International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

To cite this article: Mrs. Pushpa N and Dr. Y Muniraju (2025). FOOD SAFETY IN INDIA: REGULATORY CHALLENGES, CONSUMER AWARENESS, AND THE ROLE OF FSSAI IN DAKSHINA KANNADA DISTRICT, International Journal of Research in Commerce and Management Studies (IJRCMS) 7 (3): 01-24 Article No. 387 Sub Id 722

FOOD SAFETY IN INDIA: REGULATORY CHALLENGES, CONSUMER AWARENESS, AND THE ROLE OF FSSAI IN DAKSHINA KANNADA DISTRICT

Mrs. Pushpa N[1] and Dr. Y Muniraju[2]

[1]Research Scholar, Department of Commerce Mangalore University, Mangaluru and
Assistant Professor, Department of Business Administration, St Philomena College (Autonomous), Puttur, Karnataka, India
pushpamuliya@gmail.com, pushpamuliya@spcputtur.ac.in
https://orcid.org/0009-0008-7632-2918
[2]Professor, Department of Commerce, Mangalore University, Mangalagangotri, Mangaluru, Karnataka, India
drymuniraju97@gmail.com

DOI : https://doi.org/10.38193/IJRCMS.2025.7301

ABSTRACT

Food safety has emerged as a paramount concern in India, where rapid urbanization, population growth, and increased demand for processed foods have created fertile ground for food adulteration and contamination. Despite having a comprehensive regulatory framework in place, particularly under the aegis of the Food Safety and Standards Authority of India (FSSAI), multiple systemic challenges continue to undermine the effectiveness of these regulations. This research paper investigates the multifaceted issue of food adulteration in India, with a special focus on the Dakshina Kannada district, exploring both regulatory mechanisms and consumer awareness levels. It aims to evaluate the implementation of food safety standards and identify critical gaps that allow adulteration to persist in the supply chain.

The study underscores the role of the FSSAI, the apex body established under the Food Safety and Standards Act, 2006, tasked with regulating and supervising the manufacture, distribution, sale, and storage of food items. Although FSSAI has developed a series of stringent guidelines, its effectiveness is limited by practical barriers such as inadequate enforcement, shortage of trained personnel, under-resourced testing laboratories, and the vast unorganized food sector. Additionally, consumer behavior, often shaped by a lack of awareness and negligence in checking certifications and food labels, contributes significantly to the ongoing consumption of adulterated products.

Primary data was collected through structured surveys distributed among 100 consumers, food vendors, and regulatory officials in Dakshina Kannada. Findings revealed that 80% of respondents were aware of the term 'food adulteration,' yet only 50% regularly checked food labels for FSSAI certification. Alarmingly, 70% admitted to unknowingly consuming adulterated food at some point,

highlighting the prevalence and public health risk of such products. Correlation analysis indicated a strong positive relationship ($r = 0.78$, $p < 0.05$) between consumer awareness and label-checking behavior, reinforcing the need for widespread educational campaigns.

Secondary data was obtained from government reports, peer-reviewed journals, and official FSSAI guidelines, offering a contextual understanding of the legal and institutional environment. Studies consistently reported that food adulteration, particularly in products like milk, spices, edible oils, and fruits, poses severe health risks ranging from gastrointestinal disorders to chronic diseases such as cancer and organ damage. Moreover, the economic repercussions include increased healthcare costs, loss of productivity, and erosion of consumer trust in the food system.

The research also delves into the challenges FSSAI faces in implementation. These include the limited availability of food inspectors (with a ratio of one officer per 100,000 citizens), delays in legal proceedings, poor coordination among enforcement agencies, and the proliferation of unlicensed food vendors. Despite technological advancements and the introduction of digital platforms like FoSCoS (Food Safety Compliance System), monitoring remains inadequate due to limited reach and infrastructure.

Consumer perception of FSSAI's effectiveness was divided: while 60% believed that FSSAI plays a key role in regulating food safety, 25% expressed skepticism due to a lack of visible enforcement. Furthermore, many consumers, especially in rural and semi-urban areas, were found to be unaware of their rights or the mechanisms available to report food safety violations.

