****

9B21M065

SATS Ltd.: GEARING FOR GROWTH

Sarah Cheah, Kritesh Patel, and Matthew Lim wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

This publication may not be transmitted, photocopied, digitized, or otherwise reproduced in any form or by any means without the permission of the copyright holder. Reproduction of this material is not covered under authorization by any reproduction rights organization. To order copies or request permission to reproduce materials, contact Ivey Publishing, Ivey Business School, Western University, London, Ontario, Canada, N6G 0N1; (t) 519.661.3208; (e) cases@ivey.ca; www.iveycases.com. Our goal is to publish materials of the highest quality; submit any errata to publishcases@ivey.ca. i1v2e5y5pubs

Copyright © 2021, Ivey Business School Foundation Version: 2021-08-31

On August 5, 2019, Khoo Seng Thiam, the senior vice-president of SATS Ltd. (SATS), the primary ground handling and inflight catering service provider at Singapore’s Changi Airport, was reviewing the latest air cargo market report produced by the trade association of the world’s airlines, the International Air Transport Association (IATA). According to the report, global air cargo volume would increase at a moderate rate after registering an unusually strong growth in 2017. Many indicators pointed toward a sustained annual growth of 4.4 per cent for the next five years.[[1]](#endnote-1) The surge in e-commerce, particularly in time-sensitive and high-value goods, had fuelled more air cargo movements across borders. While there were potential risks to the market from trade tensions, volatile fuel prices, and external competition, the general outlook was favourable for air cargo business.

With strategic foresight, SATS had built its capabilities to capitalize on these future trends. In 2010, it launched the world’s first temperature-sensitive cargo handling facility.[[2]](#endnote-2) This facility became the first in the world to receive certifications by IATA’s Center of Excellence for Independent Validators (CEIV) in Pharmaceutical Logistics and CEIV for Perishable Logistics for its excellence in handling pharmaceutical and perishable cargoes, respectively.[[3]](#endnote-3) Further, the SATS eCommerce AirHub, established in 2017, improved productivity by automating the sortation processes of mail and e-commerce goods.[[4]](#endnote-4) SATS’s aim was to grow its operations across Asia through strategic mergers and acquisitions in overseas airports. Over the years, it had expanded its cargo handling operations in Oman, Saudi Arabia, and India. The global growth in demand of pharmaceutical and perishable goods presented new opportunities for air freight handlers. With major players building cold chain facilities at airports, the market was fast becoming competitive.

As SATS considered its growth strategy for the next five years, China and Japan were identified as target markets in the cold chain logistics sector. The Chinese cold chain market was poised for growth in the coming years, with a forecasted compound annual growth rate (CAGR) of 15.6 per cent for 2018–2022. However, competition from international and local existing operators, the threat of substitution in the form of rail freight, and compliance with stringent government regulations would have to be surmounted expeditiously.[[5]](#endnote-5) Japan, on the other hand, seemed to be an attractive market, as it was among the world’s largest food importers, with imports reaching US$64 billion[[6]](#endnote-6) in 2018. In 2017–2018, Japan imported pharmaceutical goods from Singapore worth $665 million.[[7]](#endnote-7) This accounted for 4 per cent of Japan’s total pharmaceutical imports.[[8]](#endnote-8) However, expansion into Japan would not be without challenges, as any new venture would face competition from the cheaper ocean cargo services offered by other operators in China, South Korea, Taiwan, and Hong Kong, which were geographically closer to Japan than Singapore.[[9]](#endnote-9) High tax rates and labour costs, lower net operating loss (NOL) carrying periods, and a non-English-speaking environment with strong cultural differences would have important cost implications for new entrants.[[10]](#endnote-10)

It was apparent that both China and Japan had high potential that merited further attention from SATS, and Khoo and his team needed to choose between the two opportunities. For future growth in the next five years, would the company consider the Chinese air cargo market, which was in a stage of high growth but fraught with bureaucracy? Or would it focus on the Japanese air freight industry, which was more established but challenging to foreign investment?

OVERVIEW OF the GLOBAL AIR CARGO INDUSTRY

Since the turn of the century, the global air cargo industry had seen its fastest growth in the past three years.[[11]](#endnote-11) Starting from a seven-year low of $80.8 billion in 2016, industry revenue shot up to $109.8 billion in 2018. Air cargo volume growth was forecast by IATA to rise in tandem by 4.5 per cent—from 59.9 million metric tons in 2017 to 62.5 million metric tons in 2018.[[12]](#endnote-12) Although this tonnage represented less than 1 per cent of global trade by volume, it exceeded 35 per cent by value. The air cargo industry was slated to continue its ascent into the following years, doubling its revenue ton-kilometre[[13]](#endnote-13) by 2035 at a forecasted CAGR of 4.9 per cent.[[14]](#endnote-14)

The air cargo supply chain was highly complex. The point of origin, also known as the shipper, would initiate the movement of goods by handing them over to the freight forwarder for delivery to the airport. The freight forwarder was also responsible for booking space on the aircraft for the goods that were ready to travel. The crucial link between the freight forwarder and airline was completed by the exporting ground handling agent. Based on instructions furnished by the airline, the exporting ground handling agent would make provisions for warehousing and palletizing the goods into cargoes for loading onto flights. Upon reaching the destination, the importing ground handling agent would unload and de-palletize the cargoes at its warehouse into goods before passing them onto the local freight forwarder for making final delivery to the consignee (see Exhibit 1).

There were several economic factors driving the industry’s growth. Among them was a rise in the global demand for pharmaceutical products. In 2015, pharmaceutical industry intelligence providers such as IMS Health and Evaluate Ltd. forecast that the global biopharmaceutical market would see sales revenues of $1.12 trillion in 2022 (see Exhibit 2).[[15]](#endnote-15) As the transportation of most biopharmaceuticals would require a temperature-controlled environment, the air cargo industry would be poised to benefit from the rise in demand. Another economic driver of the industry was the boom in e-commerce demand. Global retail e-commerce sales were $2.3 trillion in 2017—more than double the $1.1 trillion spent in 2012. With no signs of slowing down, the e-commerce market size was projected to double again by 2021, reaching nearly $4.9 trillion in global sales. Riding on the e-commerce boom, many third-party logistics companies were offering multimodal services, which included air cargo services as a critical mode of transportation. Leading the world market in 2017 was the Asia-Pacific region, at 34.7 per cent share, followed by North America, at 23.2 per cent (see Exhibit 3).[[16]](#endnote-16) The region’s dominance was forecast to continue from 2018 to 2037 due to the rising affluence and increased spending of its middle class.[[17]](#endnote-17) According to a Boeing Company (Boeing) forecast, the routes leading in air cargo traffic growth included routes within domestic China and East Asia, East Asia–North America routes, and Europe–East Asia markets.[[18]](#endnote-18)

As consumers’ expectations of fast goods delivery through e-commerce channels continued to rise, their preference for air freight over ocean freight became more compelling. A 2018 survey conducted by Dropoff found that 43 per cent of respondents expected companies to have much faster delivery times, compared to 35 per cent of respondents in the previous year. [[19]](#endnote-19) The rising trend was evident in global online shopping events such as Amazon Day, launched in 2019 by Amazon.com Inc., which allowed packages to be delivered more quickly on exact delivery dates specified by the consumers.[[20]](#endnote-20)

