

A wide-angle photograph of a modern food processing plant. In the foreground, several workers wearing green uniforms and white hairnets are positioned along a long conveyor belt. The conveyor belt is filled with numerous apples. Above the workers, there are multiple levels of shelving or processing units. The background shows more of the facility's interior, including additional workers and equipment. The overall atmosphere is one of a high-volume, automated food production environment.

MARC

Technologies That Will Change The Face Of The Food Industry

Tech trends in the food industry for 2023
and beyond.

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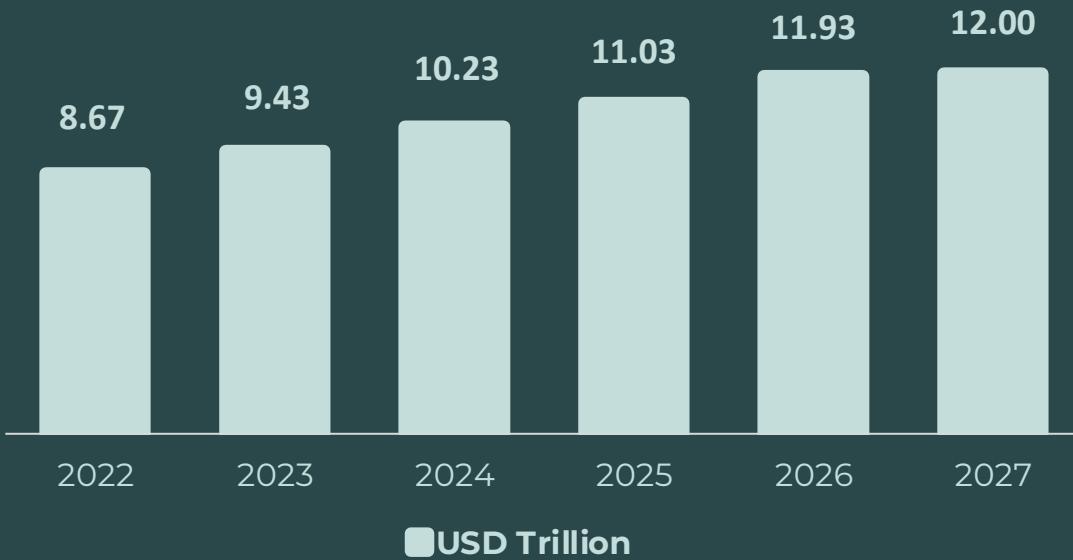
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1. The Growth Explosion In The Food Industry

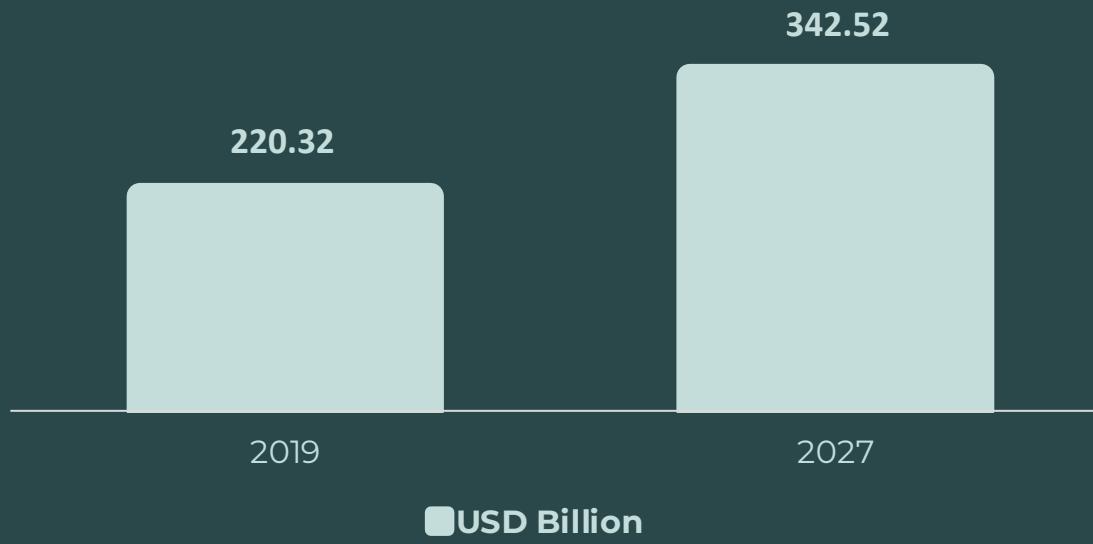


Source -Statista Food Market Worldwide

The food industry consists of businesses that manufacture, produce, package, retail, and distribute food goods in a variety of ways. Thanks to technology advancements, the food business has undergone substantial transformation in the past 20 years, keeping up with the rising demand for convenience foods. With a CAGR of **6.21%**, it is expected to reach a **USD 12 Trillion** market by **2027**.



