

# Fuelling the Future: How Food Tech Is Shaping the Future Industry

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COLUMN



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AI-driven diets and lab-grown meat are only two examples of the substantial transformations in food. The food on your plate in the future will not resemble what it looks like now, regardless of whether you are a health-conscious professional, a youthful inventor, or a tech-savvy consumer. In this food tech era, innovation, science, and sustainability foster a smarter, healthier future.

## **Alternative Proteins: Reinventing the Protein Paradigm**

One of the most emphasised domains of food innovation is the quest for sustainable protein sources. An increase in greenhouse gas emissions and energy usage is the result of conventional livestock farming. To deal with such challenges, standardized solutions are being developed that are ethically and ecologically responsible. Plant-based proteins are an innovative solution to these challenges, which are developed to imitate the texture and taste of animal-sourced meat. For the development of such proteins, ingredients like soy, pea protein, and coconut oil are being employed. Moreover, to revolutionize the meat industry, innovations like cultured or lab-grown meat have been introduced. These are made from real animal cells without the need for animal slaughter, and it has the potential to drastically reduce land and water use. Nowadays, many emerging sources of proteins, such as microbial biomass or single-cell protein and edible insects, are cultivated for premium food products like protein powders, energy bars, and RTE snacks. Due to their high nutritional content and minimal ecological impact, these options are ideal for sustainable future food trends.

## **Personalised Nutrition: Custom Diets for Better Health**

Food intake patterns are undergoing a technological revolution for better consumer health and wellness. Recently, the personalization of nutrition has been trending, with groundbreaking advancements in AI, genetics, and gut microbiome studies. There is more inclination towards individualized nutritional plans based on the person's unique biological profile instead of conventional dietary suggestions. Such type of customized diet is being utilized to treat lifestyle conditions like diabetes, high blood pressure, and digestive issues in addition to weight management. In both clinical and consumer settings, the concept of food as medicine is growing in popularity, particularly for the treatment of chronic conditions and preventative care.

## **Functional Foods: Eating with a Purpose**

Consumers are keener to have more functional health benefits from the food they consume instead of just calories. Functional foods are scientifically proven to have advantages like boosting immunity, improving gastrointestinal health, and supporting cardiovascular health. Incorporation of probiotics, prebiotics, omega-3 fatty acids, adaptogens, and plant-based antioxidants in greater amounts is successfully meeting these needs. Moreover, to help achieve specific health benefits, meal replacements, wellness snacks, and fortified food and beverages are being developed.

## **Next-Gen Processing and Future Kitchens**

Magical and futuristic technologies have become a reality in food processing, which has enhanced food preparation to become more sophisticated, efficient, and consumer-oriented. Advanced technologies in commercial sectors like 3D and 4D food printing provide consumers with the ability to design the food they eat and also meet their nutritional needs. The industrial application of emerging processing technologies, like high-pressure processing, pulsed electric fields, ultrasound, and irradiation, in the food industry has enhanced food safety and increased shelf life without the use of any artificial preservatives. These advancements are meeting the consumer demand for healthier and more transparent food choices while also adding convenience to the market.

## **Ethical, Regulatory, and Access Considerations**

Consumers find accessibility and affordability a major challenge in the processed food sector. Many innovations are still priced beyond the reach of the average consumer, raising questions about equality and inclusiveness. Governments, entrepreneurs, and public health organizations will need to collaborate to ensure that food tech solutions are safe, scalable, and readily accessible to everyone. In addition to changing how we eat, food technology is also transforming the fundamentals of global health, climate resilience, and food equity.

As India and the rest of the world struggle with issues related to health and the environment, the integration of food and technology offers a healthier, more intelligent, and more sustainable way forward. Everyone is involved in this change, whether an entrepreneur establishing a food company, students studying nutrition, or consumers just figuring out the next snack. As science and sustainability converge, one thing is for sure: the way we eat is changing for good and for a better sustainable future.