Amidst ever present challenges, opportunities remain to create business and economic value
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Chairman’s message
These are interesting times for China and the world. Rising pessimism around growth prospects, protectionist and populist sentiments are causes for concern for business leaders. Although China’s 6.6% growth rate in 2018 is a very high rate among the world’s major economies, China is facing economic headwinds with a slowing GDP growth rate, deleveraging measures and a trade war spanning a few months. Despite these uncertainties, China’s quest for continuing economic transformation and its focus on science and technology driven innovation has not been dampened. In 2018 at the 40th anniversary of its opening up, China announced further market liberalisation measures to drive and encourage investment in innovation, science and technology. This has raised intense interest from investors to participate in this once-closed market.

Meanwhile, Hong Kong’s annual GDP growth has decelerated to 3% in 2018 from 3.8% in 2017. Hong Kong’s economy will continue to face headwinds. Hong Kong has been instrumental to the development of Mainland China’s capital market and, going forward, Hong Kong will strategically leverage its strengths to capture the opportunities arising from Mainland China, for example, through participation in the Greater Bay Area initiative. Given Hong Kong is closely connected with Mainland China’s economy, the diverse economic structure and policy frameworks between the two countries, presents different challenges for the private sector in Hong Kong thereby resulting in varying market sentiments between executives in Hong Kong and China.

During this complicated environment in 2018, PwC conducted its 22nd Annual Global CEO Survey. The survey results revealed that despite concerns about protectionism and trade conflicts, executives in China were reliant on their own growing capabilities, focused on capitalising opportunities in the domestic market and invested in data and AI to capture economic and productivity benefits. The results also uncovered that a higher proportion of executives in Mainland China were more optimistic about global economic growth prospects in the next 12 months than their global and Hong Kong counterparts. A higher proportion of Mainland Chinese executives were also “very confident” in terms of revenue growth prospects in the next 3 years compared to executives globally and in Hong Kong.

As far as global business confidence is concerned, executives in China see maintaining stability and confidence as paramount to cushioning the direct impact of trade war. The real underlying concern arising from the wavering confidence levels is the psychological impact towards investment decisions resulting in such decisions being delayed or not pursued.

Amidst ever present uncertainties and the expectation of a renegotiated trade agreement, based on this edition of the 22nd Annual Global CEO Survey China Report, I posit that during periods of economic adjustment and market transition, business leaders will have to:

(i) Remain strategically focused and be flexible and agile enough to adjust supply chains to diversify risk where necessary.

While relying on core strength and competitive advantage is key during times of uncertainty, being agile and having the flexibility to adapt to course correction are also critical.

Survey results found that 64% of executives in China are shifting their sourcing strategy as an immediate response to the trade conflict. In terms of their investment strategy the three most favoured destinations were the European Union, Asia Pacific and the Belt and Road Initiative (“BRI”) countries.

(ii) Grow capabilities and therefore resilience for new economy realities.

There is continuous pressure to build capabilities, however, in the China context, investing in data analytics and AI is aligned with China’s strategic priorities to become a technology and innovation driven economy. Only 14% of Chinese executives had no plans to pursue AI initiatives at the moment suggesting that the majority have implemented AI initiatives to varying degrees. Additionally, when compared to competitors in their industry, only 5% of executives in China feel they are behind in terms of their organisation’s ability to make decisions based on data and analytics.

In terms of organisational resilience and readiness to deal with crisis, 87% of Chinese executives compared to 75% globally have invested in cyber resilience, and 91% actively managed privacy and security risks compared to 88% at the global level. It is also the responsibility of business leaders to ensure that reskilling workers is at the core of building resilience against transformative trends. 53% of executives in China told us that retraining or upskilling is most important in closing the skills gap in their organisation compared to 46% at the global level.
(iii) Ensure that technology and innovation is not just a cost proposition but a value proposition.

It is the responsibility of business leaders to think strategically about the impact of AI on the business. Thinking critically to ensure that data analytics and AI are leveraged to produce value across the social, economic and environmental spectrum will generate positive impacts to help solve the multi-dimensional challenges confronting China and the world. 89% of executives in China think AI is good for society (compared to 79% of their global counterparts) and that encouraging AI developments with vision and governance will be key.

Business leaders today have a great opportunity and responsibility to lead through a period of economic adjustment and course correction. Although the long term resolution for the trade war is unknown, by remaining flexible and accommodating, some of the uncontrollable threats can be weathered.

I would like to thank the 176 company leaders from China and Hong Kong who have taken the time to share their views with us. We greatly appreciate the willingness of our respondents in sharing their views on business challenges, concerns and opportunities. These insights shed light on how Chinese executives are navigating uncertainties during China’s economic transformation and capturing opportunities during an interesting junction in world history.
The business community in China have had to contend with a variety of risks to global and domestic growth in the past year against a backdrop of heightened geopolitical and economic uncertainty. PwC’s 22nd Annual Global CEO Survey China Report offers insights into how Chinese executives are responding to business challenges in this volatile environment. Survey results find that despite the on-going US-China trade war, CEOs in China are more optimistic about global growth in the next 12 months than their global counterparts. In the short term, the economy is expected to face challenges as a result of both the domestic reforms at home as well as due to the complicated external environment. While executives in China are believers in AI and government’s role in its development, due to capability gaps, it seems that they are unable to leverage the value from data and analytics, despite recognition of its importance as a competitive advantage. Other key findings from this report are as follows:

- **CEOs in China are confident of revenue growth despite global economic slowdown**

  35% of Mainland Chinese business leaders feel “very confident” in their company’s prospects for revenue growth over the next 12 months. A higher proportion (47%) are confident about their company’s growth prospects over the next 3 years. This is a reflection of the increasing importance of the domestic market for growth and the prevalence of growth sectors.

- **CEOs in China are more optimistic about global growth in the next 12 months than their global counterparts**

  Mainland Chinese executives’ outlook for the global economy in the next 12 months is similarly optimistic. 73% of CEOs in Mainland China believe that global economic growth will improve, compared to 41% of CEOs in Hong Kong and 42% globally. They are probably down playing fears to maintain stability and confidence as a way to cushion the direct impact of the trade war.