Based on the findings, the study proposes several policy-level and grassroots recommendations. These include enhancing the capacity of food safety departments through recruitment and training, expanding the use of mobile food testing labs, increasing community engagement through awareness drives, and mandating registration even for small-scale and street vendors. Additionally, incorporating emerging technologies such as blockchain for supply chain traceability, AI for risk prediction, and portable adulteration detection kits can drastically improve monitoring and transparency.

In conclusion, food safety in India, while governed by an elaborate legal and institutional architecture, requires a multipronged approach to address its ground-level challenges. This study affirms that without collaborative action involving consumers, regulators, manufacturers, and civil society, the objective of safe and unadulterated food remains elusive. The insights derived from the Dakshina Kannada district can serve as a microcosm for understanding broader national issues and can inform policy interventions at both state and central levels. Strengthening food safety not only protects public health but also boosts economic stability, consumer confidence, and global competitiveness in India’s

food sector.

KEYWORDS: Food safety, adulteration, FSSAI, consumer awareness, public health, food regulations, contamination, enforcement, food quality, India

INTRODUCTION

1.1 Background of Food Adulteration

Food adulteration refers to the process of adding, removing, or substituting substances in food products that reduce their quality, purity, or nutritional value. It is a significant concern in public health, as adulterated food can lead to various health complications, including food poisoning, organ damage, and long-term chronic diseases. Adulteration can occur deliberately for financial gain, due to negligence in handling, or through environmental contamination.

Historically, food adulteration has been a challenge across the world, with governments and regulatory bodies striving to implement stringent measures to combat it. In India, adulteration is a widespread issue, particularly in dairy, spices, edible oils, and packaged food products. The increasing consumer demand, inadequate regulatory enforcement, and unethical practices by some manufacturers have contributed to the persistence of this problem.

1.2 Importance of Food Safety Standards

Food safety standards are critical in ensuring that food products are free from harmful contaminants and meet quality benchmarks before reaching consumers. The implementation of food safety regulations helps prevent foodborne illnesses, maintains consumer trust, and promotes fair trade practices. Regulatory authorities define these standards based on scientific research, risk assessment, and global best practices.

In India, the Food Safety and Standards Authority of India (FSSAI) is the apex regulatory body responsible for establishing and enforcing food safety regulations. It ensures that food manufacturers, distributors, and retailers comply with established safety norms. By setting strict guidelines on permissible levels of additives, contaminants, and preservatives, FSSAI plays a crucial role in protecting public health.

1.3 Role of FSSAI in Ensuring Food Safety

The Food Safety and Standards Authority of India (FSSAI) was established under the **Food Safety and Standards Act, 2006** to regulate food production, distribution, and sale across the country. It works towards achieving the following objectives:

- Establishing scientific standards for food safety

- Regulating the manufacture, storage, distribution, and import of food items
- Conducting surveillance to detect and prevent adulteration
- Implementing stringent penalties for violators of food safety norms
- Educating consumers and raising awareness about safe food practices

FSSAI ensures that food businesses obtain licenses and comply with hygiene and safety regulations. It also collaborates with state food authorities to monitor and enforce safety measures. In the context of Dakshina Kannada, where a variety of food products such as dairy, seafood, and spices are produced and consumed, FSSAI's role is vital in preventing food adulteration and ensuring compliance with safety standards.

1.4 Need for the Study in Dakshina Kannada

Dakshina Kannada, a coastal district in Karnataka, is known for its diverse food culture, including seafood, coconut-based products, and traditional South Indian delicacies. The region has a thriving food industry, with a mix of small-scale vendors, local markets, and large food processing units.

However, food adulteration remains a concern due to factors such as:

- The presence of unregulated small-scale food vendors
- Inadequate awareness among consumers regarding food safety norms
- The use of chemical preservatives and synthetic additives in food processing
- Challenges in effective monitoring and enforcement of food regulations

This study aims to assess the extent of food adulteration in selected products in Dakshina Kannada and analyze the effectiveness of FSSAI regulations in controlling adulteration. By understanding consumer awareness levels, challenges faced by regulatory authorities, and the impact of adulteration on public health, the research will provide insights into strengthening food safety mechanisms in the region.

2. LITERATURE REVIEW

Food adulteration is a pressing issue that affects public health and food security worldwide. It involves the deliberate addition or removal of substances to alter food quality, often leading to health hazards. This section provides an overview of previous studies on food adulteration, the regulatory framework for food safety, the impact of food adulteration, and the challenges in implementing food safety regulations.

