org/upgrading/eng/

3. Incorporate computer science and relevant digital skills at all levels of schooling

As evidenced in the Residents research, improving knowledge of AI, computer science and data-related topics will help accelerate AI's acceptance and growth.

The spotlight has turned to the critical role that schools should play in preparing students for an AI-enabled future. This includes, for example, providing textbooks and curricula on AI, data and analytics as well as investing in boosting the number of teachers who are qualified in these subjects.[31] In terms of collateral support there is also a need to ensure the right infrastructure is in place to foster AI education such as best-in-class equipment, support staff, bandwidth and connectivity.

Policymakers can play a role in incorporating the crucial knowledge and skills in the formal curricula across all levels of schooling.

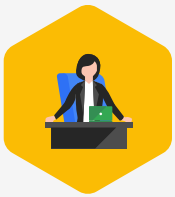
In addition to coding and STEM subjects, specific priorities at different school stages include:

- **Kindergarten to primary school:** hone problem-solving and collaboration skills, and develop fundamental understanding of coding and computer science starting from primary school. When working with AI in later stages, it will be necessary to separate a large problem into many smaller units and then integrate the solutions for the smaller units.

- **Secondary school:** robotics and digital art should be added to broaden students' knowledge and interests. Strengthen the connection between mathematics and computer science, such as through statistics, probability and logic.

In higher education, there should be a greater focus on educating the future workforce on the applications of AI through use cases. This is one of the focus areas for corporates that are looking for business specialists who understand AI in the context of their businesses and are able to join the dots to build AI products and services.

31 Harvard Business Review "How to Prepare the Next Generation for Jobs in the AI Economy" https://hbr.org/2017/06/how-to-prepare-the-next-generation-for-jobs-in-the-ai-economy



For Corporates

In the wake of economic pressures and 'business-not-as-usual' operating constraints brought about by COVID-19, the spotlight is on corporates to optimise ways of working and adjust to changes in customer demand.

Businesses with more mature AI data and analytics capabilities have been more resilient to COVID-19 because they can understand and react to changing customer behaviours in real time, predict and forecast more accurately, and manage supply chains, motivate and empower talent according to these shifts.

Without exception, the road ahead will be difficult. Nonetheless this extraordinary period presents a unique opportunity. In 'normal' times, change can be difficult to achieve, as future needs naturally take a back seat to the day-to-day. Thanks to an elevated sense of urgency across the corporate world now, initiatives that typically take months or even years to push through an organisation can be accelerated. There may never be a better moment for change agents to make things happen.

Economy

1. Build data capabilities across the business

Digital businesses are fuelled by data: they collect it through every touchpoint, store it in cloud-based data warehouses and data lakes, and apply data analytics and machine learning tools to bring value to the business and its customers.

Customers are becoming ever more demanding and the competitive landscape ever more intense. The practical application of AI and data analytics to improve operating efficiency and streamline customer experience should be a cornerstone of every corporate strategy. Building these capabilities will help every business respond more quickly to changing market forces, and recover from economic setbacks caused by COVID-19.

2. Allocate resources into relevant areas

Investments in AI should be made based on where businesses find themselves in the AI Readiness framework.

- Businesses at the start of their journey should focus on the basics: building capability in collecting and housing data, as well as defining a clear data strategy aligned with their goals.
- As for businesses that are further along in their journey, they should focus on analytics capabilities and their ability to incorporate the insights from these analytics into decision-making.
- More mature businesses should ensure that AI is implemented enterprise-wide and invest in initiatives seeking to build cutting-edge AI products and services targeted at market differentiation.

3. Build AI reporting and forecasting tools to derive insights from data

Corporates can extract value from both first-party data collected via Enterprise Resource Planning (ERP) and CRM systems, as well as third-party data collected from various customer touchpoints. AI will add predictive capabilities to analytics and reporting as well as improve accuracy.

AI and machine learning can be applied to understand changing customer preferences and behaviour, and fine-tune existing products and services. These insights can be fed into innovation pipelines and product life cycles to aid R&D efforts. AI can also help improve the precision of sales forecasting and inventory management, hence informing business strategy.

Ecosystem

1. Partner with ecosystem participants to champion the development of practical use cases

Collaboration with other parties within the technology ecosystem (policymakers, academia, start-ups, venture capitalists) will unlock economic benefits and enable training to develop, thus enhancing the AI ecosystem as a whole. Partnership efforts should focus on use cases that are demand-driven, which bring value to customers and where ROI is clearly measurable.