- **Trade conflicts, policy uncertainty and geopolitical uncertainty are the top economic, policy and social threats Chinese executives face and they are responding by adjusting supply chains to diversify risk**

  In terms of economic, policy and social threats, trade conflicts was the primary concern for 78% of the Chinese CEOs surveyed, followed by policy uncertainty and geopolitical uncertainty (73%), and protectionism (72%). As a response to the trade conflicts, Mainland Chinese CEOs are adjusting their supply chain and sourcing strategy (70%) and shifting their growth strategy (52%) and production (40%) to alternate territories.

- **Cross-border investment is being directed to Belt and Road countries, Asia Pacific and the European Union, evidence that Chinese executives are shifting their sourcing and production in light of the trade tensions**

  For Mainland Chinese CEOs that have invested abroad in the past and will continue to do so, or those hoping to start in the future, the top three geographic regions that are a priority for outbound investments are Belt and Road countries (59%), Asia Pacific (56%) and the European Union (47%). Investment in these regions are rising as executives are shifting their sourcing and production to alternate territories in light of the trade tensions.
• Chinese companies rely on various data sources to stay competitive while experiencing information gap, suggesting that companies are unable to sufficiently extract value and insights from the data collected for different purposes

While there are areas where the data available is comprehensive enough to facilitate decision-making, there are some areas where a clear information gap has emerged. Comparing the difference between the degree of importance and comprehensiveness of data available, the gaps are as follows: data about risks to which the business is exposed (65%), data about tax implications/risks arising from your decisions (64%), data for financial forecasts and projections (63%), as well as benchmarking data on the performance of industry peers (62%).

• Conducive business environment and data infrastructure have put Chinese firms ahead of competition

13% of the China sample (Global: 12%) said they are “significantly ahead” of their competitors in the industry when assessing their organisation’s ability to make decisions based on data and analytics, while 56% (Global: 38%) consider themselves “somewhat ahead” of the game.

Strong confidence in data usage and analytics can be reflective of a conducive business environment for companies whose operations revolve around data.

China has the competitive advantage in terms of high penetration rate of mobile devices, robust data infrastructure, availability of data centres and cloud computing services, relative ease of obtaining consumer data and wide adoption of IoT sensors in businesses and government.

• Capability gap is impacting the bottom line, which is being resolved by public and private sectors working through retraining and education

When asked about the impact of the lack of availability of key skills on organisational growth prospects, Chinese executives (asked of those who are somewhat or extremely concerned by this threat) reported a wide range of challenges including the inability to innovate effectively (53%; Global: 48%), impact on quality standards and/or customer experience (52%; Global: 39%), as well as the more-than-expected rise in people costs (50%; Global: 47%) which would understandably weigh on business competitiveness.

In response to the capability gap, significant retraining or upskilling of the existing workforce (53%; Global: 46%) is seen as the main lever for Chinese business leaders to narrow if not close the skills gaps, followed by hiring from competitors (20%; Global: 14%).

• Chinese executives are strong believers in AI and government’s involvement in the space is seen as instrumental

Overwhelmingly large proportion of Chinese executives (92%; Global: 85%) are of the view that the adoption of AI will significantly change the way they do business in the next five years, of which 38% (Global: 40%) strongly agree with such statement.

They agree that AI is good for society (89%; Global: 79%) and that it is likely to have a larger impact on the world than the Internet Revolution (84%; Global: 62%). In regards to government involvement in this area, 85% of Chinese executives agree that government should play a critical and integral role in AI development (Global: 68%).
Introduction to the Survey
These are interesting times for China and the world. Global economic growth slowed in the second half of 2018¹ and China is facing economic headwinds with a slowing GDP growth rate, deleveraging measures and a trade dispute spanning several months. During this climate of economic, geopolitical complications and trade uncertainties, PwC conducted its 22nd Annual Global CEO Survey to gauge what executives are thinking and how they are solving for business issues in this uncertain environment.

The 22nd Annual Global CEO Survey was built around the themes of Growth, Data and Analytics, Artificial Intelligence and People. It was conducted between September and October 2018 and interviewed more than 1,378 executives from 91 territories and a range of sectors.

This is the China report which presents the views of 176 executives based in China and Hong Kong. For the purposes of this report, “China” refers to the People’s Republic of China, including Hong Kong executives. Where there is a statistically significant difference in the survey results between Hong Kong and Mainland China, results are presented separately.

Chapter 1

Growth and revenue prospects
Mainland Chinese executives were more positive than their global peers in terms of the global economic growth outlook. Nearly 73%, expected global economic growth to improve in the next 12 months compared to 42% of global executives and about 41% of Hong Kong executives. This is the only economy among the major territories surveyed who were more optimistic this year as compared to last year. The proportion of Mainland Chinese executives (20.8%) who believed the global economic outlook over the next 12 months would decline is less than the global average (29%) and Hong Kong average (46.9%), suggesting higher optimism amongst executives in China.

73% of Mainland Chinese executives expected global economic growth to improve in the next 12 months.
Figure 2
CEOs who are “very confident” on the company’s revenue growth prospects
For the 3 year time frame, survey found that a higher proportion of executives in Mainland China are “very confident” about revenue growth prospects, compared to executives globally and in Hong Kong. What is also notable is that Hong Kong executives are particularly pessimistic about their own revenue growth prospects (consistent with their negative views on global growth referenced earlier). Survey results suggest that there is a sense of optimism over revenue growth prospects over a longer time horizon than over the next 12 months.

Hong Kong’s annual GDP growth decelerated to 3% in 2018 from 3.8% in 2017. The Hang Seng Index’s weak performance in 2018 and currency depreciation against the US dollar are indicators of continued headwinds for Hong Kong’s economy.2 While Hong Kong’s economy is gradually becoming more integrated into China’s economy, the differing economic structure and policy frameworks can result in varying market sentiments between executives in HK and China.

As far as global business confidence is concerned, higher proportion of executives in China are found to have a positive outlook compared to their global counterparts. They are probably down playing fears to maintain stability and confidence to cushion the direct impact of trade war as the actual impact is the uncertainty and delaying of investment decisions. As far as their optimism for revenue growth prospects are concerned, this may be related to two factors: first the increasing importance of the domestic market for growth and the government policies supporting this, and second, the prevalence of growth sectors such as financial services, technology, communications, entertainment and media, and retail and consumer companies in the Mainland China sample. These three growth sectors are buoyant to meet the emerging consumption and investment needs of its population and compose 59% of the sample which could be drivers of this positive outlook.

