



22nd Annual Global CEO Survey
Food industry report

Innovation is not optional in the age of New Retail





Waves of innovation and a background of uncertainty

Against a backdrop of increasing pessimism, protectionism and populism, the food industry is being transformed by waves of innovation. While CEOs across all industries have lowered their expectations for global economic growth, food industry CEOs are confident in their companies' own growth prospects over both the near term and the long term. Their top concerns are taxes, over-regulation and uncertainty related to policy and trade. They face challenges with hiring and the availability of key skills. Trade conflicts are pushing some food industry CEOs to adjust their supply chains or their growth strategies.

At the same time, the industry is being transformed by changing customer behaviour and innovation. Of all the world's markets, China's retail food and restaurant sectors have seen the fastest introduction and adoption of multiple waves of new technologies.



China's innovation offers a glimpse of the future

59% of China's consumers

are likely to buy groceries online, compared to a global average of 22%.



400 million consumers in China

have used mobile restaurant ordering and delivery apps to purchase meals.



Food industry CEOs from around the world can look at China's digital retail and "New Retail" transformations to see their own future and understand how their business models will likely change.

Digital Retail

Over the last five years, China's retail market has experienced a digital growth miracle. Social media, e-commerce and mobile payments have already been seamlessly integrated. Purchasing decisions can be driven by social media influencers, crowd-sourced ratings on third-party platforms, or data-driven personalised offers.

PwC's Global Consumer Insights Survey 2018 found that 50% of Chinese consumers buy products online weekly (compared to a global average of 22%), and 59% are likely to buy groceries online (compared to 21% globally.) China's urban millennials order their groceries and restaurant meals on smartphones and expect delivery within 30 minutes. Of China's 800 million smartphone users, nearly 600 million have used their smartphones for payments and online purchases; and more than 400 million have ordered restaurant meals for delivery.¹

New Retail²

This intense connectivity has led to a proliferation of big data that is being used, along with artificial intelligence (AI), to optimise customer engagement. 67% of Chinese consumers expect retailers to have up-to-date information on them and to personalise their experience accordingly, compared to 42% globally.³

China's e-commerce giants are adopting an omni-channel approach by building or acquiring chains of supermarkets to provide a traditional retail experience while also serving as local distribution centres for rapid delivery of online orders.

China's New Retail approach is going beyond customer engagement and is transforming the entire value chain with data and technology. Retailers are building smarter, more flexible, multi-purpose supply chains that are capable of orchestrating inventory across online and offline channels.

Brand owners are using data to make product development more demand-based and tailored, with shorter time to market.

1. China Internet Network Information Centre, *The 43rd China Statistical Report on Internet Development*
2. PwC, *China's next retail disruption: End-to-end value chain digitisation*
3. PwC Global Consumer Insights Survey 2018

Growth expectations

Only **39%** of food industry CEOs are confident about global economic growth.



but **74%** of food industry CEOs are confident about their own business.



Against a global backdrop of pessimism, protectionism and populism, we surveyed CEOs from around the world. Among the world's three largest consumer markets, only the US showed accelerating GDP growth in 2018. China's 6.6% GDP growth was high compared with other markets but was slower than 2017. The IMF expects slower growth in 2019 for China, the US and the EU. Only 39% of food industry CEOs expect global economic growth to improve during the next 12 months, compared to 42% of CEOs across all industries.

But 74% of food industry CEOs are confident in their own business prospects during the next 12 months. Over a longer time horizon, food industry CEOs are even more confident, with 88% expressing confidence in their own business prospects during the next three years, compared to 85% of all CEOs.

