Empowering Hong Kong's economy through innovation
Empowering Hong Kong's economy through innovation
Dr. David Chung  
**Under Secretary for Innovation and Technology**  
**Hong Kong SAR Government**

**Strengthening Hong Kong as a leading international innovation and technology center**

The Hong Kong Government has been committed to promoting the development of innovation and technology (I&T), with a view to injecting new impetus into the economy, improving people’s quality of life, and creating brilliant job opportunities for young people.

The current Government has been stepping up I&T development efforts in eight major areas: increasing resources for research and development (R&D); pooling technology talent; providing investment funding; creating technological research infrastructure; reviewing existing legislation and regulations; opening up access to government data; leading changes to procurement arrangements; and strengthening popular science education. More than HKD100 billion has been devoted so far with good progress.

With the concerted efforts of different parties, the I&T atmosphere in Hong Kong is continuously improving. Building on our existing efforts, we will continue to add momentum to local I&T ecosystem. The 2019 Policy Address Supplement (the Supplement) published alongside the Chief Executive’s Policy Address on 16 October 2019, sets out 11 new measures to further promote the development of I&T.

Nurturing technology talent is a key component of promoting I&T. We will enhance the nurturing of local talent and step up efforts to attract technology talent from overseas and the Mainland. We will also further support the application of local R&D outcomes as well as continue to strengthen local technological infrastructure. The Supplement also proposed several measures to strengthen smart city development and further enhance public services.

The new initiatives proposed in the Supplement are intended to further break through the bottlenecks in I&T development. The Government will endeavor to take forward these initiatives with a view to making Hong Kong a competitive international I&T center.
New technologies, new business models and customer needs are opening up vast opportunities in China. Although the future seems to promise almost unlimited disruptive growth potential, existing management and industry practices are being challenged by these same developments. How can Hong Kong companies harness the potential of these changes to drive business success? It is crucial to understand new technology developments and learn how to apply them so that firms, economies and societies will reap the benefits of the innovation and technology transitions before us.

The Deloitte Technology Fast Program recognizes and profiles fast growing technology companies. Our top list this year brings a group of ambitious, diverse companies into the spotlight. Each year we are inspired by the sheer quality, capacity and determination of our entrants and the way in which they have built successful businesses.

Through the data collected in selecting these outstanding Tech Fast companies in Hong Kong and the Greater Bay Area, Deloitte has produced research that provides a deeper understanding of innovation and technology transitions. This research provides a thorough comparison and understanding of emerging changes and the implications of business-oriented innovations in Hong Kong and the Chinese Mainland.

Embracing innovation allows organizations to improve internal processes and drive their growth potential. Hong Kong’s fast growing technology companies, however, face an entirely different set of challenges than their larger peers due to limited resources. This paper explores the opportunities and barriers in the existing ecosystem that confront Hong Kong’s growing companies.

As Hong Kong strives to break through traditional industries, we all have a role in shaping, cultivating and driving potential—locally, regionally and globally—fueled by technology and innovation.

We hope that as you read through this year’s list of winners and our research findings, you are inspired and motivated to explore the diversity of opportunities out there.

Congratulations to all our Technology Fast 2019 Hong Kong winners!
Thank you to our supporters

Strategic partners

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HKSTP
HSBC

Official Knowledge Partner

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WORLD CLASS IN ASIA

Diamond Sponsors

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SPARK VENTURES

Supporting organizations

Alibaba Entrepreneurs Fund
Beyond Ventures

Guangdong-Hong Kong-Macao Bay Area Economic And Trade Association
HKEX
HK Venture Capital and Private Equity Association
PIXIU CAPITAL
RADIANT
SQC
SQ CAPITAL
# Contents

## Technology Fast Program
- Program background 2
- Technology Leadership winner 3
- Technology Fast winners 3
- Rising Star winners 6
- Tech Fast Female winners 10

## Empowering Hong Kong’s economy through innovation
- About the study 12
- Executive summary 14
- Survey findings: Comparison of Hong Kong, Greater Bay Area and other Mainland Chinese cities 18
- Government policy and R&D investment 25
- Education and human capital 33
- Public and private funding 44
- Innovation culture and entrepreneurship 50

## The way forward
- The GBA: Opportunities or competition? 56
- Recommendations for Hong Kong’s innovation ecosystem 62

## References

## About us
Technology Fast Program
Program background

The Deloitte Technology Fast 2019 Hong Kong (HKTF) ranks fast growing public and private technology companies on their revenue growth over the last three years.

HKTF is open to companies from the technology, media and telecommunications (TMT) sector. **Tech Fast** Companies must satisfy the following criteria:

- Three years of business operation
- Headquartered in Hong Kong
- At least HKD1,200,000 in operating revenue during the 1st year of the 3-year evaluation period
- Proprietary intellectual property or proprietary technology that generates substantial operating revenue

One tech company with revenue of more than HKD500m in FY18 that has achieved outstanding growth and leadership status is awarded **Tech Leadership**.

**Rising Star** is a special category that recognizes high-growth companies that have demonstrated astounding business growth, but are too young to be listed in the Technology Fast ranking.

This year, for the first time, we are giving **Tech Fast Female** awards. This category is for companies that made the Tech Fast list and were founded or co-founded by women, or have female CEOs.

HKTF is a sub-program of the Deloitte China Technology Fast 50 Program (China TF50). Once an enterprise reaches HKTF, it automatically becomes eligible to enter the China TF50 Program to compete with peers from every corner of the Chinese Mainland.

Over the years, many companies named in the global Deloitte Technology Fast 50 (Global TF50) have emerged to become international technology giants, with notable winners including Apple, Google, Facebook, Baidu, Alibaba, Tencent, Jingdong and Qihoo 360. With most of its companies at their early growth stages when ranked, the TF50 can also be considered the “Cradle of Rising Stars”. China TF50 has become an important part of Deloitte Technology Fast 500 Asia Pacific (TF500 Asia Pacific), with companies achieving China TF50 rankings automatically becoming candidates for TF500 Asia Pacific.
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Technology Leadership winner

2019 Deloitte Hong Kong Tech Leadership award

#01 Internet e-Commerce

Klook Travel Technology Limited
Growth rate 729%

Founded in 2014, Klook is a world leading travel activities and services booking platform, providing seamless booking experiences for attractions, tours, local transportation, food & beverage venues, and unique experiences on its website and award-winning app.

Technology Fast winners

2019 Deloitte Hong Kong Tech Fast awards ranking

#01 Logistics service

HKTaxi App Limited
Growth rate 1,704%

HKTaxi, founded in 2013, is the first local taxi-hailing app. It has gathered 1.4M downloads and 60,000 registered drivers, pioneering credit card acceptance and endeavoring to innovate point-to-point transport.

#02 Intelligent hardware

ePropulsion Innovation (HK) Limited
Growth rate 1,259%

Founded in 2012 in Hong Kong by a group of watersports loving engineers, ePropulsion is dedicated to developing intelligent, sustainable marine propulsion systems. Through continuous research and innovation, ePropulsion has made giant strides in the last few years by successfully developing and manufacturing four major products – SPIRIT 1.0, NAVY 3.0, NAVY6.0 and VAQUITA – three electric outboard motors and one sup/kayak propulsion motor.
### 2019 Deloitte Hong Kong Tech Fast awards ranking

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company Name</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>IOE Technologies Limited</td>
<td>904%</td>
</tr>
<tr>
<td>04</td>
<td>GoGoChart Technology Limited</td>
<td>594%</td>
</tr>
<tr>
<td>05</td>
<td>Pakpobox Hong Kong Limited</td>
<td>376%</td>
</tr>
<tr>
<td>06</td>
<td>E-Buy Global Limited</td>
<td>337%</td>
</tr>
</tbody>
</table>

#### IOE Technologies Limited
Growth rate 904%

IOE is an IoT solutions company. Its core technologies include indoor location, RFID, Bluetooth, and battery-less wireless sensing.

#### GoGoChart Technology Limited
Growth rate 594%

GoGoChart is an award-winning mobile advertising technology company that specialize in growth strategy, user acquisition and app store optimization (ASO) for mobile apps. As a performance-driven technology company, GoGoChart empowers partners and their apps to be elevated with maximum exposure in the app stores. Since 2015, GoGoChart has helped over 2,000 mobile apps and worked with more than 300 publishers globally.

#### Pakpobox Hong Kong Limited
Growth rate 376%

Pakpobox is a tech-logistics company founded in 2013, to ease bottlenecks in package deliveries. Pakpobox builds and operates automated smart lockers that allow people to collect packages easily, 24/7 and in total privacy.

#### E-Buy Global Limited
Growth rate 337%

Buyandship provides cost-efficient delivery services, resolving the issue of high transshipment costs in global online shopping.
Starling Labs Limited (SHOPLINE)
Growth rate 184%
SHOPLINE is Asia’s biggest smart commerce platform, helping brands of all sizes strengthen their local businesses and sell products everywhere. It has helped over 150,000 brands open online stores since its foundation in 2013.

Yoho Hong Kong Limited
Growth rate 167%
Yoho is a pioneer of Hong Kong e-commerce service. Through its unique shopping platform, online and offline, its strives to offer customers over 18,000 quality products at attractive prices.

Sanomics Limited
Growth rate 148%
Sanomics was founded in Hong Kong in 2015 and established its Thailand branch in 2018. With “patient first” as its guiding principle, Sanomics Limited specializes in providing liquid biopsy and tissue based genetic diagnostics for cancer patients, helping doctors create personalized cancer solutions for patients.

Everyware Limited
Growth rate 136%
Everyware Limited is a point of sales (POS) software developer. The Caterlord (餐飲王®) POS System is its killer product. In less than four years, Caterlord has been adopted by more than 2,000+ restaurants and retail stores.
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Rising Star winners

2019 Deloitte Hong Kong Rising Star awards (in alphabetical order)

#01 Financial technology

AI Financial Technology Holding Company (OneDegree)

OneDegree is a technology company that aims to be the next-generation insurance industry leader in Asia.

#02 Intelligent driving

AutoX, Inc

A world-leading L4 self-driving solution provider. Empowering the world with AI drivers to accelerate universal access to transportation for people and goods, safely and conveniently.

#03 Healthcare

Belun Technology Co., Ltd.