A white paper produced by IATA in March 2019 highlighted the future possibilities of technological advances for cargo facilities. Many cargo facilities were envisioned to be automated by 2030, on the back of several key technologies. First, robotics and automated systems were slated to increase productivity, precision, and quality of processes in cargo facilities. Brendan Sullivan, head of cargo operations for IATA, reported that 80 per cent of operations were outsourced to third-party ground handlers and that, given this, the introduction of robotics was crucial for the accurate and constant flow of information down the value chain.[[21]](#endnote-21) Second, Internet of things (IoT) technology would drive the interconnectedness of cargo and allow for better identification, tracking, monitoring, and interaction between everything and everyone within the entire cargo facility. Growing at a CAGR of 19.6 per cent, the number of IoT-enabled devices used in the cargo industry was expected to reach 8.9 million by 2022.[[22]](#endnote-22) Finally, introducing IoT, as well as the use of predictive artificial intelligence for deep learning that it would enable, would enhance the ability of cargo companies to capitalize on the big data it generated. This was projected to contribute to internal process optimization, better predictability of maintenance needs, and improvement in employee health and safety, resulting in overall cost reductions. For instance, Erica Brinker, senior director of Honeywell’s Boeing 757 Connected Aircraft program, highlighted the potential cost savings by as much as 25 per cent from data-enabled predictive maintenance: “The airplane will tell the company what needs to be done or fixed before the next flight so that maintenance can be waiting at the gate at the end of the current flight and mitigate or eliminate a future flight delay, which costs the industry [$]25 billion annually.”[[23]](#endnote-23)

The air cargo industry had received fair attention for its negative environmental impact, primarily through its contribution to greenhouse gas (GHG) emissions. According to 2014 preliminary data compiled by the European Environment Agency, GHG emissions had doubled since 1990 and were 18.3 per cent higher in 2014 than in 2000. As the upward trend was expected to continue, industry regulations such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) were launched by IATA to manage carbon emissions.[[24]](#endnote-24) Carbon offsetting was an action by a company or individual to compensate for their emissions by financing a reduction in emissions elsewhere. As of January 1, 2019, CORSIA mandated that all carriers were required to report their carbon dioxide (CO2) emissions on an annual basis. IATA forecast that CORSIA would mitigate around 2.5 billion metric tons of CO2, at an annual average of 164 million metric tons of CO2, and generate over $40 billion in climate financing between 2021 and 2035. The initiative was pegged to international standards adopted by the United Nations Framework Convention on Climate Change and the Paris Agreement, thus ensuring uniformity in regulation throughout the industry.[[25]](#endnote-25)

The relentless expansion of air trade routes among countries would have political implications, especially for developing nations that would leverage their national airlines for economic development and political legitimacy. A 2017 report by the International Civil Aviation Organization (ICAO) applauded air cargo services as a tremendous enabler for economic progress in developing nations, as they would connect markets across countries.[[26]](#endnote-26) For example, Kenya’s cut-flower industry had supported over 100,000 jobs and 500,000 livelihoods since opening its markets through the air cargo industry. Each year the industry generated $1 billion in foreign exchange, as 90 per cent of fresh horticultural products were air freighted. These air trade routes were enabled by international agreements on the liberalization of airspace. Most notably, America’s Open Skies policy, launched in 1992, had provided operational flexibility for cross-national airline alliances among over 120 partners.[[27]](#endnote-27) Multilateral agreements had been made, including the 2001 Multilateral Agreement on the Liberalization of International Air Transportation between the United States and New Zealand, Singapore, Brunei, and Chile, later joined by Samoa, Tonga, and Mongolia. These legal frameworks facilitated the cross-border trade and value chain that existed in the air cargo industry and provided economic benefit to the countries involved. For instance, IATA found that open-skies liberalization policies had benefited Singapore by increasing international air traffic by 21 per cent in just one year, from 2007 to 2008, generating SG$921 million[[28]](#endnote-28) in gross domestic product (GDP).[[29]](#endnote-29) Another key factor affecting the air cargo industry’s political front was global trade tensions amid increasing populism and protectionism. Since the intensification of the China–United States trade war in early 2019, the air cargo industry had seen a fall in demand, resulting in the downward revision of its 2019 growth forecast to zero by IATA.[[30]](#endnote-30) IATA’s director general and chief executive officer (CEO), Alexandre de Juniac, commented on the risk of protectionist policies: “The positive outlook for the rest of 2018 . . . faces some potentially strong headwinds, including escalation of protectionist measures into a full-blown trade war. Prosperity grows when borders are open to people and to trade, and we are all held back when they are not.”[[31]](#endnote-31)

Regulatory bodies such as ICAO and IATA had put their pressure on the air cargo industry by increasing regulation on safety for aircraft, passengers, and crew. For instance, IATA Resolution 753 was passed and became effective on June 1, 2018, mandating that airlines should track baggage at four key points in the baggage journey: (a) when the airline acquires the passenger’s bag; (b) when the passenger’s bag is delivered to the aircraft; (c) at custody changes between carriers; and (d) at return to the passenger.[[32]](#endnote-32) Airlines were required to share the tracking information with their interline journey partners as needed. ICAO had also set in place Annex 18 on the safe transport of goods by air, aimed to safeguard against security and safety mishaps by mandating the handling and inspection of dangerous goods in accordance with stipulated procedures.[[33]](#endnote-33) The rising costs of compliance with increasing security regulations and data handling had eaten into the profit margin of not only the airlines but also the air cargo service providers. According to Deutsche Lufthansa AG, the mounting regulation had hindered its operational efficiency, as security was a double-edged sword, and its costs of compliance with security regulations had risen tenfold from 2001 to 2012.[[34]](#endnote-34)

SATS

Headquartered in Singapore, SATS was Asia’s leading provider of food solutions and gateway services. Formally corporatized in 1972 as a part of Singapore Airlines (SIA), SATS became an independent organization after divestment from SIA in 2009. In the financial year (FY) ending in March 2019, SATS posted revenue of SG$1.8 billion, split 64 per cent to 36 per cent between gateway services and food solutions, respectively (see Exhibit 4). While 86 per cent of its revenue was driven by its aviation services, SATS also provided non-aviation services such as commercial catering, cruise terminal management, security, and hospitality services.[[35]](#endnote-35) By 2019, SATS was serving the majority of airlines that flew out of Singapore, along with major operations in China, Japan, India, and Southeast Asia. In 2016, it was among the top five players in the global airport service market by revenue, with other players in this space including Dubai-based airport service provider Dnata, Switzerland-based and Chinese-owned ground handler Swissport International Ltd., UK-based Menzies Aviation, and US-based Worldwide Flight Services (see Exhibit 5). Together, these operators dominated the global aviation service market, which was projected to grow to $32 billion by 2023.[[36]](#endnote-36)

SATS Airport Services, a wholly owned subsidiary of SATS, managed cargo and freight operations. From FY 2014–15 to FY 2017–18, SATS’s cargo operations saw a revenue increase of more than 7 per cent—from SG$697 million to SG$776.5 million—contributing 45 per cent of SATS’s revenue.[[37]](#endnote-37) Its operating profit in the same time period rose from SG$39.6 million to SG$78.3 million. In 2014, the company clinched the title of “Best Air Cargo Terminal in Asia” at the Asian Freight and Supply Chain Awards for the 16th time.[[38]](#endnote-38) In 2019, with a staff strength of more than 14,000, SATS handled 5.4 million metric tons of cargo and close to 682,000 flights across its various operations around the globe.[[39]](#endnote-39) Among the resources and capabilities that SATS possessed, its temperature-controlled cargo facility, SATS Coolport, stood out prominently as a market leader.

