

GREATER BAY AREA BUSINESS TECHNOLOGY REPORT 2021

A CPA Australia survey of
technology usage by businesses
in the Greater Bay Area



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GREATER BAY AREA BUSINESS TECHNOLOGY REPORT 2021

61% 

believe the GBA is already or will become a **world-leading technology hub** within the next 5 years

89% 

will **increase investment in or use of technologies** in the next 12 months

90% 

have undertaken at least one **technology-related project** in the past 12 months

44% 

choose **FinTech** as the technology that will **improve collaboration** between different cities in the GBA

TECHNOLOGY PROJECTS HIGH-GROWTH BUSINESSES MOST LIKELY UNDERTOOK IN THE PAST 12 MONTHS

47% Developed a long-term technology / digital strategy

40% Worked with technology companies to improve the business

39% Upskilled the technology capabilities of staff

TOP TECHNOLOGIES THAT BUSINESSES WILL INCREASE INVESTMENT IN OR USE OF IN THE NEXT 12 MONTHS

 Cloud technology

 Data analytics and visualisation

 Video conferencing and group collaboration tools



75%

Say improving operational efficiency is a driver of technology adoption in business



36%

Say shortage of talent is a challenge to technology adoption in business



68%

Believe the current GBA workforce possess moderate to high levels of technological skills

TECHNOLOGY ADOPTION TRENDS

Strategy

There is a link between business performance and the technology-related projects they undertook. High-growth companies were more likely to have developed a long-term technology strategy and worked with technology companies.

Collaboration

The varying focus of technology among different cities in the GBA may encourage further collaboration between companies in the SARs and the mainland cities of the GBA.

Data

Large companies in the GBA are more likely to invest and adopt data-driven technologies. A large data pool in the GBA is conducive for companies to develop and adopt innovative services and products.

Talent

As demand for talent soars in the GBA, this may accelerate the movement of people with diverse skills in the bay area and increase competition for attracting talent. Companies will need to upskill or reskill employees and attract talent in innovative ways.



ABOUT THE SURVEY

The survey was conducted from 28 May to 30 July 2021. A total of 258 responses were received from accounting and finance professionals in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA).

Respondents were most likely to be a manager / supervisor, professional or hold a senior level position.

Respondents came from a variety of different industries, with banking, finance or insurance (20 per cent), accounting (13 per cent) and consulting (11 per cent) being the industries with the largest representation.

The size of the business that respondents worked for was most likely to be 1000 or more employees (40 per cent) or fewer than 50 employees (24 per cent).

ABOUT CPA AUSTRALIA

CPA Australia is one of the largest professional accounting bodies in the world, with more than 168,000 members in over 100 countries and region. Our core services include education, training, technical support and advocacy. CPA Australia provides thought leadership on local, national and international issues affecting the accounting profession and public interest.

We engage with governments, regulators and industries to advocate policies that stimulate sustainable economic growth and have positive business and public outcomes. Find out more at cpaaustralia.com.au.

FOREWORD



Dr George Lam BBS FCPA (Aust.)

Chairman of Hong Kong Cyberport Management Company Limited

“On behalf of Cyberport, Hong Kong’s digital technology flagship and FinTech hub, I would like to convey our appreciation and congratulations to CPA Australia on releasing the seminal results of the Greater Bay Area Business Technology Report. The report can illuminate the path towards shaping the GBA into a global financial centre through innovation and technology (I&T) propelled by Hong Kong’s high-calibre talent from around the globe.

Boasting a population of 86 million and a GDP of nearly US\$1.67 trillion in 2020, the GBA has emerged as the most promising market for growth of businesses and I&T.

Among the economic megatrends, remarkable growth in offshore RMB business, asset management, risk management and intellectual property trading has led to countrywide demand for FinTech, InsurTech, WealthTech, RegTech, Green Finance, digital assets and more.

The 14th National Five-Year Plan envisaged the establishment of an international I&T hub in the GBA, further unleashing unlimited potential for digital transformation in the financial sphere.

These flourishing enterprises will be complemented and facilitated by eager anticipation and support from finance and accounting professionals in Hong Kong as reflected in the Survey’s results. Over 60 per cent of the respondents believed that the GBA was already or would become a world-leading technology hub within the next 5 years, while many respondents chose FinTech as the technology that would improve collaboration among different cities in the GBA, as it would likely create more business opportunities and promote the GBA as a global financial centre.

These findings foregrounded Hong Kong professionals’ hopeful outlook and confidence in the GBA’s development path towards a more digitalised and interconnected economy.

With over 65 years’ presence in Hong Kong, CPA Australia has dedicated tireless efforts to uplifting professionalism in accounting and corporate stewardship through dedicated personnel enhancement and extensive thought leadership.

Pursuing the same vision to cultivate talent and advance industries, Cyberport has been fostering innovation and digital tech entrepreneurship, and driving digital transformation across industries in Hong Kong and beyond. Through Cyberport’s cross-border collaboration programmes and overseas networks, our vibrant community of over 1700 tech companies and start-ups including two virtual banks, four virtual insurers, five “unicorns” and Hong Kong’s largest FinTech cluster, is well on track to thrive in the wider market offered by the GBA.

On the back of its solid foundation for global finance and trade, business and I&T, Hong Kong is well placed to contribute to advancing the digital economy while riding on a wave of burgeoning I&T development in the GBA.

We look forward to taking the impactful cooperation with CPA Australia to the next level, setting our sights on strengthening Hong Kong’s position in bolstering economic advancement in the GBA and our nation with innovative talent and industry development.”

MESSAGE FROM THE PRESIDENT OF THE GREATER CHINA DIVISION 2021 AND THE EXECUTIVE GENERAL MANAGER INTERNATIONAL



Janssen Chan FCPA (Aust.)

2021 CPA Australia's Divisional President
– Greater China

Founder and Managing Director of
Anssen Consulting Limited



Deborah Leung FCPA (Aust.)

Executive General Manager
International, CPA Australia

"Sustainability strategy and digital technology are the two essential components to today's business management matrix. Business leaders hold key roles in assessing and managing these two major factors and how they will impact business and the society.

As one of the world's largest professional accounting bodies, CPA Australia holds a strong interest in advocating policies that encourages sustainability and connectivity. We have conducted this survey to help us understand the impact of technology in the GBA and how it influences people and businesses.

CPA Australia's report on the impact of technology on the GBA details the breadth and depth of how businesses are utilising digital technologies to respond to change. The report also investigates the confidence level of business leaders and accounting professionals towards the future of the GBA. It is pleasing to see that most have a positive outlook towards the future of the GBA and that they will be increasing their business and technological investment there.

In recent years, we have seen the implementation of several major government policies and incentive schemes to support the innovation and technology growth in the GBA. These policies and incentive schemes will certainly increase the pace at which businesses embrace digital transformation.

As highlighted in the report, one of the most rapidly evolving technology segments is the adoption of digital payment across the GBA. While digital payment is already a common practice in Mainland China, Hong Kong has just begun to accelerate its pace with the e-consumption voucher schemes. With the launch of this scheme, we are confident that it will encourage more people and business to embrace payment technologies commonly available across the other GBA cities.

The report builds on other research by CPA Australia showing a strong correlation between technology usage and business success.

This report will be particularly valuable for the SME sector, as they can gain a deeper understanding on the opportunities arising in the bay area, and which technologies are more closely associated with high growth businesses.

Finally, we would like to extend our gratitude to everyone who has contributed to the success of this report. Our thanks to the CPA Australia team for compiling and analysing the data. We would also like to thank our subject matter experts and business leaders for offering their insightful commentaries. This report affirmed our view that the GBA exhibits great potential, and there is a unique digital ecosystem brewing in the bay area, which will enable it to become the next international technology hub in the near future."

MESSAGE FROM THE CHAIRPERSON OF THE GREATER BAY AREA COMMITTEE



Marcellus Wong FCPA (Aust.)

Chairperson of CPA Australia's Greater Bay Area Committee – Greater China

Vice Chairman of AMTD Group

"As Chairperson of CPA Australia's Greater Bay Area Committee, it has been my ambition for our committee to provide insights and thought leadership to our members and the community on the future of the GBA. That's why I am particularly pleased to present our Greater Bay Area Business Technology Report to you this year.

This report, comprising the valuable insights of more than 250 business leaders and finance and accounting professionals, will definitely be a great asset to you if you wish to have a deeper understanding on the latest developments and opportunities across the cities of the GBA.

The 11 GBA cities collaborate and complement each other in many ways, creating a very business friendly ecosystem. The journey of a new business always begins with the birth of an amazing idea, which then leads to the formation of a start-up. Several GBA cities contain world-class incubators to support such start-ups. In addition, these start-ups are well supported on manufacturing and logistic processes in cities like Dongguan within the GBA. They also have access to professional, legal and financial support from cities like Hong Kong, Shenzhen and Guangzhou to raise funds to expand their business further. This is the beauty of the GBA.

We have seen a lot of successful technology companies emerging from the GBA in recent years. They are truly the testimonies of the success of this "bay area" concept.

From this survey, most respondents are very positive on the future of the GBA and are confident that it will become a leading global technology hub.

However, respondents from smaller businesses have highlighted a few challenges that they have encountered within the GBA. I would encourage these businesses to utilise the numerous government incentives and funding schemes available to assist them on their digital transformation journey. It is also worthwhile they seek suitable partners and investors to support the business.

That said, we encourage the relevant authorities to consider introducing further measures, such as financial subsidies and tax incentives for cross-boundary R&D projects, to facilitate cross-cities collaborations and reduce the risks associated with R&D.

The survey provides insights to the current state and the future state of the bay area and I would like to congratulate the CPA Australia team and the Greater Bay Area Committee for collaborating together in composing this excellent report. We are excited to share the findings with you!"

KEY FINDINGS

TECHNOLOGY IN THE GBA

Sixty-one per cent of respondents in the GBA think that the GBA is already a world-leading technology hub or will become one within the next five years.

Sixty-eight per cent of respondents rated the technology skills of the current GBA workforce as “somewhat skilled”, “skilled” or “highly skilled”.

Respondents believe that FinTech, 5G technology and big data analytics are the top technologies that will improve collaboration between cities in the GBA.

On the expected impact that FinTech will have on the GBA, respondents were most likely to nominate that such technology will create more business opportunities, enhance the GBA as a global financial centre and improve capital flows.