2.1 Previous Studies on Food Adulteration

Several studies have highlighted the rising concerns of food adulteration in India. According to research conducted by **Kumar et al. (2018)**, the increasing demand for processed food has led to a

rise in adulteration cases, with common contaminants including chemical preservatives, synthetic food colors, and toxic substances. Similarly, **Gupta & Sharma (2019)** found that milk and dairy products, spices, and edible oils are the most commonly adulterated food items in India.

A study by **Ravishankar & Devi (2020)** emphasized that food adulteration is prevalent due to poor regulatory enforcement and lack of awareness among consumers. Their research concluded that while food safety laws exist, they are often not implemented effectively, leading to gaps in ensuring food quality. Furthermore, research by **Patel & Reddy (2021)** focused on consumer perception, revealing that a significant percentage of people fail to verify food safety certifications before purchasing food products.

2.2 Regulatory Framework for Food Safety

Food safety regulations in India are primarily governed by the **Food Safety and Standards Authority of India (FSSAI)**. Established under the **Food Safety and Standards Act, 2006**, FSSAI is responsible for regulating the manufacture, storage, distribution, sale, and import of food products to ensure consumer safety. The Act consolidates various food laws and sets **scientific standards** for food quality control.

According to **Chakraborty (2017)**, the FSSAI plays a critical role in regulating food safety by establishing guidelines, conducting inspections, and taking legal action against defaulters. The **FSSAI Food Safety and Standards Regulations, 2011**, classify food adulteration into different categories, including **intentional adulteration (economic fraud)** and **unintentional adulteration (accidental contamination)**.

However, a study by **Mehta & Rao (2019)** points out that despite the existence of strong regulations, enforcement remains a challenge due to resource constraints, lack of trained personnel, and the vast informal food sector in India. They argue that stricter penalties and regular monitoring are required to improve food safety compliance.

2.3 Impact of Food Adulteration on Consumers and Economy

Food adulteration has severe health consequences, including food poisoning, gastrointestinal disorders, organ damage, and long-term diseases such as cancer. Research by **Singh & Verma (2020)** highlights that **artificial ripening agents like calcium carbide** and **chemical preservatives such as formalin** have been linked to severe health risks. Additionally, adulteration in dairy and meat products has resulted in an increase in foodborne illnesses.

Beyond health concerns, food adulteration also impacts the **economy and consumer trust**. A report

by the **World Health Organization (WHO, 2021)** estimated that foodborne diseases cost developing countries billions of dollars annually due to lost productivity, increased healthcare costs, and loss of consumer confidence. Furthermore, **Sharma et al. (2022)** pointed out that frequent food scandals and reports of contamination discourage foreign investment in India's food processing industry.

2.4 Challenges in Implementing Food Safety Regulations

Despite the presence of stringent regulations, enforcing food safety laws remains a challenge in India. Studies have identified multiple barriers, including:

1. **Lack of Consumer Awareness** – A survey conducted by **Mishra & Iyer (2021)** found that **nearly 60% of consumers in rural areas are unaware of FSSAI regulations** and food safety certification. Many consumers do not check food labels for **FSSAI certification numbers** or expiry dates before purchasing.
2. **Resource Constraints and Limited Surveillance** – The **Food Safety and Standards Authority of India (FSSAI, 2022)** reported that **India has only one food safety officer per 1,00,000 people**, making inspections infrequent. This allows unscrupulous food manufacturers to continue adulteration practices without fear of legal consequences.
3. **Informal Food Sector** – A study by **Joshi & Banerjee (2020)** noted that India's vast unorganized food sector, which includes street vendors and small-scale food businesses, remains largely unregulated. The lack of proper licensing and monitoring in these sectors increases the risk of food adulteration.
4. **Legal and Enforcement Gaps** – Research by **Desai & Menon (2018)** suggested that legal loopholes allow food adulterators to escape harsh penalties. The authors recommended stricter **legal actions, higher fines, and increased consumer participation** to strengthen food safety measures.

2.5 Summary of Literature Review

Existing literature highlights that while food adulteration is a **major public health concern**, regulatory enforcement remains weak in many parts of India. Studies have consistently shown that food adulteration is widespread due to **consumer unawareness, weak surveillance, legal loopholes, and challenges in monitoring informal food businesses**. FSSAI plays a crucial role in setting food safety standards, but **there is a need for stronger enforcement, more inspections, and public awareness campaigns** to effectively combat food adulteration.