Mainland China has a growing middle class which is expected to double to 600 million in the next 10 to 15 years.3 Given their rapid accumulation of disposable income, executives are increasingly looking to target domestic consumers rather than look to external markets. Particularly in the retail and consumer sector, which comprises 14% of the sample, the rise in new economy trends such as e-commerce and shift to “new retail” is powering online spending and mobile payments.4

Technology, communications, entertainment and media companies, which comprise 15% of the Mainland China sample, would also be bullish on growth given the country’s strategic national priorities to be a technology and innovation driven economy. Several state directives have been issued to support this, for example in December 2018, the State Council approved the rollout of 23 pro-innovation reform measures to mobilise technological innovation resources and nurture new drivers of growth.5

85% of Chinese executives are “somewhat/very confident” in their company’s prospects for revenue growth.
The government is also taking steps to promote the growth of privately-owned enterprises (which form 60% of the Mainland China sample). As of June 2018, China’s National Development and Reform Commission and the Ministry of Commerce released a shortened negative list ensuring sectors including financial services, transportation and infrastructure are more or fully open to foreign investment. In November 2018, President Xi Jinping announced policies such as tax cuts and equal treatment to support privately-owned enterprises. In December 2018, during the trade negotiations with the US, China agreed to competitive neutrality meaning that privately owned enterprises (POEs) would get the same treatment as state owned enterprises (SOEs). Additionally, at the recent Central Economic Work Conference (CEWC) held in Beijing in December 2018, the government has pledged to keep prudent monetary policy while maintaining market liquidity at a reasonably ample level and make direct financing more accessible and affordable for the private sector and small businesses.

Another reason for the positive outlook is that the largest proportion of the Mainland China sample of executives (28%) are from the financial services industry. This sector is opening up considerably and PwC estimates that by 2020 Mainland China will be the second largest Asian asset management market fuelled by an 8.7% CAGR in total investable assets from 145 trillion yuan to 260 trillion yuan. As of June 2018, the government removed the foreign ownership cap for banks and asset management companies and raised the cap to 51% for other financial services companies including fund managers and life insurers. According to CEWC meeting outcome, China has started to liberalise more sectors for overseas investors from finance to manufacturing, while continuing to protect the intellectual property rights and interests of foreign companies.
In terms of the ranking of attractiveness of countries as being most important to their organisation’s overall growth prospects over the next 12 months, for Mainland Chinese CEOs, Australia was ranked first this year, while the US has dropped to second place from its top position in 2018, followed by Japan. The impact of the trade conflict has meant that Chinese CEOs are less reliant on the US and thus are looking elsewhere for growth opportunities.

In Hong Kong, the three economies (apart from their own) that CEOs consider as being most important to their organisation’s overall growth prospects over the next 12 months are China (50%), followed by India (15.6%) and Australia, Vietnam and USA (each 12.5%). At the global level, the ranking of countries remains unchanged from 2018 with the USA, Mainland China and Germany being the top three territories that are most important for overall growth prospects over the next 12 months.

It is important to note that the level of uncertainty among CEOs about their expansion plans outside of their home markets has increased significantly this year. Globally, 15% of CEOs stated they “don’t know” which territories are important for growth prospects (up from 8% in 2018). The data also shows that executives are looking inward and focusing on their domestic markets for growth. This is very prominent among Mainland Chinese CEOs, where the proportion who opted for “no other country” was up significantly (17% chose this option compared to none last year). This is not surprising given the realities of the current trade environment and the promise of the growing middle class consumer base in China.
Chapter 2

Challenges to growth and how to tackle them
Business threats are correlated to trade tensions

Despite the sense of optimism in revenue growth among Chinese CEOs over a longer time horizon, in the short term there are headwinds that CEOs are facing both in their own business operations and in the policy and economic environment. In terms of top three business threats to organisation’s growth prospects, 68% of executives in Mainland China cited supply chain disruption (Hong Kong: 56%; Global: 50%), 68% cited volatile energy costs (Hong Kong: 50%; Global: 52%) and 64% cited availability of key skills (Hong Kong: 66%; Global: 79%). It is interesting that supply chain disruption and energy costs were not cited among the top three risks in 2018 and hence signal the impact the trade tensions and oil price volatility are having on businesses. In terms of the top three business risks faced by executives in Hong Kong, 78% cited speed of technological change (Mainland China: 61%; Global: 69%), 72% cited real estate costs (Mainland China: 61%; Global: 33%) and 69% cited readiness to respond to a crisis (Mainland China: 58%; Global: 58%).

The fact that supply chains have become so integrated, incorporating R&D, design and logistics and bundling goods and services, means that the impact of the trade tariffs have been magnified both domestically and globally. In terms of energy costs, in 2018 oil prices have been impacted by excess supply and low demand growth following the building up of US oil inventory, overproduction by OPEC and the softening of original Iran sanctions by the US government.
Macro threats loom large for CEOs

When asked about the top economic, policy, social, and environmental threats to organisations’ growth prospects this year, trade conflicts was the primary concern for 78% of the Chinese CEOs surveyed, followed by policy uncertainty and geopolitical uncertainty (73%), and protectionism (72%). Rising economic nationalism, with policies such as “America First” has meant that some of the other concerns that came to the fore in 2018 such as social instability and increasing tax burden are no longer top of mind.

It is interesting to see that at the global level, trade conflict was not the top concern. Instead, 78% of executives worried about policy uncertainty, 75% were concerned with geopolitical uncertainty and 73% about uncertain economic growth and over-regulation.

*Please note: 2019 was the first year CEOs were asked about ‘policy uncertainty’ and ‘trade conflicts’.*
Trade conflicts are altering sourcing strategies to diversify risk

For those executives who were "somewhat or extremely concerned" about trade conflicts, they were queried on which specific trade conflicts were top of mind. 91% of Mainland Chinese executives were worried about the trade conflict between China and the US (Hong Kong: 96%; Global: 81%) and 37% about the trade conflict between the US and European Union (Hong Kong: 18%; Global: 44%). CEOs were also asked how these were affecting their operating model and growth strategy. In light of the trade tariffs on US $250 billion of Mainland Chinese products by the US, 70% of Mainland Chinese executives are adjusting their supply chain and sourcing strategy, 52% are shifting their growth strategy to alternate territories, and 40% are shifting their production to alternate territories.