TECHNOLOGY USE IN BUSINESSES IN THE PAST 12 MONTHS

Video conferencing and group collaboration tools, new payment technologies and cloud technology were the top three technologies that respondents reported that their employer used in the past 12 months. Conversely, robotic process automation (RPA) and artificial intelligence (AI) were the technologies least likely to be used.

Respondents from businesses that grew in 2020 were more likely to indicate higher technology usage in the past 12 months than respondents who stated that their businesses remained largely unchanged or shrank in 2020.

Businesses that grew were much more likely to use the following technologies than businesses that were unchanged or shrank:

- Customer Relationship Management (CRM) software
- RPA
- data analytics and visualisation software
- Enterprise Resource Planning (ERP) software
- AI
- Business intelligence software.

TECHNOLOGY-RELATED PROJECTS UNDERTAKEN BY BUSINESSES IN THE PAST 12 MONTHS

“Developed a long-term technology / digital strategy”, “reviewed the business’ technology for improvement” and “upskilled the technology capabilities of staff” were the top three technology-related projects that respondents said their business had undertaken in the past 12 months.

Respondents from businesses that grew in 2020 were significantly more likely to report that their employer “developed a long-term technology / digital strategy”, “worked with technology companies to improve the business” and “increased recruitment of staff with technological skills” than respondents from businesses that remained largely unchanged or shrank last year.

EXPECTED INVESTMENT IN OR USE OF TECHNOLOGY IN THE NEXT 12 MONTHS

The strong uptake of technology tools and solutions among GBA businesses looks set to continue. Cloud technology, data analytics and visualisation software, and video conferencing and group collaboration tools were the top three technologies that respondents expect their business to increase its investment in or use of in the next 12 months.

Respondents from the Mainland GBA cities believed their business are most likely to increase investment in or use of data analytics and visualisation software in the next 12 months

Respondents from Hong Kong and Macao believed their business are most likely to increase investment in or use of video conferencing and group collaboration tools in the next 12 months.

Respondents from businesses that grew in 2020 were significantly more likely to expect to increase their investment in or use of:

- data analytics and visualisation software (43 per cent)
- RPA (30 per cent)
- business intelligence software (28 per cent).

DRIVERS OF TECHNOLOGY ADOPTION

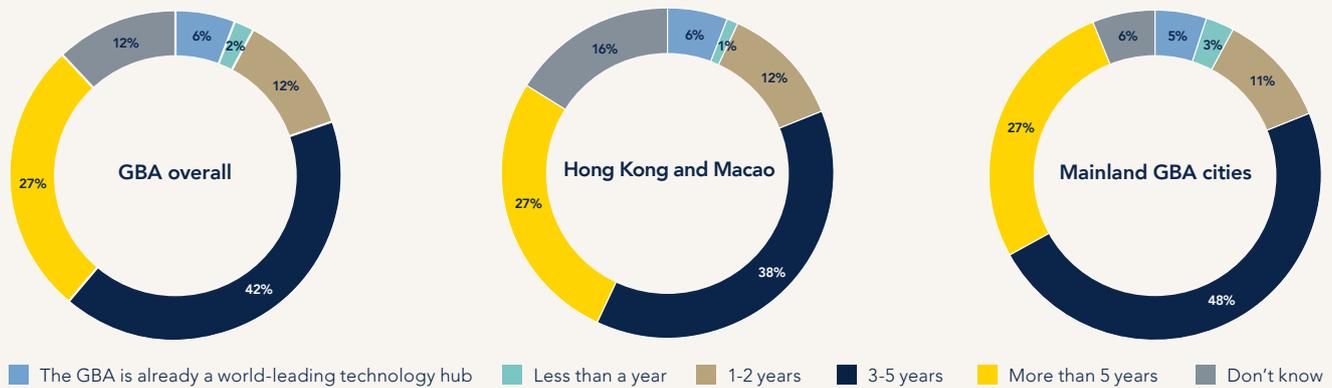
Enhancing operational processes is the major driver for businesses to adopt technology, with “improve operational efficiency” being the most likely driver of technology adoption. “Cost savings” and “improve the customer experience” were other key drivers of business technology adoption identified by respondents.

CHALLENGES TO TECHNOLOGY ADOPTION

Technology adoption is not without its challenges. Respondents nominated “shortage of technology talent” as the most likely challenge to technology adoption, followed by “financial constraints” and concerns with cybersecurity and data privacy.

TECHNOLOGY IN THE GREATER BAY AREA

Figure 1. Time until GBA becomes a world-class technology hub



QUESTION:

How long do you think it will take for the GBA to become one of the world's leading technology hubs?

NOTE: Percentages may not add up to 100 per cent due to rounding.

Sixty-one per cent of respondents believe that the GBA is already a world-leading technology hub or will become one within the next five years. The GBA has many of the core attributes necessary to support its emergence as one of the world's leading technology hubs. This includes being home to some of the world's leading technology companies, a large market of over 80 million people, access to global finance through Hong Kong, quality infrastructure and government policies that are encouraging innovation.

Policy announcements such as the signing of the 2020 Work Plan of Framework Agreement on Hong Kong / Guangdong Cooperation in October 2020 which includes measures to further facilitate cross-border payment of funds between Hong Kong and Guangdong as well as policies to enable cross-border usage of scientific research funds will further develop the GBA into an international innovation and technology hub.

For businesses with a strong focus on technology, this indicates that the GBA is one of the major areas they

should consider investing or increasing their investment in. For the GBA economy, it's likely that innovation and technology will be key drivers for economic growth and competitiveness, leading to more high skilled job. For the local governments of the GBA, the question is how to turn this business confidence into measures that further strengthen technology development in the GBA. Considerations include, what additional economic, talent and investment policies and reforms are required to complement existing policies, and what measures are needed to attract and retain businesses and people to turn this expectation into a reality.

TECHNOLOGY SKILLS OF THE CURRENT GBA WORKFORCE

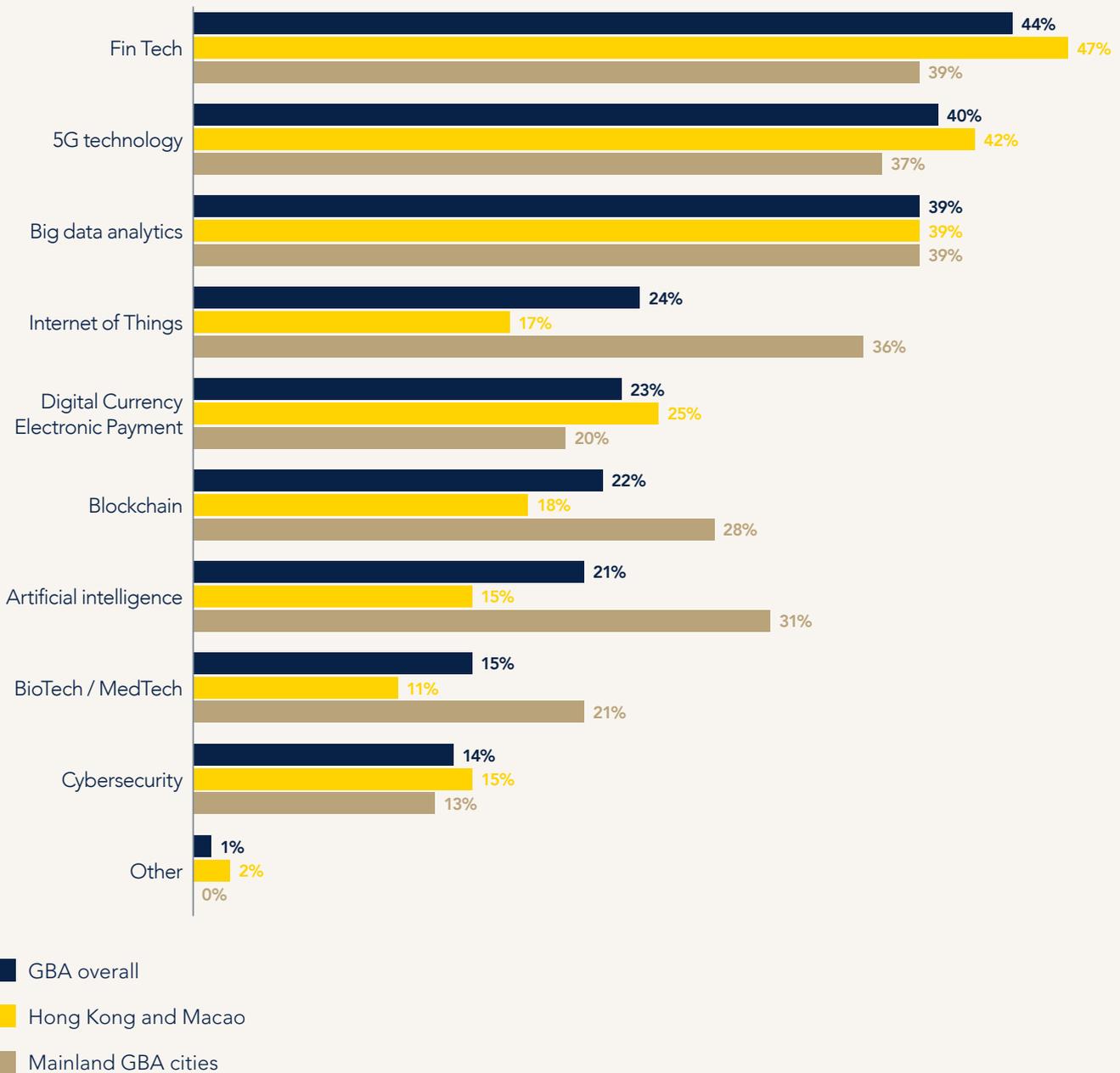
Fifty-eight per cent of respondents rated the technology skills of the current GBA workforce as "somewhat skilled" or "skilled" and 10 per cent believes that the workforce is "highly skilled". This indicates that while existing technology skill levels are reasonable, there is still much room for improvement.

It is pleasing to see that the local governments in the GBA are investing in upskilling programs – making direct investments in enhancing the technology skills of the current workforce and improving the skills of the future workforce through curriculum reform. For example, the Hong Kong government launched the Reindustrialisation and Technology Training program to subsidise Hong Kong businesses to train their staff in "Industry 4.0" technologies. The results of the survey suggests that employers are looking for talent with skills and knowledge in FinTech, big data analytics and cloud computing.

