

Stigma and Redemption – A Review on Convenience Food Legacy

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ABSTRACT

Since last few decades, it is seen that convenience food industry is facing severe backlash as it dismisses the nutrition chart and termed as nutritionally inferior or characterizing delineating culinary standards, convenience food has combatted a persistent social stigma. At a glimpse it has been viewed as a denotation of compromise- not flavorful and low in nutritional content. Associated with fast-moving way of living, industrial processing paves way towards the separation of traditional cooking to industrial pre-cooked meal especially in the cultures that glorifies fresh home-cooked meals, have anticipated convenience food as a last expedient rather than a cautious preference. But underneath this stratum of criticisms and judgements lies a rapidly evolving market that reflects the distinct realities of modernism. The version of redemption starts with shifts in consumer presumptions, technological innovations, and the methodologically growing demand. The explicitly customized dietary needs, a growing healthier and environmental consciousness society supports advancements like plant-based ready meals directly microwavable, the industrial trend is showing a positive graph towards health, sustainability, and authenticity. This radical change reflects deeper civil transformations—urbanization, duplex income households, and lack of time—revamping how food is gauged and consumed. The paper discusses the role of food processing industry's from both perspectives i.e. consumer health and processing techniques as well as economic growth showcasing the reliance of RTE and RTS products serving as a guilty pleasure for the society yet monitoring towards ensuring the sustainability in individual's diets and health. The Ministry of Food Processing Industries (MoFPI) has taken various prudent initiatives, like the PM Kisan SAMPADA Yojana and Production Linked Incentive Scheme (PLISFPI), that represents the aim, purpose and advantages of convenience food market, food safety and dietary parameters, growth parameters, innovation and competitiveness of the industry. The paper focuses on the reimagining the world of convenience with the economic growth and consumer satisfaction.

Keywords: Convenience Food Industry, Consumer Health and Satisfaction, Government Initiatives, PLISFPI, Processing Techniques.

Introduction

Not long ago, food processing despite has been severely criticized and even condemned in several platforms, documented that surprisingly various operations like cooking, steaming, boiling, drying, fermenting techniques were part of the daily routine by our early ancestors, have lost their essence in the ear of modernization. In addition, more optimized, sustainable and resourceful technologies have been innovated and delivered during the last 2-3 decades, illustrating a rapidly evolved and forward growing lifestyles.

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Convenience food before was seen as a guilty pleasure by the society, which now is slowly transforming itself to seek the necessity derived from the practical nature of the product type. A modernistic approach on cultural norms, societal dynamics, culinary choices and process associates to the society more on its individual choices and lifestyle. Rather than solely dependent upon the matter of ease and readiness of the product's nature, this study throws light on the equal derivation of nutrients, abundance of availability, quality of life and life choices. The empowerment of such products shows the deconstructing thought of stigma surrounding the convenience food market and exploring the market's evolution to offer redemption in both- the product innovation segment and values derived from it. Convenience Food processing aims and obliged to duly meet the nutritional challenges which are exhibited and are the aspirations of food processing industry as presented.

In this study, we will emphasis on two major key aspects that significantly impacts and associated with the risk aware and controlled growth of the convenience food industry. First, we will review on development in food processing technologies, including artificial intelligence as a transformation in the industry, and smart packaging for sustainability, automation for better use of resources and efficient working to enhance product quality, better shelf life, and upgraded food safety standards. These developments facilitate the producer as well as consumer towards a well-researched environment to meet the soaring demands for ready-to-eat, and convenience food options.

Stigma associated with convenience food products is divided under two perspectives in this paper: the consumer perspective & behavior and taking bigger perspective is the economic implications. From the consumer mindset that relying on convenience products has drawbacks that is often criticized for its nutritional shortcomings yet convenience food offers undeniable benefits **in various factors, undoubtedly controversial defamation overlooks progress** especially when perceived through the prism of government support and societal change. On the economic dynamics, stigma can obstruct innovation and investment. If businesses recognize that the customers who buy or are associated with convenience food may be reluctant to opt on suitable quality or environmental sustainability, they may restrict to such reframe the quality ingredients and licenses or adopt eco-friendly packaging alternatives. This hesitancy can hinder the growth in sectors equipped for transformation, like sustainable technology for food processing or nutritional intactness. Overcoming these stigmas could not only strengthen costumer's preference, but also unleash new opportunities for economic growth. In contrast to common thought process of adults it is seen that they strictly prefer traditional home-cooked meals, but in a study it is revealed that there is seen a new ear of enigma of acceptance of convenience foods, particularly if they deliver expected taste, quality, and ease of use promise **(Peura-Kapanen, Jallinoja, & Kaarakainen, 2017)**. Convenience foods holds a key contribution in supporting a notable contribution in the process of meal preparation, especially for consumers with limited time, physical disability, preferential lacking. It emphasizes that if thoughtfully selected, these foods can significantly cut down the load of cooking while still potentially not compromising on nutritional adequacy and dietary factors. **(Peura-Kapanen, Jallinoja, & Kaarakainen, 2020)**.

