



Case study

Kraft Heinz

Kraft Heinz aiming for fully digital production. Data governance and organisation are the key challenges for the global food giant.

Kraft Heinz is one of the largest food companies in the world, with operations in more than 40 countries and sales of over \$26 billion. The company is in the midst of a transformation programme that includes transitioning to fully sustainable products and processes by 2025, and rolling out an agile digital ecosystem throughout its value chain. As part of this transformation, Kraft Heinz is also digitalising all of its production processes around the world.

For Kraft Heinz, the high road to total digitalisation begins at the factory level, and the company has three priorities when it comes to quality analytics: zero defects (“right first time”), end-to-end traceability, and eliminating customer complaints or returns.

The company says that the root cause of most product quality issues is human error rather than machine failure, so eliminating the human factor is the obvious path towards zero defects.

Kraft’s digitalisation programme is designed to move production line processes beyond simple monitoring. Instead, the aim is to reach a point where data from sensors, cameras and X-rays can predict errors and defects before they start generating faulty products.

For example, Kraft Heinz began installing X-ray technology on its production lines around seven years ago, and today virtually every Kraft Heinz factory in the world has X-ray capabilities. This replaced the old manual system of carrying out spot checks by opening selected containers to check for defects.

Kraft Heinz has now also augmented this technology with a layer of automation and artificial intelligence (AI), using a machine vision system (MVS) that can analyse data from production line cameras. The MVS supervises production lines for products such as sauce sachets, which may appear simple but actually have multiple potential points

of failure. Adding to the challenge is the fact that if just one sachet leaks or otherwise fails, the entire case of sachets has to be rejected.

“It is very difficult to maintain the integrity of the seal on those little sachets of sauce, but that is what we have to do,” says Dr Lee Reece of Kraft Heinz. “There are actually about 50 different ways that particular manufacturing process can go wrong, so what we have done is teach the MVS to detect what could be a leak or a failure even if it doesn’t look like a leak to the human eye.”

“There was a time when the only way this could be done was to have a human operator standing over the line and every now and then taking a sachet and giving it a good twist to see if it would leak. But today, the MVS feeds the image data into our AI system, which can not only detect failure, but also failure about to happen. We have got to the point where production machinery can effectively check itself.”

However, monitoring production quality and predicting failures are only the first steps on the road to a digital organisation. “When we first started looking at quality analytics, we knew we had specific problems to solve, such as the cost of putting large batches of product into ‘quarantine’ on the basis of a single production line error,” says Dr Reece. “At that stage, we were thinking of something as simple as ‘right ingredient, right place, right time.’”

Another human process Kraft Heinz is replacing in quality analytics is the use of tastings for quality assurance. The company's quality experts are trained to taste any variations in the recipe, but working this way has its limits: tasting is not carried out continuously, and humans cannot detect small incremental changes in salt content that build up over time. Machines, on the other hand, can detect these tiny variations. By using the latest sensors and advanced analytics, Kraft Heinz has made significant progress in continuously monitoring the quality of its products and avoiding changes in taste and texture.

"We started to realise that there was scope for much more digital control. This was something that could be applied to pretty much every step in the manufacturing process. So it has grown from a single issue to a much bigger operations-wide opportunity, and we have taken our initial idea focussed on one specific area and extended it end to end to create digital manufacturing from inputs to distribution," says Dr Reece.

However, the company cautions that technology, automation and AI are only one element of creating a digital factory. Data governance, analytics capabilities and organisational response can be even bigger challenges.

"You can learn how to get data from your production lines," says Dr Reece. "The question then is what are you going to do with that data? How are you going to use it for intelligent decision-making? How are you going to integrate it into different systems? The earlier you can answer these questions, the more effective the digital transformation will be."