RISING DEMAND FOR A TEMPERATURE-CONTROLLED FACILITY

A series of decisions and deliberations preceded the launch and success of SATS Coolport in 2010, which was achieved mainly through SATS’s commitment to being responsive to industry trends. The facility where SATS Coolport resided had originally been an ordinary freight terminal. The lead-up to its conversion into an advanced temperature-controlled warehouse began from a thorough process of formulating future scenarios. On the vision of SATS Coolport, Khoo highlighted the following: “In a nutshell, when we looked into future-planning, with SATS Coolport being one of the examples, it was clear how the future of cargo in terms of commodities or the nature of cargo would evolve. We had to begin to plan ahead and embrace that.”[[40]](#endnote-40)

At the turn of the second millennium, the economic imperative in Singapore’s development had started to shift away from low value-added manufacturing toward an economy driven by high value-added knowledge production. Most notably, the pharmaceutical and biomedical industries were identified as new domains that would accrue Singapore the high-value growth it desired. The country aimed to be the hub of biomedical sciences in Asia and beyond. As a testament to this ambition, in 2003 it started to build and develop, in several phases, a 185,000-square-metre complex of offices and laboratories dedicated to the development of these industries. The SG$500 million complex, fittingly called Biopolis, housed an international cast of leading biomedical and pharmaceutical companies.[[41]](#endnote-41) In 2007, the pharmaceutical and biomedical industries contributed SG$2.6 billion to Singapore’s manufacturing output and generated more than 7,300 jobs.[[42]](#endnote-42) By 2018, the industry’s exports were valued at SG$11 billion, accounting for almost 2 per cent of Singapore’s total exports.[[43]](#endnote-43)

In the industries’ nascent years in the late 2000s, the demand for specialized logistical functions had much potential to grow alongside the burgeoning industries. Various pharmaceutical and biomedical products required careful handling and precise temperature control to prevent perishing, thereby creating the potential for cold chain solutions along the delivery journey. With industry growth on the horizon and the inkling of a market gap that the logistics and cargo industry could address, SATS envisioned its market positioning in this future scenario.

What eventually culminated in 2010 was the opening of SATS’s temperature-controlled cargo terminal, SATS Coolport, which proved to be of significant contribution to the company.[[44]](#endnote-44) The facility, which boasted 18 cold rooms with four temperature zones, earned a suite of certifications and international awards. For instance, in 2014, it was the first temperature-sensitive facility in the world to receive IATA’s Certified Center of Excellence in Pharmaceutical Handling.[[45]](#endnote-45) By 2018, the company recognized that the high value added by the specialized SATS Coolport facility would be a key driver for new freight volumes.[[46]](#endnote-46) The company generated SG$776.5 million in revenue from its cargo operations, up 2.9 per cent from the previous financial period. The cargo handled by the facility had more than doubled since its inception—from 130,000 metric tons in 2010 to over 300,000 metric tons in 2019.

Building upon the success of SATS Coolport in Singapore, SATS came up with two overseas Coolport facilities in India and Saudi Arabia. SATS and Air India formed a 50/50 joint venture, Air India SATS Airport Services Private Limited (AISATS), to build India’s first integrated on-airport perishable cargo handling centre, ASIATS Coolport. The centre started operations in October 2016 at the Kempegowda International Airport, Bangalore.[[47]](#endnote-47) With a 11,000-square-metre facility, the centre had a specialized cargo handling capacity of 40,000 metric tons per annum, offering cold storage solutions with 17 dedicated cold rooms of adjustable temperatures ranging from −25℃ to +25℃. In August 2016, SATS won an award in Saudi Arabia to build and operate a new SG$40 million 20,000-square-metre cargo terminal at King Fahd International Airport, which would have a facility of handling 150,000 metric tons of cargo annually.

**GEARING FOR GROWTH**

Expanding their presence beyond Singapore was at the forefront of SATS’s growth strategies. Through collaboration with other ground handlers in key markets, SATS had extensive operations in over 60 locations across 13 countries in Asia in 2018.[[48]](#endnote-48) For example, SATS partnered with AirAsia Berhad in 2017 to provide ground handling services in fast-growing countries in Southeast Asia such as Indonesia and Malaysia (see Exhibit 6). In SATS’s annual report for 2017–18, Alex Hungate, president and CEO of SATS, announced,

Global air travel continues on a growth trajectory. It is projected to double by 2035 and Asia will be the biggest driver of that demand. With our vision to feed and connect Asia, SATS will continue to invest in technology and our people. We will continue to expand both locally and into overseas markets to build scale and capabilities that enable our customers, partners, and ourselves to harness opportunities for growth.[[49]](#endnote-49)

The strategy to expand its network across Asia showed steady progress, with international operations contributing 37 per cent of its overall revenue for FY 2018–19.[[50]](#endnote-50) The top overseas markets were China and Japan, accounting for 11 per cent and 10 per cent of its annual revenue, respectively (see Exhibit 7).

As the company scanned the horizon for new growth opportunities, these two markets came onto the radar.

China

In 2019, SATS formed two joint ventures to invest ¥136 million[[51]](#endnote-51) to develop its business in China.[[52]](#endnote-52) In the first joint venture with Capital Airport Holding Company (CAH), SATS subscribed to ¥106 million worth of shares, representing a 40 per cent stake in the joint venture, to establish a company in Beijing to provide ground and cargo handling and other related services at Beijing Daxing International Airport. The second joint venture was SATS’s partnership with CAH and Juneyao Airlines, involving the former’s subscription of ¥30 million worth of shares, representing a 10 per cent equity interest, to incorporate a catering company in Beijing to provide inflight catering and other related services at Beijing Daxing International Airport.

China was a large economy, transforming rapidly into a consumer-driven one. The country’s middle class, fuelled by economic reforms that pushed up employment and income, was forecast to grow from 68 per cent of China’s urban population in 2012 to 76 per cent by 2022.[[53]](#endnote-53) The burgeoning middle class’s increase in consumer spending on premium products saw a corresponding rise in imported perishable items, such as fruits, vegetables, meat, and dairy, adding up to $300 million worth of food imports in 2015 and accounting for 6.7 per cent of China’s overall merchandise imports.[[54]](#endnote-54) Simultaneously, growing health awareness, an aging population, and new government health care reforms in China had contributed to the country’s flourishing pharmaceutical sales, which were projected to hit $167 billion by 2020.[[55]](#endnote-55)

With large projected volumes of perishable goods and biopharma trade flow in and out of the country, China presented substantial opportunities for developing cold-chain supply-chain infrastructure (see Exhibit 8). The Chinese cold chain market was poised for growth in the coming years, with a CAGR of 15.6 per cent forecast for 2018–2022.[[56]](#endnote-56) According to the China Federation of Logistics and Purchasing, China’s fledgling cold chain logistics market was expected to reach ¥470 billion by 2020, with a CAGR rate surpassing 20 per cent.[[57]](#endnote-57) Given its infancy stage and highly fragmented nature, the industry had seen a considerable number of mergers and acquisitions.[[58]](#endnote-58) For example, in July 2016, Hainan Air Cargo and HNA Logistics invested ¥900 million and ¥2.8 billion, respectively, in Yangtze River Express (at ¥1.6 per share), with HNA Logistics owning 76 per cent of Yangtze River Express after the deal. With this collaboration, HNA Logistics planned to fund and grow the cargo carrier’s eastern China network expansion plans.[[59]](#endnote-59) Recently, the China-based cold chain logistics service provider Dalian Yidu Group Co. Ltd., in association with the Zhengzhou Xinzheng International Airport, built a cold chain warehouse with a capacity of 200,000 metric tons, investing close to ¥1 billion on the project.[[60]](#endnote-60)

Building on the momentum of the growing industry, SATS would be well positioned to expand its cold chain network to mainland China. With the newly built state-of-the-art Beijing Daxing International Airport scheduled to open in September 2019, Beijing offered a favourable environment for entry into the market. The airport was designed to handle an annual capacity of 72 million passengers and 2 million metric tons of cargo and mail.[[61]](#endnote-61) Beijing offered great connectivity via road and rail transport modes for the transshipment of goods to other high-demand markets such as Shanghai, Tianjin, Shenzhen, and Guangzhou.[[62]](#endnote-62)

However, the China market would present some challenges. China’s high-speed rail network and land routes were viewed as serious competitors to air cargo service within the country. The One Belt and One Road initiative[[63]](#endnote-63) had the potential to disrupt the future growth of cross-country air cargo trade in China by offering cheap alternatives for fast cargo delivery. International air freight costs ranged from $1.5 to $4.5 per kilogram,[[64]](#endnote-64) while rail freight would be almost six times cheaper.[[65]](#endnote-65) The initiative would have a major impact on the China–Europe trade route. By 2027, the total rail potential for the route was forecast to be about 636,000 20-foot equivalent units,[[66]](#endnote-66) or 21 trains a day, according to China Railway Corporation.[[67]](#endnote-67) The daily loss of volume for the air cargo industry in China could potentially amount to $25 million.

