

Smart Packaging - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Smart Packaging Market size is estimated at USD 22.67 billion in 2024, and is expected to reach USD 31.98 billion by 2029, growing at a CAGR of 7.12% during the forecast period (2024-2029).

Smart packaging refers to a specific type of sensor-equipped packaging system used for various items, including food and medication. The technology used in smart packaging helps to increase product quality, shelf life, freshness monitoring, and customer and product safety. When products are packaged using intelligent technology, these systems provide details about the product's quality and freshness.

Key Highlights

- The smart packaging market's growth is driven by consumer lifestyle changes brought on by rapid urbanization and increased use of individualized personal items with cutting-edge integrated innovation. In addition, the global packaging market business depends on the untapped geographic areas that offer enormous open doors for market competitors for its growth. Owing to increasing concern about health hygiene, especially after the pandemic, there has been an increased demand for sustainably packaged organic food worldwide.
- According to the Global Organic Trade Guide, the consumption of organic packaged foods in the United States was estimated to be worth USD 14.96 billion in 2016, and it is expected to have surpassed USD 21 billion in 2022. Moreover, even in developing countries like India, China, Thailand, and Indonesia, the market size for organic packaged food has been positive in the past few years. This may have consequently pushed the demand for smart packaging in these countries for the future.
- Several smart packaging manufacturers across the globe are constantly innovating products with their consistent effort to support environmental sustainability coupled with smart packaging initiatives. In December 2022, LMI Technologies (LMI), the manufacturer of 3D scanning and inspection solutions, announced that it had stopped using single-use, plastic-based foams and

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any other plastic materials in product packaging and had begun packaging and shipping all its products with 100% recyclable and biodegradable materials. The transition to the new eco-smart packaging was underway, and the company anticipated to have switched over the great majority of its products by the beginning of 2023. The new eco-smart packaging features a printed QR code on the outside of the box that connects to a webpage with all the product quick start guides (QSG) that are currently available. Customers can quickly download the PDF version corresponding to their new LMI product by scanning the QR code on the box with their smartphone and then perusing the QSGs on the associated homepage.

-However, the high cost of capital for instalments, security issues, new techniques for fabricating such sensors and indicators compatible with current packaging standards, and awareness among consumers are key restraints and challenges to the market's growth.

-After the pandemic outbreak, the European Organization for Packaging and the Environment called on the European Commission to recognize packaging as an essential component of the product groups identified as critical, like perishable goods, especially food items, to maintain the uninterrupted flow of goods. In this context, StePac, which supplies its solutions in European countries, developed an advanced modified atmosphere packaging, effectively reducing the food products' ripening and ageing processes.

-Another factor expected to drive the market in the future is e-commerce or online purchasing. Until now, online buying of groceries was limited only to cosmopolitan or metro cities, but soon, it may be a preferred mode of buying in small cities and towns. This is further anticipated to create growth in the packaging sector and boost the development of active and intelligent packaging.

Smart Packaging Market Trends

Active Packaging to Hold Major Share in the Market

- Active packaging does more than contain and protect the product. It interacts with the contents of the package to enhance freshness or extend shelf life. The packaging includes added or removed ingredients to adjust conditions such as humidity, oxygen levels, odors, and flavors. Active packaging is mainly used for food and beverages.

- Active packaging works by placing the active element inside the package. A small packet, envelope, or label is placed inside the package with the product. This can, for instance, release antibacterial agents to slow the spoilage process or remove oxygen to keep food from spoiling. Another way active packaging works is by incorporating active elements into the packaging material by extrusion, lamination, or printing. This mechanism is more appealing to consumers as there are no confusing or odd items on the packaging.

- Active packaging technology builds on the traditional concept of packaging by adding functionality to the packaged product, adapting its mode of action to the protective function and needs of the product, and going beyond mere containment, protection, and transmission to limit destructive processes. Active packaging, therefore, offers a new approach to reducing food waste and loss during increased demand in the supply chain while maintaining current manufacturing systems.