Incorporated in 2016, Belun Technology Co. Ltd. is dedicated to the research, development and commercialization of wearable and portable medical devices and solutions allowing people to pre-screen, manage and prevent sleep-related, respiratory and cardiovascular complications at home.

#04 Biomedicine

Cellomics Holdings Limited

Cellomics is a leading Hong Kong-based biotech company focusing on the development and commercialization of liquid biopsy products and services for cancer early screening and disease management.
### 2019 Deloitte Hong Kong Rising Star awards (in alphabetical order)

<table>
<thead>
<tr>
<th>#</th>
<th>Category</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>#05</td>
<td>Blockchain</td>
<td>CryptoBLK Limited</td>
</tr>
<tr>
<td>#06</td>
<td>Artificial intelligence</td>
<td>Fano Labs Limited</td>
</tr>
<tr>
<td>#07</td>
<td>Education</td>
<td>Find Solution Ai Ltd.</td>
</tr>
<tr>
<td>#08</td>
<td>Financial technology</td>
<td>Kristal Advisors (HK) Limited</td>
</tr>
</tbody>
</table>

**CryptoBLK Limited**

CryptoBLK focuses on developing, deploying and operating blockchain systems, aiming to make a global impact in the financial services industry by delivering software solutions and services based on Distributed Ledger Technology (DLT/blockchain).

**Fano Labs Limited**

Fano Labs is an AI company specializing in speech recognition and natural language processing technologies. Focusing on a variety of languages and dialects, Fano Labs helps enterprise customer services, compliance and other lines of business.

**Find Solution Ai Ltd.**

Founded in 2016, Find Solution Ai Ltd. is an award-winning AI specialist with 10 years professional experience that has spent more than six years self-developing an AI-driven motivation model.

**Kristal Advisors (HK) Limited**

Kristal.AI is an AI-powered, licensed virtual wealth manager. By leveraging an AI-based recommendation system for automated, non-biased portfolio advisory, all kinds of investors can allocate resources based on a consolidated view of their savings and risk-profiles.
Negawatt Utility Limited

Negawatt is a property engineering tech company specializing in smart building solutions. Negawatt’s proprietary building operating system helps traditional buildings achieve digital transformation with AI and IoT technology, saving energy and improving operational efficiency.

Nova Credit Limited

Nova Credit broke the monopoly of TransUnion, is headquartered in and has received major funding from the US. Nova Credit has a diversified shareholder base with geographical spread. Its shareholders are local banks and financial institutions, the founders of Nova Credit and other reputable credit bureaus.

OKLink Fintech Limited

OKLink Fintech Limited, a wholly-owned subsidiary of LEAP Holdings Group Limited (1499.HK), focuses on blockchain technology R&D and applications.

Qupital Limited

Qupital is a leading SME trade financing company in Asia, providing a user-friendly, safe and secure platform for SME businesses to quickly raise capital by matching them with investors seeking investment opportunities.
2019 Deloitte Hong Kong Rising Star awards (in alphabetical order)

#13 Artificial intelligence

RaSpect Intelligence Inspection Limited
RaSpect is AI-powered predictive inspection company for architecture, building the "brain" of architectural safety.

#14 AR/VR

Redspots Creative (Hong Kong) Limited
Redspots Creative (Hong Kong) Company Limited is a multi-media production company which focuses on development, production, application, and marketing promotion with advanced motion capture technology and virtual character live streaming. It provides services in three major categories: 2D and 3D video production, AR/VR interactive technologies and products, and AR platforms.

#15 Entertainment

VAR LIVE International Entertainment Company
VAR LIVE Group is a leading technology entertainment company with in-house creative teams developing virtual reality titles and manufacturing peripheral gaming hardware. It has flagship retail stores in Hong Kong, Taipei and Kaohsiung, offering state of the art VR and AR experiences for all ages.
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Tech Fast Female winners

2019 Deloitte Hong Kong Tech Fast Female awards

#01 DayDayCook

DayDayCook is a new lifestyle brand focused on providing a better experience for the female millennial. Since its establishment in 2012 in Hong Kong, DayDayCook has been dedicated to becoming the largest food driven community in China, from quality recipe video content to online and offline experiential commerce.

#02 Lynk

Lynk, pioneers of the knowledge-as-a-service platform, provides opportunities for best-in-class professionals with proven experience to monetize their knowledge and provide actionable value for users. Lynk’s technology enables access to over 500 million experts.
Empowering Hong Kong’s economy through innovation:
An analysis of Hong Kong's innovation ecosystem

Empowering Hong Kong’s economy through innovation

About the study

For HKTF 2019, Deloitte conducted primary and secondary research on and interviewed Hong Kong’s fastest growing tech companies, gaining a deep knowledge of the innovation and technology landscape. This HKTF 2019 report traces the development of Hong Kong’s innovation and technology ecosystem, identifies gaps and provides key recommendations.

We are honored to have Hong Kong University of Science and Technology (HKUST) Business School as our official knowledge partner, and are particularly thankful for their input in designing the survey, carrying out part of the survey and providing valuable insights during the writing of this report.

Research methodology and respondents

The data in this report is based mainly on surveys conducted in the third quarter of 2019 in Hong Kong. Both surveys contained 20 questions. Individual interviews were carried out to complement the results.

The Entrepreneur Survey sought to summarize the successful experiences of respondent organizations and seek understanding and insights on Hong Kong’s innovation landscape. The respondents represented large, mid-sized and small start-ups, of which more than 40 percent had revenue of over HKD10 million in 2018. The background of respondents varied across a broad range of industries, although most are members of founding or senior management teams in the finance, retail, internet and software sectors. The 10 Entrepreneur Survey questions were the same as those in a survey conducted in the Chinese Mainland. This compares Hong Kong with representative cities in the Greater Bay Area (GBA) and rest of the Chinese Mainland across multiple dimensions, including internal innovation, human resources, employee motivation and companies’ development plans.

The Student Entrepreneur Survey targeted MBA student entrepreneurs from universities in Hong Kong who have applied for entrepreneur funding in the past and have unique insights into Hong Kong’s innovation ecosystem. The survey canvassed student entrepreneurs’ opinions and attitudes towards Hong Kong’s innovation and technology environment. Nearly 90 percent of respondents have full-time work experience, and a fourth have worked for start-ups or in areas connected to entrepreneurship.
We received 130 valid responses, 90 from established entrepreneurs and 40 from student entrepreneurs in Hong Kong.

In addition to the surveys, the study included interviews with start-up founders from the HKTF Program and Key Opinion Leaders (KOLs) active in innovation and entrepreneurship, as well as venture capital (VC) executives, government leaders, and academics.
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Executive summary

Hong Kong remains one of the most competitive cities in the world, with progress in its innovation and technology environment

Hong Kong rose to 3rd place in the World Economic Forum’s competitiveness ranking and 13th in the Global Innovation Index ranking in 2019, despite ongoing political turmoil. Hong Kong’s well-established regulatory environment and legal framework provide the greatest advantage for start-ups, according to 77 percent of entrepreneurs and 58 percent of student entrepreneurs. The transparent, efficient legal system and regulatory ecosystem are the most important factors when deciding to set up headquarters in Hong Kong.

Key advantages in starting a business in Hong Kong

<table>
<thead>
<tr>
<th>Advantage</th>
<th>All respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory environment and legal framework</td>
<td>71%</td>
</tr>
<tr>
<td>Access to market in China</td>
<td>50%</td>
</tr>
<tr>
<td>Access to market in Asia</td>
<td>36%</td>
</tr>
<tr>
<td>Access to credit and funding</td>
<td>35%</td>
</tr>
<tr>
<td>Human capital</td>
<td>18%</td>
</tr>
<tr>
<td>Entrepreneur culture and social norms</td>
<td>18%</td>
</tr>
<tr>
<td>Government incentives and policies</td>
<td>18%</td>
</tr>
<tr>
<td>IP Protection</td>
<td>12%</td>
</tr>
<tr>
<td>Physical infrastructure</td>
<td>9%</td>
</tr>
<tr>
<td>Internal market in dynamics</td>
<td>6%</td>
</tr>
<tr>
<td>Others</td>
<td>3%</td>
</tr>
<tr>
<td>R&amp;D transfer</td>
<td>3%</td>
</tr>
</tbody>
</table>

Source: Deloitte Research

Hong Kong’s easy access to the Chinese Mainland is a major source of competitive advantage. Half of all respondents picked access to the Chinese Mainland as a competitive advantage when starting a business in Hong Kong. The estimated revenue breakdown of surveyed start-ups shows more than half have entered the Mainland market. With its surging middle class and booming consumer market, the Chinese Mainland provides many Hong Kong start-ups with ideal pilot markets for new technologies and products. Entrepreneurs see tremendous potential in the Chinese Mainland but are still concerned about Hong Kong’s local entrepreneur culture and talent acquisition issues.
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Hong Kong is transforming from a world financial center into an R&D hub, embracing innovation and technology as its engine of growth

Entrepreneurs and student entrepreneurs were asked whether they regard Hong Kong as an innovation hub in several emerging technology areas. With its position as a premier international financial center and role as an offshore RMB business center, Hong Kong is a leading fintech market. However, the results suggest a need for continued efforts in the identified growth sectors of e-commerce, smart city and big data.

Fintech is out in front, with 71 percent of respondents saying Hong Kong has an advantageous fintech ecosystem that embraces related start-ups. Hong Kong is among the world’s top ten fintech hubs. With virtual banking licenses being handed out, Hong Kong is trying to change the landscape of the fintech ecosystem in Asia. Thirty-eight percent highlighted the potential of e-commerce in Hong Kong.

Artificial intelligence (AI), a key innovation area proposed by the Hong Kong Government, was cited by 19 percent of entrepreneurs. Two interviewees of an AI start-up note that the main gap between Hong Kong’s fledgling AI sector and Chinese Mainland AI is their different ability to commercialize the technology. “Hong Kong is at the forefront of AI research, with a number of high-level papers published, but has not yet become strong enough in terms of commercialization,” they commented, “without the support of a mature industrial sector, AI lacks application scenarios.”

