

Abstract

Resilient Food Supply Chains in the Face of the Russo–Ukrainian War: Harnessing the Power of the Internet of Things [†]

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Abstract: The current war in Ukraine has severely disrupted global food supply chains due to the significant decline in the production of grain commodities, of which Ukraine and Russia are major global suppliers. This creates problems in today's globalised food systems. In particular, a number of countries are heavily dependent on food imports from Ukraine and/or Russia, particularly some developing nations in regions like the Middle East and North Africa. As a result, alternative suppliers need to increase production and food supply chains need to adapt distribution processes. In these situations, building resilience in food supply chains is critical to react to disruptions. Resilience has become a widely researched topic in the context of food supply chains, leading to the exploration of different strategies. One potential strategy to improve resilience is to integrate digital technologies to optimise food operations. One of the digital technologies at the core of Industry 4.0, and one that is increasingly being used, is the Internet of Things (IoT). The IoT refers to systems that connect devices via the Internet, allowing them to collect and share data in real time within a network. The successful use of IoT in industrial systems has already been demonstrated and the food industry has begun to embrace the opportunities this technology offers. This research focuses on the potential of the IoT to support food supply chains by making them more resilient, particularly in the context of the disruptions caused by the war in Ukraine. Using a literature review and data from statistical sources, we explore the challenges posed to food supply chains by the Russo–Ukrainian war, and identify specific vulnerabilities that the IoT can address. We discuss the challenges of implementing this technology, particularly in wartime situations, and its potential to strengthen food supply chain operations through its ability to collect and share accurate data in real time.

Keywords: Russo–Ukrainian war; food supply chains; food production disruption; resilience; Internet of Things (IoT)



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