Given the fact that 13% of the Mainland Chinese CEOs surveyed are in the industrial manufacturing sector and an additional 5% are in engineering and construction, tariffs on commodities such as steel and aluminum is expected to impact them. Mainland China is the world’s largest exporter of manufactured goods, by a large margin. However over the past decade, factory owners have begun moving production to developing countries such as Bangladesh, Cambodia and Vietnam in view of the cheaper wages and as a way to diversify political and economic risk. This is expected to intensify due to the trade measures.10
Taxation in Mainland China is still complex

66% of Mainland Chinese executives were concerned about the rate of tax that their organisation pays

60% of Mainland Chinese executives were concerned about the complexity of the tax legislation

65% of Mainland Chinese executives were “somewhat or extremely concerned” about the increasing tax burden. These executives were also queried on which specific concerns they had in mind. 66% of Mainland Chinese executives were concerned about the rate of tax that their organisation pays (Hong Kong: 79%; Global: 70%) and 60% of executives were concerned about the complexity of the tax legislation (Hong Kong: 74%; Global: 61%). In spite of technological advances in tax compliance as well as a significant overhaul of the tax system including the removal of business tax and the digitalisation of VAT compliance, PwC’s Paying Taxes 2019 report finds that Mainland China’s tax system is still seen to be complicated, particularly in terms of the different number of taxation requirements.
Drivers of revenue growth amid economic uncertainty

To drive their revenue growth in the next 12 months, high proportions of executives in China opted to focus on operational efficiencies (61.9%), launch a new product or service (61.9%) and enter into a new strategic alliance/joint venture (58.5%) as the primary activities. On the other hand, global CEOs considered organic growth (71.5%), operational efficiencies (77.1%) and launching a new product or service (62%) as favoured measures to drive revenue growth. Survey results found that "entering a new market" or "new M&A" activity doesn’t appear to be a priority for executives in China as well as globally.

Chinese CEOs may be more risk averse amid the economic uncertainty and the depreciation of the yuan has also made outbound M&A more costly to execute. Moreover executives globally are under pressure from regulatory risk and unpredictable antitrust reviews as established market environments are being challenged by technological disruption.
In terms of their expectations to increase company headcount over the next 12 months, another indication of growth outlook, Chinese executives were more optimistic than their global counterparts: 69% expected to increase their headcount in 2019 (Global: 53%).

Figure 7
Expectations of increase in headcount over the next 12 months
While there has been a 5% drop in the proportion of executives with plans for new M&A from 2018, Mainland Chinese CEOs, were asked about their motivations for cross-border investment. 75% were motivated by expansion of their market or customer base for existing products or services, 66.4% by pursuing opportunities unique to targeted markets and 62.5% by strategic asset allocation/diversification. In a global economy that is increasingly characterised by protectionist trade policies, it follows that diversification may help to act as a buffer against these negative effects, by ensuring Chinese businesses are not reliant on one market or customer base alone. Aside from the focus on the domestic market, it is imperative that Chinese companies (particularly those reliant on the US market), diversify their clients in different countries and regions as much as possible.\(^\text{14}\)

Cross-border investment is being directed to Belt and Road countries, Asia Pacific and the European Union.

**Figure 8**
Key motivations for Chinese executives to start or continue with overseas investment

- **Expand market/customer base for your existing products/services**: 77% (Mainland China), 75% (Hong Kong)
- **Pursue new opportunities unique to targeted market(s)**: 64% (Mainland China), 66% (Hong Kong)
- **Strategic asset allocation/diversification**: 63% (Mainland China), 36% (Hong Kong)
- **Aspiration to advance from domestic brand to international champion**: 50% (Mainland China), 57% (Hong Kong)
- **Access to global talent base**: 49% (Mainland China), 41% (Hong Kong)
- **Enhance operational efficiency (e.g. seek low cost production base or economy of scale)**: 41% (Mainland China), 42% (Hong Kong)
- **Access to new technologies**: 18% (Mainland China), 41% (Hong Kong)
In terms of types of cross-border investment, the majority (62%) of Mainland Chinese executives have already made cross-border investments in the form of partnerships and for the future, 62% said they would consider greenfield investment. In terms of the top three geographic regions that are a priority for outbound investments, Mainland Chinese executives preferred Belt and Road countries (58.6%), Asia Pacific (55.6%) and the European Union (46.6%).

Data from Ministry of Commerce (MOFCOM) shows that Mainland China’s non-financial direct investment flowing into Belt Road Initiative projects in 55 countries totaled US $9.6 billion from January to August of this year. This represents a 12% year-on-year increase from the same period in 2017 and accounts for 12.9% of the total non-financial direct investment over this period. The investment was mainly targeted at ASEAN bloc countries such as Singapore, Laos, Malaysia, Pakistan, Vietnam, Indonesia, Thailand and Cambodia. Also at the CEWC, one of the key policy directives was to continue the expansion of economic opening-up by encouraging trade with Belt and Road countries (already more than 17 free trade agreements involving 25 countries and regions have been finalized).