Hong Kong is now the world’s second largest funding hub for biotechnology, yet only 15 percent of respondents believe Hong Kong’s biotech ecosystem is a robust innovation hub for start-ups. One explanation could be the high cost of biomedical research and long road to turning this into effective applications, which stops university laboratories putting research achievements into practice, according to a founder of a biotech start-up.

Surveyed companies’ revenue by region

Source: Deloitte Research

1. The Future of Finance is emerging: New Hubs, New Landscapes, University of Cambridge, Zhejiang University, Sinai Lab, November 2018
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“A vibrant start-up ecosystem and sufficient support for younger start-ups can address this concern. Additionally, as Hong Kong has a solid foundation for biotechnology innovation, and well-established integration of information and resources,” says this founder of the biotech start-up. “There will be more opportunities and incentives for student entrepreneurs to start their own businesses in Hong Kong.”

Hong Kong’s status as an innovation hub (by sector)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fintech (including InsurTech)</td>
<td>71%</td>
</tr>
<tr>
<td>E-commerce</td>
<td>38%</td>
</tr>
<tr>
<td>Smart City</td>
<td>35%</td>
</tr>
<tr>
<td>Big Data</td>
<td>30%</td>
</tr>
<tr>
<td>Artificial Intelligence</td>
<td>19%</td>
</tr>
<tr>
<td>Internet of Things</td>
<td>15%</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>15%</td>
</tr>
<tr>
<td>Others</td>
<td>10%</td>
</tr>
<tr>
<td>Robotics</td>
<td>8%</td>
</tr>
<tr>
<td>None of above</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: Deloitte Research

Despite an improving innovation environment, headwinds remain

Despite Hong Kong’s competitive advantages and openness to new, transformative mind sets, there are still many challenges to entrepreneurship. Seventy-four percent of respondents rank high cost as the biggest challenge to starting a business in Hong Kong.

Without sufficient, stable cash flow and feasible commercialization plans, transforming theory into practice becomes increasingly difficult. As a respondent from a smart manufacturing start-up puts it, “Cutting-edge research achievements do not always match market demand, and the lack of accessible resources and channels also add to the cost of exploring the Chinese Mainland market for start-ups.”
High rent and labor costs also make warehousing and logistics a challenge. One interviewee from a cross-border e-Commerce shipping services provider says that their company has established B2B partnership links with major companies to realize online-offline integration. However, compared with convenient, low-cost shipping in the Chinese Mainland, the cost of doing business in Hong Kong remains high.

Market size and dynamics are another major concern, cited by 50 percent of respondents, as are access to talent and political and economic environment, which were cited by 36 percent and 35 percent, respectively, as major barriers to starting a business in Hong Kong.

Entrepreneurs, however, see opportunities and challenges from unstable economic and political conditions. A co-founder and CTO of an IT company, which provides cloud-based POS software for restaurants, sees business opportunities in the current turmoil: “If many restaurants need to cut costs and reduce employee numbers due to the economic slowdown, an automated, comprehensive POS is just what is needed.” Young entrepreneurs finding ways to overcome these barriers will be essential to their success. By building an entrepreneurial mind set, leveraging in-house and external resources in R&D technology and sourcing more tech talent, Hong Kong will develop a vibrant innovation ecosystem.

**Key challenges in starting a business in Hong Kong**

- **Cost of doing business**
- **Market size and dynamics**
- **Access to talent**
- **Political and economic environment**
- **Market competition**
- **Access to credit and funding**
- **Maturity of local industrial cluster**
- **Culture support**
- **Others**

Source: Deloitte Research
Empowering Hong Kong's economy through innovation

Survey findings: Comparison of Hong Kong, Greater Bay Area and other Mainland Chinese cities

Deloitte distributed CEO/entrepreneur questionnaires during the Technology Fast Programs in the Chinese Mainland and Hong Kong SAR. Overall, 615 valid responses were received from the Chinese Mainland, including Beijing, Shenzhen, Guangzhou, Qingdao, Wuhan and Chengdu. This year’s survey focused on the theme, **Think Big, Act Fast: Business-oriented Innovation**. This chapter closely compares the results of surveys in GBA cities, other Chinese Mainland cities, and Hong Kong.

**Business oriented innovation**

**Hong Kong lacks endogenous innovation drivers. Local business growth is also increasingly exposed to global political turbulence**

When looking at the growth of local start-ups, Hong Kong lags behind Shenzhen, Guangzhou and the rest of the Chinese Mainland in advanced products and services and spirit of mass innovation. Due to the small size of the Hong Kong market and limited profit margins, local start-ups also tend to leverage M&A and strategic cooperation for resource integration.

**Major drivers of organizational growth**

What is/are the most important reason/reasons behind the growth of your organization?

![Survey findings: Comparison of Hong Kong, Greater Bay Area and other Mainland Chinese cities](image-url)
As a trade-oriented, open economy, Hong Kong is highly vulnerable to changes in the external environment. Escalating international trade frictions and uncertain government policies could cause long-term, far-reaching harm to organizations in Hong Kong. These uncertainties and risks are also shaking the confidence of investors in the Chinese Mainland, with some organizations eyeing more stable market environments.

Hong Kong enterprises should explore more possibilities to innovate and apply emerging technologies. Only 36 percent of Hong Kong entrepreneurs said their organizations would follow and apply new technologies to achieve cutting-edge innovation, compared with much higher percentages among respondents from Shenzhen (82 percent) and Guangzhou (76 percent). In addition, Hong Kong still has great room to improve how it attracts high-tech talent (29 percent), compared with other cities in the GBA. Due to society’s general risk aversion, high living costs and the imperfect talent system in frontier domains, Hong Kong graduates are concentrated in financial services, real estate or trade-related industries, prompting an innovation brain drain.

Organizations in Hong Kong are more likely to embrace cutting-edge innovation through M&A than their peers in the Chinese Mainland are. Nearly one-quarter of respondents believe investing or acquiring companies engaged in new technology innovation will keep them in a leading roles, the highest number among the surveyed cities.
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Innovation strategies for the next two years
What innovation strategies will your organization adopt to keep a leading role in the next two years?

- Innovate based on customer demands
- Collaborate and innovate with the help of industry platforms or ecosystems
- Follow and apply new technologies to achieve cutting-edge innovation
- Attract high-tech innovation talents
- Establish innovation organizations and strengthen innovation culture
- Invest/acquire companies engaged in new technology innovation
- Collaborate and innovate with the help of industry platforms or ecosystems
- Innovate based on customer demands
- "absence of an innovation culture" (21 percent), and "short-sighted planning and opportunism" (17 percent). Despite these challenges, Hong Kong's safety protection and its capacity for deep data analysis and insights provide assurance and opportunities for start-ups and founders.

Innovation challenges in the coming 12 months
What innovation challenges will your organization face in the coming 12 months?

- Inadequate innovation investments (e.g. without steady cash flow support)
- Low acceptance of new patterns and new technologies among clients
- It is difficult to integrate production, business and IT system
- Existing structure of the organization cannot be integrated or extended
- Absence of innovation culture
- Short-sighted planning and opportunism
- Deficiency of deep data analysis and insights
- Weak safety protection
- "absence of an innovation culture" (21 percent), and "short-sighted planning and opportunism" (17 percent). Despite these challenges, Hong Kong's safety protection and its capacity for deep data analysis and insights provide assurance and opportunities for start-ups and founders.

Source: Deloitte Research
Internal, streamlined management
Recruiting and retaining local and international talent remains the biggest internal management issue
This study found that entrepreneurs are increasingly seeking solutions to enhance leadership. Due to uncertainties including the turbulent social environment and sluggish economic growth in Hong Kong, about half of entrepreneurs said they will motivate and enhance collaboration and trust among employees. However, only 29 percent of Hong Kong entrepreneurs provide systematic leadership training for mid- and high-level managers, fewer than elsewhere in the GBA.

Approaches to enhancing leadership in the coming 12 months
How should your organization enhance leadership in the coming 12 months?

<table>
<thead>
<tr>
<th>Approach</th>
<th>Hong Kong</th>
<th>Shenzhen</th>
<th>Guangzhou</th>
<th>Mainland China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivate all employees</td>
<td>40%</td>
<td>45%</td>
<td>50%</td>
<td>55%</td>
</tr>
<tr>
<td>Enhance collaboration and trust</td>
<td>35%</td>
<td>40%</td>
<td>45%</td>
<td>50%</td>
</tr>
<tr>
<td>Invest in talent development strategies (such as systemic training)</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
<td>45%</td>
</tr>
<tr>
<td>Cultivate leaders and successors</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>Provide mid and high-level managers with systemic leadership training</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>Improve change management capability</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Others</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Source: Deloitte Research

Turning to access to human capital, the survey found improving employee loyalty is the top HR issue for organizations in Hong Kong, accounting for 39 percent of respondents. This is almost 30 percentage points more than in Chinese Mainland cities, suggesting Hong Kong has more difficulty in retaining talent. Meanwhile, 34 percent of Hong Kong entrepreneurs said improving performance management should also be taken into consideration to build a sound reputation and retain loyal employees. Overall, Hong Kong attaches more importance to HR utilization and rewards mechanisms than the Chinese Mainland does.
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The top HR priorities
What human resource issue(s) is/are the top priorities of your organization in the coming 12 months?

As entrepreneurs increasingly seek to improve corporate risk management, the study pinpoints differences between Hong Kong and Chinese Mainland approaches to risk alleviation. About 13 percent of Hong Kong entrepreneurs said they will introduce professional third-party risk management service institutions, about twice as many as in other parts of the GBA and the rest of the Chinese Mainland. However, compared with Hong Kong, Chinese Mainland entrepreneurs pay more attention to internal risk controls and monitoring mechanisms. This gap could be partly explained by Hong Kong companies tending to seek external advice from professional services firms, whereas Chinese companies still rely heavily on internal solutions.

Key factors in improving corporate risk management
What is/are the most important factor/factors for your organization to improve corporate risk management in the coming 12 months?

Source: Deloitte Research
**Future development plans**

**Hong Kong entrepreneurs have a more conservative attitude to private equity financing and IPOs**

At present, half of Hong Kong enterprises have M&A plans for the next two years. Due to deficiencies in core technologies and disruptive innovation with the help of the industry ecosystem, only 13 percent of respondents—fewer than half the number in Shenzhen—believe strengthening technology research capability is an important factor in M&A. On the other hand, Hong Kong entrepreneurs highlight entering new industries (10 percent), much more than those in Shenzhen (3 percent), Guangzhou (4 percent) and other Chinese Mainland cities (3 percent), due to constrained internal market dynamics.