The health-insurance industry, for example, could work with data scientists and social scientists to develop enhanced and better-personalised insurance products to cater to an ever-changing population profile, with the larger goal of promoting health and quality of life in Hong Kong.

2. Facilitate knowledge and talent exchange across geographies

Corporates should encourage the establishment of cross-functional teams to exchange ideas, learn from one another, and partner with external experts such as technology specialists.

Two-way talent exchanges such as secondment opportunities can spark new ideas. Collaboration between teams to exchange ideas, try new things and learn from each other will facilitate knowledge sharing, better understanding between departments leading to faster growth and smoother collaboration across the organisation.

Education

1. Upskill colleagues

Other than recruiting experienced AI talent, building know-how requires putting into place AI training programs to bridge the knowledge gap for existing staff. Training should focus not only on technical skills but where the value is created for businesses: how the technology is applied within use cases that generate tangible benefits for the business. A core level of AI knowledge should be encouraged for everyone: colleagues who already understand the business but who are trained in basic AI principles will be extremely valuable to help identify use cases and business benefits.

2. Define AI career paths and promote AI internal usage

Businesses should define career paths for AI specialists within the company with associated certifications, development actions and KPIs.

Throughout the business, leaders should promote internal AI usage across all levels and include AI-related goals in everyone's objectives throughout the company. AI objectives can then be defined for all departments and AI success stories celebrated across the organisation to help incentivise staff to build their AI knowledge. A particular focus on encouraging cross-team AI usage will be helpful to ensure expertise does not reside in narrow silos.

Businesses that achieve these goals will be seen as preferred places for AI experts to work and therefore will have an advantage in recruitment.

3. Establish special interest communities

Internal communities can help foster a culture of innovation where individuals from across teams and departments could come together, and work on the topics or projects they have common interest in. And such initiatives should also be valued and supported by managers/management, as it is becoming an incentive for creating solutions/products using new approaches and applying new technology/AI .

For Small and Medium-Sized Businesses

Without the cash reserves or the scale of corporates to help buffer them against economic downturns, SMBs have been hit especially hard by COVID-19.

As such, SMBs acutely need AI's benefits to help them persevere. A data-driven approach and digital ways of working are proving transformative. SMBs that leverage data and analytics to make decisions in their day-to-day business operations are more likely to be able to make changes to their inventory levels and manage fluctuating demands for their goods and services post-pandemic. This in turn ensures they manage their working capital efficiently while keeping costs low. Those who have a digital presence should also look at moving more of their business online to cater to the new normal and make up for revenues lost in offline sales.

In the Finance and Technology & Innovation sectors, SMBs are close to corporate levels of AI readiness given that these sectors are natively data-driven. In Retail and Travel & Logistics, SMBs have some way to go to catch up with corporates in terms of AI readiness.

As commitments to AI accelerate, so too should efforts towards value realisation and building talent. This educational process requires touting practical use cases, sharing successful adoption experiences, and providing support for existing talent.

Economy

1. Make data strategy core to the business

Data should be at the core of every SMB business strategy. This recognition paves the way for the creation of a data strategy: how to collect, store and analyse it.

To harness the power of data, infrastructure is required. An infrastructure roadmap aligned with data strategy is essential. If this is the first time that such a roadmap has been created, it is helpful to initiate an audit of current capabilities.

Moving to cloud is an essential step within any roadmap. Businesses of all sizes can digitalise and migrate data capture away from paper-based to electronic documentation, and move file storage away from physical repositories to gain more flexibility and cost efficiency, and even enable virtual collaboration using a cloud-based suite of tools. This is especially important post-COVID-19 as the capacity for remote working and collaboration becomes more critical to maintain productivity and 'business as usual'.

2. Begin deploying tools to analyse data, extract insights and apply advanced data analytics

Once the ability to gather and store data is in place, there must be a focus on how to extract value from the assembled data. The goal for every business is to be able to analyse and provide insight from data to inform decision-making in real time. Inventory management based on past sales data, for example, is a good way of ensuring the right products and services are stocked to ensure working capital is used efficiently.

For businesses that are still building basic capabilities, turnkey AI services can be quickly deployed to accelerate recovery, such as 'analytics as a service' - 'cloud-based analytics tools designed for rapid integration with a company's own data. This overcomes the need to create analytics capabilities from scratch in-house.

3. Identify AI use cases to build financial resilience

Many SMBs are facing a sudden drop in demand due to COVID-19, leading to cash-flow problems. AI can help businesses gain control over their working capital by using intelligent audit recovery, for example, to identify overpayments or incorrect payments. This entails an analysis of existing accounts-receivable documents and leveraging AI to recover money from customers due to excess or erroneous payments.