Figure 1
Global economic growth over next 12 months

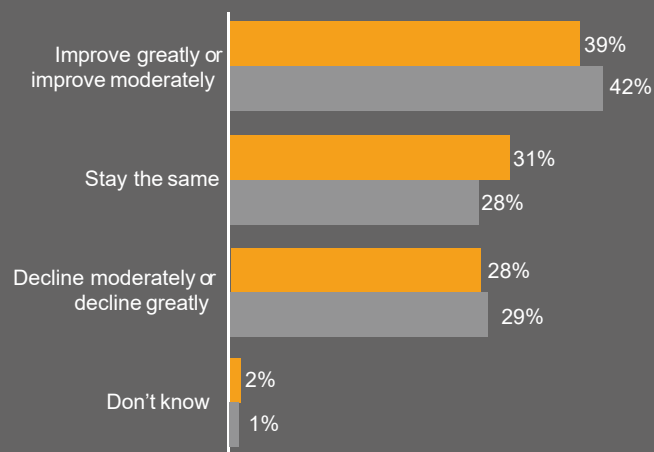


Figure 2
Own business prospects for growth over next 12 months

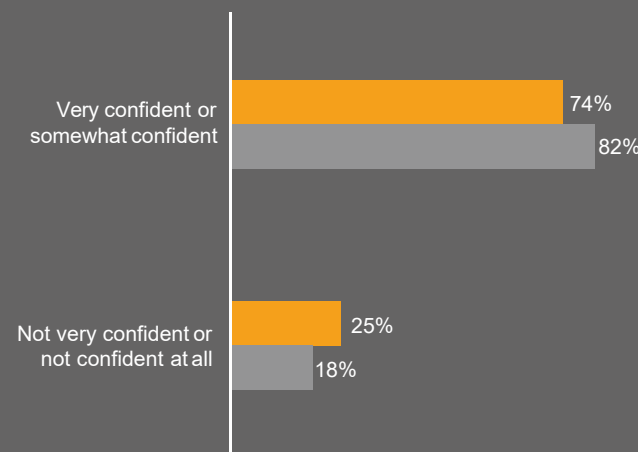


Figure 3
Own business prospects for growth over next 3 years

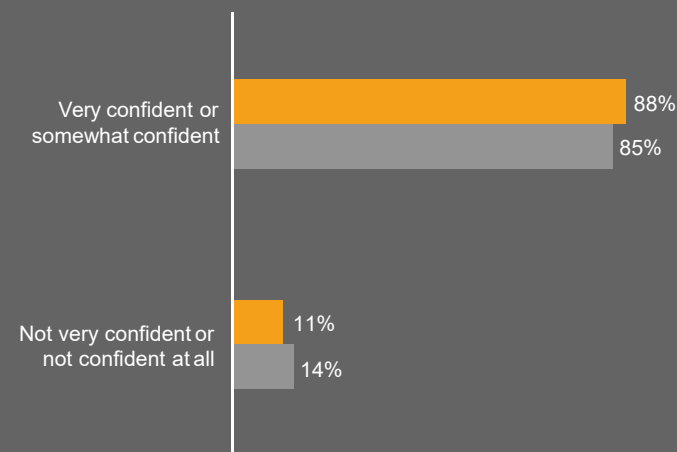
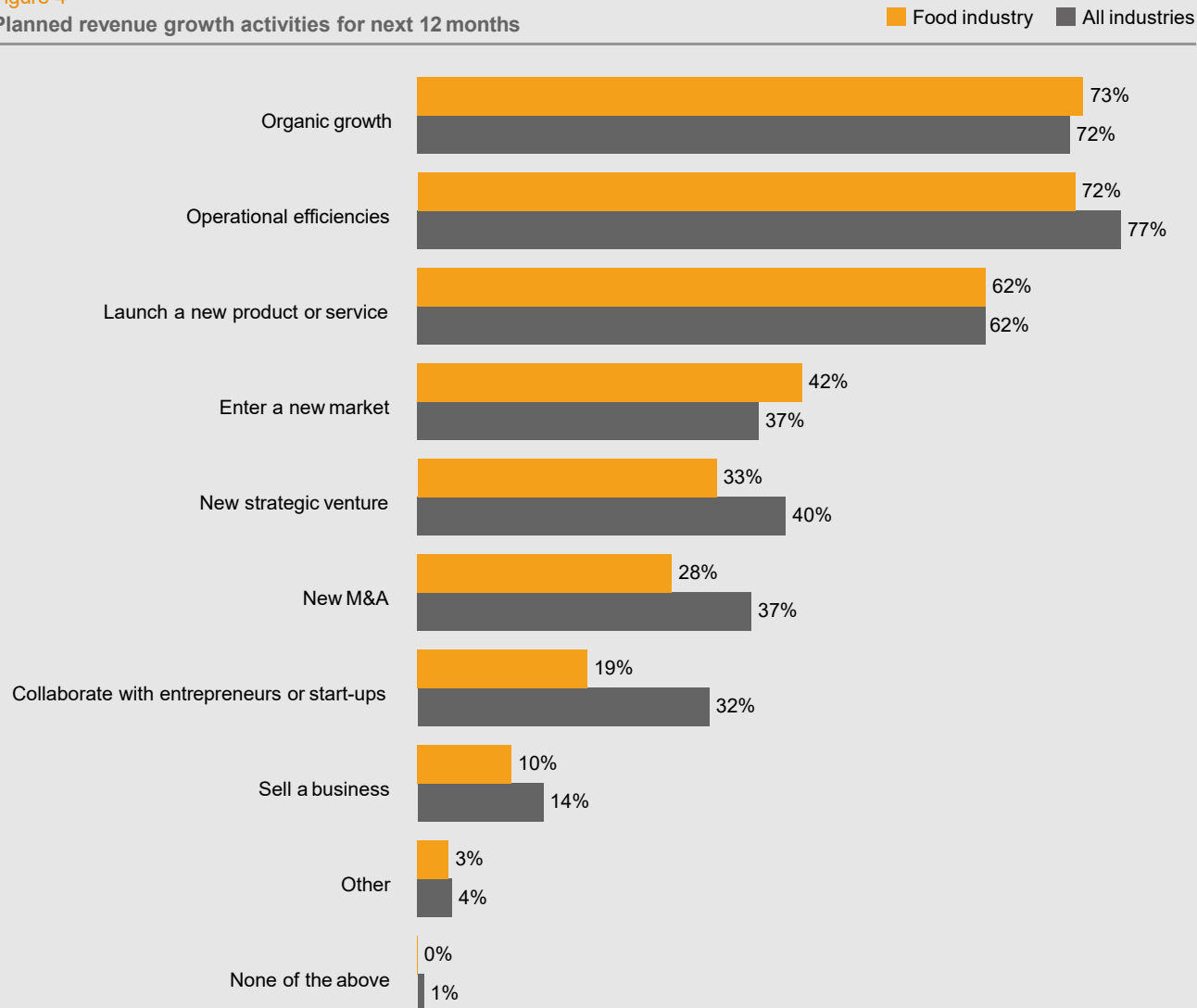


Figure 4
Planned revenue growth activities for next 12 months



Growth initiatives

Most food industry CEOs are planning to increase revenues during the next 12 months through organic growth, operational efficiencies and new products or services. More than 40% are looking to enter a new market.

Even though only 28% of food industry CEOs are planning new M&A and only 19% are planning collaboration with entrepreneurs or start-ups, there has been significant activity in these areas.

E-commerce giants in the US and China have been acquiring and building their own physical grocery store chains, taking an omni-channel New Retail approach.

Leading branded food and beverage companies have been acquiring start-ups or small businesses in order to more quickly adapt to changing consumer preferences. Examples include craft breweries and distillers, better-for-you brands, organic farming companies and artisanal specialties.

In order to connect with entrepreneurs even earlier, several food industry giants now have their own incubators and accelerators. In addition to new products and brands, they are working with start-ups to upgrade their technical capabilities, such as data analytics, machine learning, robotics, etc.

73% of food industry CEOs



are planning to increase revenue with organic growth.

Artificial intelligence

74% of food industry CEOs either agree (48%) or strongly agree (26%) that artificial intelligence (AI) will change the way they do business during the next five years.

At the same time, only 22% of them currently have AI initiatives in their businesses that are fundamental to their operations (1%), used on a wide-scale basis (4%) or have limited uses (17%). Another 34% have plans to start introducing AI during the next 3 years. Those who don't yet have in-house AI initiatives are probably already benefiting from (or competing against) AI technology embedded in third-party e-commerce platforms.

More and more people are using AI-driven "voice commerce" on home-based devices to replenish household supplies and groceries. Consumers in China appear to be more receptive

than those in the US or Europe. PwC's 2018 Global Consumer Insights Survey found that 21% of Chinese consumers surveyed already own an AI device, compared to about 15% in the US, UK and France, and 10% globally. More than half of respondents in China (52%) plan to buy one, compared to about 25% in the US, UK and France, and 32% globally.⁴

AI is revolutionising how companies profile and segment customers. It is helping stores optimise real-time inventory and improve shelving techniques. The technology is also transforming logistics and delivery.⁵

AI's integral role in inventory, logistics and supply chain optimisation will continue as data generated by the internet of things (IoT) overtakes data generated by the internet of

people. In the future, AI will help companies anticipate demand based on market signals.⁶

With their New Retail approach, China's e-commerce giants are already leading the way in using big data and technology to engage consumers and optimise their entire supply chains.

74% of food industry CEOs agree that AI will change the way they do business during the next five years.



Figure 5
Artificial intelligence will significantly change the way you do business in the next 5 years.