Figure 9a:
Type of investments abroad Mainland Chinese executives are considering or have already made

<table>
<thead>
<tr>
<th>Type of Investment</th>
<th>Considering</th>
<th>Currently Doing</th>
<th>Done in the Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenfield investment</td>
<td>62%</td>
<td>26%</td>
<td>12%</td>
</tr>
<tr>
<td>Joint ventures</td>
<td>44%</td>
<td>49%</td>
<td>6%</td>
</tr>
<tr>
<td>M&amp;A</td>
<td>43%</td>
<td>48%</td>
<td>9%</td>
</tr>
<tr>
<td>Partnerships</td>
<td>32%</td>
<td>62%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Figure 9b:
Type of investments abroad Hong Kong executives are considering or have already made

<table>
<thead>
<tr>
<th>Type of Investment</th>
<th>Considering</th>
<th>Currently Doing</th>
<th>Done in the Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenfield investment</td>
<td>35%</td>
<td>47%</td>
<td>18%</td>
</tr>
<tr>
<td>Joint ventures</td>
<td>33%</td>
<td>48%</td>
<td>19%</td>
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<tr>
<td>M&amp;A</td>
<td>41%</td>
<td>35%</td>
<td>24%</td>
</tr>
<tr>
<td>Partnerships</td>
<td>36%</td>
<td>55%</td>
<td>9%</td>
</tr>
</tbody>
</table>
Chapter 3

Data analytics and cybersecurity
Chinese companies rely on various data sources to stay competitive while experiencing information gap

Data, along with algorithm and computing power, has played a crucial role in propelling the country’s advancement along the AI curve. In July 2017, China’s State Council issued a three-step road map to become a world leader in AI by 2030. The government also included AI in its 2015 Internet Plus Initiative, a national mandate to stimulate economic growth through innovative, Internet-based technologies.

The value of data in decision making is also widely recognised as a source of competitive advantage for Chinese companies. We asked the executives in Mainland China how important various data categories are to their decision making, and how adequately they receive such data (asked only of those who consider their data needs as critical or important), and a clear pattern of information gap has emerged when we compare the difference between the degree of importance and comprehensiveness of data available.
The information gap suggests that companies are unable to sufficiently extract value and insights from the data collected for different purposes. The information gap is distributed unevenly across different data categories and most prominent in these areas: data about risks to which the business is exposed (87%–22%=65%), data about tax implications/risks arising from your decisions (85%–21%=64%), data for financial forecasts and projections (96%–33%=63%), as well as benchmarking data on the performance of industry peers (90%–28%=62%).

On a bright note, there are areas where the data available are both important and comprehensive enough to facilitate decision-making (where the information gap is smallest) such as data about the impact of climate change on the business (66%–31%=35%), data relating to how efficiently real estate resources are utilised (74%–34%=40%), and data about employees’ views and needs (85%–36%=49%).

Figure 10
Availability and comprehensiveness of data used to make decisions about the long-term success and durability of business, Mainland China
When probed about the primary reasons for data inadequacy or the inability to attain data, majority attribute the phenomenon to the lack of analytical talent (55%; Global: 54%), poor data reliability such as errors and incomplete data (52%; Global: 50%), as well as data silos and lack of sharing (51%; Global: 51%). This is comparable to global findings. It is worthwhile to note that for Hong Kong companies the issue of data inadequacy is primarily driven by data silos and lack of sharing (67%) compared to their Mainland counterparts (48%), possibly as a result of more stringent regulation on data privacy and consumer protection laws which inhibit the sharing of data.

**Figure 11**
Primary reasons why the data received is not adequate or that information is not received

- **Lack of analytical talent**: 55% (China) vs. 54% (Global)
- **Poor data reliability (e.g. errors and incomplete data)**: 52% (China) vs. 50% (Global)
- **Data siloing and lack of sharing**: 51% (China) vs. 51% (Global)
- **Unwillingness of customers and clients to share information**: 47% (China) vs. 42% (Global)
- **Inability to quantify external information**: 42% (China) vs. 40% (Global)
- **Inadequate IT infrastructure**: 36% (China) vs. 35% (Global)
- **Inability to navigate customer information privacy rules (e.g. GDPR)**: 32% (China) vs. 15% (Global)
- **Inability to adequately protect and secure the data**: 22% (China) vs. 8% (Global)
Despite the pressing need to address the information gap, Chinese executives are generally confident about data driven decision making and have demonstrated higher “data savviness” than their global peers. 13% of the China sample (Global: 12%) said they are “significantly ahead” of their competitors in the industry when assessing their organisation’s ability to make decisions based on data and analytics, while 56% (Global: 38%) consider themselves “somewhat ahead” of the game. Such confidence in the use of data is even higher for Mainland Chinese executives (significantly or somewhat ahead: 72%) than Hong Kong executives (significantly or somewhat ahead: 56%).

Conducive business environment and data infrastructure have put Chinese firms ahead of competition

Strong confidence in data usage can be reflective of a conducive business environment for companies whose operations revolve around data. China has the competitive advantage in terms of high penetration rate of mobile devices, robust data infrastructure, availability of data centres and cloud computing services, relative ease of obtaining consumer data and wide adoption of IoT sensors in businesses and government.

All these factors have contributed to the growing popularity and use cases of data analytics particularly in the new economy. For example, data-driven customer acquisition and big data powered risk management technology have allowed FinTech firms like Creditease’s Yirendai and Ping An’s Lufax to have a competitive edge in P2P online lending. Meanwhile, the world’s largest money market fund, Yu’e Bao, affiliated with Ant Financial, had 1.7 trillion yuan ($267.9 billion) in net assets as of end of March 2018 and capitalises on Taobao’s vast consumer database and billions of untapped online savings.
Chinese companies boast higher cyber-resilience

Our study finds that Chinese companies at large have exhibited strong degree of cyber resilience. 87% of Chinese executives said their organisation is cyber-resilient shown in its ability to withstand cyber-attacks and recover quickly (Global: 75%). This is supported by the observation that more Chinese companies than their global peers are proactively managing security and privacy risks when adopting new technology (91%; Global: 88%), and adapting the way it monetises data to better address data privacy and ethics (80%; Global: 67%).

However, they do recognise their vulnerability to being subject to geopolitical cyber activity (80%; Global: 72%) given the complexity of international relations China is now facing with its trading partners.

The enhanced level of cyber-resilience felt by businesses can be partly explained by the country’s strategic priority to protect the cyberspace through the enactment of multiple regulations. The Chinese government has issued close to 300 new national standards related to cybersecurity over the past several years. Of course, some of these regulations also inevitably dampened the convenience and ease of doing business for the private sector.

Domestic businesses, particularly technology firms, are experiencing a tightening of cybersecurity and data localisation rules governing the ownership, use, and transfer of data. However, compared to the even greater obstacle and scrutiny Chinese tech companies are facing overseas in particular the US following the Section 301 trade investigation, they should find the domestic situation more favourable with the added benefit of higher level of nationwide cybersecurity.