2. What Is The Future Of Food-tech?



Source –Statista Food-Tech Market & Appinventive Food-Tech Trends

The size of the worldwide food-tech market was USD 220.32 billion in 2019, and it is projected to grow at a CAGR of 6.0% from 2019 to 2027 to reach USD 342.52 billion. The market for food-tech is being mainly driven by the growing desire for cheaper, safer, and better food items. Robotics, processing methods, and data technology advancements are giving the food business new growth prospects.



3. Focus Points Of Food-Tech Industry

Focus Points



Sustainability



Healthy Food



Freshness Of The Product

Consumer spending patterns, according to Ernst & Young, demonstrate that consumers are prepared and willing to pay for advancements in food technology that can satisfy their growing demands for convenience, health, and low environmental impact. With the emergence of new consumer groups, including young, urban-dwelling, working professionals, the emphasis has switched to product sustainability, health, and freshness. It's a terrific moment for food inventors to take advantage of these market demands and grow quickly thanks to the possibility in food technology firms. The rising investments have led to significant innovation in the food industry. The industry now seeks to adapt to the times, promote healthier, more acceptable eating habits, and prevent food product fraud.

4. Opportunities In The Food-Tech Industry

There are three key areas in which food-tech innovations are beginning to deliver completely new and novel approaches along the value chain. These areas include Consumer Food-Tech, Industry Food-Tech and Supply Chain and Procurement. These areas represent technological approaches addressing serious pain points within the food industry, such as adapting to changing consumer demands, better processing and packaging of food products, sustainability, and ensuring food safety. These sectors are expected to experience significant growth and investment attention in the coming years as the industry is looking for ways to meet the increasing demand for food while addressing the global challenges such as population growth and climate change.

Areas of Opportunity in Food-Tech Industry



Consumer Food-Tech
(Plant-based alternatives, Healthy Fd etc.)



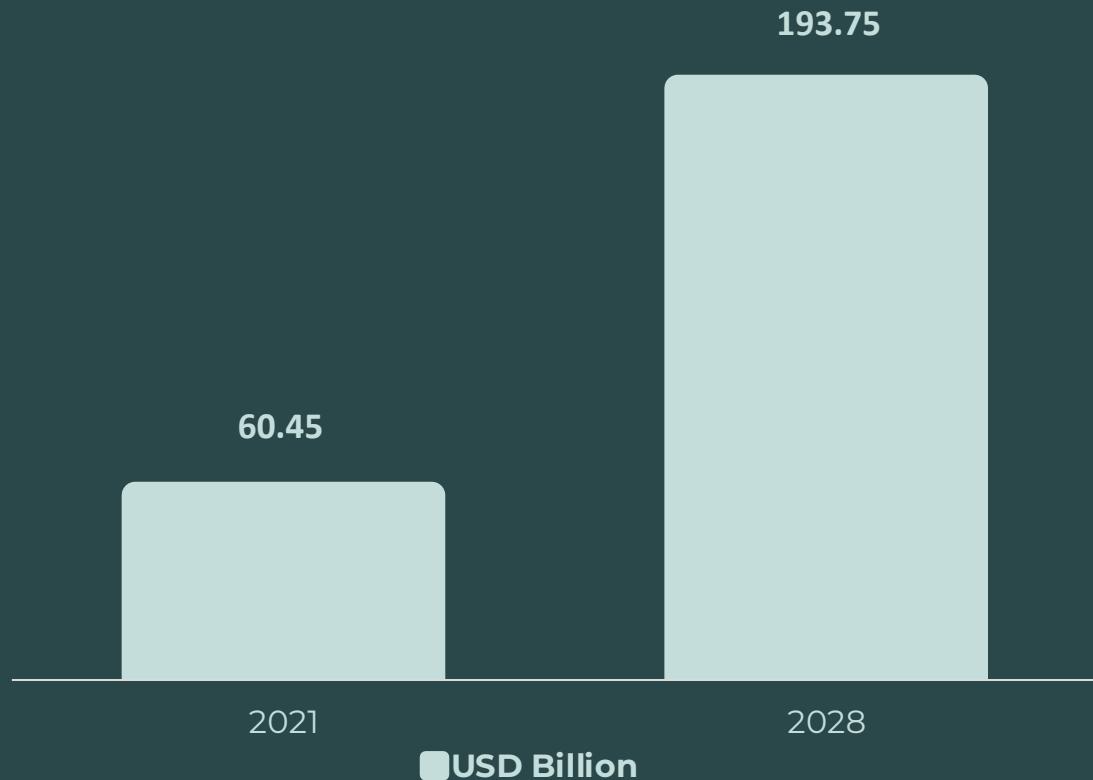
Industry Food-Tech
(Processing, Packaging, sustainability etc.)