This review provides the foundation for the current study, which aims to assess the role of FSSAI in preventing food adulteration in selected products within **Dakshina Kannada**. The findings from this research will contribute to developing better regulatory strategies and improving food safety standards in the region.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

3. RESEARCH METHODOLOGY

3.1 Research Objectives

The primary objective of this study is to analyze the role of the **Food Safety and Standards Authority of India (FSSAI)** in preventing food adulteration in selected products within **Dakshina Kannada**. The specific objectives include:

1. Examining the **prevalence of food adulteration** in selected food products.
2. Assessing the **level of consumer awareness** regarding food adulteration and FSSAI regulations.
3. Evaluating the **effectiveness of FSSAI regulations** in ensuring food safety.
4. Identifying **challenges in enforcing food safety laws** at the local level.
5. Suggesting **strategies to improve food safety standards** in the region.

3.2 Scope of the Study

This study focuses on **Dakshina Kannada**, a district known for its diverse food consumption patterns. The research covers various **commonly adulterated food products**, including:

- **Milk and Dairy Products** (e.g., milk, paneer, ghee)
- **Edible Oils** (e.g., coconut oil, palm oil)
- **Spices and Condiments** (e.g., turmeric, chili powder)
- **Fruits and Vegetables** (e.g., artificially ripened fruits, wax-coated vegetables)
- **Packaged and Processed Foods**

The study primarily targets **consumers, food vendors, and regulatory officials** to gain a **holistic understanding** of the issue.

3.3 Research Design

A **descriptive research design** has been adopted to assess the extent of food adulteration and the role of FSSAI in monitoring and controlling such activities. The study uses **both qualitative and quantitative methods** to analyze data.

3.4 Data Collection Methods

The study utilizes **primary and secondary data sources**:

3.4.1 Primary Data

Primary data is collected through **surveys, interviews, and field observations**.

- **Consumer Survey:** A structured questionnaire is distributed to consumers to evaluate their awareness, perception, and purchasing behavior related to food adulteration.

- **Retailer Interviews:** Local food vendors and shopkeepers are interviewed to assess compliance with food safety regulations and challenges faced in following FSSAI norms.
- **Regulatory Official Discussions:** Discussions with FSSAI officials help understand the enforcement mechanisms, inspection processes, and legal actions taken against violators.

3.4.2 Secondary Data

Secondary data is obtained from **official government reports, FSSAI guidelines, research papers, journal articles, newspapers, and industry reports**. These sources provide insights into food safety trends, regulatory frameworks, and statistical data on food adulteration cases.

3.5 Sampling Technique and Sample Size

A **stratified random sampling** method is employed to ensure that the study represents different stakeholder groups effectively. The sample includes **consumers** (randomly selected across different demographics), **food vendors and retailers**, **FSSAI officials and health inspectors**

The total sample size of **100 respondents** ensures a balanced and unbiased representation of the food safety ecosystem in Dakshina Kannada.

3.6 Data Analysis

The collected data is analyzed using both **qualitative and quantitative methods**:

- **Quantitative Analysis:** Statistical tools such as percentages, frequency distribution, and cross-tabulation are used to interpret consumer responses.
- **Qualitative Analysis:** Content analysis of interviews with vendors and regulatory officials helps identify recurring themes, challenges, and regulatory gaps.

3.7 Ethical Considerations

To maintain the **integrity and reliability** of the research:

- **Informed consent** is obtained from all participants.
- Data is collected and used **anonymously** to protect respondent identity.
- The study follows **ethical research guidelines** and ensures that responses are **not manipulated or misrepresented**.

3.8 Limitations of the Study

While the research aims for accuracy, certain **limitations** may impact the findings:

1. **Limited Geographical Scope:** The study is restricted to Dakshina Kannada and may not reflect trends across India.
2. **Self-Reported Data:** Responses may be influenced by **individual biases** or lack of awareness.

3. **Availability of Secondary Data:** Some **official reports and industry data** may be difficult to access due to privacy concerns.

