The ethics of digital technology in the food sector

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Imagine a world in which smart packaging for supermarket-ready meals updates you in real-time to tell you about carbon footprints, gives live warnings on product recalls and instant safety alerts because allergens were detected unexpectedly in the factory.

But how much extra energy would be used powering such a system? And what if an accidental alert meant you were told to throw away your [food](#) for no reason?

These are some of the questions asked by team of researchers, including a Lancaster University Lecturer in Design Policy and Futures Thinking, who—by creating objects from a "smart" imaginary new world—are looking at the ethical implications of using artificial intelligence in the food sector.

Their article, Considering the ethical implications of digital collaboration in the Food Sector, is published today in the November issue of the data science solutions journal *Patterns*.

Food production is the largest sector in the UK manufacturing industry. Complex food production and distribution processes and systems, involving millions of people and organizations, produce huge amounts of data every day.

But, says the article, for opportunities to be fully realized, there is a need to be able to securely work together, share and access a wide variety of data sources across the entire food sector. Sharing data and using it more effectively, such as with AI and other new technological innovations, can potentially reduce waste, increase sustainability and protect health.

Meeting this need requires a trusted mechanism to enable the different parties throughout the supply chain to support each party to make informed decisions about the credibility of the separate data sources. But organizations can be wary of sharing data that may be commercially sensitive, so new systems are being developed that can be trusted to protect privacy while allowing wider use to be made of the collected data.

The article warns that new [technology](#) may also introduce ethical issues and unexpected, harmful consequences.

"To create such a data collaboration would require the integration of both cutting-edge technologies and surrounding social, institutional, and policy elements to ensure that the system works equally well and equitably for all parties involved," adds the article.

"For example, if AI is to be implemented, we need to address ethical challenges that are well known in this area, such as bias and accountability, to create systems that are responsible in their implementation and prioritize human well-being."

The project brought people together with different types of expertise, and used a method called "design fiction" to help explore ethical implications of sharing data about food and evaluate technologies that don't yet exist.

Lead author Dr. Naomi Jacobs from the Imagination Laboratory at Lancaster University said, "Rather than ask general questions about what might go wrong, or have to wait until something is fully built—when it is probably too late to change things without huge costs or starting all over again—we imagined what the world might look like if 'data trusts' (designed to protect private data while allowing others to make use of it) already existed."

As part of a wider project established by the Internet of Food Things Network+ (led by the University of Lincoln) to explore data trusts related to the food sector, the research team created objects that acted as "props" from that fictional world such as a "documentary" film about a supermarket recall, and the [real-time](#) [supermarket](#) ready meal packaging. These props were used with a set of cards designed to enable engagement with the ethics of technology, called the Moral-IT Deck.

Using these, they worked with experts in food and technology to evaluate the potential ethical benefits, risks and challenges they posed.

"Through this process, we learned about important issues," added Dr. Jacobs. "For example, it is key to consider where power lies in these systems, how large companies, small companies and individual consumers might be positively or negatively impacted, and how different ethical aspects such as sustainability and wellbeing, privacy and transparency, might need to be balanced. These need to be considered when developing these types of data trusts in the future."

The article sets out an approach by which the ethical implications of technological progress can be considered, specifically here in the context of digital collaboration in the food sector and with a particular focus on the use of AI in shared data management and usage and the importance of responsible innovation.

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