Other use cases to help SMBs manage the pandemic impact include digital collaboration tools for remote working, and predictive analytics to improve financial forecasting and inventory management. AI-powered customer targeting and personalised recommendations can help SMBs rebuild demand and respond to customers' shift towards online purchasing channels.

Ecosystem

1. Work with partners to accelerate knowledge and capability

For SMBs at all stages of their AI journey, working with external partners will help fill gaps in expertise and fast-track progress.

This applies equally for relatively advanced businesses as it does for those at the beginning of the journey.

As businesses develop and their AI readiness improves, the way they utilise third-party AI providers will change.

- Learning-stage businesses are relatively less AI-ready and in the early days of experimentation. Partnerships will kick-start their journey, help set up in-house capability and generate awareness.

- Developing-stage businesses can gain a head start by deploying 'analytics as a service', establishing use cases and giving teams valuable hands-on experience.

- Established businesses are able to lean on in-house talent while taking advantage of third-party AI products and services to boost their capabilities.

- Leading businesses bring together partners with in-house centres of excellence to co-create market-leading AI solutions that confer competitive advantage.

2. Make use of external providers to improve set-up before investing in in-house technology

Before embarking on costly, resource-intensive infrastructure projects, SMBs may benefit from working with providers of plug-and-play service solutions.

Working with turnkey providers will help quickly establish and test proof of concept, fast-track deployments, build familiarity and knowledge, and help SMBs establish the right use cases and associated ROI.

As observed in 2019's *Smarter Digital City*[32] research, a 'buy' strategy may be more effective than a 'build' strategy. For some businesses it will be advantageous to outsource their AI infrastructure, obviating the need for significant in-house technology investments.

Examples of turnkey solutions include recommendation engines, web and social media analytics monitoring customer behaviour, and machine-learning models for predictive forecasting.

32 Google Smarter Digital City Hub: www.thinkwithgoogle.com/intl/en-apac/trends-and-insights/smarter-hk-collection/

Education

1. Start with leaders, and incorporate incentives to learn

In many SMBs, particularly in the Retail and Travel & Logistics sectors, staff are still operating in traditional analogue models and lack understanding of the benefits and use cases of AI.

Start by building knowledge among managers and leaders who will then cascade to other staff. Building in AI-related goals in performance objectives will help incentivise learning and establish this priority within the fabric of the business.

For AI training and development, SMBs can leverage the wealth of freely available resources provided by various academic institutions and technology houses. Courses on foundational AI, data and analytics and machine learning should be the focus for SMBs that are embarking on their AI journeys.

09
Reference

This whitepaper is the first of a series published by Google Hong Kong in collaboration with KPMG and Intuit Research.

This whitepaper is the culmination of research among Hong Kong residents, businesses and key opinion formers comprehensively capturing views, expectations and experiences relating to AI among a wide array of stakeholders.

1	2	3	4
Residents quantitative research	Businesses quantitative research	Businesses qualitative research	Key opinion formers qualitative research
Online survey among 1,000 Hong Kong residents	Online survey among 449 small, medium and large businesses in Hong Kong	In-depth interviews with 11 businesses	In-depth interviews with 8 individuals

Residents' quantitative research

KPMG in collaboration with Intuit Research conducted 1,000 online self-completed interviews, each about 20 minutes in duration, among Hong Kong residents aged 18 to 64. Quotas were set to ensure that the sample was representative of the Hong Kong online population by gender, age, region and household income.

Recruitment was conducted via a managed research panel. Fieldwork was conducted from June 1 to 9, 2020.

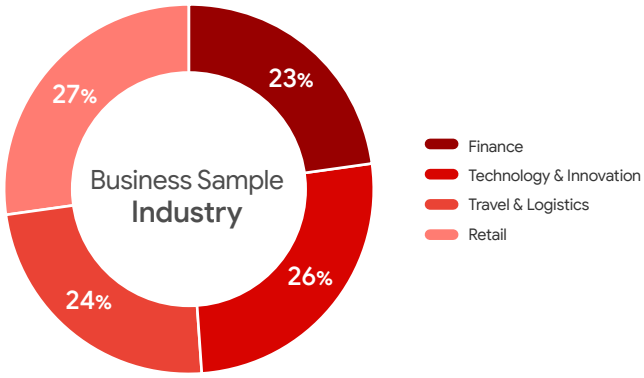
Businesses' quantitative research

KPMG in collaboration with Intuit Research conducted 449 online self-completed interviews, each about 20 minutes in duration, among decision-makers for businesses in Hong Kong. This comprised:

- 210 corporates (100 or more employees in Hong Kong)
- 91 medium-sized businesses (50-99 employees)
- 148 small businesses (49 employees or fewer)

Recruitment was conducted via a number of sources: managed research panels, targeted telephone recruitment, as well as Google customers. Fieldwork was conducted between May 29 and June 30, 2020.

