

Physical Flow in Alibaba

Alibaba Group Holding Limited was founded in 1999 at Hangzhou, China, by 18 founders led by Jack Ma. Its first business, Alibaba.com, is a global wholesale e-marketplace that opens a wealth of business opportunities for firms regardless of operation scale. The group provides business-to-business, business-to-consumer, and consumer-to-consumer sales services mainly via its web portals Alibaba.com, TMall.com, and Taobao.com, serving both Chinese and overseas markets. Its core commerce businesses together generated a revenue of \$53.13 billion for the twelve months ending December 31, 2018.

China's online retail sales are expected to grow from \$1.3 trillion in 2018 to over \$6 trillion in 2020. The 552 million active consumers of Alibaba Group, growing in purchasing power, together contribute to a huge demand for frictionless long-distance delivery service across this giant country with varying terrain. Most friction takes place in the "last mile" (also known as "last kilometer") of the delivery. In e-commerce, this refers to the last leg of a package's journey from a transportation hub to the final destination, which is usually a customer's doorstep. Customers expect the package to arrive as soon as possible, but they may not be at home all day to wait for it. Failed delivery results in extra costs and more pollution. Moreover, the last-mile service is a key differentiator of online retailers in cutthroat competition as it is the last—and perhaps the only—direct contact with customers, thus leaving them with the deepest impression in the whole online shopping experience. If the customers' perceptions are negative, they switch to competitors without hesitation.

In 2013, to fulfill its product delivery needs, Alibaba Group founded a logistics affiliate, Cainiao Network ("Cainiao" means "rookie" in Chinese), with a consortium of logistics companies including 20 major players and 8,000 smaller ones in the Chinese express delivery market, competing only on price. Cainiao is a pioneering syndicate that collaborates with its partners through data infrastructure, technologies, and advanced intelligence. As a freight forwarder, Cainiao provides various stakeholders—fulfillment centers, overseas vendors, delivery companies, merchants, and customers—with real-time access to up-to-date logistics information from a cloud- and

big-data-powered data-sharing platform called the "Cainiao Logistics Cloud" through various interfaces for streamlining the logistics operation.

Cainiao operates domestic fulfillment centers dedicated to Alibaba's TMall Supermarket, serving numerous vendors. Storehouses and bonded warehouses use a warehouse management system to raise efficiency by optimizing stock location management and minimizing honeycombing (unexhausted space). Later, Cainiao runs new intelligent warehouses (some located at sites decided based on big data) which are equipped with armies of automated guided robots that move shelving racks to warehouse clerks following the guidance of RFID floor tags with instructions received through Wi-Fi, doubling the efficiency of product picking and packing and thereby improving accuracy.

Cross-border deliveries become easier and faster thanks to electronic clearance through the special government-backed China Customs channels. When consumers buy from overseas retailers using Alibaba Group websites, the three essential pieces of information that Chinese customs requires for every order—transaction, payment, and shipping data—are automatically sent to Cainiao's clearance system and then to Chinese customs through a direct digital link for speedier custom processing and more accurate tariff calculation.

With the aid of standardized e-shipping labels integrating a Level 5 Customer Address Database, packages are sorted and grouped automatically by warehouse equipment for delivery consolidation by different land-bridge transport operators. Deliverypersons can search for the precise location based on the text-based address. Cainiao gives couriers real-time logistics data and intelligence, such as smart routing and dynamic forecasting, computed using an intelligence algorithm to maximize vehicle fill and minimize empty running (delivery vehicles returning empty to the transportation depot), thus allowing logistics partners to leverage their capacity and capabilities without expanding their transportation fleet. Cainiao also optimizes delivery routing and scheduling with the aid of machine learning to fulfill the special delivery needs of individual vendors, such as direct store delivery and milk runs.

Merchants operating at any Alibaba marketplace can access up-to-date delivery data from Cainiao, available in various data visualization and presentation formats, to see an overview of the nationwide warehousing and distribution network, which supports daily operations such as replenishment planning. The intelligent backbone supports data exchange with partners to and from different types of databases using various computer languages protected by data encryption. The system's high flexibility helps vendors avoid huge investment in data marts.

The Cainiao Network website provides a global order-tracking function by working with national post offices as well as its partners abroad. In 2016, it launched Cainiao Guoguo, a mobile app for customers in China who wish to track their packages. In addition, when placing orders in Alibaba Group-related platforms, customers may select a self-pick-up spot in China (there are more than 40,000 thanks to arrangements with individuals, convenience stores, chain stores, and colleges). Once the packages

arrive at the pick-up stations, SMS and email notifications are sent to customers. They can collect the parcels any time they want, and as the delivery address is not the customer's home or office address, this also ensures better security protection of privacy. Pick-up stations located in rural, remote areas even help local residents pay their utility bills and facilitate sales of their agricultural produce to urban areas.

Cainiao is approaching the realization of its ultimate goal of delivery anywhere across China within 24 hours and anywhere in the world within 72 hours.

Sources: "Alibaba's Cainiao Launches China's First IoT Distribution Center," Xinhua Silk Road Information Service, January 23, 2019; "Alibaba Revenue 2011-2018," www.marotrends.net, accessed March 28, 2019; James Melton, "Online Retail Sales in China Grew Nearly 24% in 2018, Its Government Says," and Digital Commerce 360, January 24, 2019. J. Erickson, "Cainiao, Alibaba's Logistics Arm, Opens Up," www.alizila.com, May 28, 2015, accessed October 28, 2017, Goldman Sachs, "China E-commerce: The Next Leg of Growth," www.goldmansachs.com, July 2017, accessed October 28, 2017; www.alibabagroup.com, accessed October 28, 2017; www.alizila.com, accessed October 28, 2017.

Case contributed by Joyce Chan, City University of Hong Kong, and Christy Cheung, Hong Kong Baptist University

CASE STUDY QUESTIONS

1. Identify the logistics problems Alibaba Group faced. What are the issues raised by the last-mile bottleneck?
2. What are the logistical activities supported by Cainiao Network?
3. What are the tactics Cainiao has adopted to deal with the information flow in daily logistics operations? What are technological innovations or applications employed?
4. How does Cainiao Network solve the last-mile bottleneck? What is your evaluation of the solution?