In contrast, foreign companies doing business in or with China are expected to be worse off with greater regulatory oversight. With China’s newly issued Standards for Personal Information Protection that came into effect on 1 May 2018, foreign firms have to do more to catch up with the higher and stricter compliance standards and localisation requirements.

Also, China’s new cyber regulations introduced in March 2018 on the use of virtual private networks (VPN) has added to the cost and inconvenience for foreign companies who are more likely to rely on cross-border communication.

<table>
<thead>
<tr>
<th>Statement</th>
<th>China</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>My organisation is cyber resilient — can withstand attacks and recover quickly</td>
<td>34%</td>
<td>60%</td>
</tr>
<tr>
<td>My organisation proactively manages security and privacy risks when adopting new technology</td>
<td>38%</td>
<td>60%</td>
</tr>
<tr>
<td>My organisation may be affected by geopolitical cyber activity</td>
<td>28%</td>
<td>53%</td>
</tr>
<tr>
<td>My organisation is adapting the way it monetises data to better address data privacy and ethics</td>
<td>36%</td>
<td>49%</td>
</tr>
</tbody>
</table>
Chapter 4

Artificial intelligence and people
Over the last decade, China has made remarkable progress to become the world’s artificial intelligence (AI) powerhouse. Advances in data collection and algorithms, and the prevalence of mobile devices, coupled with aggressive R&D spending, have paved the way for the country to achieve major breakthroughs in the AI realm.

In 2017, the market value of China’s AI Industry reached 23.7 billion yuan, up 67% year on year. There are 1,011 companies engaged in this line of business, second only to the U.S. number of 2,028. From 2013 to the first quarter of 2018, AI companies in the country on an aggregated basis received around 60% of the world’s total venture capital investment.
As much as 47% of the China sample (Global: 42%) currently have some forms of AI initiatives in place in their organisation: 17% (Global: 6%) said these initiatives are present on a wide-scale within their company while 25% (Global: 33%) said they have done so in a limited sense. Only 14% of executives said they have no plans to pursue any AI initiatives, much lower than the global average of 23%.

The rate of adoption in AI and related technology in China has clearly accelerated in the private sector and will continue to grow in the coming years. 39% of Chinese executives indicated they have plans to start introducing AI initiatives in their organisation in the next 3 years, 4 percentage points higher than their global counterparts.

AI adoption in Chinese businesses has outpaced global average as fuelled by intensive R&D spending and industry growth

Figure 14
Executives' usage of AI

- We have no plans to pursue any AI initiatives at the moment
- We have plans to start introducing AI initiatives in our organisation in the next 3 years
- We have introduced AI initiatives in our business, but only for limited uses
- AI initiatives are present on a wide-scale in our organisation
- AI initiatives are fundamental to our organisation's operations

China
Global
There is in fact no shortage of AI use cases in e-commerce, FinTech, health care, automotive, amongst other sectors, while increasingly more traditional companies are experimenting with AI in an attempt to reorganise or reinvent the business process. R&D investment in high-end technology has a notable role to play in accelerating AI dissemination and adoption.

According to PwC’s Innovation 1000 Study 2018, Chinese companies’ R&D spending increased by 34.4% to reach US$60.08 billion, marking the largest growth globally. In addition, R&D spending has increased in all industries in China, especially in the software and internet as well as industrial sectors. Twenty more Chinese companies entered the Global Innovation 1000 list compared with last year, thanks to the country’s strategic move to gear up developing an innovation-driven country.

On the other hand, China is dubbed the country with the most number of patents published in AI, constituting 22% of the world’s total and slightly edging the United States and Japan, according to “China’s AI Development Report 2018” released by Tsinghua University.
Chinese executives are strong believers in AI and government’s involvement in the space is seen as instrumental.

It appears that the business community in China are believers in AI and have widely embraced the positive externalities brought by such technology. First, they strongly believe that AI is good for society (89%; Global: 79%) and that it has a larger impact on the world than the Internet Revolution (84%; Global: 62%). They are also of the view that AI will become as smart as humans (70%; Global: 45%) and will help eliminate human bias in work situations such as gender bias (81%; Global: 48%).

![Figure 15](image_url)

**Figure 15**

Executives’ level of agreement with statements about AI

<table>
<thead>
<tr>
<th>Statement</th>
<th>China</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI-based decisions need to be explainable in order to be trusted</td>
<td>27%</td>
<td>58%</td>
</tr>
<tr>
<td>Governments should play a critical and integral role in AI development</td>
<td>33%</td>
<td>47%</td>
</tr>
<tr>
<td>AI is good for society</td>
<td>39%</td>
<td>61%</td>
</tr>
<tr>
<td>AI will displace more jobs than it creates in the long run</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td>AI will eliminate human bias such as gender bias</td>
<td>32%</td>
<td>39%</td>
</tr>
<tr>
<td>AI will have a larger impact on the world than the Internet revolution</td>
<td>36%</td>
<td>41%</td>
</tr>
<tr>
<td>AI will become as smart as humans</td>
<td>24%</td>
<td>33%</td>
</tr>
</tbody>
</table>
Overwhelmingly large proportion of Chinese executives (92%; Global: 85%) are of the view that the adoption of AI will significantly change the way they do business in the next five years, of which 38% (Global: 40%) strongly agree with such statement.
With regard to government involvement in this area, 85% of Chinese executives agree that government should play a critical and integral role in AI development (Global: 68%). In particular, there are multiple asks of the government to do more including: incentivising to retrain workers whose jobs are automated by AI (91%; Global: 65%), providing a safety net for people displaced by AI (82%; Global: 66%), introducing incentives to accelerate the development and use of AI (84%; Global: 66%), and developing a national strategy and policies for AI including expected impact on communities (87%, Global: 76%).

Business leaders are also hoping for regulatory relaxation. They are in strong agreement that the government should limit regulations around data collection to facilitate AI development (81%; Global: 52%), while to a certain extent allowing organisations to self-regulate the use of AI (82%; Global: 59%).