**Major concerns in M&A**

Does your organization have any M&A plans for the next two years? If yes, what is/are the most important factor/factors for your organization in M&A?

The survey suggests Hong Kong entrepreneurs are relatively conservative towards raising PE financing. Nearly half said they have no Private Equity (PE)-financing plans, and the amount targeted mainly ranges up to HKD30 million (20 percent). In Shenzhen and Guangzhou, more entrepreneurs aim to raise HKD30 million to HKD100 million, at 28 percent and 31 percent respectively, versus only 13 percent in Hong Kong.
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**PE-financing plans for the coming 12 months**
Does your organization have a PE-financing plan for the coming 12 months? If yes, how much does it aim to raise?

Source: Deloitte Research

Hong Kong entrepreneurs have even less appetite for IPOs. Fewer than a quarter plan to list in the next 24 months, with the number shooting up to 70 percent in Shenzhen. With regards to Hong Kong’s target markets, Hong Kong itself accounts for 19 percent, followed by the United States (7 percent). In stark contrast, Shenzhen, Guangzhou and Chinese Mainland respondents pay more attention to their own markets.

**Target market(s) of IPO plans in the coming 24 months**
Does your organization have any IPO plan in the coming 24 months? If yes, what is/are the target market(s)?

Source: Deloitte Research
Government policy and R&D investment

The evolution of government policies
Hong Kong's innovation policies have gone through three stages: exploration, reformation, and acceleration. Government budget allocations and spending have reached new heights with further implementation of plans for the Greater Bay Area. Governments play an important role in enhancing economies' innovation capacity. Throughout the history of the world's major innovation capitals, effective government policies have been the foundation for development of healthy, prosperous innovation and technology ecosystems.

Before innovation and entrepreneurship started to spread across Hong Kong, its government took the lead in exploring the path to developing an entrepreneurial ecosystem. It has launched a series of strong policies and funding schemes to boost Innovation and Technology (I&T). Forty-eight percent of student entrepreneurs surveyed somewhat agreed that the Hong Kong Government supports start-ups as a high-priority, with 10 percent strongly recognizing the government's current performance.

However, other student entrepreneurs surveyed show diverging opinions on this topic, with 13 percent somewhat disagreeing and 5 percent strongly disagreeing. A quarter of them were neutral on this issue.

Dr. George Lam
Chairman of Cyberport

“Cyberport continues to drive growth in Hong Kong's digital economy by providing a holistic ecosystem for start-ups and entrepreneurs. There is tremendous momentum in the innovation and technology sector in Hong Kong, and it is becoming one of the most fertile grounds for innovators and entrepreneurs thanks to the concerted efforts of industry players and the government.”
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Student entrepreneurs’ views on whether the government supports start-ups as a high priority

The turn of the century marked the beginning of Hong Kong’s I&T development. The Hong Kong Government took its first steps through its “Silicon Harbour” and “Cyberport” projects. However, policies and their implementation did not have a significant impact on I&T development. The bursting of the Dot-Com bubble around the millennium is one reason. Hong Kong, which plays a major role in global finance, has been more exposed to such fluctuations. In subsequent years, the Hong Kong Government has established several functions and branches in quick succession to better formulate and implement policies to promote I&T development. These include the establishment of the Innovation and Technology Fund (ITF); the Hong Kong Applied Science and Technology Research Institute; and the Commerce, Industry and Technology Bureau.

In 2006, greater emphasis was placed on technology transfer and commercialization. As a result, the government established five separate Research and Development (R&D) centers to coordinate and undertake applied R&D in selected areas. As of May 2016, these R&D centers had conducted over 920 projects, involving about HKD4.1 billion in funding.

In their first decade, government policies do not appear to have had any great impact on the development of local I&T. I&T GDP is smaller than that generated by Hong Kong’s four traditional industries. By contrast, the added value of those four industries, including logistics, is almost 40 times that of the I&T industry. The Hong Kong Government has shifted policy from providing cheap land and office buildings to direct and indirect funding for start-ups, ushering the development of Hong Kong’s I&T industry into the next phase of reform.

Source: Deloitte Research

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2. Fact Sheet: Innovation and Technology Industry in Hong Kong (2016-2017), Research Office Legislative Council Secretariat
A series of policies were introduced in the following years. In 2014, the Technology Start-up Support Scheme for Universities (TSSSU) was launched by the Innovation and Technology Commission (ITC). Under TSSSU, annual funding of up to HKD8 million is given to each of the six local universities to encourage technology start-ups. The Innovation and Technology Bureau was established in 2015 to better formulate and implement I&T policies.

Aside from changes in funding, the Hong Kong Government attempted to attract more talent by improving immigration policies. This involved the cancellation of the investment immigration scheme in 2015 to create more opportunities for talent to work in Hong Kong. In 2016, the Cyberport Management Company set up the HKD200 million Cyberport Micro Fund to invest in ICT start-ups. The government also established a HKD2 billion Innovation and Technology Venture Fund (ITVF) for co-investing with private (VC) funds on a matching basis to bring "smart money" into Hong Kong and boost investment in I&T start-ups.

Last year and 2017 saw milestones in the construction of Hong Kong's I&T ecosystem. Investment in start-ups surged and the entrepreneurial ecosystem began to thrive. Business-funded R&D expenditure reached HKD10,640 million in 2017, up 10.4 percent from 2016 and 43.5 percent from 2013. Meanwhile, government sector R&D expenditure was HKD1,031 million, up 12.8 percent and 68.8 percent from 2016 and 2013. In 2018, the number of start-ups in Hong Kong rose 18 percent from the previous year to 2,625, with a 51 percent surge in total employment to over 9,500 people. Business engagement in incubation and acceleration projects also increased between 2017 and 2018. More funding and benefits were provided to further implement I&T policy, which alleviated some of the pressure on start-ups from high rents and access to talent.

Aside from government policy support, business incubators and accelerators are also essential catalysts for the Hong Kong start-up ecosystem. Nearly half of student entrepreneurs said business incubators and accelerators provide effective support for start-ups, with 5 percent strongly agreeing and 43 percent somewhat agreeing with the statement. In contrast, 15 percent somewhat disagreed that business incubators and accelerators play an effective role in helping start-ups, with 3 percent strongly disagreeing.

3. Census and Statistics Department, Hong Kong Special Administrative Region
4. ibid
5. HKTDC Research
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Student entrepreneurs’ views on whether business incubators and accelerators provide effective support for start-ups

![Chart showing student entrepreneurs' views on business incubators and accelerators](chart)

Source: Deloitte Research

In 2018, the Hong Kong Government offered more tax deductions for qualifying R&D expenditure incurred by local companies, benefiting eligible companies’ R&D efforts over two years. In May 2018, the Ministry of Science and Technology and Ministry of Finance allowed universities and research institutions in Hong Kong to bid for science and technology funding from the Chinese central government that can be spent in Hong Kong.

Hong Kong’s I&T sector is set to receive a substantial boost when the detailed blueprint for the GBA is revealed. To seize unprecedented opportunities for Hong Kong, the government lifted its I&T sector budget to more than HKD50 billion for 2018/19, while introducing tax deductions and exemptions to accelerate the growth of innovative and creative industries.

More than HKD100 billion has been allocated to promoting the development of I&T in Hong Kong. In the Chief Executive’s latest Policy Address, several measures were announced to support a vibrant start-up ecosystem and attract more global talent to Hong Kong, with a HKD5.5 billion investment in Cyberport and HKD3 billion for Hong Kong Science & Technology Park (HKSTP). Hong Kong will also invest USD2 billion to encourage re-industrialization, with scientific and technological innovation at its core, and leverage Hong Kong’s advantages in creative design, scientific and educational resources, and its international business environment, to better integrate into the GBA.
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R&D investment and innovation capabilities
Hong Kong R&D investment goes mostly to higher education and research institutions. The low level of R&D investment in business and industry has consequences for long-term economic growth and impedes the development of innovation.

Innovation expenditure has been resilient in the face of global economic uncertainty. In 2017, global government expenditure on R&D grew by about 5 percent, while business R&D expenditure rose 6.7 percent.

Hong Kong has strong R&D capability through its world-class universities. Its overall R&D expenditure, however, accounts for a relatively small proportion of the GDP. Hong Kong remains weaker than Singapore, the Chinese Mainland and OECD countries in R&D expenditure, and this needs to be strengthened.

Albert Wong
CEO of Hong Kong Science and Technology Parks Corporation

"Hong Kong is presented with unprecedented opportunities in innovation and technology through consolidated support from the government, industry, academia and research institutions. By capitalizing on our solid R&D foundations, world-class talent and infrastructure, Hong Kong is poised to evolve into a dynamic international I&T hub. Hong Kong Science and Technology Parks Corporation will continue to boost our value-added services for tech companies and start-ups and provide comprehensive support throughout their innovation and entrepreneurship journey from ideation to commercialization.”
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R&D expenditure as a percentage of GDP (2017)

Hong Kong’s total R&D expenditure has risen in the past five years. Recognizing the pivotal role of R&D in Hong Kong’s economic development, R&D investment has been increased gradually since 2011. As of 2017, Hong Kong spends 0.8 percent of GDP on R&D.

Hong Kong R&D expenditure by sector
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Additionally, R&D expenditure in higher education accounts for a higher proportion of GDP than business and public sector spending do. The government’s underperformance in public sector R&D investment is stark. Spending on higher education has increased sharply since 2014 as the TSSSU policy became embedded. However, a lack of R&D investment in business and industrial sectors not only decelerates company’s technological innovation, but also impedes Hong Kong’s long-term economic growth.

Hong Kong’s R&D environment has two characteristics. First, its world-class universities have an outstanding number of high quality researchers. These give Hong Kong strong positions in basic research and nurturing industry. Hong Kong is reimagining itself not just as a financial center, but also a research hub in Asia. Hong Kong’s I&T sector, in tandem with Shenzhen, form the Shenzhen-Hong Kong technology cluster, which was ranked as the world’s 2nd largest research hub in the Global Innovation Index 2019.