OTHER FINDINGS

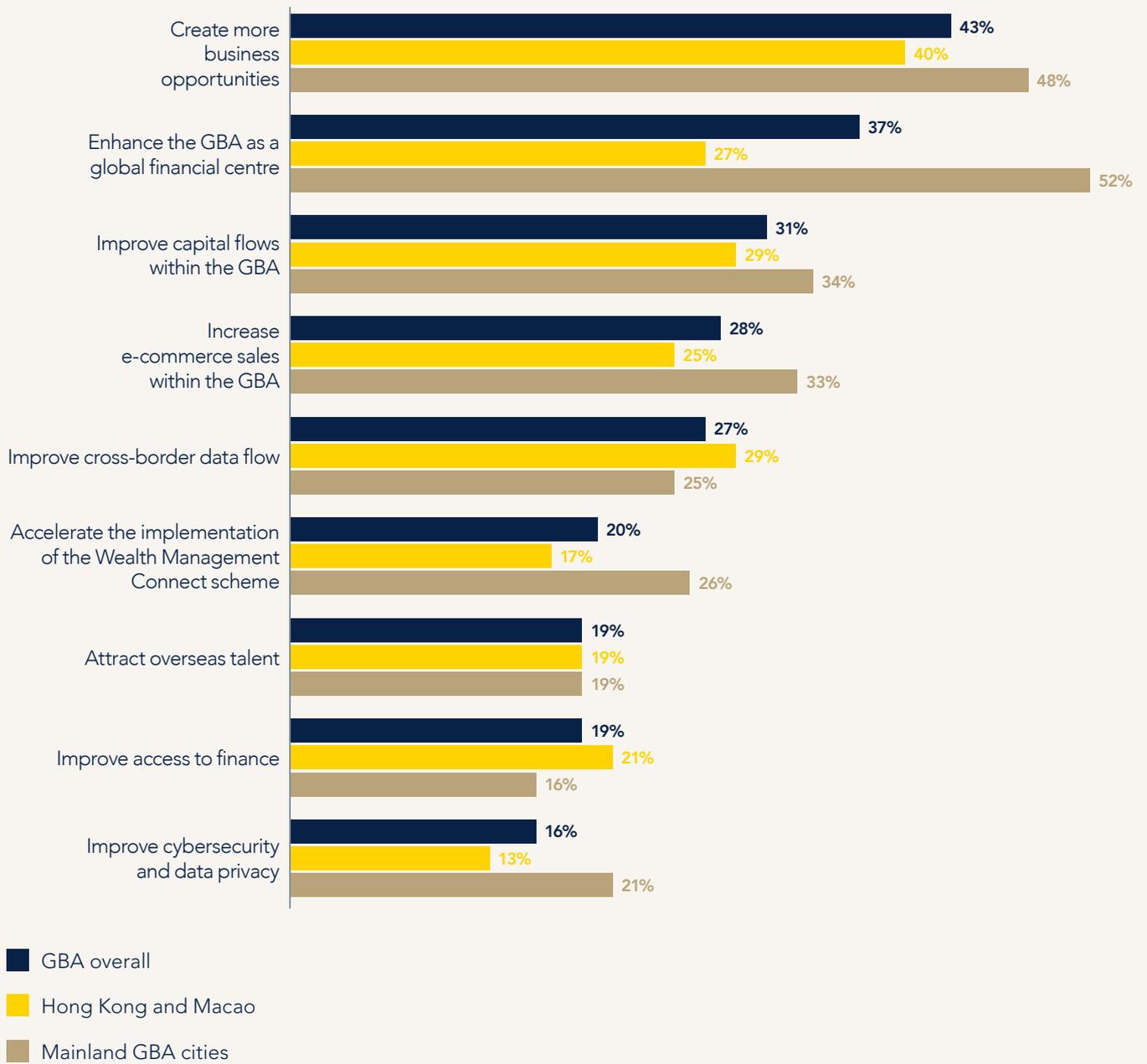
- 59 per cent of respondents from Hong Kong and Macao rated the technology skills of the GBA workforce as "somewhat skilled", "skilled" or "highly skilled".
- 83 per cent of respondents from the Mainland GBA cities rated the technology skills of the GBA workforce as "somewhat skilled", "skilled" or "highly skilled".

Figure 2. Technologies that will improve collaboration between cities in the GBA



QUESTION:
Which technologies do you think will most likely improve collaboration between different cities in the GBA?

Figure 3. Impacts of FinTech on the GBA



QUESTION:

In your opinion, how will financial technology (FinTech) most likely impact the GBA?

Respondents foresee that technology, especially financial technology (FinTech) will be essential to helping improve collaboration between people and businesses in the GBA.

When asked how will FinTech most likely impact the GBA, the top three options that respondents chose were “create more business opportunities”, “enhance the GBA as a global financial centre” and “improve capital flows within the GBA”.

With initiatives such as the announcement of the Wealth Management Connect scheme, FinTech will most likely emerge as one of the key enablers of more seamless movement of capital throughout the GBA, and will benefit not only investors but also financial services and technology sectors. FinTech will remain essential to Hong Kong’s position as a global financial centre.

Other technologies seen as important to improving collaboration between GBA cities are 5G technology and big data analytics. More data is essential to the improved utility of data analytics for businesses and the community. 5G technology provides the speed, significantly lower latency and connectivity to enable the capturing and processing of data to help businesses gain insights and assist in better decision-making.

Recent regulatory announcements, such as plans to establish a common data platform for the GBA, as well as building a data trading market in Shenzhen, could promote cross boundary data flow and further facilitate business and technology collaboration in the GBA.



Eden Wong FCPA (Aust.)

2021 CPA Australia's Deputy Divisional President – Greater China

Founder and Chairman of ViiPark Financial Group

“According to the survey, respondents were most likely to choose FinTech as the technology that will improve collaboration between different cities in the GBA as they believe it will help create more business opportunities and enhance the GBA as a global financial centre.

Further financial integration will likely provide a boost to the development of the GBA as a more competitive global financial centre. Technologies may facilitate capital flow between GBA cities and encourage robust business activities. Take the GBA Wealth Management Connect Scheme as an example, the adoption of FinTech and other technologies will be indispensable in expanding the channels for residents in different parts of the GBA to invest in cross-boundary financial products.

It will also enable banks under different regulatory regimes to open accounts for investors remotely, carry out suitability assessment process for non-professional investors and complete sales and transaction processes in a more efficient manner.

As an international financial centre, Hong Kong is pushing ahead in the development and adoption of FinTech. I'm pleased to see that the Hong Kong Monetary Authority unveiled the “FinTech 2025 Strategy” in June 2021 to continue to drive FinTech development in the city. We look forward to seeing more innovative technologies being adopted by businesses and individuals to facilitate further financial integration in the GBA.”

“Further financial integration will likely provide a boost to the development of the GBA as a more competitive global financial centre. Technologies may facilitate capital flow between GBA cities and encourage robust business activities.”



Samuel Lung FCPA (Aust.)

Committee Member of CPA Australia's
Greater Bay Area Committee
– Greater China

Partner, Financial Services Business
Consulting, EY

“Since the GBA development framework was signed in 2017, governments within the GBA have collaborated in multiple areas which aims at establishing the GBA as a world class integrated business and financial hub. Despite the COVID-19 disruption, the fast-paced development has been tilted to financial integration.

A year ago, regulators in the GBA signed a memorandum of understanding, which sets the framework of cross-border wealth management activities as well as regulatory expectations. Undoubtedly, FinTech is the key to the success of these future activities. A signature example is the joint effort made by Octopus Hong Kong and Macao Pass, allowing these cards to be used across the GBA.

From wealth management to payment facilitates, FinTech would be a key solution for the GBA transformation and it is especially true given the overwhelming demand for contactless transactions.

In Hong Kong, virtual banks have already started their debut operations in 2020, which have allowed the public to experience the convenience of digital banking. However, unlike FinTech, RegTech has yet to gain significant traction in Hong Kong. According to a recent RegTech survey commissioned by the Hong Kong Monetary Authority, budget and resource were identified as the number one hurdle to RegTech adoption by both banks and RegTech solution providers. Under the demand for cost-effectiveness, should we expect more GBA collaboration between Hong Kong professional firms and Shenzhen IT vendors in the future? You know the answer!”

“From wealth management to payment facilitates, FinTech would be a key solution for the GBA transformation and it is especially true given the overwhelming demand for contactless transactions.”



Prof Seen-Meng Chew

Associate Dean for External Engagement and Associate Professor of Practice in Finance at CUHK Business School

“The FinTech industry in the GBA is vibrant and growing steadily, supported by Hong Kong’s position as the Asian financial centre and Shenzhen’s eminence as the technology hub of China. These two important cities have brought the best resources of finance and technology together, enabling the advancement of numerous successful FinTech companies.

However, to sustain the growth of these companies, there will be a significant increase in demand for FinTech professionals in the future. They need people who are equipped with both technical digital skills and an agile business mind that understands how to improve business models using new technology.

Universities in this region have a critical role to play to nurture the new generation of FinTech talents. Business schools have to work with the engineering faculty more closely than ever to develop relevant degree programs that combine courses in engineering, computer science and business.

In addition, universities should collaborate with corporations and fintech companies to provide internships and practicum project opportunities for students to gain relevant work experience.

FinTech is a dynamic subject which evolves and progresses rapidly. Universities must continuously invest in research and develop teaching materials that correlate with industry developments.