Figure 17
Executives’ level of agreement with statements about government involvement in AI

<table>
<thead>
<tr>
<th>Statement</th>
<th>China</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governments should individually develop a national strategy and policies for AI including expected impact on communities</td>
<td>32% 55%</td>
<td>56% 20%</td>
</tr>
<tr>
<td>Governments should allow organisations to self-regulate the use of AI</td>
<td>28% 54%</td>
<td>48% 11%</td>
</tr>
<tr>
<td>Governments should incentivise organisations to retrain workers whose jobs are automated by AI</td>
<td>37% 54%</td>
<td>46% 19%</td>
</tr>
<tr>
<td>Governments should introduce incentives to accelerate the development and use of AI</td>
<td>33% 51%</td>
<td>50% 16%</td>
</tr>
<tr>
<td>Governments should limit regulations around data collection to facilitate the development of AI</td>
<td>31% 50%</td>
<td>42% 10%</td>
</tr>
<tr>
<td>Governments should provide a safety net to people displaced by AI</td>
<td>34% 48%</td>
<td>43% 13%</td>
</tr>
<tr>
<td>Governments should intentionally slow down the replacement of workers by AI to avoid widespread job displacement</td>
<td>23% 40%</td>
<td>18% 6%</td>
</tr>
</tbody>
</table>

■ Strongly agree ■ Agree
Industry advancement in AI has revealed capability gap, calling for realignment of jobs and skills in the labour market

On a broader scale, higher proportion of business leaders in China are somewhat or extremely concerned about changing workforce demographics (56%; Global: 50%) and the unemployment of the workforce in general (48%; Global: 41%).

The country’s working-age population in 2017 dropped to its lowest level in nine years, to below a billion for the first time since 2010. Also, the number of university graduates in China has reached record high at 7.35 million in 2017 (7.04 million from last year) and more than double that of a decade ago, posing additional pressure on young worker employment, according to data from Ministry of Education.

In general, China CEOs have experienced less difficulty than many countries in hiring workers in their respective industries thanks to rising supply of university graduates and steady worker migration to urban centres. Only 40% said it has become more difficult for them do so compared to the global average of 62%, although significant difference is still evident between the Mainland China (35%) and Hong Kong sample (63%).

Figure 18
Executives’ level of difficulty to hire workers in their industry
However, for those who did experience more difficulty in hiring, 38% noted it is mainly caused by the deficit in the supply of skilled workers, indicating that for some companies they still have a hard time finding the right hires from the existing pool of young workers despite the country’s huge supply of university graduates every year.

Other notable reasons for more difficulty in hiring included change in skill requirements in their industry (21%; Global: 19%), compensation expectation (18%; Global 9%), and growth in the industry (13%; Global 8%). Clearly, structural changes in the many industries and rapid growth of the new economy also led to the emergence of jobs that call for drastically different skill sets. Job titles which were barely heard of a decade ago such as data scientists and machine learning specialists have become numerous and highly sought after today.

Figure 19
Executives’ reasoning as to why it has become more difficult to hire skilled workers

<table>
<thead>
<tr>
<th>Reason</th>
<th>China</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficit in supply of skilled workers</td>
<td>38%</td>
<td>50%</td>
</tr>
<tr>
<td>Skills requirements in our industry have changed</td>
<td>21%</td>
<td>19%</td>
</tr>
<tr>
<td>Compensation expectations</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>Growth rate of the industry</td>
<td>13%</td>
<td>8%</td>
</tr>
<tr>
<td>Working conditions</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Candidates' view of industry reputation has changed</td>
<td>4%</td>
<td>8%</td>
</tr>
</tbody>
</table>
In particular, the rapid pace at which different forms of AI-enabled automation are being adopted and implemented in traditional manufacturing sectors — in response to the government’s call for industrial upgrading and digital transformation — has sparked worry of large scale job displacement. Survey found that considerably higher proportion of Chinese executives believe that AI will displace more jobs than it creates in the long run (85%) compared to the global average (49%).

While the net outcome of AI impacts on jobs is mixed and differ across industries, it is a good opportunity for all the stakeholders to reassess their own situations and as part of the economic transformation of the labour market to make the necessary readjustment, even though it means certain jobs will be displaced.iii

iii. PwC estimates in a recent study that AI and related technologies, such as robots, drones and autonomous vehicles could displace around 26% of existing jobs in China over the next two decades, but could create significantly more additional jobs in China through boosting productivity and real income and spending levels. The net impact is estimated to be a boost to employment in China of around 12%, equivalent to around 90 million additional jobs over the next two decades.
When asked about the impact of the lack of availability of key skills on organisational growth prospects, Chinese executives (asked of those who are somewhat or extremely concerned by this threat) reported a wide range of challenges including the inability to innovate effectively (53%; Global:48%), impact on quality standards and/or customer experience (52%; Global:39%), as well as the more-than-expected rise in people costs (50%; Global:47%) which would understandably weigh on business competitiveness.

On a territory scale, Hong Kong executives are feeling the most “pain” from the talent shortage in the area of pursuing market opportunities (57%; Mainland China: 29%) and meeting growth targets (57%; Mainland China: 29%), much more so than their Mainland China counterparts.

Capability gap is impacting the bottom line, which is being resolved by public and private sectors working through retraining and education.

### Figure 20
Impact of lack of ‘availability of key skills’ on organisation’s growth prospects

<table>
<thead>
<tr>
<th>Impact</th>
<th>China</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>We are not able to innovate effectively</td>
<td>53%</td>
<td>48%</td>
</tr>
<tr>
<td>Our quality standards and/or customer experience are impacted</td>
<td>52%</td>
<td>39%</td>
</tr>
<tr>
<td>Our people costs are rising more than expected</td>
<td>50%</td>
<td>47%</td>
</tr>
<tr>
<td>We are unable to pursue a market opportunity</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>We are missing our growth targets</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>We cancelled or delayed a key strategic initiative</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>There is no impact on my organisation’s growth and profitability</td>
<td>3%</td>
<td>8%</td>
</tr>
</tbody>
</table>
In response to the skills deficit, significant retraining or upskilling of the existing workforce (53%; Global: 46%) is seen as the main lever for Chinese business leaders to narrow if not close the skills gaps, followed by hiring from competitors (20%; Global: 14%). Other viable options to close the potential skill gap included hiring from outside the industry (12%; Global: 18%), establishing a strong pipeline direct from education (9%; Global: 17%), as well as changing composition of workforce between permanent and contingent (7%; Global: 5%).