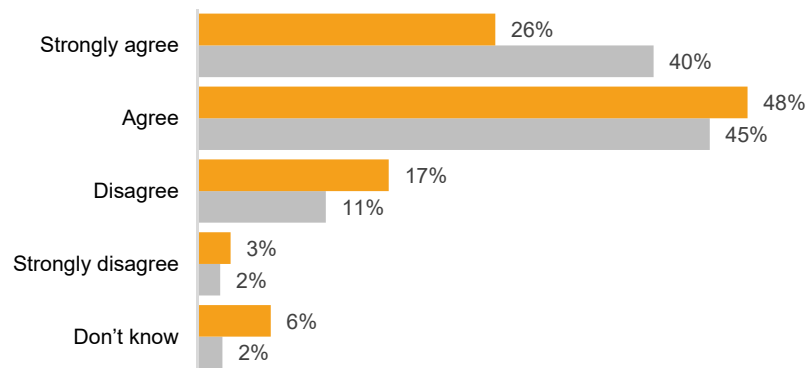
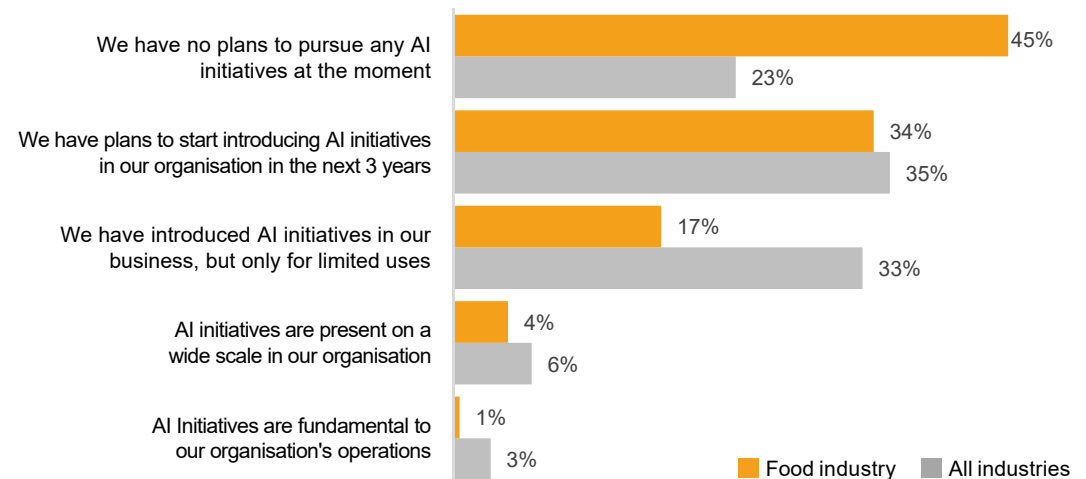


Figure 6
Which statement best applies to your company?



4. PwC Global Consumer Insights Survey 2018
 5. PwC, *Artificial intelligence: Touchpoints with consumers*
 6. PwC, *Sizing the prize: What's the real value of AI for your business and how can you capitalise?*

What's keeping the CEO up at night?

In an industry often characterised by low margins, the top concerns of food industry CEOs are those issues that will affect their bottom line. Of the food industry CEOs we surveyed, 39% cited tax burdens, 32% cited exchange rate volatility and 28% identified volatile commodity prices as serious concerns, (compared to only 25%, 27% and 19% of CEOs across all industries.)

36% of food industry CEOs were extremely concerned about over-regulation and 35% cited policy uncertainty. These likely reflect the influence of agricultural policy, food safety regulation, labelling requirements, import/export restrictions, etc.

Only 15% of food industry CEOs were extremely concerned about readiness to respond to a crisis, and only 12% were extremely concerned about the lack of trust in business. This suggests some potential blind spots with regards to food safety, food fraud, crisis management and supplier management.

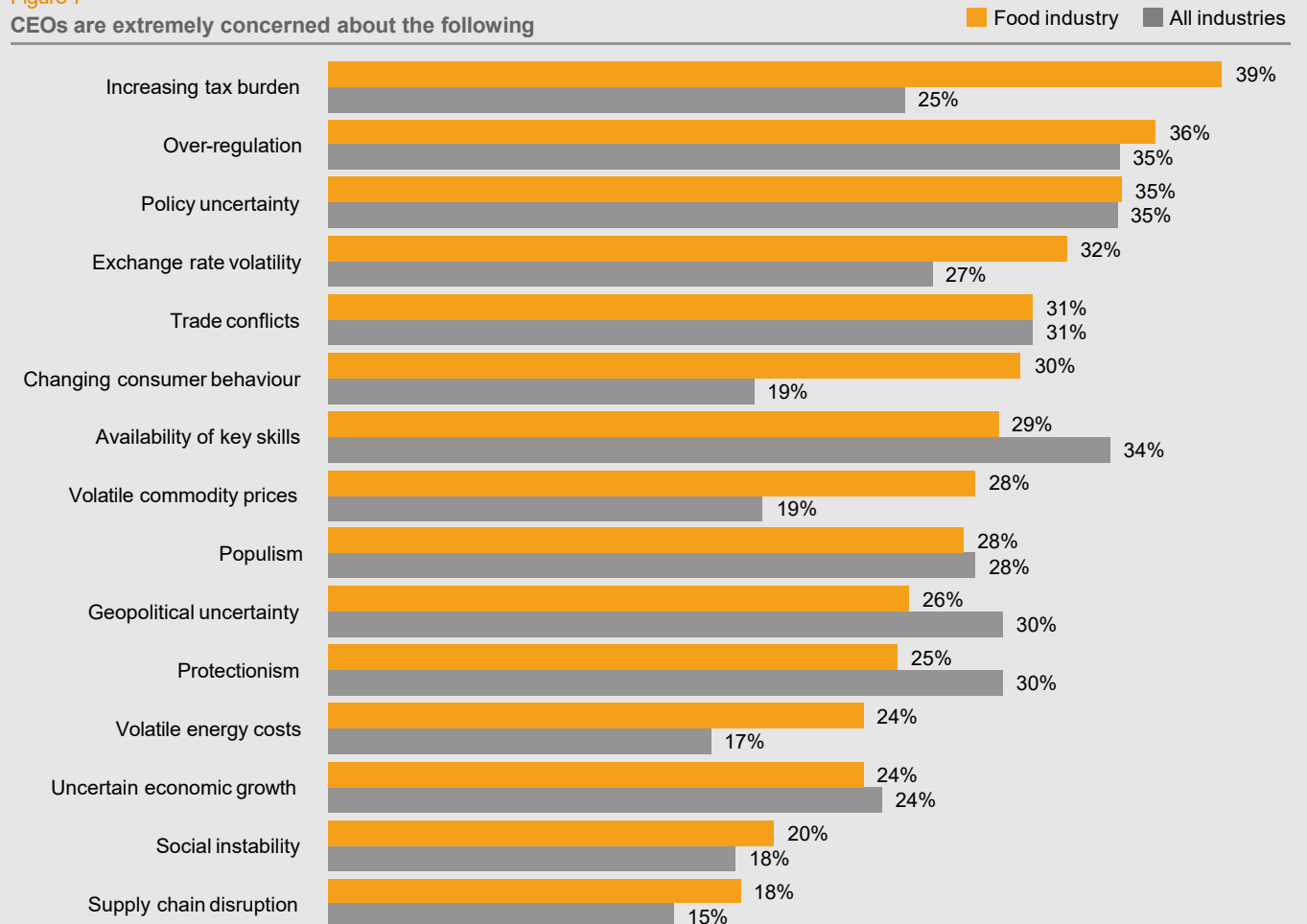
39% of food industry CEOs

are extremely concerned about increasing tax burdens, compared to 25% across all industries.