Cargo handling companies in China faced fierce competition from international integrators such as DHL International GmbH (DHL), based in Germany, and United Postal Services Inc. and FedEx Corporation, based in the United States. Since the liberalization of its cargo operations, China had seen the set-up of several vertically integrated carriers at its airports. These companies had greater logistical capability and held competitive advantage over other local ground handlers in handling air cargo operations. In 2012, DHL opened a $175 million 88,000-square-metre cargo hub at Shanghai Pudong Airport to meet the growing air cargo volume in China.[[68]](#endnote-68) This development helped DHL successfully tap into the flourishing e-commerce market in China. Subsequently, DHL opened the DHL Life Science & Healthcare Competence Centre as an addition to its temperature-controlled facility in Shanghai, taking its total cold chain logistics area to nearly 3,000 square metres.[[69]](#endnote-69) Although SATS had a significant competitive advantage in handling cold chain operations, fierce competition from established players in China would act as a major challenge to entering the market. The competition could lead to price wars, driving lower yields and affecting revenue.

Foreign businesses needed to carefully consider the costs of complying with the stringent regulations imposed by Chinese government agencies.[[70]](#endnote-70) The process of licensing and obtaining customs clearance could be time-consuming.[[71]](#endnote-71) The airline industry in China was regulated by the Civil Aviation Administration of China, and all the major airports within the country were owned by the state government. The airport ground handling industry was highly competitive, with multiple local players.[[72]](#endnote-72) The major players were state-owned enterprises, and there were strict regulations requiring foreign operators to form joint ventures with local enterprises before they were permitted to start operations in the country.

Japan

In 2010, SATS entered into an agreement to purchase Japan Airlines International Co. Ltd.’s entire 50.7 per cent stake in TFK Corporation (TFK) for approximately SG$122 million.[[73]](#endnote-73) TFK was the leading airline caterer in Japan. It had a strong presence at both Narita and Tokyo International Airports, the two major international gateways of Japan. TFK held a 30 per cent market share in the aggregate for both airports, with revenues of about SG$248 million for FY 2018–19.[[74]](#endnote-74) SATS’s venture in Japan had reported a gain of SG$228 million for the FY ending on March 31, 2018.[[75]](#endnote-75) The first venture in Japan turned out to be a profitable one over the years (see Exhibit 9). On the back of this successful venture experience, it would be timely to explore further growth opportunities in the country.

Being a small island country, Japan lacked the natural resources to self-sufficiently sustain agricultural demand in the country. This was compensated by importing the required resources from the global market. In 2018, Japan imported food products worth $64 billion, making it one of the largest food importers in the world.[[76]](#endnote-76) The major share of its imports was perishable items including seafood, fruit, vegetables, and dairy products. These items possessed a short shelf life and required cold chain logistics for transportation and storage. Other products that required similar transportation and handling infrastructure came from the pharmaceutical industry. Pharmaceutical sales in Japan hit about $95 billion in 2015 and were anticipated to increase to $108 billion by 2020.[[77]](#endnote-77) The rise in demand for pharmaceutical products reflected the issue of a large and rapidly aging population that had the highest health care expenditure per capita in the world.[[78]](#endnote-78) In 2013, 25 per cent of the country’s population was above the age of 65, and this figure was likely to grow to 36 per cent by the end of 2030.[[79]](#endnote-79)

To cater to the growth in temperature-sensitive products, Tokyo airports had to expand their existing capacity of cold chain facilities. The Tokyo International Air Cargo Terminal (TIACT) operated a common cold chain centre (referred to as a “medical gateway”) for the two operational airports. It had a floor space of 1,200 square metres and operated only within three specific temperature ranges.[[80]](#endnote-80) In 2018, Narita International Airport had installed the 2,504-square-metre Cargo Climate Control Terminal to accommodate growing demand for temperature-sensitive goods.[[81]](#endnote-81) Comparing these facilities to SATS Coolport in Singapore, which had a floor space of 8,000 square metres and 18 different cold rooms, the facilities at Tokyo’s airport were significantly smaller, lacked the advanced technology, and offered a limited range of services.[[82]](#endnote-82) To leverage opportunities from the present trade flow of perishable goods into the country, SATS, along with TFK, could enter into a joint venture with TIACT to jointly build and operate a cold storage facility.

Apart from acting as a gateway for handling various temperature-sensitive goods imported into Japan, the facility could help grow trade between the two countries. Japan imported pharmaceutical goods worth $665 million from Singapore in 2017–18,[[83]](#endnote-83) which accounted for 4 per cent of the country’s pharmaceutical imports.[[84]](#endnote-84) As a common operator on both ends, SATS could help to establish a more linear cold chain supply chain, opening opportunities for growth in trade volume.

One key challenge faced by SATS would be competition from the ocean cargo industry. China, South Korea, Taiwan, and Hong Kong were among the top trading partners for Japan. These countries were geographically closer to Japan and better connected via maritime links than Singapore. In 2014, ocean cargo was responsible for close to 35 million metric tons of trade volume between Japan and China.[[85]](#endnote-85) In comparison, Japan’s total air freight volume for the same year was 2 million metric tons.[[86]](#endnote-86) Although the air cargo volume in Japan indicated steady growth, it was no match for the cheap and conveniently accessible ocean cargo, which was highly preferred over the fast and reliable but expensive air cargo (see Exhibit 10).

With a foreign direct investment (FDI) to GDP ratio of only 3.8 per cent, Japan had the lowest level of FDI among industrialized countries.[[87]](#endnote-87) High tax rates and employment costs along with lower NOL carrying periods created a challenging environment for foreign investors setting their sights on Japan. The non-English-speaking environment with strong cultural differences presented further challenges to foreign investors.[[88]](#endnote-88)

MOVING FORWARD

It was apparent that the two opportunities presented in the Asian region merited further attention from SATS. As Khoo examined the two options for future growth, he knew that a decision should soon be made. Should the company consider the Chinese air cargo market, which was in a stage of high growth but fraught with bureaucracy? Or should it focus on the Japanese air freight industry, which was more established but challenging to foreign investment?

EXHIBIT 1: AIR CARGO INDUSTRY VALUE CHAIN

Carrier

Origin

Destination

Import Customs

Export Customs

Source: Created by the authors based on “Paperless Air Cargo and Logistics Solution to Boost Productivity across Supply Chain,” Civil Aviation Authority of Singapore, accessed May 31, 2019, https://www.caas.gov.sg/about-caas/newsroom/Detail/paperless-air-cargo-and-logistics-solutions-to-boost-productivity-across-supply-chain/.

EXHIBIT 2: GLOBAL BIOPHARMA SALES FORECAST ($ billions), 2016–2022

Source: Created by the authors based on Mark Lipowicz, “Biopharma Cold-Chain Market Forecast,” Pharmaceutical Commerce, September 3, 2018, accessed May 31, 2019, https://www.pharmaceuticalcommerce.com/view/biopharma-cold-chain-market-forecast.

EXHIBIT 3: CARGO Volume BY AIRLINE DOMICILE, 2017 (%)

Source: Created by the authors based on Boeing, *World Air Cargo Forecast: 2018–2037*, 2018, accessed May 31, 2019, https://www.boeing.com/resources/boeingdotcom/commercial/about-our-market/cargo-market-detail-wacf/download-report

/assets/pdfs/2018\_WACF.pdf.