- Furthermore, increasing demand for security and tracking solutions drives growth for the active and intelligent packaging market. For instance, RFID tags provide the ability to identify, control, and manage the food supply chain. These are more advanced, reliable, and efficient for food traceability than conventional barcode tags. RFID tags for monitoring the products' temperature, relative humidity, pressure, pH, and light exposure are already available on the market, aiding in enhancing food quality and safety. In April 2022, major worldwide food chain Chipotle Mexican Grill started exploring RFID technology to improve its inventory and traceability systems at its Chicago distribution center and roughly 200 restaurants in the greater Chicago area.

- According to the research of ZebraTechnologies, a US-based manufacturing company, by 2024, the market-leading packaging manufacturers and end users are likely to gravitate toward incorporating more comprehensive automotive solutions. According to the report, the investment in technologies, including RFID, sensors, and augmented reality, is expected to be up from 29%, 29%, and 22%, respectively, in 2019 to 35%, 35%, and 29% in 2024. In Europe, it is expected that more outbound activities may employ RFID and location technology, with more than one in five expecting to utilize it for packaging (25%), inventory

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management (20%), and picking (19%) by 2024.

North America is Expected to Hold Significant Market Share

- Due to favorable regulatory conditions, a growing focus on sustainability, and rising demand for active and intelligent packaging across various end-user segments, particularly the food and healthcare industries, the smart packaging market in the United States has experienced significant growth over the past few years.
- According to the Food and Agriculture Organization of the United States, in the US, an estimated 133 billion pounds of food, at a value of USD 161 billion, is wasted yearly. Efforts to reduce food waste are multifaceted, including increased diversion of food-to-food banks, education and outreach, and efforts to standardize date markings on food labels. Further, reducing food waste using smart packaging is gaining significant traction in the United States.
- Moreover, the growth of intelligent packaging in the food industry is significantly attributed to government efforts, as beyond reducing food waste or helping to ensure food safety, intelligent packaging also can track the location and condition of food. For instance, the US Department of Defense (DOD) and the Food and Drugs Association (FDA) have encouraged using RFID technology for supply chain management and tracking and tracing products requiring smart packaging.
- Canada is expected to register significant growth over the forecast period. The shift towards healthier, less processed food that has been effectively packaged to ensure safety from contamination and lengthen the shelf life indicates customer preferences towards smart packaging solutions nationwide.
- The Canadian Printable Electronics Industry Association has formed the IntelliPACK Leadership Council, in partnership with PAC, Packaging Consortium, to speed up the adoption of new intelligent packaging products and applications. The joint IntelliPACK program was launched in 2017 to drive the development and adoption of intelligent packaging enabled with printable, flexible, or organic electronics (PE).
- Further, the IntelliPACK Business Network is working with organizations that can help develop the capability to enable intelligent packaging using Printable and Organic Electronics (PE) in Canada. For instance, the organizations recently made a strategic collaboration agreement with the PAC, Packaging Consortium (PAC), and IntelliFLEX to facilitate the widespread adoption of active and intelligent packaging across Canada. Furthermore, the Canadian government assists industry efforts to identify environmentally sound approaches to agricultural problems that will benefit the economy and future generations.

Smart Packaging Industry Overview

The intensity of competitive rivalry in the Smart Packaging Market studied is moderately high and is expected to remain the same during the forecast period. Some of the major players in the market are Sealed Air Corporation, Amcor PLC, Ball Corporation, BASF SE, and Huhtamaki OYJ. Players in the market are adopting strategies such as partnerships, innovations, and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

In May 2023, Amcor PLC, a global player in the design and manufacture of responsible packaging solutions, announced that it signed a definitive agreement to acquire ModaSystems. ModaSystems is a manufacturer of state-of-the-art automated protein packaging machines. ModaSystems develops, assembles, and supports innovative, high-performance, modular vacuum packaging solutions for the meat, poultry, and dairy industries.

In March 2023, Avery Dennison Corporation announced its latest Atma-io-connected product cloud updates to help brands transform their supply chains. The platform manages over 28 billion items for brands across apparel, retail, food, and healthcare.

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- The market estimate (ME) sheet in Excel format
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