Figure 7

CEOs are extremely concerned about the following



Key skills and hiring

75% of food industry CEOs said that they were extremely concerned (29%) or somewhat concerned (46%) about the availability of key skills.

With digital retail, big data and AI playing increasingly large roles in the grocery and restaurant sectors, food industry companies require new skills to stay competitive.

Even though 74% of food industry CEOs feel confident about their revenue growth over the next 12 months, 54% expect their headcount to stay the same (35%) or decrease (19%) during that same period.

60% of food industry CEOs said that their people costs were rising more than expected due to limited availability of key skills. Others indicated that the limited availability of key skills was negatively affecting innovation (55%), quality and/or customer experience (42%), the ability to pursue market opportunities (40%) or the achievement of growth targets (37%).

Only **46%** of food industry CEOs

expect to increase headcount during the next 12 months.



Figure 8

Headcount expectations during next 12 months

Food industry All industries

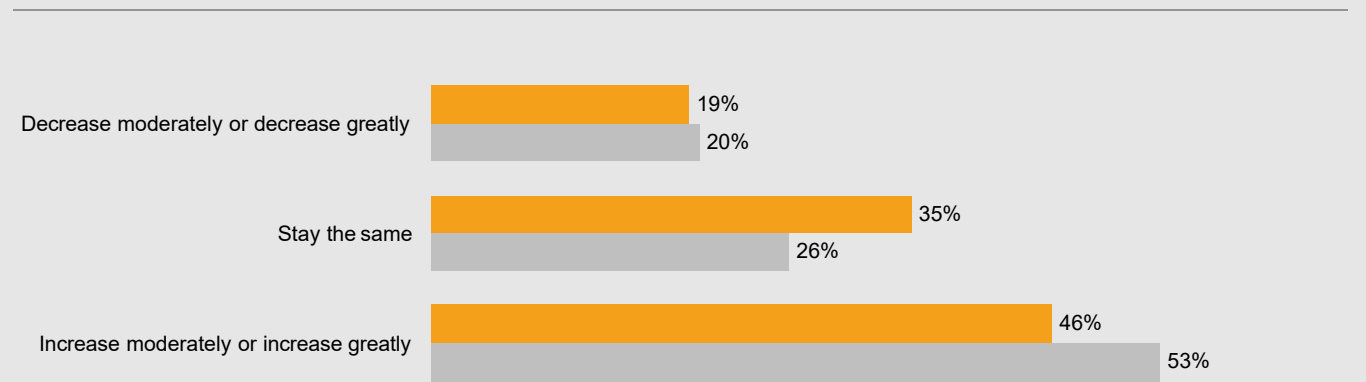
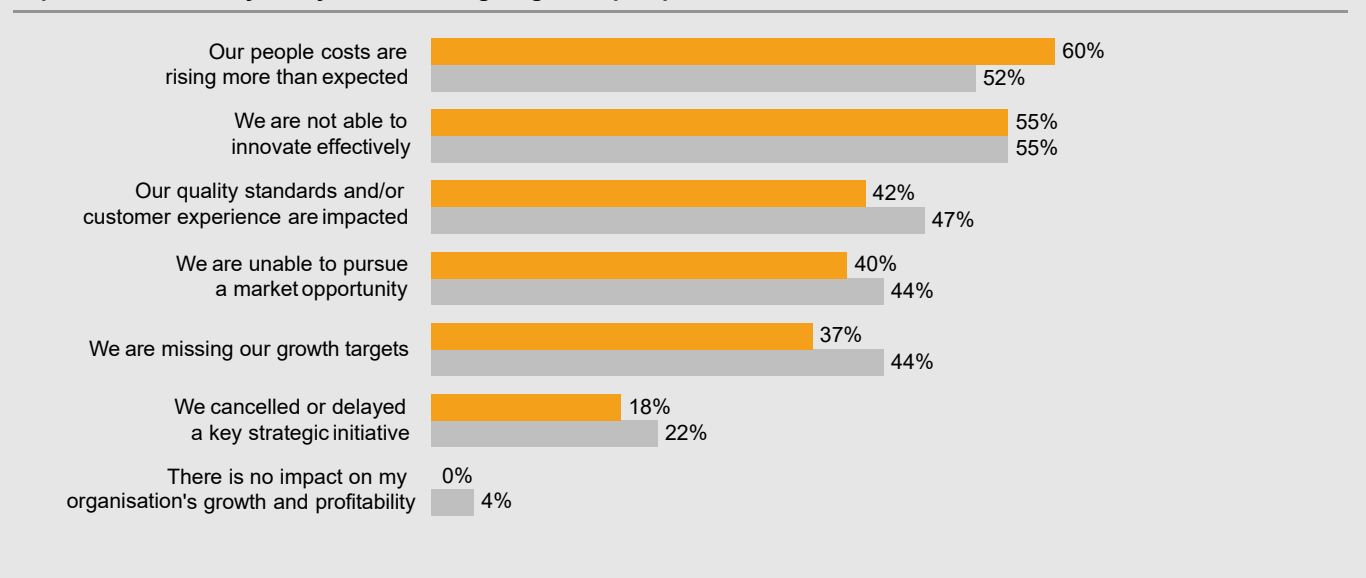


Figure 9

Impact that availability of key skills is having on growth prospects



69% of food industry CEOs



say it has become more difficult to hire workers.

Figure 10

Has it become more or less difficult to hire workers in your industry?