PROFILE OF BUSINESS SAMPLE



Question: Which of these best describes the industry your organisation operates in?
Base: Hong Kong businesses, n=449

Businesses qualitative research

KPMG conducted 11 in-depth interviews with business leaders covering each of four key sectors. Each interview lasted 60 minutes and was conducted in either Cantonese or English depending on the interviewee's preference. Some quotations included in this whitepaper are translations.

These interviews were used to generate insights and quotes included in this whitepaper, along with additional desk research to produce the case studies of AI deployment by brands and organisations that are featured throughout.

A list of participants is included in this Reference section.

'Key Opinion Formers' qualitative research

KPMG conducted eight in-depth interviews with leaders from Hong Kong's government, education and public sectors. Each interview lasted 60 minutes and was conducted in Cantonese. Quotations included in this whitepaper are translations.

A list of participants is included in this Reference section.

Calculating the AI Readiness Index

An index score was calculated for each individual participant in the Residents and Businesses quantitative research. These scores were then aggregated, and a mean score reported at overall or sub-group level. Examples of subgroups include age and business sector.

Index scores consist of five pillars, each of which was represented by multiple questions in the research interview as shown in the following table:

	Residents	Businesses
Know-how	• Familiarity with AI • Understanding of AI and technology • Importance of AI training • Interest in learning about AI • Importance of government and business support in AI/tech education	• Importance of AI talent for business success • Current AI capabilities and expertise levels • Number of AI experts • Defined career paths for AI talent • Ability to attract AI talent
Confidence	• Sentiment towards AI technology • AI and quality of life • Trust in technology	• Impact of technology • Impact of AI • Organisation's view of AI • Presence of AI leadership • Maturity of AI strategy • Barriers to adopting AI • AI governance in the organisation • Ease of compliance with privacy regulations
Set-up	• Device current and future ownership • Cloud current and future usage • Attitude towards data sharing	• Maturity of AI infrastructure • Maturity of data strategies and policies
Usage	• Openness to AI • Perceived benefits of AI • Current and future AI usage	• Use of AI technologies • Use of customer-facing AI technologies
Spending	• Expected future spending on AI services	• Current spending on AI services • Expected future spend on AI services

For each survey participant, all survey questions were scored, and then a total score between 0 and 100 was allocated for each pillar. The scores for all five pillars were averaged to produce an index score between 0 and 100.

No weighting of the different pillars was deployed – a diagnostic question in the survey to identify the relative importance of each of five index components showed that they all carried equal weight. Therefore each of the five components carries equal weight within the index score.

The distribution of individual scores for residents form a bell curve, with the bulk of the scores being relatively close to the median and fewer scores observed at the extremes.

Businesses were benchmarked according to a maturity framework that assigns businesses to one of four maturity segments based on their score.

Learning 1st-15th percentiles

In the learning stage, organisations are still exploring AI and building internal awareness. They do not have a clear direction or AI strategy in place and no investments directed towards AI. In terms of enabling data and infrastructure, they do not have the necessary foundation in place to adopt AI.

These organisations need to start articulating their AI strategy so that they can take concrete steps to move from the learning stage to the developing stage.

Developing 16th-50th percentiles

In the developing stage, organisations have started experimenting with AI through siloed proof of concept (POC). There is no coherent AI strategy with different interpretations of AI across the organisation. Investments are ad-hoc and focused on specific pockets of the business. They struggle to attract AI talent because they do not have a defined career path for AI. While they have general guidelines around AI, they fail to inspire confidence for AI development and deployment because of a lack of AI-specific governance policies. They have very basic infrastructure and data readiness as far as AI adoption is concerned.

These organisations need to make the transition from experimenting to implementing AI at scale by moving from POC to real production. This transition can be enabled by improving governance and firming up data and infrastructure readiness.

Established 51st-84th percentiles

Well-established AI organisations have moved on from POC to actual AI use cases, albeit in the middle and back office functions of the organisation. They are driven forward by a well-defined coherent strategy which is backed by AI specific investments. They have a well-oiled machinery in terms of AI governance that assures robust AI development and deployment. They are able to attract AI talent because of their in-house AI capability and training program which is fairly well known in the market.

