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REGULATION OF ADVANCED DIGITAL FOOD SERVICE TECHNOLOGIES IN INDIA

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& DR LS CHIRMULAY

Abstract:

- **Purpose:** Artificial Intelligence is transforming the culinary tourism industry. Guest experience uses unique or innovative approaches through the automation of food services, food waste reduction and sustainability practices. A survey of the available literature points to the need to analyse the laws in India regulating technologies in food service. The research note aims to present the upcoming technologies in the industry and the need for corresponding regulation.
- **Methods:** Secondary sources pertaining to food technologies and regulatory issues in the Indian jurisdiction, provided the data for the note.
- **Results:** The note finds that although the emerging technologies are nascent in India, future practices would require a strong regulatory framework with regard to automation and AI learning, data collection and use, and food printing.
- **Implications:** The note shows that there is a requirement for the regulatory authorities to formulate policy or guidelines which will be of use in industry practice. Legal implications and future research lines are suggested.

Keywords: food robotics, food printing, ecommerce, Artificial Intelligence, regulation

1. INTRODUCTION

Digital technology has permeated almost all areas of human life, including the food sector, and is being implemented with the aim to optimize food security, food production, food design, food service, nutrition and wellness. Major technologies include Artificial intelligence ('AI'), Internet of Things ('IoT'), augmented and virtual reality, and blockchain technology. The United Nations System Standing Committee on Nutrition has acknowledged the importance of digital technologies in assisting the design and delivery of food and nutrition measures.

Food technology is an ecosystem of technologies that improve food production, distribution and supply, and affects the way food is sold, produced and distributed. The global food technology market was worth USD 220.32 billion in 2019 and is estimated to reach USD 342.52 billion by 2027. The Asia Pacific region (including India, China, Japan, Malaysia, Singapore) is expected to show rapid increase in adopting food printing technology given its desire to explore a variety of chocolates, fast food and contemporary cuisine. In India, the food processing market was estimated to be valued at INR 25,455 billion in 2022, and is expected to reach INR 45,345 billion by 2028.

Digital food technology involves the use of science-based technologies and tools for assisting the food system. These are being harnessed at all stages in the food cycle such as agricultural production, food science research, food services, and waste management. In the food business sector, kitchen automation and smart appliances are being used in the process of food preparation, IoT technology and blockchain technology are useful in tracking and supply chain management, while apps are commonly being used in consumer services. The use of such technology is beneficial because it improves operational efficiency, enhances customer experience, and increases transparency. The note attempts to provide an overview of the regulatory scope over advanced forms in digital food service technologies in India.

2. REVIEW OF LITERATURE

Digitalization in the food sector is beneficial because it provides solutions to address challenges in the food supply network and helps to control the quality and safety of food production. It can effectively complement alternative strategies to guarantee sustainability and quality, and assist in developing new ingredients and structures (Valoppi, Agustin et al, 2021). Digital tools such as apps for nutrition are being used to optimize ingredients and recipes for customers. They are sources of data to be used to classify consumers' needs and preferences regarding diet, food products, and their characteristics of calories, composition and nutrition (Marra, 2022). In relation to food safety, technologies such as Internet of Things, blockchain, sensors, AI can help in food production processes by using data on sourcing of food products, real-time information, production management, and can help establish a sustainable food system (Halim-Lim, Bahrauddin et al, 2023). Technologies in the food manufacturing industry which enable automated data collection, ensure efficient operator guidance and improve production performance are big data analytics and Internet of Things, Hologram virtual reality for product

design and big data analytics (Demartini, Pinna et al, 2018).

3. RESEARCH METHODOLOGY

The research comprised an interdisciplinary approach towards understanding the interrelation between the fields of food service industry and legal regulation. By referring to secondary sources available in the form of books, articles, reports in the area of food services technology, and analysing the corresponding legal provisions, the authors sought to draw conclusions regarding the scope of regulation for the same.

4. PRESENTATION OF FINDINGS

FOOD ROBOTICS AND ECOMMERCE

In India, although the food and beverage industry has potential for growth, the adoption of food robotics requires a workforce specializing in software or mechanical disciplines.

In the United States, restaurants and eateries are diverting customer calls to voice bots or automated voice-activated technology. These make it easier for companies to store and analyze customer data. If the AI model applied in banks to determine creditworthiness of a customer is applied in the restaurant business, then information about a customer could be used for discriminatory purposes, such as offering some customers better service than others or by refusing reservations based on data from their past visits.

In the ecommerce food service sector, food aggregator platform softwares provide recommendations for customer preferences. AI software can also help restaurateur businesses to better understand their customers and anticipate their needs, by researching a customer's social media feeds, dietary restrictions and preferences.

AI AND INTELLECTUAL PROPERTY PROTECTION

A chef can monetise a signature or proprietary recipe by transcribing it onto an AI software programme which can be accessed by other chefs who can recreate it without the presence of the creator. AI or ChatGPT cannot be stopped from using accessible information to create that recipe because recipes, menus cannot be copyrighted. The Supreme Court of India had recognised that there is no copyright protection for ideas, schemes, or methods, but their expression may get copyright protection.¹ This means that the written text of the recipe would have copyright as a

literary work, but the dish itself or the instructions, method of preparation will not be protected.