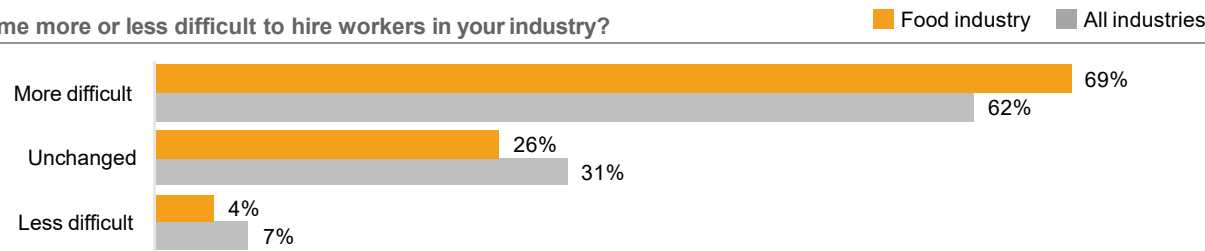
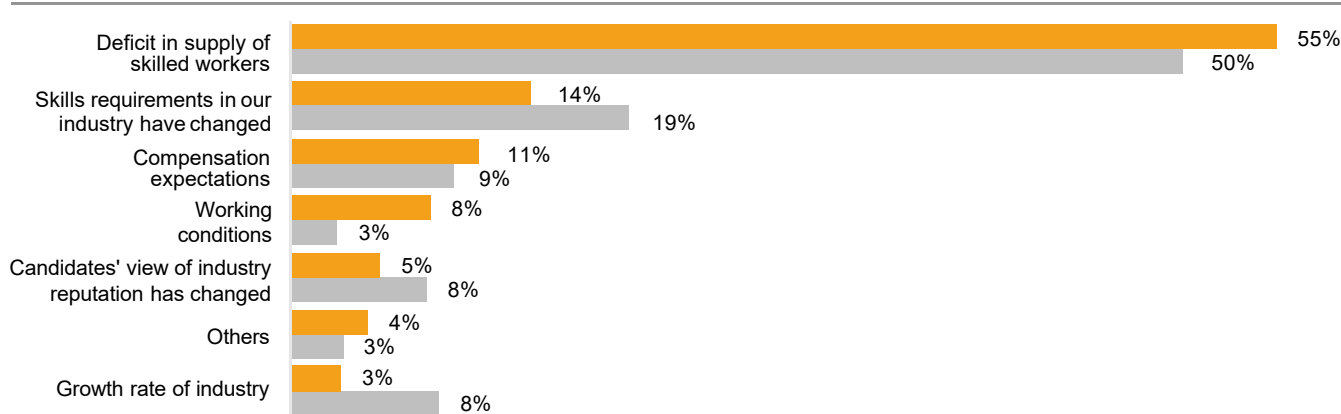


Figure 11

Primary reason it has become more difficult to hire workers



These limited headcount growth expectations reflect the fact that 69% of food industry CEOs said it has become more difficult to hire workers. 55% of them said that hiring is more difficult due to a deficit in skilled workers.

Labour markets are tightening for both demographic and economic reasons across the globe. Most food industry CEOs were either extremely concerned (17%) or somewhat concerned (34%) about changing workforce demographics.

US unemployment is at its lowest in 50 years.⁷ The cost of living in prosperous cities is squeezing the food service and retail workforce. At the upstream end of the supply chain, hiring of seasonal farm workers is increasingly difficult.

In China, the unemployment rate is well below 5%. The working age population declined by 2.8% between 2011 and 2018,⁸ during which time annual GDP growth averaged 7.4%.⁹ Looking forward, China's working age population could fall by 200 million by 2050 according to a report from the Chinese Academy of Social Sciences.¹⁰

The EU's working age population is expected to decline by more than 10% between 2019 and 2050.¹¹ By 2060, Japan's working age population is expected to be 35% lower than in 2015, and 45% lower than its 1995 peak.¹²

CEOs may be limiting headcount, but most are also improving productivity. 72% of CEOs plan to grow revenues during the next 12 months through operational efficiencies.

7. US Bureau of Labor Statistics
 8. World Bank
 9. Caixin, "Chart of the Day: China's Shrinking Workforce", 29 Jan 2019, <https://www.caixinglobal.com/2019-01-29/chart-of-the-day-chinas-shrinking-workforce-101375782.html>
 10. 社会科学文献出版社,《人口与劳动绿皮书:中国人口与劳动问题报告 No. 19》发布会召开, 3 Jan 2019, <https://www.ssap.com.cn/c/2019-01-03/1074956.shtml>
 11. EUROSTAT
 12. National Institute of Population and Social Security Research, *Population Projections for Japan (2016-2065)*, http://www.ipss.go.jp/pp-zenkoku/e/zenkoku_e2017/pp_zenkoku2017e_gaiyou.html

International growth opportunities

The US and China topped the list of foreign markets identified by food industry CEOs as important to their companies' growth. These two countries have the world's largest consumer markets; and food industry revenue ultimately depends on consumer spending.

The US offers one of the world's highest per capital incomes (USD 31,177/year)¹³ and a large population, but its market is relatively mature. Chain restaurants and national brands already claim a large share of the market. Opportunities can still be found in the US consumers' openness to innovation and new concepts.

China has a population of 1.4 billion. Disposable income is still growing and consumer preferences are constantly changing due to income growth, urbanisation, technology and international exposure. The relatively low penetration

of national brands and chain restaurants implies opportunities for market entry and growth, although foreign businesses may face challenges due to physical geographic barriers, cultural differences, intense competition and a challenging regulatory environment.

Food industry CEOs also identified the largest countries in Western Europe as important foreign markets. The markets of the UK, France, Germany and Spain are mature and much smaller than those of the US and China. But they are also wealthy and have minimal transportation, trade, investment and cultural barriers with neighbouring countries. 75% of exports from countries in the EU's single market are to other countries within the EU's single market.¹⁴ In contrast, the North American and Chinese consumer markets are relatively self-contained.

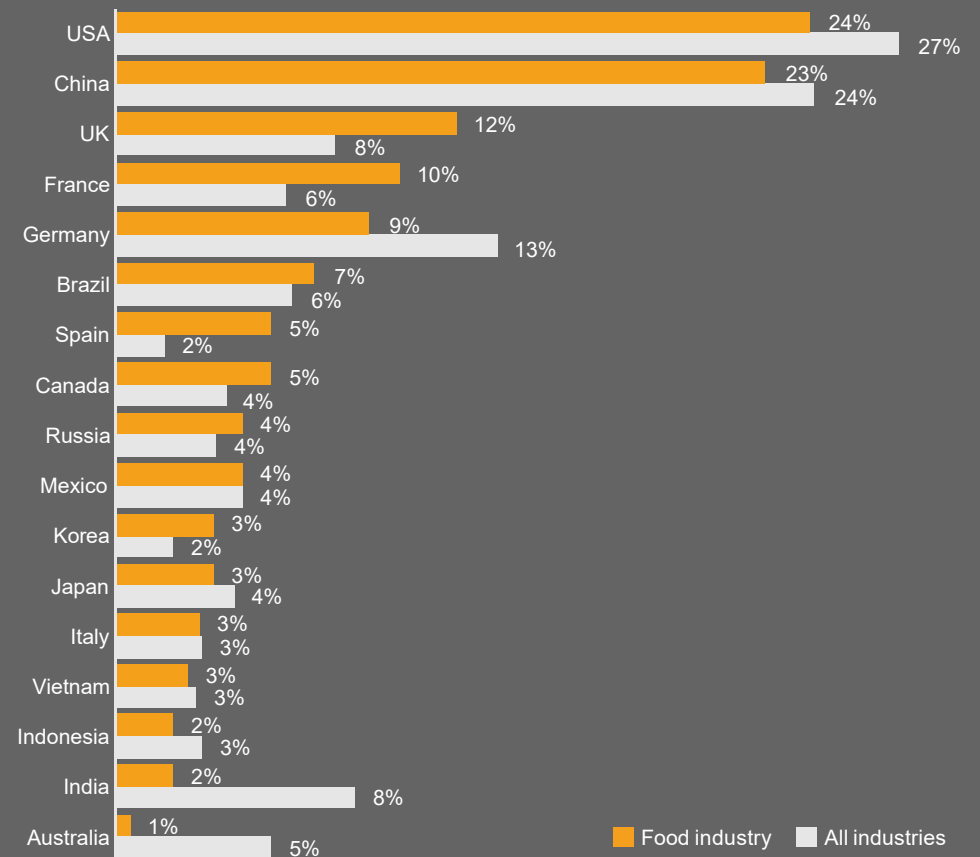
24% of food industry CEOs

identified the US as an important foreign market and 23% cited China.



