

Otto: Using predictive analytics to place inventory in the network

Retailers have always collected information about their customers, but long gone are the days of handwritten notes and Excel spreadsheets and human intelligence to make sense of it all. Today, the future can be glimpsed at the Otto Group headquarters in Hamburg, where the German e-commerce merchant is using Artificial Intelligence, big data and machine learning to make quick and accurate decisions that reverberate along the length of their supply chain.

Of course, companies – most notably Amazon – have been using these technologies for years to understand consumer tastes, personalise websites and recommend products. At Otto today, these same tools are also being used to automate business decisions that extend far beyond customer management. The most crucial of these for Otto is trying to lower the number of product returns, which cost the company millions of euros every year.

The company knew from traditional data analysis that customers were less likely to return products if they arrived within 48 hours. Anything longer was risky: if a customer saw the product cheaper elsewhere, or could get it faster, they might be tempted to cancel the Otto order and force the company to bear the shipping costs. That's an expensive risk for a business built on e-commerce.

The Otto team also knew that customers prefer getting all their orders at the same time, but since Otto sells merchandise from numerous brands, the company was faced with a choice: delay sending until all of a customer's order could be shipped together, or send lots of different boxes at different times.

Enter a deep-learning algorithm from Blue Yonder (a start-up in which Otto owns a stake). This algorithm is capable of analysing around three billion historical transactions and 200 variables i.e. the day of the week, the weather, advertising campaigns, actions or range adjustments, previous orders, and any other factors that could influence a purchasing decision. As a result, stock can be optimally adjusted to demand and sales, customer satisfaction and earnings can be increased.

“The digital revolution is still at its very beginning, a few hours after the big bang.” – Dr. Rainer Hillebrand, a Member of the Executive Board, Corporate Strategy, E-Commerce & Business Intelligence at the Otto Group.

The AI brain at Otto now does this for every item in the range, and the information is then automatically shared with the supply chain. It knows which products need to be ordered from the manufacturer and in what quantities, and which products are not likely to be required for a while. As a result, in most cases, when a customer places an order, the goods are already in the warehouse, which speeds delivery time. Best of all, Otto only has to store as many items as they need – reducing leftovers at the end of a season, waste and the need for storage.

The AI system has proved so trustworthy – predicting with 90% accuracy what will be sold within the next month – that today it purchases around 200,000 items a month from third party brands with no need for human involvement or decision-making.

The benefits? Surplus stock that Otto needs to hold has been reduced by 20%. Product returns are down by two million items a year. And customers get their orders more quickly, which improves both immediate satisfaction and the likelihood of repeat business.

Professor Dr Rainer Hillebrand says he's confident data will remain the driving force in retail in the future: “The opportunities to collect and store data and make them usable by algorithms will go from strength to strength. After the smartphone success story – 50% of our business now runs via mobile devices – the next big topic will be conversational commerce and going beyond touch with chatbots and voice input playing a major role in the purchasing process.”¹⁵