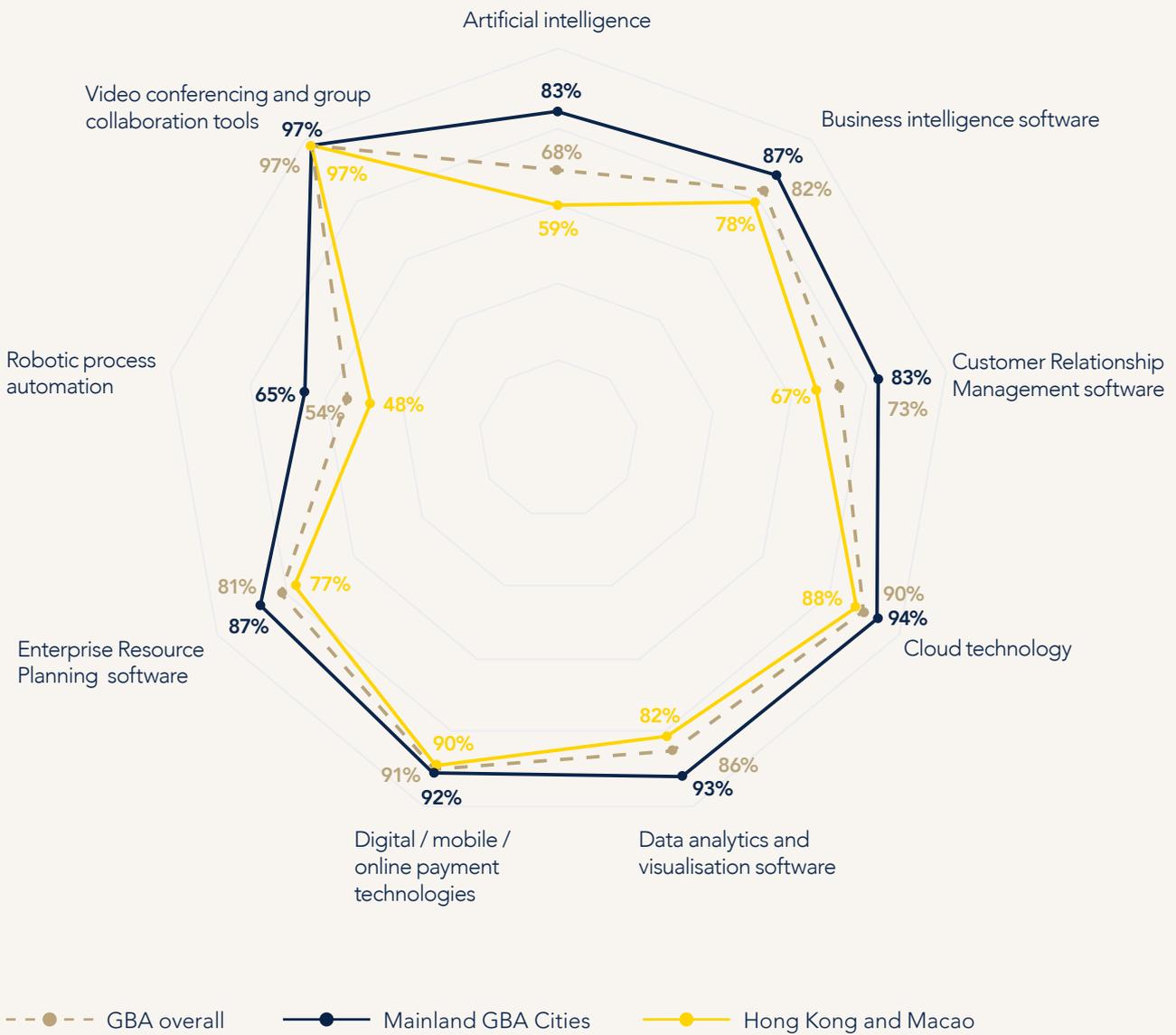
Moreover, classroom learning must be complemented with practical industry experience to ensure that students acquire the most up-to-date market knowledge when they join the workforce.

Fortunately, I believe that most universities in this region are moving in the right direction, with the support of ample government incentives in fintech. This is an industry with a bright future, and there should be many exciting opportunities for graduates pursuing this field in the coming years.”

“The FinTech industry in the GBA is vibrant and growing steadily, supported by Hong Kong’s position as the Asian financial centre and Shenzhen’s eminence as the technology hub of China. These two important cities have brought the best resources of finance and technology together, enabling the advancement of numerous successful FinTech companies.”

TECHNOLOGY USE IN THE PAST 12 MONTHS

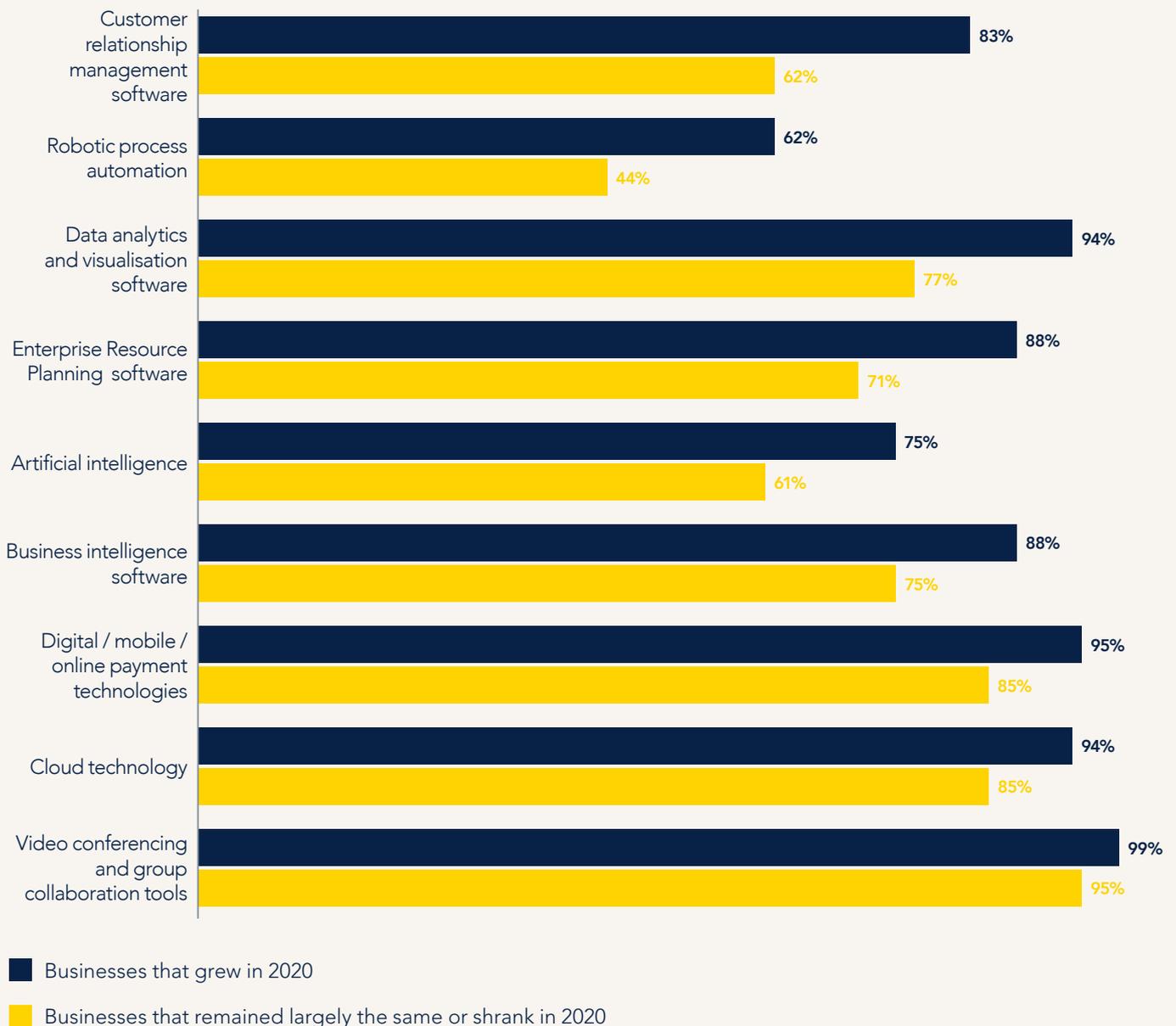
Figure 4. Percentage of GBA businesses using selected technologies in the past 12 months



QUESTION:

Please rate how frequently your business or employer used each of the following technologies in the past 12 months

Figure 5. Percentage of GBA businesses using selected technologies in the past 12 months – By business performance in 2020



QUESTION:

Please rate how frequently your business or employer used each of the following technologies in the past 12 months

To the best of your knowledge, which of the following statements best describes the financial performance of your business or employer in 2020 compared to 2019?

Technology use by businesses in the GBA is high. Over nine-in-ten respondents across the GBA reported that their employer used video conferencing and group collaboration tools in the past 12 months, making this the most common technology that businesses had used.

This is indicative of how COVID-19 has changed the way we work, where we work and how we collaborate. With many businesses requiring employees to work remotely in response to movement restrictions, work-from-home arrangements have intensified the need to enhance remote interaction with clients, stakeholders and employees. Frequent use of web and video conferencing tools provides a reliable and cost-efficient way of virtual collaboration and communication and is likely to continue in the future.

New payment technologies were the second most frequently used technology in the past 12 months. Ninety-one per cent of respondents indicated that their business had used new payment technologies. This reflects an acceleration in the shift to online sales and the growing demand for contactless payment.

New payment technologies have the potential to decrease the costs associated with handling money and provide more real-time data and insights to business.

In Hong Kong, the roll-out of an electronic consumption voucher scheme in August 2021 is likely to encourage consumers and businesses, especially smaller businesses, to increase their use of new payment technologies.

Ninety per cent of respondents said their business utilised cloud technology in the past 12 months. With cloud-based solutions providing nimbleness and scalability to help businesses respond to challenges, and increase accessibility and productivity, the adoption of cloud technology will continue to grow.

As it's likely that businesses in Mainland China have access to a larger pool of data, respondents from the mainland cities of the GBA were more likely to say that their business had used data-reliant technologies such as AI, RPA, data analytics and visualisation software and CRM software in the past 12 months than their Hong Kong and Macao counterparts.

Further, the survey shows there is a link between technology use and business performance. Respondents who reported working at businesses that grew in 2020 used technologies more often in the past 12 months compared to respondents who stated that their businesses remained largely unchanged or shrank in 2020 (See Figure 5).

For example, 83 per cent of respondents from businesses that grew in 2020 reported using CRM software. This is 21 percentage points higher than respondents who said their business remained largely unchanged or shrank in 2020. Other technologies that respondents from businesses that grew were noticeably more likely to use than respondents from businesses that remained largely unchanged or shrank included RPA, data analytics and visualisation software, ERP software, AI and business intelligence software.

This aligns with CPA Australia's **Asia-Pacific Small Business Survey 2020-21**, which showed that high growth small businesses were more likely to have invested heavily in technology such as CRM software, and business intelligence and analytical software in 2020, than small businesses that remained largely the same or shrank.

It is reasonable to conclude that technology use has a positive impact on business growth. With the GBA well positioned to become a world-class innovation and technology hub, it would be prudent for businesses to build their knowledge of digital transformation and how best to leverage technology into their operations.