Schäfer et al. (2016) found that convenience plays crucial role in healthy food choices. when individuals have time constraint and restricted energy, they tend to go for quick prepared options which are rich in nutrients generally influenced by habits and external stimuli. This puts light on the necessity of availability of healthy options to be more easily accessible and easy to choose through technological advancement and processing advancement.

Conveniently Futuristic, Review on today's Convenience Processing Techniques

Variety of food processing and preservation technologies are designed to maintain hygiene, flavours, originality, texture, safety and nutritional contents:

- **Thermal Processing:** includes two major sub divisions-i.e. **Pasteurization:** Heating the food product to the level that destroys pathogens while maintaining and retaining the quality generally used for juices & milk and **Canning/ Sterilization:** Again product exposure to high heat intensified reception to sustain sterility for longer shelf life.
- **Freezing and Chill Storage:** this includes **Blast freezing** and **IQF (Individually Quick Frozen)** procedure to speedily freeze foods, preserving texture and maintaining nutrients, which slows down the microbial growth products.

- **Dehydration and Drying:** In this method water content is removed through techniques like spray drying, freeze-drying, or drum drying used for instant products like powdered soups, instant coffee, milk powder etc...
- **Modified Atmosphere Packaging (MAP):** Here the packaged food is placed in a controlled atmospheric pressure by reducing oxygen, increasing various gases like nitrogen or CO₂ to expand the shelf life and enhance freshness levels of the product.
- **Extrusion Technology:** This technology is used to produce a particular shaped die like snacks, cereals, and pasta by forcing food materials through a under high temperature and pressure.
- **Sous Vide Cooking:** In this method, vacuum-sealing of the food is done and cooking at a precisely low temperature that maintains the texture and flavours of the product is done which is commonly used for ready-to-eat meals.
- **High-Pressure Processing (HPP):** This method emphasis on a Non-thermal method application of high pressure that deactivates the pathogens of the foods that preserved in fresh-like qualities.
- **Microwave and Infrared Heating:** A well-known method, a version of which is used in our daily kitchens, but this microwaving uses high intensity waves for rapid cooking or reheating convenience foods.
- **Fermentation:** This method is used in our households from ancient times, this method is a metabolic reaction between the microorganisms like bacteria's and yeast present in our natural raw foods, usually to enhance the flavour, texture, and shelf life of the products like yogurt, pickled products etc...



Like a new technological advancement from the introduction of **Edible coatings**, presenting an encouraging a promising and **sustainable packaging solution** for Ready-to-Eat (RTE) products, suggesting an approach to **extend shelf life, food waste reduction**, and **minimize dependency on plastic packaging**. These coatings, designed from bio based polymers, fit for consumption along with the product, thus fostering the problem of packaging waste. Augmented with minimal external packaging, they preserve the product quality and retain sustainable safety concerns, making them a good fit for **eco-friendly and practical innovation** in food processing industry. A study by Ricci et al. (2018) exhibits that trust is profoundly influenced by the intentions of consumer making them purchase eco-friendly convenience food. The consumers who have comparatively higher trust on the food supply chain are more inclined towards the positive attitude towards unprocessed and unmodified products labeled with integrated pest management (IPM) labels. The concerns of environment and health risks are effectively reduced by the presence of trust factor which duly encourages sustainable picks despite time limitations.

AI Powered Food Tech- another Technological Advancement

In last few years we have witnessed a drastic shift of human dependencies on AI –Artificial Intelligence, here we will discuss on various aspects on how a transformation is seen with the help of Artificial Intelligence (AI) in food processing industry, especially within the convenience food sector, by enhancing efficiency, effectiveness, safety, and personalization. AI technologies plays major role in smart packaging, AI-driven monitoring, and biosensors in detecting contamination. Addition to these, technologies like IoT, block chain, and intelligent packaging are taken as more efficient and effective patterns for maintaining transparency (Alam et al. 2025).

According to a report by Markets and Markets (2023), the overall global AI usage in food and beverages market is projected to grow from USD 3.1 billion in 2022 to USD 29.9 billion by 2028, at a CAGR of over 45%. (**Markets and Markets, 2023**).