Figure 12

Which three foreign countries/territories are most important for your growth prospects over the next 12 months?

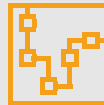


13. US Census Bureau

14. FoodDrink Europe, *Data & Trends: EU Food & Drink Industry 2018*

Trade conflicts

43% of food industry CEOs



said that they were adjusting their supply chain and sourcing strategy due to trade conflicts.

69% of food industry CEOs were either somewhat concerned (38%) or extremely concerned (31%) about trade conflicts. 62% were somewhat concerned (37%) or extremely concerned (25%) about protectionism.

43% said that they were adjusting their supply chain and sourcing strategy due to trade conflicts. 27% said that they were shifting their growth strategy to alternate territories. 33% of food industry CEOs said that there were no changes to their operating model or growth strategy due to trade conflicts.

Figure 13
% of CEOs that are concerned about these trade conflicts:

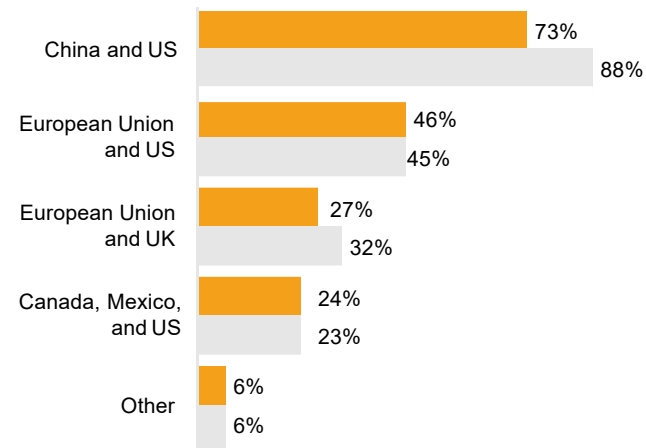
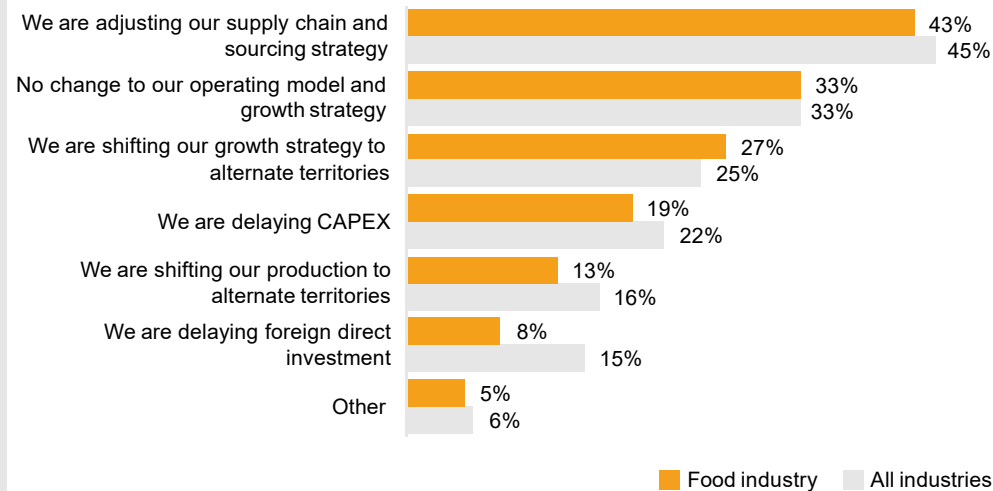


Figure 14
How are trade conflicts affecting your operating model and growth strategy?



Food industry All industries



In 2018, the US imposed tariffs on aluminium and steel imports from most of its trading partners. Many of them retaliated with tariffs on US food and agricultural goods.

US/China trade conflict

73% of food industry CEOs were concerned about the China/US trade relationship. During recent years, China has had a large overall merchandise surplus with the US, while the US has maintained a trade surplus in agrifood¹⁵ products. The China/US trade relationship combines volatility with a large impact over a broad range of products.

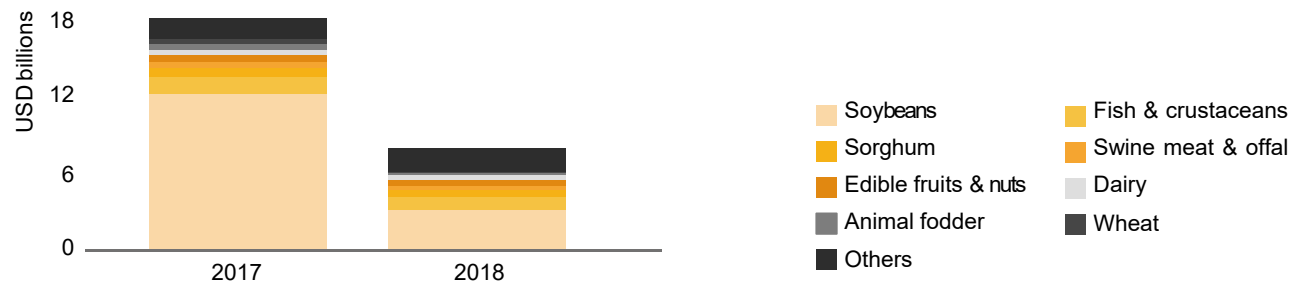
In addition to aluminium and steel, the US imposed new 25% tariffs on about USD 200 billion worth of Chinese imports. China imposed retaliatory tariffs that cover 99% (by value) of all US food and agricultural exports to China.¹⁶ As a result, China dropped from the second largest export market for US agricultural products in 2017 to the fifth largest in 2018, behind Canada, Mexico, the EU and Japan.¹⁷ Both sides have threatened additional rounds of retaliation.

Soybeans and pork are two products where the China/US trade conflict could have a large impact. In 2018, China produced and consumed about half of the world's pork, more than twice the production of the EU and four times that of the US. As China's hog production has shifted away from small household farms, it has become dependent on imported soybeans to feed pigs on commercial farms. In 2017, China relied on imports to supply more than 85% of domestic soybean consumption¹⁸ and accounted for more than 60% of global soybean imports.¹⁹

US soybean exports have felt the largest impact from China's retaliatory tariffs. In 2017, the US exported more than 12 billion dollars worth of soybeans to China, accounting for two-thirds of total US agrifood exports to China.