On the other hand, with its lack of R&D investment and weak industrial cluster, Hong Kong has inferior R&D commercialization. Patents play a prominent role in the entire technology life cycle, from initial R&D and commercialization to final market exploration. Hong Kong has far fewer patent applications than other developed economies do.

For start-ups with core technologies, having complete international trademark strategy and implementation plans is the first consideration when expanding into emerging markets. Correspondingly, comprehensive, effectively enforced Intellectual Property Rights (IPR) legislation is also a prerequisite for starting a business. With more than 60 percent of student entrepreneurs viewing Hong Kong’s IPR legislation positively, and none having outright negative sentiments towards it, Hong Kong’s innovation ecosystem can be seen as well-protected by robust IPR legislation.

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Student entrepreneurs’ views on whether IPR legislation is comprehensive and effectively enforced

Source: Deloitte Research
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Education and human capital

Looking at the education system from multiple dimensions
Hong Kong has a global edge in secondary and higher education. However, its public expenditure on education is less than many OECD countries' and it has long-established score-focused curriculum. There is still an urgent need to improve STEAM education.

Hong Kong has a well-established secondary and higher education system, modelled after the UK’s. However, when it comes to government expenditure and policy, education reform is still low on the political agenda. The Global Innovation Index ranks Hong Kong 96 out of 129 in education. It is criticized for having primary to secondary education that fails to prepare children for the future of work or give them the ability to retain their talent after graduation.

Hong Kong's overall government expenditure on education as a share of economic output lags far behind those of other regions, and the gap is widening rapidly.

Professor Tam Kar Yan
Dean of HKUST Business School

“The innovation and technology industry will provide new impetus for Hong Kong. As a bridge between the Chinese Mainland and the rest of the world, there are plenty of new opportunities for Hong Kong, especially with innovation-driven development in the GBA. Deloitte’s Hong Kong Technology Fast Program is not only able to foster a culture of innovation and entrepreneurship, but also exhibits the strong global connectivity of Hong Kong in its digital transformation journey.”
Government expenditure on education as a percentage of GDP (2017)

Source: The World Bank, Deloitte Research

Education spending as a percentage of government expenditure (2017)

Source: The World Bank, Deloitte Research
In recent years, Hong Kong’s government expenditure on education as a percentage of total government expenditure has dropped further, from 20.3 percent in 2013 to 18.8 percent in 2018. Despite this, education still ranks highly in education spending as a share of total government expenditure compared to OECD countries. Indeed, in the Hong Kong Government’s 2019/20 budget, recurrent expenditure on education was set at HKD90.6 billion, equivalent to 20.5 percent of total recurrent expenditure and more than any other policy area.

Education is a major resource for knowledge sharing and establishing a high quality talent pool. Hong Kong’s ability to harness secondary education to support more advanced academic research and scientific experimentation must become a core capability if it is to provide a competitive advantage in equipping younger generations with innovative knowledge for the future.

Hong Kong has a well-structured secondary education system that focuses on science and mathematics. In the 2015 Programme for International Student Entrepreneur Assessment (PISA), Hong Kong student entrepreneurs came 10th in science and 2nd in mathematics. Nevertheless, education output cannot be simply measured by PISA scores. Societies in Asia generally achieve high scores because most curriculums are exam-oriented.

### 2015 PISA Science ranking

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Rank</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>1</td>
<td>556</td>
</tr>
<tr>
<td>Japan</td>
<td>2</td>
<td>538</td>
</tr>
<tr>
<td>Estonia</td>
<td>3</td>
<td>534</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>4</td>
<td>532</td>
</tr>
<tr>
<td>Finland</td>
<td>5</td>
<td>531</td>
</tr>
<tr>
<td>United States: Massachusetts</td>
<td>6</td>
<td>529</td>
</tr>
<tr>
<td>Macao (China)</td>
<td>7</td>
<td>529</td>
</tr>
<tr>
<td>Canada</td>
<td>8</td>
<td>528</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>9</td>
<td>525</td>
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<tr>
<td><strong>Hong Kong (China)</strong></td>
<td><strong>10</strong></td>
<td><strong>523</strong></td>
</tr>
</tbody>
</table>

Source: OECD, Deloitte Research
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2015 PISA Mathematics ranking

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Rank</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>1</td>
<td>564</td>
</tr>
<tr>
<td><strong>Hong Kong (China)</strong></td>
<td>2</td>
<td>548</td>
</tr>
<tr>
<td>Macao (China)</td>
<td>3</td>
<td>544</td>
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<tr>
<td>Chinese Taipei</td>
<td>4</td>
<td>542</td>
</tr>
<tr>
<td>Japan</td>
<td>5</td>
<td>532</td>
</tr>
<tr>
<td>B-S-J-G (China)</td>
<td>6</td>
<td>531</td>
</tr>
<tr>
<td>Korea</td>
<td>7</td>
<td>524</td>
</tr>
<tr>
<td>Belgium: Flemish Community</td>
<td>8</td>
<td>521</td>
</tr>
<tr>
<td>Switzerland</td>
<td>9</td>
<td>521</td>
</tr>
<tr>
<td>Estonia</td>
<td>10</td>
<td>520</td>
</tr>
</tbody>
</table>

Source: OECD, Deloitte Research

In the past decade, the government has introduced new education measures, including the promotion of integrated education, information technology education, and the Hong Kong Diploma of Secondary Education curriculum. In 2019, the government committed HKD500 million to implement the IT Innovation Lab in Secondary Schools Program for the coming three school years. This new policy will equip student entrepreneurs with more IT-relevant extra-curricular activities to deepen their knowledge and stimulate their passion for science and technology.

To maintain these advantages and motivate more student entrepreneurs to engage in emerging technologies and scientific research, this study suggests more could be done to promote the development of Science, Technology, Engineering and Applied Mathematics (STEAM) in Hong Kong. Only about a third of student entrepreneurs said there is sufficient support in this area, with 30 percent somewhat agreeing and 3 percent strongly agreeing. Eighteen percent somewhat disagreed that government support for STEM development is sufficient, 5 percent strongly disagreed with the statement and nearly half were neutral (33 percent) or unsure (13 percent).

"Parents' expectations and the high cost of living tend to drive student entrepreneurs towards professions with a perceived source of income such as banking or medicine," notes a founder of an AI start-up. "More should be done to promote the development and cultivation of STEM talent in Hong Kong."

The Interviewee also suggests STEM education should be included in middle school curriculums, and more entrepreneurs should be introduced to the public through the media.
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Student entrepreneurs’ views on whether Hong Kong Government provides sufficient support to drive STEM development

<table>
<thead>
<tr>
<th>Response Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>3%</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>30%</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>18%</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5%</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>33%</td>
</tr>
<tr>
<td>Unsure</td>
<td>13%</td>
</tr>
</tbody>
</table>

Source: Deloitte Research

Hong Kong’s universities and colleges offer adequate training and courses for entrepreneurship, but not many students make full use of these resources.

The role of knowledge in transforming post-industrial society and relaunching economic progress has given tertiary education a preeminent position. In new roles, universities are orchestrating innovation processes and mobilizing entrepreneurship.

Hong Kong enjoys a worldwide reputation for tertiary education. In the QS World University Rankings, it has five of the world’s top 100 universities, and three in the top 50.7

In science and engineering, the academic achievements of Hong Kong universities are outstanding. In subjects like computer science & information systems, mathematics, and electrical & electronic engineering, Hong Kong’s universities rank in the world’s Top 30.

**Hong Kong university rankings (2017-2019)**

<table>
<thead>
<tr>
<th>Year</th>
<th>HKU</th>
<th>HKUST</th>
<th>CUHK</th>
<th>CityU</th>
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</thead>
<tbody>
<tr>
<td>2017</td>
<td>27</td>
<td>36</td>
<td>44</td>
<td>55</td>
</tr>
<tr>
<td>2018</td>
<td>26</td>
<td>30</td>
<td>46</td>
<td>49</td>
</tr>
<tr>
<td>2019</td>
<td>25</td>
<td>37</td>
<td>49</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: QS World University Ranking, Deloitte Research

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### Hong Kong universities with top-150 rankings by subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>HKUST</th>
<th>HKU</th>
<th>CUHK</th>
<th>City U</th>
<th>Poly U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical &amp; Electronic Engineering</td>
<td></td>
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<tr>
<td>Computer Science &amp; Information System</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Engineering Chemical</td>
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<tr>
<td>Chemistry</td>
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<tr>
<td>Medicine</td>
<td></td>
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<td></td>
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<tr>
<td>Physics &amp; Astronomy</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

![Table Legend](image)

Source: QS World University Ranking by Subject 2019

The commercialization of research and technology in colleges and universities is inseparable from entrepreneurship education and talent training. Most student entrepreneurs are satisfied with the entrepreneurship courses they have access to, with 10 percent strongly agreeing those offered by colleges and universities are sufficient and 60 percent somewhat agreeing. However, 15 percent of student entrepreneurs disagree with the statement, with 10 percent somewhat disagreeing and 5 percent strongly disagreeing. Tertiary education providers still need to consider how to improve the quantity and quality of entrepreneurship courses and increase student entrepreneurs' participation and satisfaction.

Parts of the survey on undergraduate and graduate innovation/entrepreneurship courses suggest Hong Kong's education system is giving student entrepreneurs more guidance on how to start businesses. More student entrepreneurs than established ones study such programs and are taking related courses. Eleven percent of entrepreneurs regret that their colleges did not offer entrepreneurship courses, whereas all the student entrepreneurs said such courses are readily accessible.
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Student entrepreneurs’ views on whether colleges and universities have enough entrepreneurship courses and programs

![Bar chart showing student entrepreneurs' views on entrepreneurship courses and programs](chart1.png)

Source: Deloitte Research

Participant rate in entrepreneurship-related courses and programs

![Bar chart showing participant rate in entrepreneurship courses and programs](chart2.png)

Source: Deloitte Research
A deeper look at this difference demonstrates a positive trend towards the education system shaping an entrepreneurial mind-set among the young people. It also shows younger generations in Hong Kong are now more enthusiastic about taking entrepreneurship courses.

However, there is still a shortfall in access to entrepreneurial guidance at college. Sixty percent of student and established entrepreneurs have or had no on-campus entrepreneurship education.