In order for established organisations to move into the leading category, they need to adopt an enterprise-wide AI strategy which is then executed via an AI centre of excellence (COE).

Leading 85th-100th percentiles

AI leaders are characterised by enterprise-wide adoption of AI, dedicated AI leadership and investments with a focus on improving the lives of their customers and employees alike. These organisations are characterised by an in-house AI COE which drives AI throughout the organisation. They are aspirational places to work for AI talent and do not have to compete for top AI talent.

These organisations need to keep AI at the top of their board's agenda to ensure they maintain their leadership position.

Key contributors

Google Hong Kong and KPMG 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 to the following people for their valuable time and insights:

Key contributors (in alphabetical order by surname)

Winnie Chan
Digital Lead,
Hong Kong and APAC,
Kimberly-Clark

Jacqueline Chiu
Senior Director -
Regional Marketing (Asia),
Sony Interactive Entertainment (PlayStation)

C-Suite Executive (anonymous)
Leading Insurer

Nelson Chow
Chief Fintech Officer,
Hong Kong Monetary Authority

Dr. David Chung, JP
Under Secretary for Innovation and Technology, Innovation and Technology Bureau

Yusuf Demiral
Regional Head of Data & Analytics ASP, HSBC

Lily Lai
Chief Information Officer,
Hong Kong Airport Authority

Wilson Lee
Group Director
of Information Technology,
Kerry Logistics Network

Vincent Ma
Chief Digital Officer,
Sun Hung Kai Properties

Hon. Charles Mok, JP
Legislative Councillor (IT)

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Co-founder & Chief Executive Officer,
Ztore

Helen Sou
Chief Business Officer, Asia,
Viu (Asia)

Ted Suen
President,
Hong Kong Computer Society

Dr. Winnie Tang, JP
Founder and Honorary President,
Smart City Consortium

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Chief Executive Officer,
Hong Kong Science and Technology Parks Corporation

Deric Wong
Chief Executive Officer,
Omnicom Media Group

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

Peter Yan
Chief Executive Officer,
Hong Kong Cyberport Management Company Limited

Jason Zhang
Chief Technology Officer,
Lalamove Asia

KPMG (in alphabetical order by surname)

Jonathan Chan
Senior Consultant,
Management Consulting,
Hong Kong

Vinayak Mohan
Associate Director,
Management Consulting,
Hong Kong

James O'Callaghan
Partner,
Head of Technology Consulting,
Hong Kong

Andrea Petitcollin
Senior Consultant,
Management Consulting,
Hong Kong

Caroline Smyth
Associate Director,
Management Consulting,
Hong Kong

Intuit Research (in alphabetical order by surname)

Marc de Lange
Director

Connie Leung
Senior Consultant

Stephen Yap
Director

Google (in alphabetical order by surname)

Jennifer Chan
Business Development,
Google Play Apps
& Games

Nellie Chan
Head of Google Customer
Solutions Sales,
Hong Kong

Tony Chan
Lead, Partner DevRel,
APAC

Fung Choi
Platform Manager,
Google Marketing Platform,
Hong Kong

Rob Chuang
Research Insights Manager,
Greater China

Rebecca Fan
Enterprise Marketing Manager,
Google Cloud,
Greater China

Terry Fung
Head of Online
Partnerships Group,
Hong Kong & Taiwan

Jingtao Ji
Head of Measurement
& Analytics Team,
Greater China & Korea

Fung Lam
Partner Developer Advocate

Saron Leung
Industry Head,
Financial Services,
Hong Kong

Kerri Lu
Product Marketing Manager,
Ads Marketing,
Hong Kong

Jing Ma
Data Strategy Lead,
Hong Kong

Anthony Ng
Head of Mid-Market Sales,
Google Customer Solutions,
Hong Kong

Hillary Nie
Head of Market Insights,
Greater China

Alan Poon
Agency Development Manager,
Google Customer Solutions,
Hong Kong

Timothy Tam
Head of Government Affairs
and Public Policy,
Hong Kong

Nancy Ting
Head of Consumer
& Brand Marketing,
Hong Kong

Leonie Valentine
Managing Director,
Sales & Operations,
Hong Kong

Wei Wei
TensorFlow Developer
Advocate

Lucy Werner
Head of Cloud,
Hong Kong

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Greater China

Betty Wong
Communications Lead,
Hong Kong

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Business Development Lead,
Google Cloud

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