In 2018, China raised tariffs on US soybeans from 3% to 28%. US soybean exports to China fell by 70% to USD 3.7 billion and total US agrifood exports to China fell by more than 55%.²⁰ China's soybean imports now come mainly from Brazil.

US agrifood exports to China²⁰



US agrifood exports to China fell by

55% in 2018.



15. Agrifood refers to HS codes 01-22

16. US Congressional Research Service, *Profiles and Effects of Retaliatory Tariffs on US Agricultural Exports*, 31 Dec 2018

17. USDA

18. Ministry of Agriculture and Rural Affairs, 《做强大豆产业推动区域经济发展 – 对黑龙江省大豆产业现状的分析与思考》, 27 Jun 2018, http://www.moa.gov.cn/xw/qg/201806/t20180627_6153261.htm

19. UN Comtrade

20. USDA

China's tariffs on US pork meat and offal have increased from 12% to 62%. During recent years, China has only imported 2-3% of its pork meat consumption, but imports are expected to rise significantly in 2019 due to the outbreak of African swine fever. The disease has impacted China's swine production, and domestic pork prices in China are expected to reach record highs in the second half of 2019.²¹

China's pork imports from the EU and the US could rise significantly in 2019 to address the supply disruption, but total global pork meat exports were only 8.4 tonnes in 2018, less than 20% of China's 2017 consumption. More than 30% of global pork exports in 2018 originated from the US.²²

US tariff increases have targeted a much broader scope of products, but have not had much impact on China's agrifood exports. Despite the ongoing trade conflict, the US imported about 7 billion dollars worth of agrifood products from China 2018, an increase of nearly 10% over 2017. China's agrifood exports to the US consist largely of seafood (40%) and fruits, vegetables and nuts (25%).²³

US/EU trade conflict

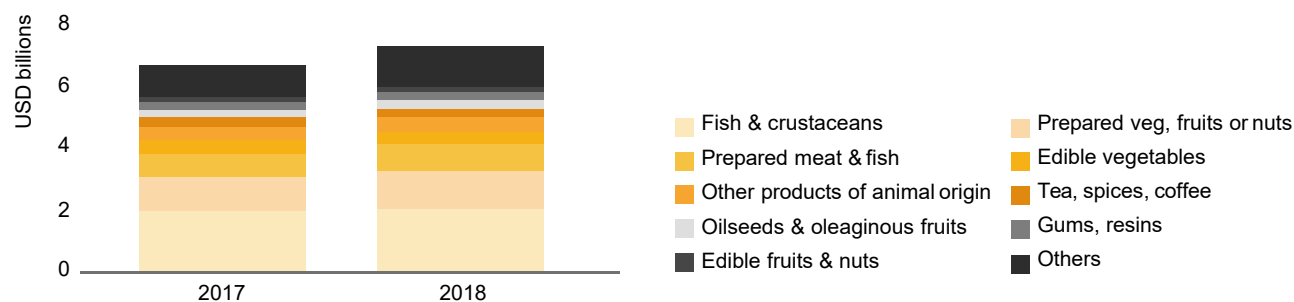
46% of food industry CEOs were concerned about the US/EU trade relationship. In response to the US levies on steel and aluminium imports, the EU has imposed 25% tariffs on products that accounted for about 8% of US agricultural exports to the EU in 2017, (i.e. prepared vegetables and legumes, grains, fruit juice, peanut butter and whiskey).²⁴ The US has threatened further tariffs on EU automobiles and parts. If these were imposed, the EU would retaliate with further tariffs on US exports, including multiple categories of food and agricultural products.

The US is the EU's largest export market for food and drink products outside of the single market, purchasing more than 22 billion euros of agrifood exports in 2018,²⁴ double the value of the EU's agrifood exports to China.

The value of US agrifood exports to the EU, however, was only about USD 13 billion. The two sides disagree on whether agricultural products should be included in the next rounds of trade discussions.²⁵

The EU exported about 126 billion euros of food and drink products to markets outside the EU in 2017. Alcoholic beverages account for about 20% of EU agrifood exports while meat and dairy account for about 15%.²⁶

China agrifood exports to the US²³



21. Ministry of Agriculture and Rural Affairs, press conference, 17 Apr 2019, http://www.gov.cn/xinwen/2019-04/17/content_5383722.htm
 22. USDA, *Livestock and Poultry: World Markets and Trade*, 9 Apr 2019
 23. USDA
 24. US Congressional Research Service, *Profiles and Effects of Retaliatory Tariffs on US Agricultural Exports*, 31 Dec 2018
 25. FoodDrink Europe, *Trade Bulletin Q4 2018*, Apr 2019
 26. *Reuters*, "EU says it is ready to launch U.S. trade talks, but without agriculture", 15 Apr 2019
 27. EUROSTAT

Only

50% of food consumed in the UK



originates for domestic sources.

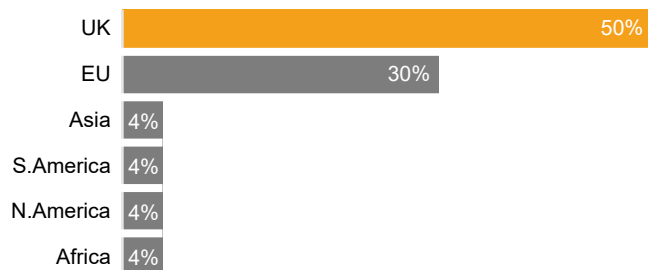
UK/EU trade conflict

Only 27% of food industry CEOs were concerned about the trade relationship between the UK and the EU. A sudden exit from the EU single market would be very disruptive for both companies and consumers in the UK. Products crossing borders with EU countries would be subject to new tariffs, bureaucracy and customs delays. The impact could also be severe in Ireland, where about half of all food exports go to the UK, including significant amounts of fresh beef and dairy. The impact will be much smaller for companies in continental Europe and beyond.