To address this issue, Cyberport, a leading government-funded incubator in Hong Kong, introduced the Cyberport University Partnership Programme. This offers local student entrepreneurs a chance to receive intensive entrepreneurship and fintech training in Hong Kong or at renowned international universities. It has received an overwhelming response in recent years. Cyberport also provides advanced technology infrastructure, runs internship programs for ICT student entrepreneurs and incubation programs for new start-ups, as well as facilitates synergy and partnerships within the ICT industry.

Student entrepreneurs have a broadly similar view on how efficiently new technology, science, and knowledge help start-ups grow, with 38 percent agreeing these resources are transferred efficiently from universities and public research centers to start-ups, although about the same number believe otherwise.

### Student entrepreneurs’ views on whether frontier resources are transferred efficiently to start-ups

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>35%</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>3%</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>13%</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>8%</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>33%</td>
</tr>
<tr>
<td>Unsure</td>
<td>10%</td>
</tr>
</tbody>
</table>

Source: Deloitte Research
I&T talent pool and immigration policies
Hong Kong has actively reformed talent-oriented immigration policies. However, its science and technology talent outflow continues due to a lack of local technology companies and increasing competition from neighboring cities.

Human capital is an essential resource in creating an I&T ecosystem. Apart from financial services and professional services, the growth rate of employment in other traditional industries in Hong Kong is slowing. In contrast, total employment in Hong Kong’s I&T sector has been increasing steadily.

However, Hong Kong has a relatively small proportion of scientific and technological talent. In 2017 the number of I&T employees in Hong Kong was equivalent to only about 5 percent of those in trade and logistics.

The growth rate of I&T employment fluctuates, partially due to government policies and Innovation and Technology Fund (ITF) allocation. The emergence of new policies and renewal of old ones can impact the job market.

Gary Yeung
President of the Smart City Consortium

"Smart City development is a gigantic project requiring substantial resources. Apart from the government’s leading role, community involvement is also essential. SCC has been actively building an effective communication network with the academic and business sectors, industry specialists, non-profit groups and organizations. On the academic front, we have built the Smart City Academy in collaboration with local universities to develop courses on technology-related topics and help train more talent."
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Employment number and growth rate by industry

According to the Global Competitiveness Report released by the World Economic Forum in 2019, Hong Kong ranks 3rd among 141 economies in global competitiveness across 103 metrics.

The human factor is the most important link in value creation. However, among all indicators, the availability of scientists and engineers—an important measure of a market’s science and technology level—is a weak link in Hong Kong’s innovation ecosystem. Hong Kong ranks 23rd in availability of scientists and engineers globally.

Despite Hong Kong having many 1st-class universities that have established themselves in innovation and technology, a brain drain of fresh graduate researchers and scientists is becoming increasingly serious. Singapore and Shenzhen attract more scientists and engineers than Hong Kong does. Attracting foreign talent is another hurdle to the development of Hong Kong’s I&T environment. Hong Kong ranks 54th out of 140 in ease of hiring foreign labor.

Developing a well-structured innovation ecosystem depends on the development and renewal of Hong Kong’s talent pool. The Hong Kong Government is aware of the shortcomings of current policies. To attract more tech talent from the Chinese Mainland and facilitate internal transfer and inter-connection, the Hong Kong Government launched the Admission Scheme for Mainland Talent and Professionals, with 120,238 mainland workers admitted since its implementation.

Source: Hong Kong Census and Statistics Department, Deloitte Research
In June 2018, Hong Kong launched a new immigration program, the Technology Talent Admission Scheme, aiming to attract more STEM professionals through a streamlined procedure. This shortened application times and eased procedures for hiring overseas and Chinese Mainland R&D talent. With a quota of up to 100 people per company, the policy requires that local companies recruit a corresponding number of local staff to support the employment market. The new scheme has granted 292 quotas so far, with 86 people granted working visas. Its impact on Hong Kong’s scientific and technological talent is yet to be seen.

### Hong Kong talent admission and immigration policies

<table>
<thead>
<tr>
<th>Policy type</th>
<th>Special requirement</th>
<th>Number admitted</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Employment Policy (GEP)</td>
<td>A confirmed offer of employment and the remuneration package must be broadly commensurate with the prevailing market rate of Hong Kong</td>
<td>41,592 (in 2018)</td>
<td></td>
</tr>
<tr>
<td>The Admission Scheme for Mainland Talents and Professionals</td>
<td>A confirmed offer of employment and a remuneration package broadly commensurate with the prevailing market rate in Hong Kong</td>
<td>120,238 (end-2018)</td>
<td></td>
</tr>
<tr>
<td>The Technology Talent Admission Scheme</td>
<td>An admission quota up to 100 people a year from each successful applicant</td>
<td></td>
<td>86 (Oct. 2019)</td>
</tr>
<tr>
<td></td>
<td>A sponsoring companies must employ an equal number of locals—one must be a full-time employee and the other two should be interns engaged in related technology work. Each sponsoring company needs to report its progress in fulfilling local talent employment requirement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Quality Migrant Admission Scheme</td>
<td>General Points Test (GPT) for highly skilled or talented people</td>
<td>4,544 (end-2018)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Achievement-based Points Test (APT) for talent with outstanding achievements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Hong Kong Immigration Department, Deloitte Research

On the other hand, as an international city, Hong Kong remains an attractive destination for foreign talent. About 35 percent of its start-ups were founded by non-locals. In addition, some foreign companies attracted by the Chinese market prefer being in Hong Kong as it can be easier to adapt to and avoid culture shock and language difficulties.

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8. 2016 start-up survey by InvestHK
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Public and private funding

Hong Kong’s government funding and VC investment hit record highs in 2018. However, the siphon effect of the Chinese Mainland I&T sector puts pressure on Hong Kong’s PE/VC market. Hong Kong needs to continue to foster collaboration across governments and with other key stakeholders to back innovative start-ups.

Hong Kong’s VC investment hit a record high of USD2.07 billion in 2018, continuing a three-year trend of rapid growth. Due to robust deal making in tech and logistics, and the government’s HKD2 billion Innovation & Technology Venture Fund (ITF), Hong Kong is set for a funding boom. In 2018, the number of start-ups was up 18 percent from the previous year, and new jobs created rose 51 percent.

In a question on access to capital, surprisingly nearly 40 percent of entrepreneurs said private savings, including their own money and support from family or friends, is the main source of funding for their start-ups. VC is the second mainstream funding source, accounting for 34 percent of entrepreneurs surveyed. Use of other formal funding sources fluctuates around 20 percent—business angels (24 percent), bank loans (22 percent), PE (21 percent) and government funding (21 percent). This gap could be partially explained by a lack of access to formal funding sources, high eligibility requirements for investment, as well as time-expensive and complicated application processes.

Lukas Petrikas
Co-Head of HKEX Innovation Lab

“HKEX is actively deploying solutions in automation, AI, blockchain, cloud computing and knowledge networks across our entire business. We have been working successfully with start-ups and technology giants alike to bring real ideas into production. The HKEX Innovation Lab offers an active conduit for technology companies interested in working with HKEX to build the capital markets of tomorrow, and we hope to see many more Hong Kong technology companies join us in ‘Connecting China, Connecting the World.’”
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Hong Kong start-ups’ funding sources

<table>
<thead>
<tr>
<th>Source: Deloitte Research</th>
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</table>

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private saving and family/friends support</td>
<td>38%</td>
</tr>
<tr>
<td>Venture capital</td>
<td>34%</td>
</tr>
<tr>
<td>Angel investing</td>
<td>24%</td>
</tr>
<tr>
<td>Bank loan</td>
<td>22%</td>
</tr>
<tr>
<td>Private equity</td>
<td>21%</td>
</tr>
<tr>
<td>Government funding</td>
<td>21%</td>
</tr>
<tr>
<td>Others</td>
<td>7%</td>
</tr>
<tr>
<td>Crowd funding</td>
<td>1%</td>
</tr>
</tbody>
</table>

One HKTF winner elaborates on this issue, “As a level playing field for all businesses, entering a government-funded Science and Technology Park is relatively slow, and the procedure is also complex to go through, which prevents innovative enterprises from accessing funding in a short time.

“Additionally, since the Hong Kong Government has paid more attention to development of the innovation ecosystem, combined with Hong Kong’s limited number of local investors and small market, many projects compete for the same investors, so requirements and thresholds are much higher than before.”

Addressing the fundraising issue, an interviewee from HKTF Program adds, “Most of the banks in Hong Kong are not very generous in granting loans to SMEs, which can hinder development of a business. The complicated loan application process also forces SMEs to turn to venture capital, technology parks or private investors to raise funds.”
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Government funding schemes

Snapshot

Since 2015, the Hong Kong Government has injected more funding, expanded the range of funding types, and introduced more flexible criteria to encourage innovation and technology development.

There are 15 types of government funding for start-ups including:

• **Innovation and Technology Support Program**
  The most common one, supporting R&D projects undertaken by designated local public research institutes and R&D Centres once a year. ITSP focuses on two types of projects – Platform Projects and Seed Projects. Considering all projects in the I&T industry, nearly all technology projects have received this fund both in 2018 and 2019.

• **Enterprise Support Scheme**
  The second most common fund. It is a major funding initiative under the Innovation and Technology Fund, and is designed to encourage the private sector to invest in R&D.

• **Guangdong-Hong Kong Technology Cooperation Funding Program**
  This program also makes up a certain proportion. It aims to enhance the level of collaboration on R&D between Hong Kong and Guangdong/Shenzhen.

• **Midstream Research Programme (MRP)**
  The MRP is a dedicated programme to encourage universities to conduct more midstream research. It also aims to foster more collaborative efforts among local and overseas universities and research institutions.

• **General Support Programme**
  GSP is a programme under the ITF but aimed for non-R&D projects that contribute to the upgrading and development of Hong Kong industries as well as encouraging an innovation and technology culture in Hong Kong.

• **University-Industry Collaboration Programme**
  The University-Industry Collaboration Programme also occupies a position in funding. Since universities are always concentrating on academic rather than commercialization. It is essential for the government to fund those projects to better commercialize the academic results for the benefits of all in the society.

