



# The rise of retail research and development labs

More retailers are developing their own departments to analyse data, innovate systems and create new technologies. Katie Deighton looks at some of the front runners

**I**nnovation has become crucially important for retailers over the past few years, and several are investing heavily in research and development labs. As Japanese retailer Rakuten opens the doors of its first European research centre in Paris, we take a look at the businesses racing to develop the latest in-house tech for retail.

## Rakuten

**Locations** New York, Tokyo, Paris

**R&D size** 70 employees

Japan's biggest retailer has invested heavily in R&D. This month Rakuten, which runs marketplaces across Europe, the US and Asia, opened its first European Rakuten Institute of Technology (RIT) in Paris to add to its established research hubs in Tokyo and New York.

RIT aims to develop ecommerce innovations in order to boost growth in the sector. It plans to revolutionise data analytics, fraud detection, recommendation systems, image processing, user interfaces and 'online to offline' transitions.

So far the institute has developed a bespoke analytics tracker, a recommendation engine and open source key value store Roma, which has substantially reduced hardware requirements across the business.

But Rakuten chief executive Hiroshi Mikitani does not plan to keep new developments to himself. He says: "Our aim globally is to empower retailers and merchants to sell online, and to do this we must keep up with consumers' browsing and buying habits.

"That's why we've increased the size of our global research team, so they can work on bringing the next big thing in ecommerce to market."

## Amazon

**Locations** California, South Carolina, Toronto, Vancouver, Dresden, Berlin, Dublin, the Hague, Lasi, Edinburgh, London, Bangalore, Chennai, Hyderabad, Cape Town  
**Spend** \$1.86bn (£1.12bn) on R&D



After the revelation about plans for drone deliveries, it should come as no surprise that Amazon is leading the pack with R&D.

The retailer has 19 development centres across the globe, including five in California that are managed by the subsidiary brand A2Z, designed to improve customers' online experience.

Opened last year, the London R&D department has been branded as the Global Digital Media Development Centre. It focuses on developing Amazon acquisitions Lovefilm and Pushbutton, paying particular attention to big-screen services and online streaming.

On top of the business's own R&D, Amazon launched technology firm A9 in 2003. A9 acts as an independent company and aims to advance search

**Amazon's London R&D office that it opened last year; @WalmartLabs aims to encourage ecommerce growth (top right)**

and advertising technology for the retailer and other clients. The company counts its 'Read inside the Book' technology, which allows shoppers to flick through books online before buying,

## HOW TESCO FORECASTS WEATHER'S EFFECT ON SALES



Tesco has been using big data to predict what customers will buy for years. In-house analysts compare weather data and detailed sales information in order to build computer models that forecast what will sell when. This has led Tesco to save £100m a year through

avoiding over-ordering stock. The system can also improve revenues by predicting how much stock needs to be ordered for a promotion, reducing the risk of under-ordering.



and Amazon CloudSearch among its success stories.

**Walmart**

**Location** California, Oregon and Bangalore  
**Size** 200 R&D employees in Bangalore alone

The world's biggest retailer now has five R&D centres to its name, including the opening of a new office in Sunnyvale, California revealed this month. The @WalmartLabs group works to promote growth of the retailer's e-commerce through tech products such as cloud technology, ecoupons and shopping apps.

The Sunnyvale opening comes a year after Walmart expanded its R&D centre in Bangalore. At the same time, it snapped up Amazon's former director of engineering to head @WalmartLabs in India. The company also runs R&D in Portland, Oregon and San Bruno and San Diego in California.

Walmart unveiled its custom-built search engine Polaris last summer. The retailer says it improves the likelihood that a customer will complete an online purchase by 10% or 15% and works by using algorithms to unlock the "social genome" of the customer.

This means the search engine will figure out basic information about a user – such as gender – and change search results accordingly. So a woman who starts typing the word 'flat' will be shown flat shoes rather than flat screens. The technology was previously developed by Kosmix, the social media technology start-up acquired by Walmart in 2011.

**Suning**

**Locations** Nanjing and California  
**Size** Palo Alto office will have 200 R&D employees by 2017

Suning, one of China's largest retailers, has started expanding its R&D department in the hope of claiming the title of China's biggest e-tailer. Its latest move into development came at the end of last year, when it revealed the opening of its first overseas research centre in Palo Alto, California. The US R&D branch will complement the work being carried out at the business's headquarters just outside of Nanjing in China.

The company hopes the Silicon Valley lab will advance its offline-to-online business model and improve back-office operations. This will involve research into big data, smart searches, high-performance computing and internet banking.

Suning chairman Zhang Jindong says: "The location of our first overseas R&D centre offers the potential to partner with leading businesses, attract high-calibre talent, and advance co-operation between China and US."

Suning began life as an air-conditioner store. It now generates revenues of \$37.7bn (£22.6bn) and has opened more than 1,600 stores across China, Hong Kong and Japan.



**"OUR AIM GLOBALLY IS TO EMPOWER RETAILERS AND MERCHANTS TO SELL ONLINE"**

Hiroshi Mikitani, Rakuten



**Target**

**Location** Bangalore

The US retailer has been slower to invest in R&D than its rivals, but its latest venture is something a little different.

Instead of launching labs in the heart of Silicon Valley, Target has plans to establish an accelerator programme in Bangalore.

The business will provide up to \$30,000 (£18,000) to IT start-ups in return for untapped engineering talent and e-commerce innovations.

Target will be the first big corporation to launch an accelerator programme in the growing tech capital. It will introduce a website that will accept start-up applications in the near future.

Target set up a Captive Technology Centre in Bangalore in 2005 to support its US back office. Since then the Indian office has played a crucial role developing Target.com and helping with its Canadian launch.

**Tesco**

**Location** London

Tesco has always been interested in using technology to drive sales. The grocer's R&D arm concentrates mainly on the supply chain, namely sales forecasting and ordering, depot ordering, supply analytics and store labour scheduling.

Last month the retailer took things further with the

creation of Tesco Labs. The London-based 'lab of innovation' will invite start-ups and SMEs to share ideas with Tesco's head office. The labs will provide Tesco with fresh perspectives in all aspects of business, both in-store and online.

Tesco also moved ahead of the game last year when it opened offices dedicated to app development in Shoreditch, east London.