OTHER RESULTS

Respondents from companies with 500 or more employees were significantly more likely to report that their business had used RPA, business intelligence software, data analytics and visualisation software, ERP software and AI in the past 12 months compared to those from companies with fewer than 500. This is likely because larger businesses have more data assets, resources and knowledge to apply data-driven technologies into their business operations.



Sidney Cheng FCPA (Aust.)

Committee Member of CPA Australia's
Greater Bay Area Committee
– Greater China

Deloitte China Macao Office
Managing Partner

"Macao has dedicated substantial efforts to transform into a cashless city. Since the COVID-19 outbreak in 2020, the Government has launched two rounds of its Consumption Subsidy Scheme, followed by the Electronic Consumption Benefit Scheme. These accelerated the acceptance and use of mobile payment by residents, particularly the young and middle-aged. The latter scheme has been pivotal in promoting the development of Macao's digital economy.

According to the Monetary Authority of Macao, between the first and second quarters of 2021, the number of local mobile payment transactions increased by 38.3 per cent, transaction value surged 44.1 per cent to MOP4.4 billion, and the number of mobile payment terminals and QR code signs was up 8.8 per cent. The development of mobile payment in Macao is gaining momentum on policy support and residents' growing appreciation of benefits including convenience and cashless, contactless services.

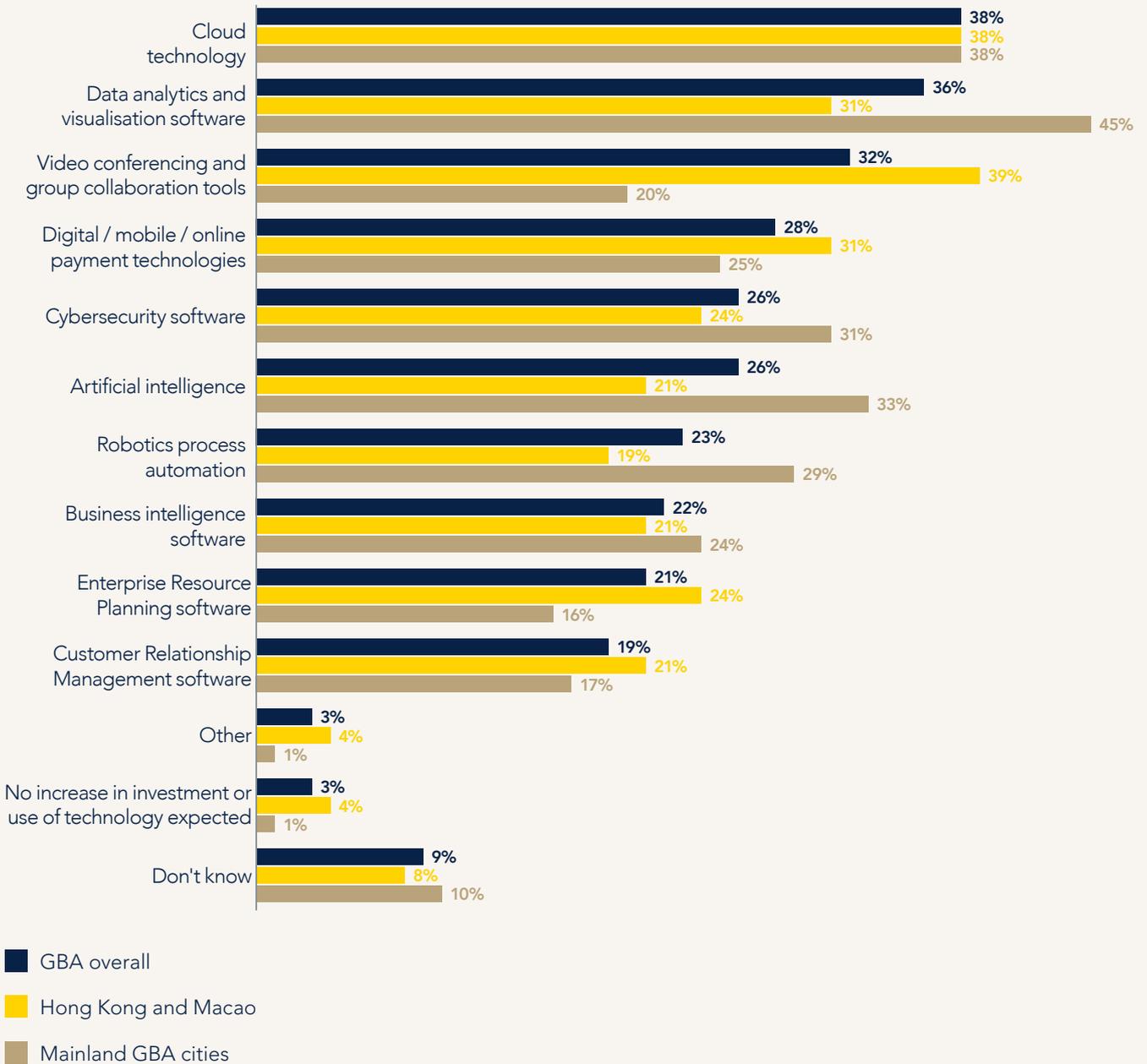
During the pandemic, the Macao Government rolled out the Back Office Electronic Funding Scheme for the local food and beverage industry, encouraging SMEs to make technological advances and digitalise their core business activities, from order processing to payment. Local SMEs have also made digital advances spontaneously, keeping pace with major Chinese e-commerce platforms and increasing their public exposure.

As a core city of the GBA, Macao is striving to integrate itself into the country's overall development. It will continue to match national policies to keep up with technological advances in the GBA, including the latest mobile payment technologies. Continued collaboration with other GBA cities will create more opportunities and ultimately drive Macao's diverse economic development."

"As a core city of the GBA, Macao is striving to integrate itself into the country's overall development. It will continue to match national policies to keep up with technological advances in the GBA, including the latest mobile payment technologies."

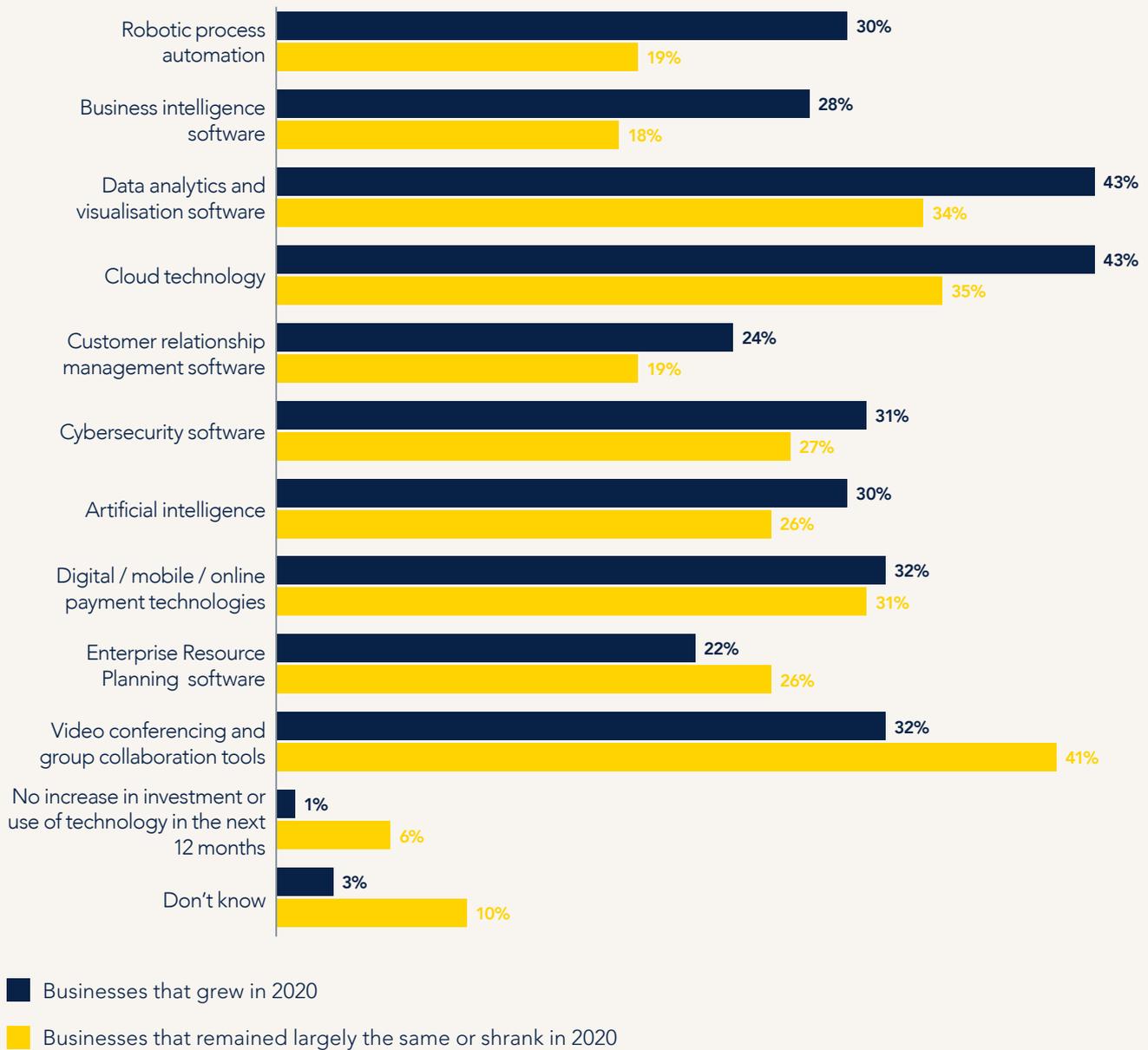
EXPECTED INVESTMENT OR USE OF TECHNOLOGY

Figure 6. Technologies businesses will likely increase investment in or use of in the next 12 months



QUESTION:
Over the next 12 months, which technologies do you expect your business or employer to increase their use of or investment in?

Figure 7. Technologies GBA businesses are likely to increase investment in or use of in the next 12 months – By business performance in 2020



QUESTION:

Over the next 12 months, which technologies do you expect your business or employer to increase their use of or investment in?

To the best of your knowledge, which of the following statements best describes the financial performance of your business or employer in 2020 compared to 2019?

The focus on technology by GBA businesses will continue in the next 12 months. Figure 6 shows that in the next 12 months, respondents are most likely to increase investment in or use of cloud technology. With workplaces becoming more remote, resulting in an increased reliance on digital tools, cloud technology is likely to be an essential element of businesses' digital transformation.