The Technology Support Programme, Research Programme, and Guangdong-Hong Kong Technology Cooperation Funding Scheme are the main government-funding sources under the ITF. By sector, electrics & electronics has received the most funds, followed by information technology. Hong Kong plans to vigorously develop its robotics, IoT technology, and smart city capacity. As one of Hong Kong’s top industries, biotechnology also has a prominent position.
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Innovation and technology funds for approved projects (end-July 2019)

Source: ITF Commission, Deloitte Research

Sector distribution of approved projects (end-July 2019)

Source: ITF Commission, Deloitte Research
Venture Capital and private equity
Although Hong Kong has a unique financial environment and bright outlook for venture capital (VC) investment, increased pressure on the global economy and China-US trade frictions have hurt investor confidence, posing a challenge to capital investment in Hong Kong. The value and volume of VC investments have increased steadily over the past decade, with average deal size rising from USD6.19 million to USD43.25 million between 2015 to 2018. However, private equity (PE) investment has a different profile, in line with the global trend, with higher overall investment and average deal size but fewer deals. Not surprisingly, TMT receives the largest chunk of VC investment.

Average size of VC investments in Hong Kong (2015-2018)

Source: Thomson Reuters, Deloitte Research

Hong Kong VC volume & value

Source: HKVCA Research, Deloitte Research
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Hong Kong PE volume & value

![Graph showing Hong Kong PE volume & value over years with peaks in 2014 and 2016.](source: HKVCA Research, Deloitte Research)

VC investment by sector

![Circle chart showing VC investment by sector with majority in TMT and a smaller portion in others.](source: HKVCA Research, Deloitte Research)

It can be difficult for local small and medium-sized enterprises to raise funds in Hong Kong and elsewhere in Asia Pacific. According to Thomson Reuters data for 2019, as of September 16, Singapore has completed 275 VC deals and the Chinese Mainland has seen a striking 1,743 deals completed.

With increasing business connectivity and cross-border transactions between the Mainland and Hong Kong, the GBA plan encourages Hong Kong PE and VC investments in innovative start-ups, which is expected to bring new impetus and form a benign ecosystem for capital investment in the region. For example, more could be done to open the Hong Kong side of VC/PE investment in high-tech companies, as well as to streamline processes and adjust requirements to allow them to invest more in high-tech start-ups.
Innovation culture and entrepreneurship

Innovation culture and entrepreneurial spirit have been gaining traction among Hong Kong student entrepreneurs. Hong Kong’s innovation culture is unique. At the cultural crossroads between the Chinese Mainland and the West, it combines Chinese diligence and Western spirit.

More than half of student entrepreneurs have seen good opportunities for start-ups in the past five years, with 55 percent somewhat agreeing and 5 percent strongly agreeing Hong Kong has made positive strides in enhancing the innovation and entrepreneurship ecosystem.

Student entrepreneurs’ views on whether opportunities for start-ups have increased considerably in the past five years

There are mixed opinions among student entrepreneurs on whether becoming an entrepreneur is a desirable career path in Hong Kong. More than 40 percent think starting their own business after graduation is an ideal career choice, although 28 percent still do not think this way. The latter number could be partially explained by Hong Kong’s high cost of living, which tends to tilt young people towards professions perceived as stable sources of income.

Source: Deloitte Research
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Cindy Chow
Executive Director of the Alibaba Hong Kong Entrepreneurs Fund

"Entrepreneurship is one of the core values of Alibaba. We believe that entrepreneurship can be applied not only to one’s business venture, but also to one’s life. The boldness of exploring outside of one’s comfort zone and harnessing creativity is the basic ingredient for Hong Kong’s younger generation to keep the city vibrant and competitive. Through a range of initiatives, we aim to create a ‘hero effect’ that will inspire more young people to venture out of their comfort zones and create start-ups or pursue innovative ideas and new technology.

Alibaba is also a huge supporter of Hong Kong, whose start-ups create unique value and bring unique perspectives to some of the most challenging issues organizations face. We are committed to working with government, academia, industry and business here to help the next generation tap their creativity and realize their ambitions. JUMPSTARTER has been running for two years, and in its second run in January this year we gained the support of over 30 corporates and an audience of 10,000. We are honored to have Deloitte to be our global partner again in JUMPSTARTER and be one of the supporting organisations to Technology Fast Program.

We aim to use these platforms to better engage people from all walks of life and encourage them to spend time understanding the value of entrepreneurship. We want Hong Kong to eventually give more support to the younger generation as they venture out from the more traditional path that our society previously adopted."

Student entrepreneurs’ views on whether becoming an entrepreneur is desirable for most people in Hong Kong

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>38%</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>13%</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>15%</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>23%</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>8%</td>
</tr>
<tr>
<td>Unsure</td>
<td>5%</td>
</tr>
</tbody>
</table>

Source: Deloitte Research
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Almost 30 percent of student entrepreneurs have plans to start their own businesses in the next three years, and 35 percent rank Hong Kong as the ideal location for start-ups, reflecting their perceived vitality of the entrepreneurial environment in Hong Kong. Other countries in Asia are also popular, accounting for 20 percent of student entrepreneurs polled. The GBA ranks 3rd, with 18 percent of student entrepreneurs considering it a preferred destination to start a business due to its open business environment and potential opportunities. This highlights the perceived significance of the GBA to younger generations’ future entrepreneurship and business development.

Bong Chan
TMT Industry Leader of Deloitte Southern China

“Through initiatives like Alibaba JUMPSTARTER and Deloitte Technology Fast, we are committed to supporting the growth of entrepreneurs, as well as the wider technology and innovation landscape, here in Hong Kong. There is a huge amount of talent here, and Technology Fast recognition, as well as high impact networking opportunities such as those provided through Jumpstarter and Technology Fast, are empowering for aspiring and established entrepreneurs.

Deloitte and the Alibaba Entrepreneurs Fund share another mission—to energize the start-up ecosystem. We want more people, particularly from younger generations, to see establishing a start-up as an attractive career path, because innovative thinking is going to be key to addressing the challenges businesses, industry and society face.

Hong Kong companies have a tremendous capacity to generate brilliant, problem solving ideas, and we look forward to continuing to support them as they make these concepts a commercial reality. As Hong Kong continues to strives to break through the traditional industries, we all have a role in shaping, cultivating and driving potential – locally, regionally and globally – fuelled by technology and innovation.”
Do student entrepreneurs’ plan to start their own businesses in the next three years?

Source: Deloitte Research

Student entrepreneurs’ top-ranked places to start a business

Source: Deloitte Research
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Most student entrepreneurs have a positive attitude towards the contribution of physical infrastructure to start-ups in Hong Kong, with 18 percent strongly agreeing that it does contribute, 48 percent somewhat agreeing and less than 10 percent disagreeing.

Hong Kong has top-notch commercial infrastructure, a convenient public transport network and sound utilities and network coverage. Meanwhile, the development of the GBA has facilitated and optimized the connectivity of public infrastructure, enabling start-ups to take full advantage of various opportunities in the region.

With an increasing number of preferential policies, Hong Kong technology talent is actively entering the GBA and the Chinese Mainland job markets. Several universities in Hong Kong have set up branches in Shenzhen and Guangzhou. The participation of Hong Kong’s young people in the GBA will bring new energy to Hong Kong’s innovation culture.

Student entrepreneurs’ views on whether Hong Kong’s physical infrastructure provides good support for start-ups

![Bar chart showing the percentage of student entrepreneurs' views on the support of Hong Kong's physical infrastructure for start-ups.]

Source: Deloitte Research
The way forward
Empowering Hong Kong’s economy through innovation

The GBA: Opportunities or competition?

The survey found Hong Kong entrepreneurs are optimistic about prospects for Hong Kong’s innovation environment in the next three years, with 76 percent of respondents saying it will improve.

What will happen to Hong Kong’s innovation environment in the next three years?

![Bar chart showing the percentage of respondents for different outcomes.](chart)

**Source:** Deloitte Research

The GBA offers great potential for Hong Kong. The findings show a positive outlook for the acceleration of the GBA, and for its benefits for Hong Kong’s innovation ecosystem. It also highlights the major opportunities for tech innovation. Fifty-two percent of respondents believe GBA development will further open up the Chinese Mainland market and improve market penetration, viewing this as the most important opportunity.

Hong Kong’s government-funded science parks are first in line when it comes to feeling the effects of the development of the GBA. According to Cyberport, "As a city that has always been a bridge between the East and the West, and a connector to opportunities and resources, Hong Kong can attract innovation and technology companies from neighboring cities in Guangdong to use Hong Kong as a springboard to access overseas markets. Meanwhile, Cyberport can also offer a platform for overseas innovators to use Hong Kong to access the GBA or Greater China markets."

Attracting more technological and academic talent is another major benefit of the GBA development plan, according to 46 percent of respondents. The respondent from the smart manufacturing start-up agrees that GBA development can promote talent circulation between Hong Kong and the Chinese Mainland and solve issues around tax and commuting.

Furthermore, leveraging the GBA’s manufacturing and sharing R&D resources across the region are also seen as providing new opportunities for Hong Kong entrepreneurs and student entrepreneurs and being beneficial to the innovation ecosystem.
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Respondents’ views on which areas of the Hong Kong innovation ecosystem GBA development will help improve

<table>
<thead>
<tr>
<th>Area</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. I do not see the opportunities for Hong Kong.</td>
<td>13%</td>
</tr>
<tr>
<td>Share R&amp;D resources in the region</td>
<td>36%</td>
</tr>
<tr>
<td>Further open up the mainland market/improved market penetration</td>
<td>52%</td>
</tr>
<tr>
<td>Attract most technological and academic talents/flow of talents</td>
<td>46%</td>
</tr>
<tr>
<td>Support the development of Hong Kong as a regional innovation center</td>
<td>15%</td>
</tr>
<tr>
<td>Speed up the progress of new technology adoption</td>
<td>22%</td>
</tr>
<tr>
<td>Leverage the manufacturing advantages in GBA</td>
<td>25%</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

All respondents

Source: Deloitte Research

Bringing I&T talent to Hong Kong is becoming easier under GBA policies. 55 percent of respondents believe the GBA provides a more convenient environment for talent to enter and exit, work and reside, and 38 percent point to the collaboration of universities in the region.

