

An Editorial

Future Trends & Emerging Technologies in Smart Sustainable Packaging

Smart Packaging is the important concept and uses various types of emerging technologies specially information and communication technologies. As far as such technologies are concerned embedded sensors, indicators, and real-time environment is essential. Among the technologies RFID and NFC are important to gather information regarding condition of the product including its freshness, quality, safety related concern, reducing the waste systems, etc. It is important to note that smart packaging is helpful and dedicated in enhancing the effective lifespan, tracking of the product, etc. As far as futuristic packaging is concerned it is going to be more digitally equipped, attached and involved with other technologies such as artificial intelligence, internet of things, QR Code with NFC using IoT sensors, Digital Twins, optimization systems, intelligent packaging. As far as active tracking is concerned smart packaging become effective and a sustainable packing leads reducing waste management, increase of the interactive facets. Today QR Codes, intelligent packagings are important in enabling quick identification of product data such as authenticity verification, identifying signal product status, etc. There are significant role of embedded sensors that helps in monitoring temperature, humidity as locations, food safety as well as other effective supply chain management systems.

Apart from information technologies there are other concern of emergence in smart packaging such as use of the Bio-based plastics which include the polylactic acid from corn starch, etc., uses of the mushroom packaging systems, effective marine source based materials. In recent years development also noted in uses of reusable products, use of the less materials, effective digital tracking based authentic mechanism, etc. Ultimately smart packaging is helpful in effective data-driven systems and which are useful in future uses. As far as waste reduction in concerned smart packaging is very much helpful this ultimately leads waste reduction and helps in enhancing the safety systems. As far as consumer engagement, it is important to note that smart packaging is helpful in waste reduction, proper supply chain management and effective consumer engagement.

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