Given more software is being distributed as Software-as-a-Service, where data can be sent and accessed remotely, businesses may be able to achieve cost savings from shifting from their own servers to cloud-based solutions. With the pandemic leading to an increase in demand for online sales, cloud technology also better enables businesses to scale up and down for peaks in sales.

Respondents from Mainland GBA cities think their business are most likely to increase investment in or use of data analytics and visualisation software in the next 12 months. These technologies can help their company gain valuable insights, provide more value-adding client services and assist in uncovering new growth opportunities.

On the other hand, respondents from Hong Kong and Macao think their businesses are most likely to increase investment in or use of video conferencing and group collaboration tools in the next 12 months. This suggests that as remote working becomes the norm, demand for tools that effectively supports collaboration with non-local clients, stakeholders and employees will only increase.

The survey results also show that respondents from businesses that grew in 2020 are significantly more likely to expect their business to increase their use of or investment in the following technologies in the next 12 months than respondents from businesses that did not grow over the same period (See Figure 7):

- RPA
- business intelligence software
- data analytics and visualisation software
- cloud technology.

Only a very small percentage of respondents stated that their business will not increase investment in or use of technology in the next 12 months.

OTHER FINDINGS

Respondents from businesses with 500 or more employees were most likely to choose data analytics and visualisation software (46 per cent), cloud technology (40 per cent), RPA (37 per cent) and AI (34 per cent) as the technologies their business will increase investment in or use of in the next 12 months.

Respondents from businesses with fewer than 500 employees were most likely to choose cloud technology (42 per cent), video conferencing and group collaboration tools (37 per cent) and data analytics and visualisation software (33 per cent) as the technologies their business will increase investment in or use of in the next 12 months.



Dr Paul Sin FCPA (Aust.)

Committee Member of CPA Australia's
Greater Bay Area Committee
– Greater China

Deloitte China and Deloitte's Asia
Pacific Blockchain Lab Leader

"The survey results show that there are diverse technology investment preferences among businesses of different sizes and in different regions of the GBA. SMEs are more focused on tools that will enhance productivity, such as cloud technology and video conferencing and group collaboration tools, while larger companies with more data assets are more likely to increase the use of or investment in data-driven technologies to drive growth such as data analytics and visualisation software, RPA and AI.

Data is a key component to the adoption of data-intensive technologies. With more businesses in the GBA adopting data-driven technologies, maintaining proper data security and consistency is crucial. One type of technology that could help maintain this is blockchain technology, which provides a safe and transparent infrastructure for data and information flow.

As blockchain technology offers a secure business-to-business data synchronisation platform, it has the potential to create further collaboration among different industries and cities in the GBA.

It is likely that as blockchain technology and applications such as smart contracts continue to evolve, we will see a wider adoption of this emerging technology in the commercial space. In fact, many accounting and financial professionals may already be using blockchain technology in their work without knowing it. Hence, it would be sensible for organisations to maintain enough talent in this technology to be aware of the latest development and trends."

"Data is a key component to the adoption of data-intensive technologies. With more businesses in the GBA adopting data-driven technologies, maintaining proper data security and consistency is crucial."



Winson Woo FCPA (Aust.)

Committee Member of CPA Australia's
Greater Bay Area Committee
– Greater China

Partner, Consulting, EY

“The GBA was chosen as a national champion for innovation and technology development by the Central Government. In the past 12 months, technology development in the GBA has received a boost due to the increasing number of high-growth businesses focusing on R&D and new patents and products.

These businesses have spent critical investment in new technology applications such as data analytics and business intelligence. They have also adopted cloud technology on top of their original core business systems such as ERP or CRM software.

To develop various behavioural analytics models of their customer base for making better sales and business decisions, these enterprises collect customer data via different channels, including from their own business systems, e-commerce platforms, social media and other data sources. I believe that this trend will continue, and enterprises will continue to increase their investment in technology, especially in data analytics, in the coming few years.

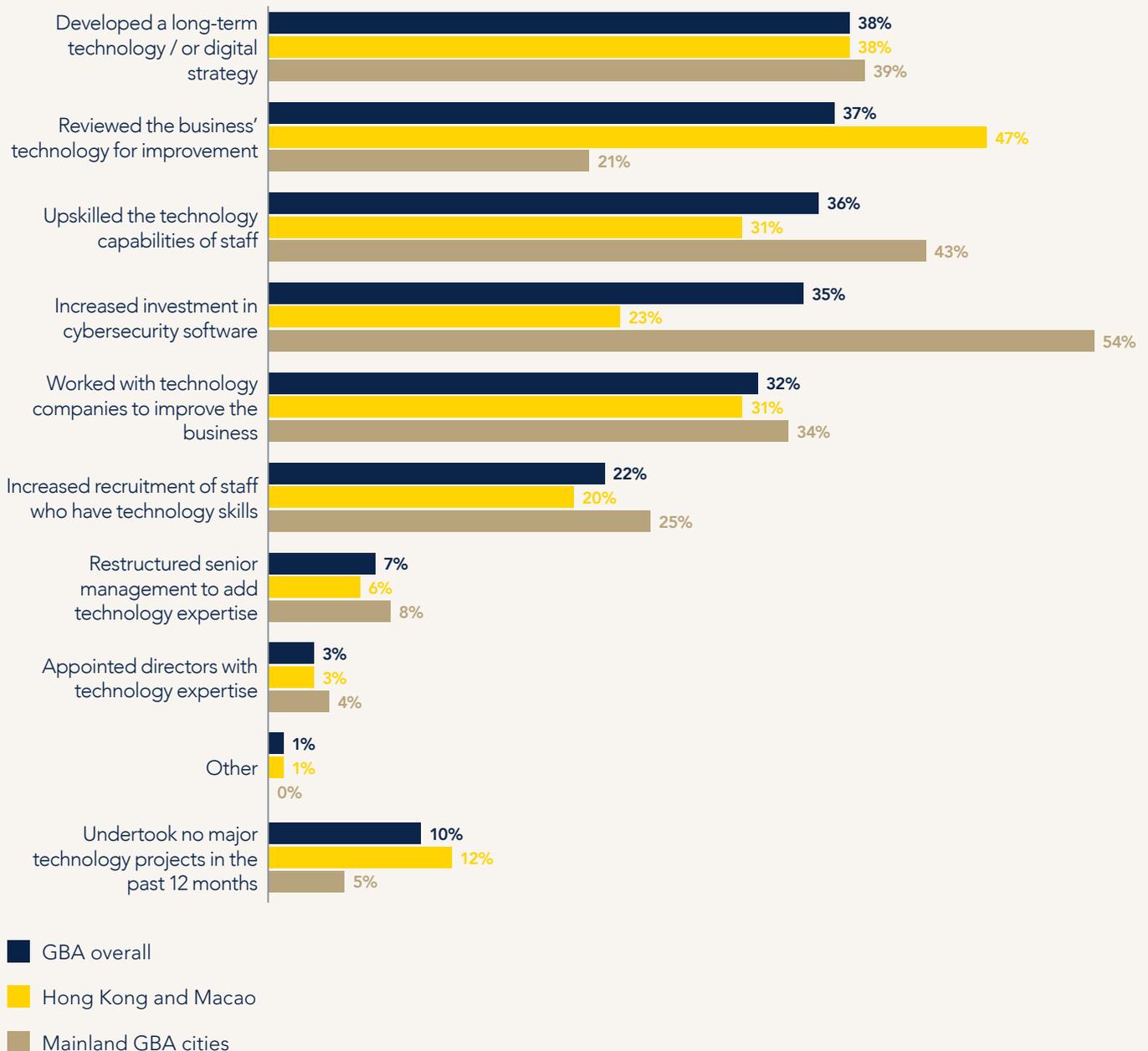
While the market seems excited in mining new fortunes with the help of the aforementioned new technologies, enterprises will continue to collect and store various consumer data and personal information.

Therefore, it is necessary for enterprises to understand the new Data Security Law that came into force on 1 September 2021. The law covers the usage, collection and protection of data in the People's Republic of China. There are also requirements for cross-border data transfers when engaging with overseas companies or investors. To avoid any compliance issues, enterprises need to understand what they are collecting and how they are going to handle and process the data in order to comply with the law.”

“While the market seems excited in mining new fortunes with the help of the aforementioned new technologies, enterprises will continue to collect and store various consumer data and personal information.”

TECHNOLOGY-RELATED PROJECTS BY BUSINESSES

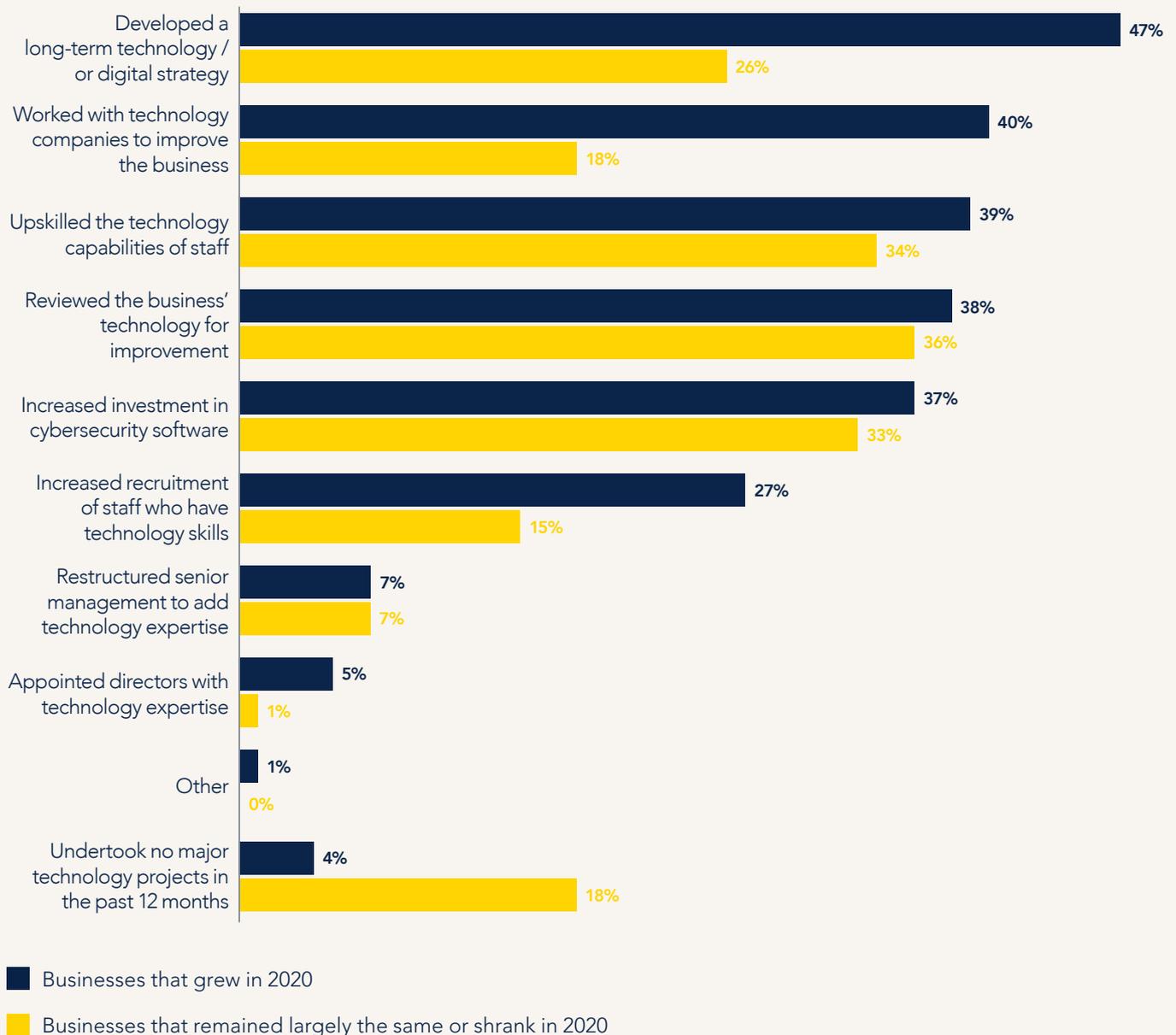
Figure 8. Key technology-related projects businesses undertook in the past 12 months