EXHIBIT 4: SATS Ltd. REVENUE BY SECTOR, 2014–2019 (¥ Millions)

| **Year** | **Food Solutions** | **Gateway Services** | **Total Revenue** |
| --- | --- | --- | --- |
| 2014–15 | 697 | 1,052 | 1,753 |
| 2015–16 | 726 | 967 | 1,698 |
| 2016–17 | 755 | 973 | 1,729 |
| 2017–18 | 776 | 947 | 1,725 |
| 2018–19 | 838 | 988 | 1,828 |

Note: ¥ = CNY = Chinese yuan renminbi; US$1 = ¥7.0515 on August 5, 2019.

Source: Created by the authors based on SATS Ltd., *Capital Markets Day*, May 30, 2019, accessed May 31, 2019, https://www.sats.com.sg/docs/default-source/financial-reports/road-shows/2019-2020/preso-cmd-30may19.pdf?sfvrsn=2cf1f37f\_4.

EXHIBIT 5: ANALYSIS OF COMPETITORS IN The GROUND HANDLING SECTOR, 2016

|  |  |  |  |
| --- | --- | --- | --- |
| **Operator** | **Revenue**  **(€ Millions)** | **No. of Stations** | **Market Share (%)** |
| Swissport International Ltd. | 2,444 | 293 | 13.7 |
| Dnata | 956 | 79 | 5.4 |
| Menzies Aviation | 951 | 149 | 5.3 |
| Fraport AG | 656 | . . . | 3.7 |
| Worldwide Flight Services | 650 | 144 | 3.6 |
| **SATS Ltd.** | **473** | **43** | **2.6** |
| Aviapartner | 350 | 38 | 2.0 |
| Aviator Airport Alliance | 224 | 23 | 1.3 |
| Çelebi Aviation | 220 | 34 | 1.2 |

Note: € = EUR = euro; US$1 = €0.8934 on August 5, 2019.

Source: Created by the authors based on Didier Bréchemier, “Ground Handling Financial and M&A Overview,” November 29, 2016, accessed May 15, 2019, https://www.slideshare.net/DidierBrchemier/ground-handling-financial-and-ma-overview.

EXHIBIT 6: REVIEW OF SATS LTD.’s EXISTING ASSOCIATIONS, 2018

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Country** | **Partner** | **Holding (%)** | **Division** | **Description** |
| Greater China | Asia Airfreight Terminal | 49.0 | Gateway Services | Cargo handling services |
| Beijing Aviation Ground Services | 29.0 | Gateway Services | Aviation ground handling services in Beijing Capital International Airport |
| Beijing Airport Inflight Kitchen | 28.0 | Food Solutions | Inflight catering service for Beijing Capital International Airport |
| Capital Airport Holding Company | 40.0 | Gateway Services | Ground and cargo handling and other related services at Beijing Daxing International Airport |
| Capital Airport Holding Company and Juneyao Airlines | 10.0 | Food Solutions | Inflight catering and other related services at Beijing Daxing International Airport |
| Nanjing Weizhou Airline Food Company | 45.0 | Food Solutions | Frozen food, ambient meals, and related food component production for aviation companies in China |
| Evergreen Air Cargo Services Corp. | 25.0 | Gateway Services | Cargo handling services in Taiwan |
| Indonesia | PT Cardig Aero Services | 41.7 | Food Solutions and Gateway Services | Ground handling, cargo handling, aircraft release and maintenance, and catering services at airports in Indonesia |
| PT Jasa Angkasa Semesta Tbk | 49.8 | Gateway Services | Ground handling services at airports in Indonesia |
| PT Purantara Mitra Angkasa Dua | 20.0 | Food Solutions | Inflight catering services for international airlines in Indonesia |
| Malaysia | Brahim's SATS Food Services Sdn Bhd | 49.0 | Food Solutions | Inflight catering services in Kuala Lumpur International Airport and Penang International Airport |
| Philippines | MacroAsia Catering Services | 33.0 | Food Solutions | Inflight catering services in Ninoy Aquino International Airport in Manila |
| Vietnam | Tan Son Nhat Cargo Services | 15.0 | Gateway Services | Cargo handling services to airlines and forwarding agents at Tan Son Nhat International Airport |
| India | Air India SATS Airport Services Private Limited | 50.0 | Gateway Services | Ground handling and cargo handling services in India |
| Mumbai Cargo Service Center Airport Private Limited | 49.0 | Gateway Services | Air cargo handling services |
| Taj SATS Air Catering Limited | 49.0 | Food Solutions | Airline services in the areas of inflight catering, laundry, and aircraft cleaning |
| Oman | Oman Air SATS Cargo LLC | 33.0 | Gateway Services | Cargo operations handler in Muscat International Airport |
| Pakistan | Aviserv Ltd. | 49.0 | Food Solutions | Inflight catering services |
| Maldives | Maldives Inflight Catering Private Limited | 35.0 | Food Solutions | Inflight catering services in Maldives, based at Velana International Airport |
| Japan | TFK Corporation | 59.4 | Food Solutions | Inflight catering and non-aviation catering at Narita and Tokyo International Airports in Japan |

Source: Created by the authors based on data from SATS Ltd., *Capital Markets Day*, May 30, 2019, accessed May 31, 2019, https://www.sats.com.sg/docs/default-source/financial-reports/road-shows/2019-2020/preso-cmd-30may19.pdf?sfvrsn=2cf1f37f\_4;

SATS Ltd., *Execution of Two Joint Venture Agreements in Relation to Two New Companies to Be Incorporated in Beijing*, *China*, January 24, 2019, accessed May 15, 2019, https://links.sgx.com/FileOpen/SGXAnn\_Daxing%20JVs%20Final.ashx?App=

Announcement&FileID=541425; SATS Ltd., *Execution of Share Purchase Agreement and Share Subcription* [*sic*] *Agreement in Relation to Nanjing Weizhou Airline Food Corp., Ltd.*, May 17, 2019, accessed May 31, 2019, https://links.sgx.com/FileOpen/SATS\_NWA\_Annc\_Final.ashx?App=Announcement&FileID=560064.

**EXHIBIT 7: SATS LTD. SHARE OF REVENUE BY REGION, 2018–2019**

Note: ASEAN = Association of Southeast Asian Nations; ASEAN (Ex-SG) = ASEAN (excluding Singapore)

Source: Created by the authors based on data from SATS Ltd., *Capital Markets Day*, May 30, 2019, accessed May 31, 2019, https://www.sats.com.sg/docs/default-source/financial-reports/road-shows/2019-2020/preso-cmd-30may19.pdf?sfvrsn=2cf1f37f\_4.

EXHIBIT 8: CARGO VOLUME GROWTH IN CHINA, 2011–2017 (Millions of Metric Tons)

Source: Created by the authors based on data from “Air Cargo Volume in China from 2007 to2017,” Statista, June 2018, accessed May 15, 2019, https://www.statista.com/statistics/275913/air-cargo-volume-in-china/.

**EXHIBIT 9: SATS LTD. REVENUE IN JAPAN, 2013–2019**

| **Year** | **Total Revenue**  **(SG$ Millions)** |
| --- | --- |
| 2013–14 | 268.1 |
| 2014–15 | 220.9 |
| 2015–16 | 221.7 |
| 2016–17 | 259.5 |
| 2017–18 | 239.4 |
| 2018–19 | 257.0 |

Note: SG$ = SGD = Singapore dollar; US$1 = SG$1.3819 on August 5, 2019.

Source: Created by the authors based on data from SATS Ltd., *Capital Markets Day*, May 30, 2019, accessed May 31, 2019, https://www.sats.com.sg/docs/default-source/financial-reports/road-shows/2019-2020/preso-cmd-30may19.pdf?sfvrsn=2cf1f37f\_4.