The public sector has also recognised the issue and doing its fair share to ease long term supply constraints of STEM talents in the AI arena, albeit slowly. In April 2018, the Ministry of Education unveiled a five-year university-level AI training program to meet the growing demand for AI professionals. The program, which entails subjects like AI theory, machine learning, deep learning, and computer vision, aims to supply at least 500 teachers and 5,000 students in AI-related fields at top universities over the next five years.24

Meanwhile, in September 2018, National Development and Reform Commission (NDRC) urged the government to step up the development of the country’s US$3.8 trillion digital economy as it expects big data and artificial intelligence to be the big drivers in job creation in the coming years.25 It will also encourage more workers to switch to jobs in the new digital economy as a means to step up the digital transformation of traditional employment sectors.
Conclusion
Looking back over the past five years, the top global trends which Chinese CEOs believe have transformed their business are technological advances (78%), shift in global economic power (74%) and urbanisation (51%).

Competing in an open global marketplace with trends toward more closed national policies is complicated. Changes to national policies are a risk all CEOs have to account for and finding good local partners who can guide through localised issues and being flexible to accommodate policy changes are key.

In order to overcome macroeconomic threats such as trade conflicts, policy uncertainty and uncertain economic growth, businesses are already focused on the opportunities in the growth sectors in the domestic market and have adjusted their supply chain and sourcing strategy to protect against country-specific risk. In order to respond to emerging investment and consumption needs of a population with rapidly rising disposable income and investable assets, the business segment would benefit from cultivating demand for value added products and services. Businesses would also benefit from realising the importance of having proper risk control and data governance to build trust with customers. Beyond stricter government regulations, it becomes imperative for businesses to exercise prudence and care throughout data generation life cycle to build trust on the data front.

Policy makers in China have been active in engagement and dialogue with the business to foster open and practical information exchange to enhance understanding of the new emerging business models and new economy trends. In November 2018, President Xi invited China’s top entrepreneurs to dinner to assure them of a level playing field where they would benefit from the establishment of fair, open and transparent market rules and a law-based business environment.

Further, from the various initiatives last year and the Central Economic Work Conference (CEWC) in December 2018, it can be seen that the top leadership in China is already updating policy frameworks, harmonising standards and regulations to promote properly functioning markets. From the CEWC, it emerged that:

• Direct financing will be more accessible and affordable for the private sector and small businesses.

• More policy and tax incentives will be implemented to promote the Regional Comprehensive Economic Partnership, Special Economic Zones as well as the Greater Bay Area.

• Optimising regional trade and investment with Belt and Road countries, Asia Pacific and European Union countries through further building economic and political ties will be promoted.

In addition to these initiatives, educating the next generation workforce to thrive in the AI led economy is as much a challenge for educational institutions and governments as it is for businesses. This is an opportunity for private and public sectors to work together to augment each other’s efforts to scale solutions: providers of education need to pragmatically upgrade their human capital training to prepare a skilled workforce with high emotional intelligence so that organisational and economic growth is not constrained by unskilled human capital.

Navigating the challenges of the complicated environment at home and abroad in a managed way, China’s long term aspirations to turn itself into a moderately prosperous society are bright.
Research Methodology

The top three sectors in the Mainland China sample were Asset and Wealth Management (14%), Industrial Manufacturing (13%) and Technology (10%), whereas the top three sectors in the Hong Kong sample were Asset and Wealth Management (19%), Business Services (16%) and Banking and Capital Markets, other Financial Services as well as Retail (9% each).

Sample composition in the aggregated sample were primarily distributed among four main sectors: Financial Services (30% of total executives), Technology, Communications, Entertainment and Media (15% of total executives), Retail and Consumer (14% of total executives) and Industrial Manufacturing (11% of total executives). Segmenting firms by revenue: 13% of the sample firms post annual revenue up to US$100 million, 34% of the sample is constituted of firms that post annual revenue between US$101 to 999 million; 41% of the sample firms post annual revenues between US$1 to 10 billion and 9% of the sample companies have revenues of more than US$ 10 billion.

*Others include agriculture, chemicals, forest, paper & packaging, government/public services, hospitality and leisure, metals, other CIPS, transportation & logistics
In terms of the POE and SOE\textsuperscript{iv} composition of firms in the sample, a majority of the firms in the Mainland China and Hong Kong sample were privately-owned: 60% of the executives in Mainland China surveyed represented private firms, compared to 75% in the Hong Kong sample and 59% in the global sample. Second, among privately-owned firms, partnerships represented 22% of Mainland China's sample and 25% of Hong Kong sample, compared to 12% of the global sample; owner-managed firms represented 19% of Mainland China's sample and 21% of Hong Kong sample, compared to only 18% of the global sample; family run firms represented 23% of Mainland China's sample and 33% of the Hong Kong sample compared to 26% of the global sample. Finally, firms with some level of government ownership or backing accounted for 36% of Mainland China's sample and 25% of the Hong Kong sample, compared to only 14% of the global sample.\textsuperscript{v}

This leads to the inference that the Mainland China and Hong Kong sample is represented by privately-owned firms which are more likely to be private equity backed in Mainland China but more family run in Hong Kong.

\textsuperscript{iv} POE refers to privately-owned enterprises and SOE refers to state-owned enterprises

\textsuperscript{v} Please note that there could be an overlap between privately-owned companies and companies with some level of government ownership and hence, the total of the two segments in the sample compositions is not 100%.

[Note: Not all figures add up to 100%, as a result of rounding percentages and exclusion of ‘neither/nor’ and ‘don’t know’ responses.]
Acknowledgements and thanks to reviewers

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<table>
<thead>
<tr>
<th>Editorial and Writing</th>
<th>Project Management</th>
<th>Design Team</th>
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</thead>
<tbody>
<tr>
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<td>Terrance Lui</td>
<td>Stephen Chow</td>
</tr>
<tr>
<td>Terrance Lui</td>
<td>Monica Uttam</td>
<td>Venus Guo</td>
</tr>
<tr>
<td>Monica Uttam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Endnotes

24. Shortage of top AI talent means graduates are writing their own paychecks, November 2018, http://www.globaltimes.cn/content/1129373.shtml