QUESTION:

Which were the main technology-related projects that your business or employer started in the past 12 months?

Figure 9. Key technology-related projects GBA businesses undertook in the past 12 months – By business performance in 2020



QUESTION:

Which were the main technology-related projects that your business or employer started in the past 12 months?

To the best of your knowledge, which of the following statements best describes the financial performance of your business or employer in 2020 compared to 2019?

The most popular technology-related project GBA businesses undertook was “developed a long-term technology or digital strategy”. When implementing a technology or digital strategy, it is important for organisations to:

- identify and prioritise digital technology components that will improve the business by addressing current and future needs
- consider internal and external factors
- engage with employees.

Businesses that develop these strategies will be better prepared to respond to shifts in the post-pandemic environment.

“Reviewed the business’ technology for improvement” was the second most popular project GBA businesses undertook. Given the technology challenges brought on by the pandemic, this response reflects the need for companies to support business continuity and maintain work productivity and functionality. This involves rapidly deploying technology solutions to reach and transact with customers, and support employees working from home.

The third most popular technology-related project GBA businesses undertook was “upskilled the technology capabilities of staff”. This result is positive for both the short-term and long-term prospects and indicates an understanding that as organisations digitise, they must also develop the digital and technical skills of employees.

Improving the technology skills of their workforce should produce benefits not only in the use of existing technologies but may spill over into encouraging investment in new technologies that are beneficial to the business.

The need to enhance technology skills was identified in CPA Australia’s **The Impact of Technology on the Desired Skills of Early Stage Accountants** report. This report noted that recent technological advancements mean employers will need to have appropriately skilled staff in data analytics and interpretation, problem solving, and coding and programming.

Respondents from Mainland GBA cities were most likely to report that their business had focused on increasing investment in cybersecurity (54 per cent). Unlike businesses from Hong Kong and Macao, Mainland Chinese businesses were far less likely to have reviewed their business technology for improvement. This could be because many of these businesses went into the pandemic with levels of digital sophistication sufficient to manage through the crisis.

According to Figure 9, the results show that there is a positive relationship between businesses that grew and technology-based projects.

Respondents from businesses that grew in 2020 were significantly more likely than respondents from businesses that remained unchanged or shrank last year to report that their employer:

- worked with technology companies
- focused on developing a long-term technology or digital strategy
- increased recruitment of staff with technological skills.

On the other hand, respondents from businesses that remained unchanged or shrank in 2020 were much more likely to report that their employer undertook no major technology projects in the past 12 months (18 per cent) than respondents from businesses that grew (4 per cent).



Dr Albert Wong FCPA (Aust.)

Committee Member of CPA Australia's
Greater Bay Area Committee
– Greater China

Partner, Public Sector Consulting,
PwC Hong Kong

“The survey findings reflect that there is a link between business performance and the technology-relevant actions businesses undertook. High-growth companies were more likely to have developed a long-term technology or digital strategy, partnered with technology companies to improve the business, have invested in human resources such as recruiting technology talent or upskilling or reskilling the technology capabilities of staff than businesses that did not grow. In addition, these companies are more likely to adopt an ecosystem approach to developing their technological capabilities.

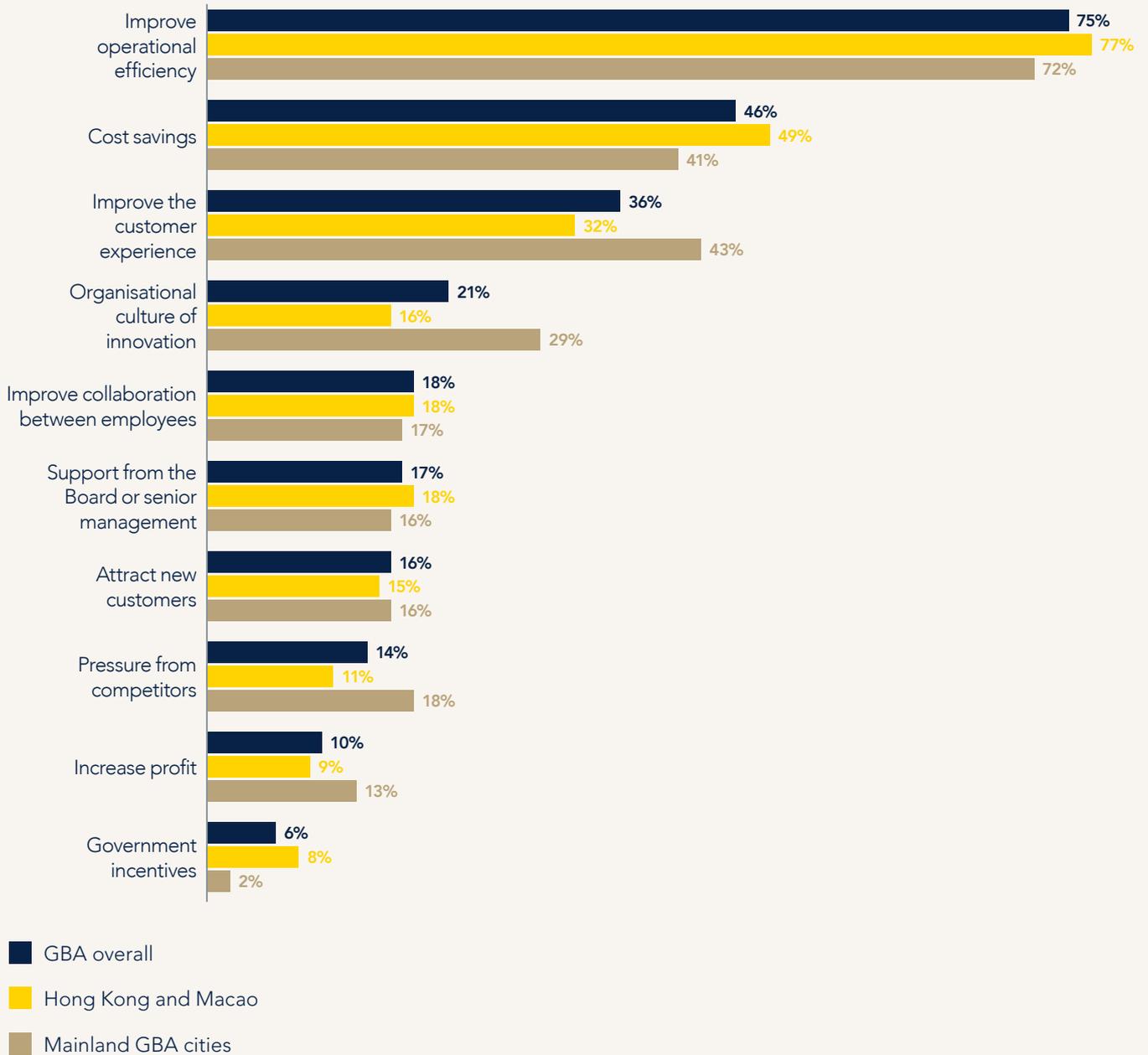
Talent supply and data assets are conducive to creating a sustainable ecosystem to nurture more technology companies in the GBA. The GBA governments could consider introducing more resources and policies to attract and retain technology-savvy talent or to upskill or reskill the current workforce with the relevant technology skills.

With data being the fuel for the application of emerging technologies, data analytics and visualisation should be one of the most sought-after skills in the GBA. In addition, clear guidance on data usage and cross-boundary data flow should be established to facilitate data sharing in the GBA. A clear data policy will lead to greater adoption of data-driven technologies in businesses. A pilot could be considered to facilitate the formulation of an appropriate cross-boundary data management mechanism and demonstrate its functionality.”

“Talent supply and data assets are conducive to creating a sustainable ecosystem to nurture more technology companies in the GBA. The GBA governments could consider introducing more resources and policies to attract and retain technology-savvy talent or to upskill or reskill the current workforce with the relevant technology skills.”