**EXHIBIT 10: CARGO VOLUME GROWTH IN JAPAN, 2011–2018**

|  |  |  |
| --- | --- | --- |
| **Year** | **Volume**  **(Millions of Metric Tons)** | **Year-over-Year Growth (%)** |
| 2011 | 2.112 |  |
| 2012 | 1.989 | −5.82 |
| 2013 | 1.8646 | −6.25 |
| 2014 | 1.971 | 5.706 |
| 2015 | 1.977 | 0.304 |
| 2016 | 1.951 | −1.315 |
| 2017 | 2.25 | 15.32 |
| 2018 | 2.45 | 8.88 |

Source: Created by the authors based on data from “Air Cargo Handling Yearly Results,” Japan Air Freight Forwarding Association, accessed May 15, 2019, www.jafa.or.jp/result/007\_result.html.

endnotes

1. “Forecasting Air-Freight Demand 2019,” International Air Transport Association, March 2019, accessed April 2, 2019, https://www.iata.org/publications/economics/Reports/freigh-forecast/Forecasting-air-freight-demand-2019.pdf. [↑](#endnote-ref-1)
2. “Asia’s Newest Perishable Handling Centre Opens,” SATS Ltd., press release, November 26, 2010, accessed April 2, 2019, https://www.sats.com.sg/Media/NewsContent/Coolport-Opening-MediaRelease-Final.pdf. [↑](#endnote-ref-2)
3. “SATS Coolport Is the World’s First Centre of Excellence in Pharmaceutical Handling,” SATS Ltd., press release, November 21, 2014, accessed April 2, 2019, https://www.sats.com.sg/Media/NewsContent/SATS%20Coolport.pdf. [↑](#endnote-ref-3)
4. “SATS Unveils $21 Million eCommerce Airhub,” SATS Ltd., press release, April 13, 2017, accessed May 10, 2019, https://links.sgx.com/FileOpen/SATS%20unveils%20$21%20million%20eCommerce%20AirHub.ashx?App=Announcement&FileID=448278. [↑](#endnote-ref-4)
5. Ken Research, “China Cold Chain Market Is Expected to Grow at a CAGR of 15.6% in the Next 5 Years till 2022,” PR Newswire, May 14, 2018, accessed April 2, 2019, https://www.prnewswire.com/news-releases/china-cold-chain-market-is-expected-to-grow-at-a-cagr-of-156-in-the-next-5-years-till-2022-ken-research-682544161.html. [↑](#endnote-ref-5)
6. All dollar amounts are in US dollars unless otherwise specified. [↑](#endnote-ref-6)
7. “Singapore Exports to Japan,” Trading Economics, accessed May 15, 2019, https://tradingeconomics.com/singapore/exports/japan. [↑](#endnote-ref-7)
8. “Distribution of Pharmaceutical Drug Imports to Japan in 2018, by Major Country,” Statista, 2019, accessed April 2, 2019, https://www.statista.com/statistics/743670/japan-breakdown-pharmaceutical-drug-imports-by-major-country/. [↑](#endnote-ref-8)
9. “Shipping Air or Ocean Freight,” Freightos, accessed April 2, 2019, https://www.freightos.com/freight-resources/air-freight-vs-ocean-freight-making-the-decision/. [↑](#endnote-ref-9)
10. “Top 10 Challenges of Doing Business in Japan,” TMF Group, accessed May 15, 2019, https://www.tmf-group.com/en/news-insights/business-culture/top-challenges-japan/. [↑](#endnote-ref-10)
11. “Worldwide Revenue of Cargo Airlines from 2004 to 2019,” Statista, accessed April 2, 2019, https://www.statista.com/statistics/564658/worldwide-revenue-of-air-cargo-traffic/. [↑](#endnote-ref-11)
12. “IATA Cargo Strategy,” International Air Transport Association, February 2018, accessed April 2, 2019, https://www.iata.org/cargo. [↑](#endnote-ref-12)
13. A revenue ton-kilometre was a common measurement in the air cargo industry and was defined by the revenue generated when a metric ton of cargo was carried 1 kilometre. [↑](#endnote-ref-13)
14. Boeing, *World Air Cargo Forecast 2016–2017* (Seattle, WA: Boeing Commercial Airplanes, 2016), accessed April 2, 2019, https://www.utikad.org.tr/images/BilgiBankasi/worldaircargoforecast20162017-7924.pdf. [↑](#endnote-ref-14)
15. Mark Lipowicz, “Biopharma Cold-Chain Market Forecast,” Pharmaceutical Commerce, September 3, 2018, accessed May 31, 2019, https://www.pharmaceuticalcommerce.com/view/biopharma-cold-chain-market-forecast. [↑](#endnote-ref-15)
16. “Air Freight Industry,” Mordor Intelligence, September 2018, accessed April 2, 2019, https://www.mordorintelligence.com/industry-reports/global-airfreight-market-industry. [↑](#endnote-ref-16)
17. Boeing, *World Air Cargo Forecast 2020–2039*, accessed April 2, 2019, https://www.boeing.com/commercial/market/cargo-forecast/; VISA, *The Geography of the Global Middle Class: Where They Live, How They Spend*, accessed April 2, 2019, https://usa.visa.com/dam/VCOM/global/partner-with-us/documents/middle-class-spending-whitepaper.pdf. [↑](#endnote-ref-17)
18. Boeing, *World Air Cargo Forecast 2020–2039*, accessed April 2, 2019, https://www.boeing.com/commercial/market/cargo-forecast. [↑](#endnote-ref-18)
19. Rachel Carollo, “Consumers Want Faster Delivery and They’re Willing to Pay for It,” Dropoff, March 20, 2018, accessed April 2, 2019, https://www.dropoff.com/blog/retail-delivery-consumer-survey-shoptalk-2018. [↑](#endnote-ref-19)
20. “Amazon Now Lets Prime Customers Schedule Orders for the Delivery Day of Their Choice—and It’s a Total Game Changer,” Business Insider, April 17, 2019, accessed May 10, 2019, https://www.businessinsider.in/slideshows/miscellaneous/amazon-now-lets-prime-customers-schedule-orders-for-the-delivery-day-of-their-choice-and-its-a-total-game-changer/slidelist/68923953.cms. [↑](#endnote-ref-20)
21. “The Cargo Facility of the Future,” Airlines IATA, April 13, 2018, accessed April 2, 2019, https://airlines.iata.org/analysis/the-cargo-facility-of-the-future. [↑](#endnote-ref-21)
22. David H. Deans, “How IoT and Blockchain Is Set to Transform the Global Cargo Industry,” Telecoms, May 29, 2018, accessed April 2, 2019, https://www.telecomstechnews.com/news/2018/may/29/iot-and-blockchain-will-transform-global-cargo-industry/. [↑](#endnote-ref-22)
23. Vivian Zhang, “How Data Science and IoT Are Changing Air Transportation,” IoT Agenda, July 5, 2018, accessed April 2, 2019, https://internetofthingsagenda.techtarget.com/blog/IoT-Agenda/How-data-science-and-IoT-are-changing-air-transportation. [↑](#endnote-ref-23)
24. “Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA),” International Civil Aviation Organization, accessed April 2, 2019, https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx. [↑](#endnote-ref-24)
25. “CORSIA Takes Center Stage,” Airlines, International Air Transport Association, March 6, 2019, accessed April 2, 2019, https://www.airlines.iata.org/analysis/corsia-takes-center-stage. [↑](#endnote-ref-25)
26. International Civil Aviation Organization, *Aviation Benefits 2017*, accessed April 2, 2019, https://www.icao.int/sustainability/Documents/AVIATION-BENEFITS-2017-web.pdf. [↑](#endnote-ref-26)