Many entrepreneurs agree that GBA development will attract diverse tech talent and enrich Hong Kong’s talent pool. As the AI start-up founder elaborates, “Fewer than 60,000 people in Hong Kong are engaged in the IT industry, and only about 20,000 are devoted to boosting R&D capabilities. With the help of the GBA, more flexible policies will be introduced to better attract and retain tech talent, and the tech talent gap in Hong Kong can be reduced.”

Multi-channel applications for Mainland/foreign talent to apply for permanent residency in Hong Kong is another major incentive, according to 27 percent of respondents. An entrepreneur at an auto-driving start-up points out deficiencies in the existing talent system, “Hong Kong’s talent system is a British-based system featuring complicated processes and demanding requirements for obtaining a work permit or residency, which discourages many potential talents.”

To address this issue, the GBA Outline Development Plan also aims to facilitate the free flow of technology specialists and academics. Its provisions will give Hong Kong-based tech companies easy access to Shenzhen’s open talent system as well as a convenient and flexible recruitment system.

Local universities are seizing the opportunity to establish GBA education collaborations.

“Talent development is another area where we see growth potential. Demand for international education will remain strong,” says HKUST Business School Dean, Professor Tam Kar Yan. “Higher education in Hong Kong can play a major role in nurturing new talent for future cross-border collaboration. The new HKUST Guangzhou Campus is precisely positioned for such endeavors.”
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Respondents’ views on whether GBA development will help bring more tech talent to Hong Kong

Furthermore, GBA policies could enable businesses to build R&D capabilities and further boost Hong Kong’s R&D environment. A significant 42 percent of respondents view reinforcing cooperation on scientific and technological innovation as the most beneficial policy for Hong Kong’s R&D environment. Thirty-eight percent recognize the GBA’s potential to help Hong Kong develop into a financing center for high tech industry. The transformation of frontier resources, and construction of R&D centers and infrastructure, are also expected to benefit from GBA measures and enhance Hong Kong’s R&D environment.

A high proportion of China’s advanced technology and talent are in Shenzhen and Guangzhou. Hong Kong companies including start-ups will be able to tap into the GBA talent pool to advance their digital transformations and business development. At the same time, Hong Kong can help export world-leading technology to countries along the Digital Silk Road.
Respondents’ views on whether GBA policies will improve Hong Kong’s R&D environment

Having said the above, there were also respondents who doubt the GBA will benefit Hong Kong’s R&D environment. These concerns show in student entrepreneurs’ and established entrepreneurs’ responses, with about a fifth of respondents holding a pessimistic view on the GBA’s influence. Concerns have been raised that Hong Kong’s neighboring city, Shenzhen, which was recently given special, model city status by Beijing, could be a strong competitor with further implementation of the GBA.

Thirty-six support measures, covering everything from internships and employment to early stage start-ups and enterprise development, have been released by the Shenzhen Qianhai Special Economic Zone to woo the best young talent from Hong Kong and Macau. Shenzhen has also pledged to extend tax breaks to top overseas talent, granting them the same 15 percent personal income tax rate as in Hong Kong. Judging from the inflow and outflow ratios of high-end and digital talent, Shenzhen’s aggressive immigration and talent policies have had a profound impact on its talent pool. Among the eight cities in the GBA, Hong Kong ranked 5th in attracting digital talent, below even Huizhou and Macao.
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Inflow/outflow of high-end and digital talent across major GBA cities

Nevertheless, the GBA’s success lies more in cooperation than competition. The 11 core cities, which account for about 12 percent of Chinese Mainland GDP, have their own strengths and challenges. Cities must set aside their differences in ideology, policy and level of economic development to seize the benefits of the GBA. Hong Kong’s advantages include abundant R&D resources, outstanding colleges and universities, key state laboratories and start-up incubators. Hong Kong is fast becoming a center of R&D, connecting with the intelligent manufacturing industry in the Pearl River Delta region and developing intelligent industry and world-class science and technology in the GBA. Platforms including alliances between universities and research institutions will be established to speed up the progress of new technology from research to application.

Major GBA cities complement each other in AI industrial ecosystem development

Guangzhou
- Solid R&D and manufacturing foundations
- Strong resource capability in resource aggregation (policy, funding, enterprises)

Shenzhen
- Core AI enterprises and numerous start-ups
- Strong R&D capability
- Various scenarios for applications

Hong Kong
- Higher education resources and advantages in basic scientific research
- Attractive to international talent
- Policy support from central and local governments

Dongguan
- Solid manufacturing foundations with huge potential for integrated development

Foshan
- Home to the Guangdong Intelligent Manufacturing Innovation Demonstration Park

Source: Digital Economy and Talent Development in the Guangdong-Hong Kong-Macao GBA, Deloitte Research
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Stan Tang
President of the Guangdong-Hong Kong-Macao-Bay Area Economic And Trade Association, Founding President of Dongguan-Hong Kong Bay Area Association

Innovation is core to Greater Bay Area development
Looking at and drawing inspiration from the Guangdong-Hong Kong-Macau Greater Bay Area, we understand better than ever the significance of innovation for its development.

Innovation means the transformation or creation of a product or a method by introducing an unconventional approach, based on an existing model and with existing resources. Since China’s economic reform, Hong Kong has had years of experience cooperating with parties within the Pearl River Delta economic zone on the economy and people's livelihoods. Our next step is to contemplate the positioning of Hong Kong amid the rise of China’s economy.

Innovation is the key word in the development plan for the Greater Bay Area: Hong Kong is responsible for promoting the development of professional services and innovation and technology; Guangzhou should establish itself as an international technology and innovation hub; Shenzhen has a mission to build global technology and industrial innovation centers, creating an eco-innovation supply chain; and Zhuhai is to become an interchange for international innovation resources entering the Chinese Mainland.

As the essential responsibilities of cities in the Greater Bay Area have been allocated, and integration and coordination of government, industry, academia and research sectors have been facilitated. It is time for us to come up with strategies to leverage the advantages of all parties and create synergy. For instance, how to leverage Hong Kong’s strength in financing to expand the industry scale of GBA cities exponentially; and how to enable the top-level industry chain of Mainland cities to materialize innovative ideas and create economies of scale.

Participation in the development of the Greater Bay Area has two aspects: First, neighboring areas should actively enhance measures to facilitate the coordination of resources, markets, logistics and finance. Second, entrepreneurs and investors in the Greater Bay Area should strive to break new ground through bold exploration and innovative efforts.
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Recommendations for Hong Kong's innovation ecosystem

Reinventing the path from lab to market: government should establish more commercialization platforms for university R&D results.

Hong Kong’s innovation ecosystem has a notable gap to R&D commercialization. Its high quality R&D resources and researchers contrast sharply with its low number of patent applications. As technology innovations emerge, commercial production can be accelerated by strategies that help the public R&D sector better understand market and stakeholder needs, as well as apply highly credible, integrated research approaches to close the research to commercialization divide.

There are several critical components in R&D commercialization. One of the challenges is bridging the “Valley of Death” for technology innovation and development. In response, Technology Transfer Centers (TTCs) explore commercialization opportunities with industry partners and technology start-ups. The TTC at HKUST, which links the research and business communities, is a good example. It helps identify collaboration opportunities in local, regional and international markets based on HKUST’s research strengths. Government and universities need to consider how they can better use TTC resources to succeed in bringing new technologies to market.

Re-diversify the talent pool: administrative and financial barriers to talent acquisition should be further lowered to better leverage GBA resources.

Hong Kong faces strong competition for talent from technology giants and Chinese Mainland cities. With further advances in the talent programs of Shenzhen, Guangzhou and other GBA cities, Hong Kong’s talent policy schemes will not compete in strength or in quantity. The government’s top priority should be finding ways to attract talent by eliminating cumbersome administration, changing the quota system and hiring criteria, solving issues with permanent residence status, and increasing financial incentives.
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Re-kindle entrepreneurship: inspire young people to venture out of their comfort zones and create start-ups or pursue innovative ideas and new technology through the hero effect.

As Hong Kong continues to strive to break through traditional industries, all stakeholders have a role in shaping, cultivating and driving potential—locally, regionally and globally—fueled by technology and innovation. Government, academia, industry and business should work together to help the next generation tap their creativity and realize their ambitions. Hong Kong has to give more direct support to rising stars as they venture out from the more traditional paths society has adopted. The hero effect of success stories will inspire more young people to venture out of their comfort zones and create start-ups or pursue innovative ideas and new technology.

Reactivate the funding environment: Government funding should be an explorer and pathfinder, paving the way for private investment.

The number of start-ups has grown at a double digit rate, with increasing support from incubators and government funding, but early-stage VE investing has not yet caught up. The Chinese Mainland has become the second largest VC market and continues to draw more attention from leading VC/PE funds, whereas money in Hong Kong tends to flow into the secondary market. Early stage investment, from seed and angel stages to Round A and B, is considered high-risk. Local investors are more risk-averse than their counterparts in the US and Chinese Mainland. Government funding and incubators are helpful during seed and angel rounds, but when a start-up enters the next growth stage, they tend to seek investment outside Hong Kong. Growing start-ups will consider moving to places with more mature VC/PE environments.
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Hong Kong’s Innovation and Technology Venture Fund (ITVF), which sought to stimulate private investment in local I&T start-ups, closed in October 2019, having completed just three projects with its co-investment partners. The government should step in to pave the way for subsequent investment by setting up more efficient, effective co-investing schemes.

Rebalance resources in the GBA: Government and the business community should see the GBA as an opportunity to achieve synergy with the Chinese Mainland.

Hong Kong’s legal and institutional advantages, and geographical proximity, give it a unique position in the GBA and in relation to the Chinese Mainland.

As a bridge between China and the rest of the world, there are plenty of new opportunities for Hong Kong to capitalize on its position, especially the GBA. To realize these opportunities, Hong Kong needs to maintain its global perspective and foster a stronger culture of innovation and entrepreneurship. The Chinese Mainland has a competitive edge in manufacturing, logistics and market size. The advantages in different cities of the GBA should complement one other to create synergy.
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Government expenditure on education, total (percent of government expenditure) https://data.worldbank.org/indicator/SE.XPD.TOTL.GB.ZS


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Public and Private Funding


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<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Tel</th>
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<td>+86 10 8520 7788</td>
<td>+86 10 6508 8781</td>
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