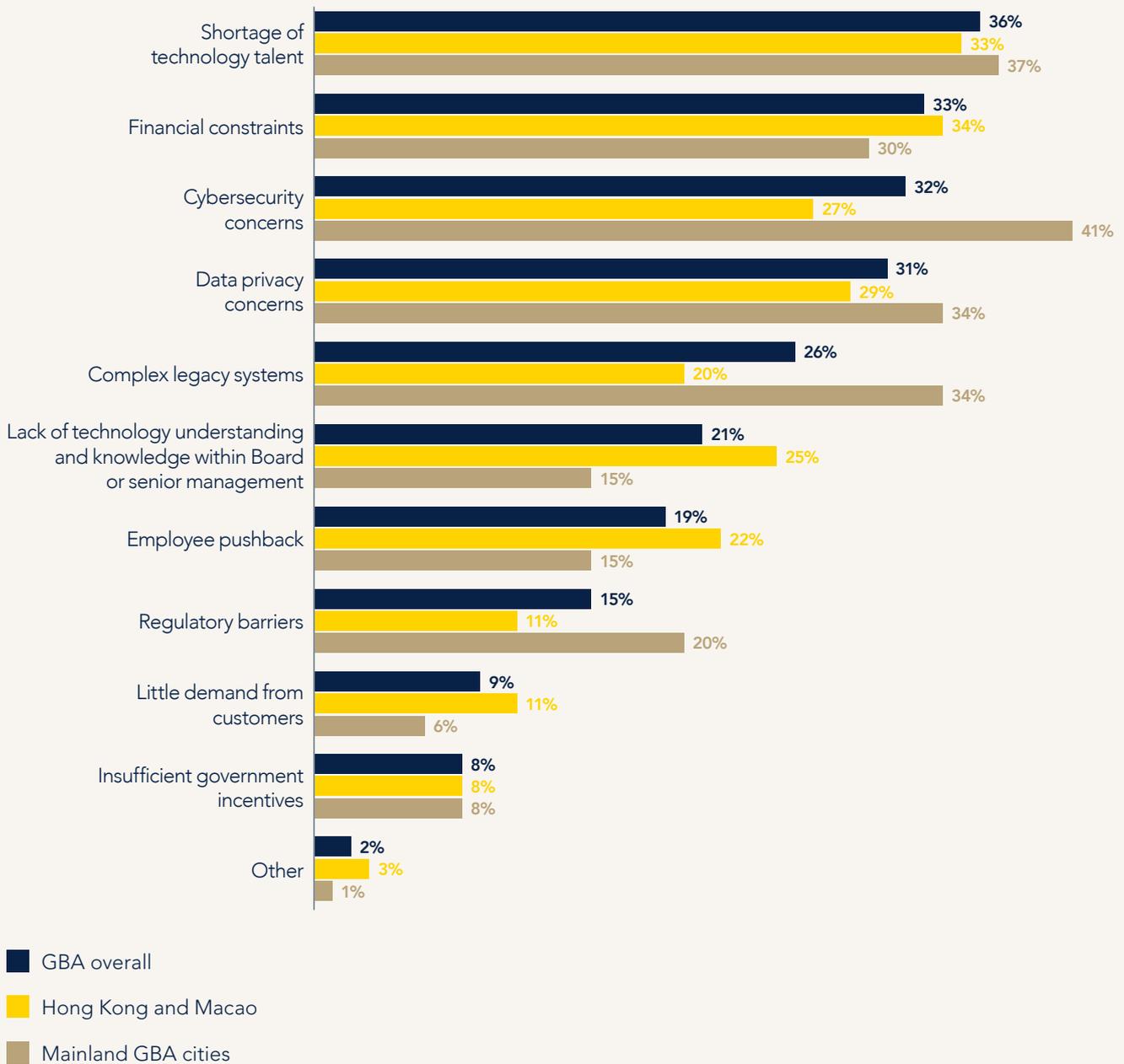
DRIVERS AND CHALLENGES TO TECHNOLOGY ADOPTION

Figure 10. Key drivers of business technology adoption



QUESTION:
In your opinion, what are the main drivers of technology take up in your business?

Figure 11. Key challenges to business technology adoption



QUESTION:
 In your opinion, what are the main challenges for technology take up for your business or employer?

DRIVERS OF TECHNOLOGY ADOPTION

More than 70 per cent of respondents nominated “improve operational efficiency” as the main driver of technology take-up for their business. This was followed by “cost savings” and “improve the customer experience”.

Improving operational efficiency, lowering costs and enhancing the customer experience are essential elements for businesses success in a challenging environment. Emerging technology tools such as AI and RPA offer the potential for further opportunities to improve operational efficiency, fuel growth and add value to an organisation’s relationship with customers. The adoption of such technologies is expected to increase once they become more accessible to smaller businesses.

For those making the business case to invest in technology, this shows that their focus should be on how the technology improves business efficiency, reduce costs in the long run and where relevant, how the technology can improve the customer experience.

OTHER RESULTS

Respondents from businesses with 500 or more employees were more likely to choose “improve the customer experience” (44 per cent) than respondents from businesses with fewer than 500 employees (30 per cent).

Respondents from businesses with fewer than 500 employees were more to pick “increase profit” (15 per cent) than respondents from businesses with a 500 or more employees (6 per cent).

CHALLENGES TO TECHNOLOGY ADOPTION

Reflecting the strong demand for technology and the consequence of growing business usage of technology, “shortage of technology talent” is the most common challenge GBA respondents believe is inhibiting technology uptake of their employer. Concerns about technology talent shortages are not exclusively a major challenge in the GBA, other regions in the world also face a similar problem. To meet the shortfall in technology talent, businesses should consider developing new talent from within, as well as recruiting talent.

While respondents from Mainland GBA cities are more likely to state that a skills shortage is a barrier to technology implementation, they are significantly more likely to believe that the GBA workforce has the technology skills required than respondents from Hong Kong and Macao. Addressing the concern on skill shortage, businesses from Mainland GBA cities invested more in upskilling their staff and recruiting new technology talent in the past 12 months.

“Financial constraints” was the second most reported barrier to technology adoption. This challenge may result in such businesses falling further behind their competitors, exacerbating their financial concerns. However, concerns about limited financial resources can be overcome by collaborating with technology vendors and using available technology tools and software.

Cybersecurity concerns were a much more important consideration in the Mainland GBA cities than Hong Kong and Macao. This explains why businesses in Mainland GBA cities were much more likely to have increased their investment in cybersecurity software in the past 12 months than Hong Kong and Macao businesses.

This challenge reinforces the importance of cybersecurity and data protection when investing in technology. Senior management or board members should ensure a clear delineation of responsibility or cybersecurity, especially in the event of a cyber attack.

In summary, the results show that people making the business case to invest in technology should focus on:

- cost effectiveness of the technology investment
- how the employer will access the skills required to implement the technology
- the cybersecurity and data privacy features of the technology.

OTHER RESULTS

Respondents from businesses with 500 or more employees were most likely to state that “shortage of technology talent” (40 per cent) “complex legacy systems” (38 per cent) and “cybersecurity concerns” (37 per cent) are the main barriers to technology take up.

Respondents from businesses with fewer than 500 employees were most likely to choose “financial constraints” (40 per cent) “shortage of technology talent” (31 per cent) and “data privacy concerns” (29 per cent) as the main challenges to technology take up.



Stanley Sum FCPA (Aust.)

Committee Member of CPA Australia's
Greater Bay Area Committee
– Greater China

Partner, Technology Consulting,
KPMG China

“The past couple of years have no doubt been challenging to many businesses. Agility is a key capability in responding to this challenge. In many cases, technology support was key to responding to this environment. For instance, many companies have expanded its operations into various mobile or online channels.

This means businesses need to catch up on their technology capabilities in order to operate effectively and improve customer experience, otherwise they risk losing their competitiveness in a challenging business environment.

Such catch up in technology capabilities results in a substantial demand (and shortage) for technology talent such as automation engineers, data scientists, cloud architects and cybersecurity specialists. In view of this, I am seeing more collaboration and partnership between businesses. They leverage the strengths of each other and work out technology solutions together. At the same time, companies are investing more in upskilling and reskilling the technology competency of their general staff, and not just the IT team, to embrace the digital age.

With the wider use of technology across business operations, managing “data” as a new asset is also becoming a key challenge. While many leaders understand the importance and value of data in the digital age, many businesses still struggle with getting meaningful insights from their data. Leading organisations are focusing on raising the maturity level of data governance and control in mitigating the associated risks (e.g. sub-optimal data quality, data breaches) as well as breaking through data-silos across legacy systems through revamping integration and unifying data models.

While digitalisation is not without challenges, the leading businesses and organisations that continue to adopt technology would be able to stand out from competitors and bring in new business models that contribute to the growth of the GBA as an international innovation and technology hub.”

“Such catch up in technology capabilities results in a substantial demand (and shortage) for technology talent such as automation engineers, data scientists, cloud architects and cybersecurity specialists.”

RECOMMENDATIONS

From the survey results, CPA Australia proposes the following recommendations to governments, companies and individuals in the GBA:

POLICY SUPPORT

- Expedite the release of detailed policies on cross-boundary data sharing in the GBA and consider implementing a pilot to help formulate an appropriate cross-boundary data management mechanism.
- Encourage universities and other educational institutions to offer competency training courses to enhance the technology capabilities of the workforce.
- Further strengthen collaboration between research institutions, academics, companies and public sector organisations through for example a GBA-wide innovation and technology networking platform.
- Support SMEs to acquire knowledge on emerging technologies such as robotic process automation and acquiring suitable technologies to improve business performance.

COMPANY STRATEGIES

- Develop and implement a digital transformation strategy that aligns technology with the organisation's business objectives.
- Partner with technology companies to develop a long-term technology solution or identify and implement appropriate technology tools that increase productivity or drive growth.
- Build and optimise organisations' data assets for analytical purposes, identify and locate sensitive data and ensure that appropriate tools and solutions are in place to help protect that data.
- Review compliance with relevant technology, privacy and data security laws and regulations.

INDIVIDUAL DEVELOPMENT

- Embark on continuous learning on specific skills and capabilities for an evolving industry.
- Seize the opportunities arising from the fast-growing technology trend in the GBA.

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- **Janssen Chan FCPA (Aust.)**
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Founder and Managing Director of Anssen Consulting Limited
- **Eden Wong FCPA (Aust.)**
2021 CPA Australia's Deputy Divisional President – Greater China

Founder and Chairman of ViiPark Financial Group

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- **Marcellus Wong FCPA (Aust.)**
Chairperson of the Greater Bay Area Committee – Greater China

Vice Chairman of AMTD Group
- **Dr Albert Wong FCPA (Aust.)**
Partner, Public Sector Consulting, PwC Hong Kong
- **Dr Paul Sin FCPA (Aust.)**
Deloitte China and Deloitte's Asia Pacific Blockchain Lab Leader
- **Samuel Lung FCPA (Aust.)**
Partner, Financial Services Business Consulting, EY
- **Sidney Cheng FCPA (Aust.)**
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