27. “Civil Air Transport Agreements,” United States Department of State, accessed April 2, 2019, https://www.state.gov/civil-air-transport-agreements. [↑](#endnote-ref-27)
28. SG$ = SGD = Singapore dollar; US$1 = SG$1.3819 on August 5, 2019. [↑](#endnote-ref-28)
29. InterVISTAS-EU Consulting Inc., *The Impact of International Air Service Liberalisation on Singapore*, July 2009, accessed April 2, 2019, https://www.iata.org/publications/economics/Reports/singapore-report.pdf. [↑](#endnote-ref-29)
30. Yolande Chee, “Airline Industry Group Slashes Its Profit Forecast as Trade War Hurts the Cargo Business,” CNBC, June 1, 2019, accessed June 5, 2019, https://www.cnbc.com/2019/06/02/airline-industry-cuts-profit-outlook-cargo-business-hurt-by-trade-war.html. [↑](#endnote-ref-30)
31. “IATA Warns over Protectionism as Cargo Traffic Continues to Grow,” Aircargo News, April 4, 2018, accessed April 2, 2019, https://www.aircargonews.net/airlines/iata-warns-over-protectionism-as-cargo-traffic-continues-to-grow/. [↑](#endnote-ref-31)
32. “Baggage Tracking,” International Air Transport Association, accessed April 2, 2019, https://www.iata.org/whatwedo/ops-infra/baggage/Pages/baggage-tracking.aspx. [↑](#endnote-ref-32)
33. “Annex 18,” International Civil Aviation Organization, accessed April 2, 2019, https://www.icao.int/safety/DangerousGoods/Pages/annex-18.aspx. [↑](#endnote-ref-33)
34. Bart Jan Haasbeek, “The Future of Air Freight Shipping,” The Network Effect, February 1, 2019, accessed June 5, 2019, https://supplychainbeyond.com/the-future-of-air-freight-shipping/. [↑](#endnote-ref-34)
35. SATS Ltd., *Capital Markets Day*, May 30, 2019, accessed May 31, 2019, https://www.sats.com.sg/docs/default-source/financial-reports/road-shows/2019-2020/preso-cmd-30may19.pdf?sfvrsn=2cf1f37f\_4. [↑](#endnote-ref-35)
36. Research and Markets, “Global Ground and Cargo Handling Services Market Outlook 2018–2023 with Swissport International, Dnata, Menzies Aviation & Worldwide Flight Services (WFS) Dominating,” PR Newswire, October 11, 2018, accessed April 2, 2019, https://www.prnewswire.com/news-releases/global-ground-and-cargo-handling-services-market-outlook-2018-2023-with-swissport-international-dnata-menzies-aviation--worldwide-flight-services-wfs-dominating-300729560.html. [↑](#endnote-ref-36)
37. SATS Ltd., *Enabling Growth: Annual Report 2017–18*, accessed April 2, 2019, https://www.sats.com.sg/docs/default-source/financial-reports/annual-report/2017-2018/sats\_fy1718\_annual\_report.pdf. [↑](#endnote-ref-37)
38. “SATS Is Named ‘Best Air Cargo Terminal – Asia’ for the 16th Time,” SATS Ltd., press release, June 17, 2014, accessed March 4, 2021, https://www.sats.com.sg/docs/default-source/media-releases/2014/sats-is-named-best-air-cargo-terminal-asia-for-the-16th-time.pdf?sfvrsn=cb093e0c\_2. [↑](#endnote-ref-38)
39. SATS Ltd., *Capital Markets Day*, op. cit. [↑](#endnote-ref-39)
40. Khoo Seng Thiam, interview with authors, April 1, 2019. [↑](#endnote-ref-40)
41. Hank Lim and Lim Tai Wei, *Sustainable Development Impacts of Investment Incentives: A Case Study of the Pharmaceutical Industry in Singapore* (Winnipeg, MB: International Institute for Sustainable Development, 2010), accessed May 31, 2019, https://www.iisd.org/system/files/publications/sd\_impacts\_singapore.pdf. [↑](#endnote-ref-41)
42. Keat Chuan Yeoh, “A Look at Singapore’s Growing Medical Technology Industry,” Medical Product Outsourcing, April 4, 2018, accessed April 2, 2019, https://www.mpo-mag.com/contents/view\_features/2008-04-04/a-look-at-singapores-growing-medical-technolo. [↑](#endnote-ref-42)
43. “Singapore | Imports and Exports | World | ALL COMMODITIES | Netweight (Kg); Quantity and Value (US$) | 2018,” Trend Economy, accessed April 2, 2019, https://trendeconomy.com/data/h2?commodity=TOTAL&reporter=Singapore&trade\_flow= Export,Import&partner=World&indicator=NW,TQ,TV&time\_period=2018. [↑](#endnote-ref-43)
44. “SATS Coolport,” SATS Ltd., accessed April 2, 2019, https://www.sats.com.sg/sites/coolport/Pages/Coolport.aspx. [↑](#endnote-ref-44)
45. “SATS Coolport Certified as the World’s First Centre of Excellence in Pharmaceutical Handling,” *Bridging Skies*, no. 24, accessed April 2, 2019, https://www.caas.gov.sg/docs/default-source/publication/222s-first-centre-of-excellence-in-pharmaceutical-handling-\_-bridging-skies).pdf. [↑](#endnote-ref-45)
46. SATS Ltd., *Enabling Growth: Annual Report 2017–18*, op. cit. [↑](#endnote-ref-46)
47. “SATS Expands Footprint in India with First Integrated On-Airport Perishable Cargo Handling Centre,” SATS Ltd., press release, October 6, 2016, accessed April 2, 2019, https://www.sats.com.sg/docs/default-source/media-releases/2016/6oct16-sats-expands-footprint-in-india-with-first-integrated-on-airport-perishable-cargo-handling-centre.pdf?sfvrsn=3f43b0c2\_2. [↑](#endnote-ref-47)
48. SATS Ltd., *Capital Markets Day*, op. cit. [↑](#endnote-ref-48)
49. SATS Ltd., *Enabling Growth: Annual Report 2017–18*, op. cit. [↑](#endnote-ref-49)
50. SATS Ltd., *Capital Markets Day*, op. cit. [↑](#endnote-ref-50)
51. ¥ = CNY = Chinese yuan renminbi; US$1 = ¥ 7.0515 on August 5, 2019. [↑](#endnote-ref-51)
52. Jamie Lee, “SATS Invests 136m Yuan in Two China JVs,” *Business Times*, January 24, 2019, accessed July 31, 2019, https://www.businesstimes.com.sg/companies-markets/sats-invests-136m-yuan-in-two-china-jvs. [↑](#endnote-ref-52)
53. Dominic Barton, Yougang Chen, and Amy Jin, “Mapping China’s Middle Class,” *McKinsey Quarterly*, June 1, 2013, accessed April 2, 2019, https://www.mckinsey.com/industries/retail/our-insights/mapping-chinas-middle-class. [↑](#endnote-ref-53)
54. “How Is China Feeding Its Population of 1.4 Billion?,” ChinaPower Project, January 25, 2017, accessed April 2, 2019, https://chinapower.csis.org/china-food-security/. [↑](#endnote-ref-54)
55. Michael Finn, *2016 Top Markets Report: Pharmaceuticals* (International Trade Association, May 2016), accessed April 2, 2019, https://legacy.trade.gov/topmarkets/pdf/Pharmaceuticals\_Top\_Markets\_Reports.pdf. [↑](#endnote-ref-55)
56. Ken Research, op. cit. [↑](#endnote-ref-56)
57. Fan Feifei, “Consumption Upgrading Heats Up Cold Chain Logistics,” *China Daily*, July 11, 2019, accessed July 20, 2010, www.chinadaily.com.cn/a/201907/11/WS5d267629a3105895c2e7cd2a.html. [↑](#endnote-ref-57)
