

Short review: application areas of Industry 4.0 technologies in food processing sector

ABSTRACT

The technological revolution or known as Industry 4.0, is a paradigm that envisages the use of sensors, machines, workpieces and IT system that is connected to the value chain beyond a single organization. As in other industries, the food processing sector is expected to embrace Industry 4.0 progressively. This paper presents the nine technological advancements that drive Industry 4.0 namely Big Data and analytics, autonomous robots, simulation, horizontal and vertical integration, cybersecurity, the Industrial Internet of Things (IIoT), the cloud, augmented reality and additive manufacturing. Additionally, the paper reviews their application areas in the food sector. These include intelligent manufacturing, food safety, training, marketing and other functions commonly found in the food industry. The advantages such as automated tasks, cost reduction, systematic management, compliance with standard and resource efficiency are presented. Yet, it is understood that new issues also arise especially when considering the common small- and medium-scaled food processors that are plagued with capital, skill, know-how and technological constraints. Hence, future studies are recommended on areas related to cybersecurity, modified workforce profile, user-friendly interface requirement, applicable concept for the small companies and their readiness for the technology.

Keyword: Digital technologies; Food manufacturing; Food processing; Food industry; Food safety and quality; Industry 4.0; Internet of things