

India Smart Packaging Market Assessment, By Type [Active Packaging, Intelligent Packaging, Others], By End-use [Food and Beverage, Healthcare, Automotive, Personal Care, Logistics, Others], By Region, Opportunities, and Forecast, FY2017-FY2031F

https://marketpublishers.com/r/I5D447948DB4EN.html

Date: March 2025

Pages: 109

Price: US\$ 3,300.00 (Single User License)

ID: I5D447948DB4EN

Abstracts

India smart packaging market is expected to reach USD 7.05 billion by FY2031, from USD 3.64 billion in FY2023, and is forecasted to grow at CAGR of 8.6% for the forecast period between FY2024 and FY2031. The market is driven by technological innovation, eco-friendly solutions, increasing incomes, consumer demand for engagement, and the rise of e-commerce. India smart packaging market is experiencing remarkable growth and transformation driven by the country's technological advancements, changing consumer preferences, and growing competition in the market. A whole new age of interactive and practical packaging solutions is emerging as technology merges with conventional packaging techniques in India smart packaging market. The market is showing an upward trajectory due to the growing number of suppliers and manufacturers catering to various business houses for their specific needs. After the integration of technology in the packaging of a product, the packaging is not limited to visual appealing to the customers, as it has become a vital tool of a business.

The India smart packaging market is at the intersection of technology, convenience, and consumer involvement due to the growth of e-commerce, online sales channels, D2C, and the emphasis on sustainability and the demand for creative supply chain solutions. The market offers various smart packaging solutions, including active packaging, interactive packaging, and more.

Supply Chain Optimization



Growing competition and the effects of the COVID-19 pandemic have forced brands to manage their supply chains in a better way. India smart packaging market is at the right spot to offer solutions and benefits to India's complex and diverse supply chains across industries providing real-time data & insights and commodities that can be tracked easily in their course. There has been an improvement in inventory management, a decrease in losses and a higher efficiency in supply chain efficiency due to RFID technology, sensors, and other smart packaging solutions. Using integrated sensors and RFID technology enable businesses to manage inventory more efficiently.

Businesses can monitor stock levels, predict demand and streamline replenishment processes. Real-time tracking and data-driven insights help optimize logistics operations. Businesses can make informed decisions about routing, transportation modes, and delivery schedules to reduce lead times and operational costs. By utilizing the technology in the most efficient way, bottlenecks can be removed from the supply chain.

Health Care and Pharma

The Indian healthcare and pharma industry are adopting smart packaging to improve patient outcomes and drug adherence. The safety of patients has increased, and medical procedures have improved, through dosage reminders, temperature monitoring, and tamper-evident features. Sensors have their unique place in the pharmaceuticals market, temperature-sensitive medications can lose effectiveness if not stored properly. Smart packaging with temperature sensors can monitor storage conditions and alert patients, pharmacists, and healthcare professionals, if the temperature exceeds safe limits. To ensure efficiency, minimize wastage, and keep 100 per cent safety standards for patient use then medicines, health supplements, medical devices, surgical equipment, and diagnostic kits require specific protection which is possible through Active Packaging (AP). Desiccants and oxygen absorbers are added to these products to provide this protection. When it comes to shielding medicines and other medical supplies from oxygen and moisture, active packaging is a crucial factor of consideration.

E-commerce Expansion

The relationship between e-commerce and smart packaging is revolutionizing how goods are packaged, transported, and experienced in the shopping ecosystem. India smart packaging market shares a direct relationship with India e-commerce market, the rapid growth of e-commerce in India is driving the demand for innovative packaging



solutions that enhance the online shopping experience. Real-time tracking and interactive content are examples of smart packaging features that enhance customer engagement and happiness in the e-commerce ecosystem.

QR codes, NFC tags, and interactive elements provide consumers with detailed product information, virtual try-on, and real-time tracking, bridging the gap between physical and online shopping. With the massive rise in packaged food consumption, awareness, and a need for high-quality products, India has experienced a boom in e-commerce. As a result, packaging ideas have increased dramatically across the nation. Brands are using innovative packaging strategies to improve the consumer experience and boost the shelf appeal of their products.

Nanotechnology in Packaging

The creation of nanoparticles using nanotechnology has sparked much interest in food packaging and India smart packaging market. It commits to the creation of food packaging with improved qualities that aid in extending the shelf life of food items. To maintain the food quality and traceability along with supply chain, better packaging, active packaging, and intelligent packaging, are developed using nanoparticles. Nanoparticles with antimicrobial properties can be added to packaging materials to inhibit the growth of bacteria, fungi, and other microorganisms. It is particularly valuable for food packaging to maintaining product freshness and safety.

Conservation, confinement, convenience, and communication are the four main purposes of conventional food packaging. These fundamental processes are enhanced to provide better, more functional, and more intelligent packaging. In India smart packaging market, the use of nanotechnology to create intelligent, interactive, and responsive food packaging with better functionality is transforming passive food packaging today into active or creative food packaging. Researchers at NIT Andhra Pradesh have created food packaging materials, driven by nanoparticles that can extend the shelf life of packed food components and preserve their quality, flavor, and color.

Impact of COVID-19

The COVID-19 pandemic significantly affected the India smart packaging market, changing trends and adoption, and market dynamics in several different industries. A move towards contactless interactions was driven by worries for people's health and safety. With the use of NFC and QR codes, smart packaging has given consumers a



means to interact with products virtually, access information, and make purchases. The pandemic made it clear that supply chains need to be transparent and optimized. Real-time tracking and RFID technology in smart packaging became essential for maintaining an uninterrupted flow of goods and minimizing delays. Consumer preferences and behaviors evolved during the pandemic. Brands used smart packaging to address changing needs, such as providing information about contactless delivery, safety measures, and remote experiences.

Key Players Landscape and Outlook

Over the years, the India smart packaging market has expanded significantly, and many players are integrating tech into their traditional practices. The outlook of the India smart packaging market is positive. The India smart packaging market is forecasted to expand consistently for the forecast period, catering to various markets, industries, and ecommerce sectors in the country. As businesses continue to recognize the benefits of enhanced consumer engagement, supply chain optimization, and brand protection offered by smart packaging solutions, the market will continue to expand. To develop innovative solutions, suited to the specific requirements and limitations of the Indian market, key businesses are expected to make investments in research and development. Packaging sensors, codes, packaging software, nanotechnology, and AI are likely to expand their footprint in the India smart packaging market.



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- *Companies mentioned above DO NOT hold any order as per market share and can be



changed as per information available during research work

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