58. “China Cold Chain Market including Cold Storage and Transportation Industry to Register High Growth on Account of High Demand from Express Logistics Sector,” Ken Research, May 16 2018, accessed May 15, 2019, https://www.kenresearch.com/blog/2018/05/china-cold-chain-market-including-cold-storage-and-transportation-industry-to-register-high-growth-on-account-of-high-demand-from-express-logistics-sector-ken-research/. [↑](#endnote-ref-58)
59. “HNA Group Units to Boost Yangtze River Express’ Shareholding,” Ch-aviation, July 20, 2013, accessed May 10, 2019, https://www.ch-aviation.com/portal/news/47948-hna-group-units-to-boost-yangtze-river-express-shareholding. [↑](#endnote-ref-59)
60. “Hong Kong Airport Maintains Pole Position despite Flat Cargo Growth,” Asia Cargo News, August 5, 2016, accessed May 10, 2019, www.asiacargonews.com/en/news/detail?id=1100. [↑](#endnote-ref-60)
61. “Beijing’s 2nd Intl Airport to Be Operational Soon,” ANI, September 19, 2019, accessed September 19, 2019, https://www.aninews.in/news/world/asia/beijings-2nd-intl-airport-to-be-operational-soon20190919165747/. [↑](#endnote-ref-61)
62. Wang Feng, *Beijing as a Globally Fluent City* (Brookings-Tsinghua Center for Public Policy and Global Cities Initiative), accessed May 10, 2019, https://www.brookings.edu/wp-content/uploads/2016/06/Beijing-as-a-Globally-Fluent-City.pdf. [↑](#endnote-ref-62)
63. The One Belt and One Road initiative is a global infrastructure development spearheaded by the Chinese government in 2013 to collaborate with close to 70 countries and international organizations. [↑](#endnote-ref-63)
64. The World Bank, *Air Freight: A Market Study with Implications for Landlocked Countries*, August 2009, accessed May 10, 2019, www.worldbank.org/en/topic/transport/publication/air-freight-study. [↑](#endnote-ref-64)
65. Greg Knowler, “China-Europe Rail Growth Unsettles Air Cargo Service Providers,” The Journal of Commerce Online, July 20, 2018, accessed May 10, 2019, https://www.joc.com/rail-intermodal/international-rail/china-europe-rail-growth-unsettles-air-cargo-service-providers\_20180720.html. [↑](#endnote-ref-65)
66. A 20-foot equivalent unit was used to describe cargo on container ships and equalled an average of 24,000 kilograms. [↑](#endnote-ref-66)
67. Knowler, op. cit. [↑](#endnote-ref-67)
68. “DHL Express Opens $175M Air Hub in Shanghai,” Post & Parcel, July 12, 2012, accessed May 10, 2019, https://postandparcel.info/49041/news/dhl-express-opens-175m-air-hub-in-shanghai/. [↑](#endnote-ref-68)
69. “DHL Launches First Life Science & Healthcare Competence Centre in Shanghai,” DHL International, press release, June 18, 2009, accessed May 10, 2019, www.dhl.com.sg/en/press/releases/releases\_2009/local/180609.html. [↑](#endnote-ref-69)
70. International Air Transport Association, *Aviation Policy in China: An Analysis of Recent Developments*, October 2011, accessed May 10, 2019, https://www.iata.org/whatwedo/Documents/economics/Lei-OConnell-Aviation-Policy-in-China.pdf. [↑](#endnote-ref-70)
71. Ibid. [↑](#endnote-ref-71)
72. Alexander Niehues, Edward Tse, and Justin Zubrod, *Express Opportunities in China: Packaging a Strategy for the International and Domestic Express Delivery Market* (New York, NY: Booz & Company, 2007). [↑](#endnote-ref-72)
73. SATS Ltd., “SATS Acquires Japan Airlines International’s 50.7% Equity Stake in TFK Corporation for ¥7.8 Billion November 2010,” press release, November 29, 2010, accessed May 10, 2019, https://www.sats.com.sg/docs/default-source/media-releases/2010/tfk-pressrelease-final.pdf?sfvrsn=373dae85\_2. [↑](#endnote-ref-73)
74. SATS Ltd., *Capital Markets Day*, op. cit. [↑](#endnote-ref-74)
75. Ibid. [↑](#endnote-ref-75)
76. International Trade Administration, *2016 Top Markets Report Cold Chain Country Case Study: Japan*, May 2016, accessed May 31, 2019, https://www.trade.gov/topmarkets/pdf/Cold\_Chain\_Japan.pdf. [↑](#endnote-ref-76)
77. Simon Wentworth, “Japan Pharma Market Review,” The Pharma Letter, June 28, 2019, accessed July 30, 2019, https://www.thepharmaletter.com/article/japan-pharma-market-review. [↑](#endnote-ref-77)
78. “Why the Pharmaceutical Industry Is Booming in Japan,” *Harvard Business Review*, March 12, 2018, accessed April 2, 2019, https://hbr.org/sponsored/2018/03/why-the-pharmaceutical-industry-is-booming-in-japan. [↑](#endnote-ref-78)
79. Misato Adachi, Ryo Ishida, and Genki Oka, “Japan: Lessons from a Hyperaging Society,” *McKinsey Quarterly*, March 1, 2015, accessed May 15, 2019, https://www.mckinsey.com/featured-insights/asia-pacific/japan-lessons-from-a-hyperaging-society. [↑](#endnote-ref-79)
80. “Logistics Innovation at Haneda Airport: Consistent Temp-Control for Perishables & Pharmaceuticals Responding to Customers’ Needs Flexibly,” *Daily Cargo*, September 10, 2012, accessed May 15, 2019, www.daily-cargo.com/english/pdf/201209DailyCARGOEnglishSpecial.pdf. [↑](#endnote-ref-80)
81. “ELPRO and Oosumi Logistics Upgrade Narita Airport (NRT) Warehouses to Offer GDP Compliant Temperature-Controlled Handling of Pharmaceuticals,” ELPRO-BUCHS AG, March 7, 2018, accessed May 15, 2019, https://www.elpro.com/about-us/news/detail/elpro-and-oosumi-logistics-upgrade-narita-airport-nrt-warehouses-to-offer-gdp-compliant-temperature-controlled-handling-of-pharmaceuticals/. [↑](#endnote-ref-81)
82. Changi Airport Group (Singapore) Pte. Ltd., *From Lab to Patient: Taking Your Pharma Business Further*, September 2018, accessed May 15, 2019, https://www.changiairport.com/content/dam/cacorp/partnership/cargo/changi-pharma-hub/Brochure\_Hi-res\_Online.pdf. [↑](#endnote-ref-82)
83. “Singapore Exports to Japan,” op. cit. [↑](#endnote-ref-83)
84. “Distribution of Pharmaceutical Drug Imports to Japan in 2018, by Major Country,” op. cit. [↑](#endnote-ref-84)
85. Hirotaka Mori, *Japanese Policies in Maritime Industry*, February 12, 2016, accessed May 15, 2019, www.mlit.go.jp/common/001121368.pdf. [↑](#endnote-ref-85)
86. Tomoo Yatsuhashi, “Japan Air Cargo Growth to Slow,” The Journal of Commerce Online, July 16, 2017, accessed May 15, 2019, https://www.joc.com/air-cargo/international-air-freight/japan-air-cargo-growth-slow\_20170716.html. [↑](#endnote-ref-86)
87. Christopher S. Thomas, “Foreign Direct Investment—Challenges and Opportunities in Japan,” *Japan Today*, December 25, 2014, accessed May 15, 2019, https://japantoday.com/category/business/foreign-direct-investment-challenges-and-opportunities-in-japan. [↑](#endnote-ref-87)
88. “Top 10 Challenges of Doing Business in Japan,” op. cit. [↑](#endnote-ref-88)