



THE CHINESE AI INNOVATION CHASM

THE COUNTRY HAS GREAT POTENTIAL BUT IS HINDERED BY ITS
EDUCATION SYSTEM

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The Chinese AI advantage

Leading economies in the world understand the importance of artificial intelligence (AI) in generating economic growth. China is no exception. In July 2017, the Chinese State Council declared that AI was a top priority and created the Next Generation Artificial Intelligence Development Plan to catch up with the West by 2020 and overtake it by 2025.

Investment is not only coming from the government. In April 2018, SenseTime Group Ltd, backed by Alibaba, became the world's most valuable AI start/up, having raised \$600 million. By 2030, it is predicted that AI will increase China's GDP by 26.1%.

In addition to massive investment, China has other distinct characteristics that put it at an advantage in the development of AI. With more than 700 million internet users, China has a clear advantage in data volume that can be used to train AI-learning algorithms. Its unique brand of socialist market economy gives the government substantial control over market forces, creating a closer cooperation between businesses and the government, and giving Beijing economic leverage to expand its AI initiatives across many industries. Additionally, China has relatively few privacy protection laws, providing the government with extensive access to consumer data, a key to AI development.

China's innovation talent gap

Despite heavy investment and easy access to data, however, we believe China will struggle to realize its AI ambitions. The main obstacle for AI development in China is not lack of funding, but lack of innovative talent.

China is not short on raw technical talent – quite the opposite. The number of STEM (science, technology, engineering, and mathematics) graduates has been particularly explosive as part of the government's push to develop a technical workforce. In 2013, 40 percent of Chinese graduates finished a degree in STEM, more [than twice the U.S. average](#).

Nevertheless, we believe that AI advancements will plateau as China struggles with its lack of innovative talent. This limiting factor cannot be easily overcome by government legislation, as it must be fostered through a culture of entrepreneurship, something that the country is sorely missing.

In recent years, China has been importing its AI talent from overseas. According to LinkedIn's Global AI Talent report published in July 2017, 44% of the overseas AI talent working in China comes from the US, followed by the UK and France as the second and third source countries. Roughly 90% of AI positions advertised in Mainland China go unfilled unless companies offer them to overseas workers. The number of Chinese AI job postings on LinkedIn surged from about 50,000 in 2014 to 440,000 in 2016, according to Wang Di, vice-president of LinkedIn China. China ranked 40th and 31st out of 63 countries in [the IMD World Talent Report](#) and [Digital Competitiveness Report](#), respectively.

Educational barriers

Inhibiting creativity starts in school and carries through higher education. Jack Ma, founder of the Alibaba Group, suggests that the Chinese education system does not give students enough time to have fun, [explore and experiment](#). It is often in these moments that great ideas are born. Chinese students, especially at university level, are so consumed by academics that they rarely get an opportunity to experiment with outside-the-classroom learning and growth.

A study conducted by researchers from Kyungpook National University in South Korea to analyze creativity in Chinese and Korean universities concluded that Chinese students at top-ranked institutions were less creative than those at less prestigious institutions. Once they enter the

workforce, these graduates struggle to step out of their disciplined and rigidly structured environment. As a consequence, they tend to produce superficial, mechanical innovations that require little imagination.

Students who enter top Chinese universities, through China's brutal Gaokao entrance exams, have their creativity muted by a system that rewards rote [memorization over original thinking](#). While China produces twice as many college graduates as the United States, it fails to cultivate entrepreneurial and [creative spirit in these highly educated workers](#).

Overcoming cultural barriers

Culture also plays an important role. Whereas risk-taking and entrepreneurship are woven into the fabric of many Western cultures, the Chinese mentality is imbued with unity, obedience and reputation. Both China's current communist system and its ancient culture have long stressed the importance of social cohesion. Rather than prioritizing their own interests, people are encouraged to think collectively, placing the majority over the individual. The stress placed on saving face means that people are scared to take risks out of fear of damaging their social standing.

These powerful cultural norms are a threat to the development of courageousness in innovation, which is a necessary condition for creating new ideas. Moreover, Confucianism highlights the importance of showing obedience to superiors. Thus, workers will often blindly follow their leaders without question. These cultural factors thus become a limitation to what Chinese companies can produce qualitatively. It cannot help that, because of government censorship, AI researchers in China do not have access to key research tools, like Google.

Chinese digital giants, like Alibaba, Tencent, and Baidu, have compensated for these cultural barriers with speed and agility. Frequent tiny, incremental changes can add up to large innovations over time. Tencent's WeChat started out as a direct copy of WhatsApp, but through thousands of rounds of iterative improvement, it has become something much more impressive. However, AI is uncharted territory, and innovations tend to be less linear than for apps, games, and marketplaces. It is unlikely that Chinese giants can use fast, incremental approaches to compensate for a lack of AI innovation.

Crossing the AI Innovation Chasm

China has the potential to become the preeminent global superpower in AI innovation. Money and other resources are available and its people have boundless intellectual capacity. At the moment, however, the cultural climate with respect to innovation is very restrictive. By fostering creativity from an early age, and reducing structural barriers, China's model for AI development would become more sustainable. Heavy R&D investment will boost the economy for a while, but a continued lack of innovative talent may leave it at standstill.

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