Supply Chain & Procurement
(Tracking and Preventing frauds)

5. Industry Trends: Alternative Protein

Market Size of Alternative Protein (USD Billion)



Rise in Alternative Protein

Higher protein will be the biggest food technology trend in 2023, predicts Eyal Afergan, co-founder and CEO of Imagindairy, noting that the trend, which originated in the sports nutrition industry, has spread to the general population. Consumers are looking for more products with higher protein content since there is a greater awareness of the importance of a balanced diet worldwide. Thus, Alternative proteins will become a more important component of new food products. The market is also predicted to grow to a **USD 193.75 Billion** market in 2028 at a **CAGR OF 18.5%**.

5. Industry Trends: Digital Transformation

Key Areas



Connectivity



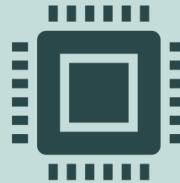
Continuous Monitoring



Data Collection and Analytics



Process Optimization



Digital Transformation

Some businesses have been slower than others to implement Industry 4.0, or digital transformation, in the food and beverage processing industries throughout the years, but the COVID-19 epidemic and labour shortages are pushing adoption to new heights in industrial facilities. Connectivity, continuous monitoring, data collecting and analysis, and process optimization are the four fundamental tenets of digital transformation. These four tenets provide many entry points for technology advancement, most notably through machine and software automation.

5. Industry Trends: Food Safety

Technologies driving Food Safety



**Temperature
Monitoring Systems**



**Robotics (Processing
and Packaging)**



**Monitoring through
Digital Sensors**



Food Safety

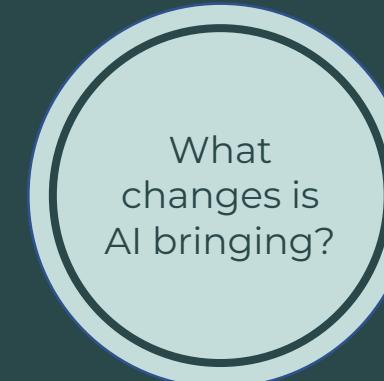
Innovative food safety technologies may not initially appear to be directly related to a food company's sustainability initiatives, but their use can have a positive impact on a processor's green goals while optimizing food protection systems. For instance, during the pandemic, developments in the creation of efficient and secure light-based disinfection technologies, such as ultraviolet light and light-emitting diodes, were sparked by need.

6. The Role Of AI In Food Industry

AI is expected to bring significant changes to the food industry by improving efficiency and productivity, reducing waste, and enhancing food safety and quality. AI-powered systems can be used for tasks such as monitoring and controlling food production processes, analysing sensor data from equipment, and predicting demand for products. Additionally, AI can be used in the development of new food products and in the optimization of existing ones. AI can also be used in precision farming, to help farmers optimize crop yields and improve food safety. Overall, the use of AI in the food industry is likely to lead to cost savings and increased revenue, as well as improved sustainability and efficiency.



Quick & accurate decision making under different scenarios with minimal errors.



What changes is AI bringing?



Sensors that can identify defects from odors and flavors and perform a deep analysis.



Food safety and quality using automated processes for minimal human error.

7. Other Trends: Production & Distribution



Blockchain

Applications built on the blockchain can improve food management by tracking and documenting transactions to uphold the industry's standards for food safety and quality. Additionally, blockchain technology aids in handling massive data and promoting brand transparency. For example, IBM partnered with Raw SeaFoods to track sea foods via blockchain to avoid frauds and guarantee higher security for the process.



Robo Chefs

Robo Chefs have not gained full traction yet, but they are slowly picking up with new investments in the area. It might sound exciting , but the cost of robo chef technology won't be for everyone, it is estimated to start at \$15,000 for each robot chef specialist. But if you're a benefactor at a Michelin-starred restaurant, this can seem like a good deal. For example, For instance, Moley, a robotics company based in the UK, recently unveiled the first robotic kitchen, with a claim of cooking more than 5000 plans.

8. Other Trends: Consumer Experience



AI-based Chatbots

Chatbots powered by AI are being used by food-related smartphone applications to communicate with their users. Based on their eating habits and mannerisms, they provide meal recommendations. Additionally, chatbot support is available around-the-clock. On the strength of predictive analytics and machine learning technologies, the future of food technology aims to become more intelligent and individualized.



Augmented Reality & Virtual Reality

With the introduction of AR and VR in the food industry, creative food images have become less important. Transparency in food is now the most important thing that there is. The calorie intake of a consumer is now attached to what cuisine they are ordering with the help of AR and VR. Technology is also helping the consumers by filling in the gap between different cultures. For example, consumers can experience the dish that they are going to order right from production to the final dish.

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