The UK is a net importer of food. According to the government, only 50% of food consumed in the UK originates from domestic sources, while 30% originates from other EU countries.²⁸

In 2018, the UK exported GBP 22.6 billion worth of food and drink products, of which more than 60% went to other EU countries. Whisky accounts for more than 20% of the UK's food and drink exports. Seven of the UK's top 10 export markets are in the EU, with the US (#2), China (#8) and Australia (#10) as the exceptions.²⁹

Origins of food consumed in the UK (2017)²⁸



28. UK Department for Environment, Food and Rural Affairs, *Food Statistics in your pocket 2017 – Global and UK supply*, <https://www.gov.uk/government/publications/food-statistics-pocketbook-2017/food-statistics-in-your-pocket-2017-global-and-uk-supply>

29. Food & Drink Federation, *Exports Snapshot 2018*, 25 Mar 2019, <https://www.fdf.org.uk/exports-2018-q4.aspx>

30. USDA

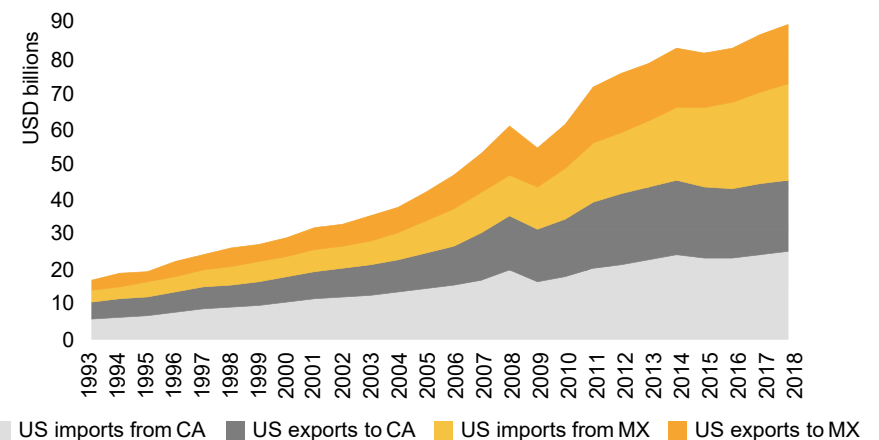
Canada/Mexico/US trade conflict

24% of food industry CEOs are concerned about trade conflicts between Canada, Mexico and the US. The North American Free Trade Agreement (NAFTA) came into force in 1994, creating the world's largest free trade area at the time. Since then, US agrifood trade with Mexico and Canada has grown from USD 17 billion in 1993 to USD 90 billion in 2018.³⁰

Food industry and agricultural supply chains have undergone major integration and specialisation during those 25 years. The US-Mexico-Canada (USMCA) agreement, negotiated in 2018 as an update to NAFTA, will make some changes to the trade in food and agricultural products, most notably in Canada's dairy sector.

If any of the three countries were to withdraw from NAFTA before the ratification of the USMCA, there would be significant disruption in the North American food and agriculture sectors.

US agrifood trade with Canada and Mexico³⁰



In the face of change and uncertainty, innovate while managing risks

Companies in the food industry need to keep up with the trend towards New Retail or risk being left behind. China's rapid adoption of new technologies and business models offers a roadmap for companies in other markets to follow. With uncertain prospects for economic growth and potential for further disruptions of international trade, food industry leaders need to keep their options open with regards to growth plans and supply chains.

- **Digital engagement:** Build a digital organisation to keep up with innovations in digital marketing practices and technology through in-house development or by partnering with third parties. Consumers increasingly expect the seamless integration of e-commerce, social media and mobile payments. Companies will be left behind if their products don't appear in data-driven recommendations and curation.
- **New Retail:** Going beyond digital marketing and sales channels, companies will need an integrated omni-channel approach in order to develop and deliver a tailored selection of products to consumers whenever and wherever they want it. On-demand 30-minute grocery and restaurant delivery is already the norm in China's first-tier cities.
- **Artificial intelligence:** AI is an increasingly integral part of New Retail. Companies need to capture the data flowing from intense digital connectivity with consumers, and use it to enhance their entire value chain, including customer engagement, demand forecasting, real-time supply chain optimisation, product development, etc.
- **Entrepreneurial infusions:** With consumer behaviours and preferences constantly changing, large companies can systematically acquire or incubate start-ups that are driving (or highly responsive to) the latest consumer trends or possess vital skills. The tech industry has long demonstrated how this approach can be more agile and effective than in-house innovation.
- **Key skills:** As customers migrate to curated selections on mobile ordering and delivery platforms, companies must have the skills to compete in this new marketplace. Traditional recruiting, training, and retention practices need to be upgraded for the digital and big data workforce.
- **Tight labour markets:** With continued economic growth and a shrinking workforce, front-line customer service and food preparation staff are becoming more expensive and difficult to hire. Food service and retail companies need innovative solutions, including increased automation and partnering with third-party ordering and delivery platforms.
- **Trade risks:** To prepare for trade disruption, commodity price volatility and exchange rate fluctuations, companies need to conduct risk analysis across all of their raw materials and intermediate products to identify imported ingredients. Companies that export also need to understand which products, markets and channels are at risk.
- **Contingency plans:** Companies should have growth and cost reduction initiatives prepared for multiple economic growth scenarios; they need alternate supply chain plans to prepare for trade disruptions and market volatility.

This report was written by Brian Marterer of PwC China.

Appendix — Survey questions for relevant exhibits



Figure 1. Do you believe global economic growth will improve, stay the same, or decline over the next 12 months?

Figure 2. How confident are you about your organisation's prospects for revenue growth over the next 12 months?

Figure 3. How confident are you about your organisation's prospects for revenue growth over the next 3 years?

Figure 4. Which of the following activities, if any, are you planning in the next 12 months in order to drive revenue growth?

Figure 5. To what extent do you agree or disagree that Artificial Intelligence (AI) will significantly change the way you do business in the next 5 years?

Figure 6. Please select the statement that best applies to your organisation.

Figure 7. How concerned are you, if at all, about (...)? (For each threat, the chart shows the percentage of respondents that chose "Extremely concerned")

Figure 8. Do you expect headcount at your organisation to increase, decrease or stay the same over the next 12 months? If your firm is part of a wider group, please only consider the entity for which you are CEO.

Figure 9. What impact is 'availability of key skills' having on your organisation's growth prospects?

Figure 10. In general, has it become more difficult or less difficult to hire workers in your industry, or is it unchanged?

Figure 11. Which of the following is the primary reason it has become more difficult to hire workers?

Figure 12. Which three territories, excluding the territory in which you are based, do you consider most important for your organisation's overall growth prospects over the next 12 months?

Figure 13. What specific 'trade conflicts' are you concerned about?

Figure 14. How are trade conflicts affecting your operating model and growth strategy?

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About PwC's 22nd Annual Global CEO Survey

PwC conducted 1,378 interviews in September and October 2018 with CEOs in 91 territories. Ten percent of the interviews were conducted by telephone, 73% online, and 17% by post or face-to-face.

Of these interviews, 204 were conducted with food industry CEOs from organisations in 58 territories, most of whom came from the consumer goods and retail sectors. Organisations from the wholesale, agriculture and food service sectors were also represented among the food industry respondents.

Of the food industry organisations, 27% had more than USD 1 billion in annual revenue, and 36% had between USD 100 million and USD 999 million in revenues. 20% had more than 5,000 employees and 29% had between 1,000 and 5,000 employees.

Not all figures add up to 100% as a result of rounding percentages and exclusion of 'neither/nor' or 'don't know' responses.

The research was undertaken by PwC Research, our global centre of excellence for primary research and evidence-based consulting services.



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