As growing consumer engagement with loads of information available handy at various platforms the consumer is now more keenly invested to gain information on the health parameters, processing technology used, sustainability initiatives, and personalized nutrition content which is taken as an important variable for promoting these innovations. These variables are actually used as predictive quality control, nutritional content optimization, reduced food waste, real-time food safety parameters for monitoring purposes. The convenience food segment, AI enables robotics to modernize production and packaging promoting faster production and customization catering niche market which will ultimately align with escalated market demand. The advanced sensing technologies are reshaping the food processing promoting consumer confidence on the product as well as the producer etc...

Navigation of Industry with Government Initiatives

With the help of aid provided through a variety of government schemes, the industry is remodeling on its own pace-acknowledging the demands of consumers, public health, sustainability issues and nation growth opportunities. The repositioning of consumption by individuals is not just a trend, but a **social evolution in eating habits**. Government driven campaigns aimed at strengthening agro-processing and food technology which not only have boosted this industry but also fostered the innovation towards healthier and regenerative ways, emerging as a valuable player in engaging food responsiveness and economic development. By reanalyzing the consumer needs, convenience food surfaces as an innovation beyond a modern shortcut—it becomes part of a wider and a more extensive spectrum to feed the growing and diverse population.

• Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)

The **PLISFPI** is a Centrally launched scheme by government of India, under the **Aatma Nirbhar Bharat Abhiyaan** affiliated to improve and enhance India's food processing potential and global trade expansion. With a sum of **₹10,900 crores**, the scheme is being enforced from the year **2021–22 to 2026–27**. A Branding incentive of 50% of expenses subject to ₹50 crore/year or 3% of food product sales whichever is lower to be provided with that the minimum expenditure for branding is of ₹5 crores over 5 years has been finalized.

There are several objectives formed by government to support the target set up for the schemes and their outlay:

Key Objectives of the scheme



The first module of the framework emphasizes to incentivizing production of four major food segments viz. Ready to Cook/ Ready to Eat (RTC/ RTE) foods including Millets based products, Processed Fruits & Vegetables, Marine Products and Mozzarella Cheese. The second segment is linked to production of Innovative/ Organic products of SMEs including Free Range - Eggs, Poultry Meat, Egg Product. The third component supports for branding and marketing internationally to encourage the emergence of impactful Indian brands for in-store Branding, shelf space encourages consumer behavior where decisions are made, impacts the use of Millets in RTC/RTE products and reinforce them under the PLI Scheme to encourage value addition and trade. Fresh Expression of Interest (EoI) were invited for availing incentives of investment for millet based products having more than 15% millet content by weight/ volume.

Liaison Office Project

The Liaison Office of NIFTEM-T was established at Guwahati, Assam in July 2010 and for innovative food processing business serves as an incubation center to cater the needs of the farmers, processors and firms in this sector. Infrastructure such as Food Processing Trainings cum Incubation Center, training centers, trainees' hostels etc. were formed. The incubation center at NIFTEM-T, has various product lines for Canning fruits & vegetables, Ready to serve (RTS) foods and Ready to Drink (RTD) fruit based beverage, Jam and jelly manufacturing with bottling facility, Ready to Cook (RTC) foods and Ready to Eat (RTE) food products. Instant mixes, masala and chutney powder's specialized packaging section with modified atmosphere packaging (MAP Packaging system) has also been induced. 41 skill development training programs and 22 in Incubation & Consultancy services trainings for students, with that equipment for food processing lines for Fruits and vegetable processing, preservation and value addition, Milk processing, Cereal processing, Spice processing, Bakery units and Packaging systems has also been included.

Discussion and Conclusion

The legacy is mutually integrated with social stigma and evolving interpretations of modern lifestyles. Originally presented as a solution for time-strapped individuals and families, convenience foods swiftly caught popularity for their practicality. However, their affiliation with hazardous ingredients, artificial preservative, and unconventional processing techniques put forward to widespread skepticism. Critics often correlate convenience foods with poor nutritional outputs, lethargy, or societal and community compromise, resulting to cultural and nutritional stigma.

Despite this, the industry has gone through profound transformation. Innovations in food science, processing techniques, consumer behavior, and consumer demand for niche market for individuals and whole, motivate companies to reformulate items—introducing organic pressing techniques, AI usage for processing, various government initiatives for contribution to economy. This is acknowledged as a turning point in reframing the image of convenience food. Modernization, nuclear family structures, dual-income households, and digital food availability services have standardized the role in contemporary food selection process.

Moreover, consumer behavior research reveals the growth through improved nutritional standards, transparent labeling, and government standards, the industry is restoring and rebuilding its trust. In conclusion, while the legacy of stigma enclosing the convenience food sustains in some shape and form, its redemption is under its resilient evolution-addressing both modern nutritional expectations and market growth. Moreover, today this industry stands as not only a choice for enjoying guilty pleasure but ensuring consumer attitude to be guided positively towards its fundamentals.

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