PACKAGING AND WASTE

Food waste reduction helps in improving sustainability of food supply chains, in which food upcycling can play an important part. 3D food printing is an emerging technology that can be utilized to upcycle food wastes from different sources. This uses certain waste types to generate customized designs familiar in taste and form for easier acceptability. It involves digital gastronomy which can be produced through creation of aesthetic designs. Food waste upcycling in the food industry can support the concept of zero waste, and hence it shows economic potential.¹ In India, food printing is developing at a nascent stage. The Food Safety and Standards Authority of India ('FSSAI') is yet to issue guidelines or standards with respect to food printing.

5. ANALYSIS AND CONCLUSIONS

IMPLICATIONS AND RECOMMENDATIONS

The question of liability for inaccuracy in recording customer orders, or for breaches in use and storage of customer data, arising in AI based models relates to the consumer protection and data protection laws. In the absence of a specified law covering AI usage, it is recommended that technical insights regarding the current state of AI and robotics service solutions should be obtained in order to structure appropriate regulation.

Since a food recipe is an idea, it cannot be copyrighted, unless it is a part of a copyrighted book of recipes. In the United States, copyright law does not protect merely utilitarian ideas or formulas, but the creative features that are 'separable (either physically or conceptually)' from the food's 'utilitarian features' (i.e. its taste and nutritional value). A widely cited example is that of Caitlin Freeman's Mondrian cake, which is copyrightable since it has unique 'artistic features' that appear to be separate from its taste.

With regard to the upcycling of food, it is recommended that, the FSSAI draft guidelines with regard to sustainable reuse of food through food printing, based on the experience in other jurisdictions.

¹ Yoha, Moses, *3D Printing Approach to Valorization of Agri-Food Processing Waste Streams* 12(1) Foods (2023), <https://doi.org/10.3390/foods12010212> last seen 12/9/23

LIMITATIONS AND FUTURE RESEARCH

The research note has studied the nascent food technologies which are being adopted in India from the legal perspective. Other forms of technologies being developed for use in food production, or food packaging can be analysed from the legal perspective.

BIBLIOGRAPHY

Alejos. H (2023), 'AI cannot taste the way a chef can': are chatbots a threat to fine dining?

<https://www.theguardian.com/environment/2023/aug/16/ai-fine-dining-chefs-restaurants>

Accessed 11th of September 2023, at 02:30

Amanda Hetler (2022), The future of the food industry: Food tech explained.

[https://www.techtarget.com/whatis/feature/The-future-of-the-food-industry-Food-tech-](https://www.techtarget.com/whatis/feature/The-future-of-the-food-industry-Food-tech-explained)

[explained](https://www.techtarget.com/whatis/feature/The-future-of-the-food-industry-Food-tech-explained) Accessed 9th of September 2023, at 12:45

Deighton. K (2022), Restaurants Send More Customer Calls to Voice Bots Amid Staffing Shortages. <https://www.wsj.com/articles/restaurants-send-more-customer-calls-to-voice-bots-amid-staffing-shortages-11661335202>

Accessed 11th of September 2023, at 12:30

Demartini, Pinna et al (2018), Food industry digitalization: from challenges and trends to opportunities and solutions, *IFAC Papers-OnLine* 51(11),

<https://doi.org/10.1016/j.ifacol.2018.08.337>

Francesco Marra (2022), Food Products and Digital Tools: The Unexpected Interconnections, 9

Frontiers in Nutrition 9, <https://doi.org/10.3389/fnut.2022.847038>

Global Market Estimates (2023), 3D Food Printing Market.

<https://www.globalmarketestimates.com/market-report/3d-food-printing-market-3674> Accessed

9th of September 2023, at 11:20

Halim-Lim, Bahrauddin et al (2023), Digital innovations in the post-pandemic era towards safer and sustainable food operations: A mini-review, *Frontiers in Food Science and Technology* 2,

<https://doi.org/10.3389/frfst.2022.1057652>

IMARC, India Food Processing Market: Industry Trends, Share, Size, Growth, Opportunity and Forecast 2023-2028, <https://www.imarcgroup.com/indian-food-processing-market> Accessed 10th of September 2023, at 12:00

Joshi, Bhindiya (2022), Protecting recipes: Gaps in Indian laws. <https://theleaflet.in/protecting-recipes-gaps-in-indian-laws/> Accessed 13th of September 2023, at 12:45

Tijhuis. E (2016), Copyright, Trademark, Patent: How to Protect a Recipe. <https://www.finedininglovers.com/article/copyright-trademark-patent-how-protect-recipe> Accessed 10th of September 2023, at 02.40

United Nations System Standing Committee on Nutrition (2020). Nutrition in a Digital World. https://www.unscn.org/uploads/web/news/UNSCN-NutInsight_on_Current_Advances_in_Food_Science_and_Technology_for_Feeding_the_World_Populationrition-45-WEB.pdf Accessed 8th of September 2023, at 13:30

Valoppi, Agustin et al (2021), Insight on Current Advances in Food Science and Technology for Feeding the World Population, *Frontiers in Sustainable Food Systems* 5, <https://doi.org/10.3389/fsufs.2021.626227>

Wong, Pant, Zhang et al (2022), 3D food printing– sustainability through food waste upcycling, *Materials Today* 70, <https://doi.org/10.1016/j.matpr.2022.08.565>

Yoha, Moses (2023), 3D Printing Approach to Valorization of Agri-Food Processing Waste Streams *Foods* 12(1) <https://doi.org/10.3390/foods12010212>

ⁱ *R.G Anand vs M/S. Delux Films & Ors* (1979 SCR (1) 218)