Despite these limitations, the research provides valuable insights into food adulteration and the effectiveness of FSSAI regulations in **ensuring food safety in Dakshina Kannada**

4. Role of FSSAI in Food Safety and Adulteration Control

4.1 Overview of FSSAI and Its Functions

The **Food Safety and Standards Authority of India (FSSAI)** is an autonomous regulatory body established under the **Food Safety and Standards Act, 2006**. It operates under the **Ministry of Health and Family Welfare, Government of India**, with the primary responsibility of ensuring food safety and regulating the quality of food products available in the market.

Functions of FSSAI:

- **Formulating Food Safety Standards:** FSSAI sets scientific-based standards for food products to ensure their safety and quality.
- **Regulating and Monitoring Food Business Operations:** It supervises food manufacturing, storage, distribution, sale, and import to prevent the supply of contaminated or adulterated food.
- **Licensing and Registration of Food Businesses:** All food businesses, including manufacturers, wholesalers, and retailers, must obtain FSSAI licenses or registrations to operate legally.
- **Conducting Food Testing and Analysis:** The authority ensures regular testing of food products through accredited laboratories to detect contamination or adulteration.
- **Consumer Awareness and Public Health Protection:** FSSAI runs educational campaigns and promotes food safety practices to protect public health.

4.2 FSSAI Regulations on Food Adulteration

Food adulteration refers to the deliberate addition of harmful or substandard substances to food products, reducing their quality and posing health risks. FSSAI has introduced stringent regulations to prevent adulteration and ensure consumer safety.

Key FSSAI Regulations on Food Adulteration:

1. **Food Safety and Standards (Contaminants, Toxins, and Residues) Regulations, 2011** - Sets maximum permissible limits for contaminants like pesticides, heavy metals, and naturally occurring toxins in food products.

2. **Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011** - Defines the quality parameters for various food items, including cereals, dairy, beverages, and processed foods.
3. **Food Safety and Standards (Packaging and Labelling) Regulations, 2011** - Mandates that packaged food must include clear labeling with details about ingredients, nutritional values, and expiry dates.
4. **Food Safety and Standards (Prohibition and Restriction on Sales) Regulations, 2011** - Prohibits the sale of food items containing harmful substances such as artificial coloring agents beyond permissible limits.
5. **The Food Safety and Standards (Advertising and Claims) Regulations, 2018** - Prevents misleading advertisements that falsely claim food products to be healthy or free from harmful substances.

These regulations empower authorities to take strict action against businesses involved in food adulteration.

4.3 Licensing and Certification Process

To regulate food businesses and ensure compliance with safety standards, FSSAI has implemented a structured licensing and certification process.

Types of FSSAI Licenses:

1. **Basic Registration:**
   - Required for small businesses with an annual turnover of up to ₹12 lakh.
   - Applicable to petty food vendors, small retailers, and home-based businesses.
2. **State License:**
   - Mandatory for medium-sized businesses with an annual turnover of ₹12 lakh to ₹20 crore.
   - Issued by state-level authorities for food manufacturers, distributors, and restaurants operating within a state.
3. **Central License:**
   - Required for large food businesses with a turnover above ₹20 crore.
   - Necessary for importers, exporters, major food manufacturers, and businesses operating in multiple states.

FSSAI Certification Marks:

- **FSSAI Logo and License Number:** Displayed on food packaging to indicate compliance with food safety standards.
- **Jaivik Bharat Logo:** Used for organic food certification.

- **AGMARK and BIS Certification:** Often used alongside FSSAI certification to ensure additional quality assurance.

Strict licensing procedures help track food businesses and prevent the sale of adulterated products.

4.4 Monitoring and Enforcement Mechanisms

FSSAI employs multiple mechanisms to monitor food safety, identify adulteration, and enforce compliance with regulations.

1. Surveillance and Food Sampling

FSSAI, along with **State Food Safety Authorities**, regularly collects samples of food products from markets, restaurants, and manufacturing units. These samples undergo laboratory testing to check for contamination, adulteration, and compliance with quality standards.

2. Food Safety Compliance System (FoSCoS)

- A digital platform introduced by FSSAI to streamline licensing, registration, and compliance monitoring of food businesses.
- Helps track businesses violating food safety norms and take action against them.

3. Food Testing and Analysis

- FSSAI operates through a network of **National Food Testing Laboratories** and accredited private labs.
- Laboratories conduct tests for microbial contamination, chemical adulterants, pesticide residues, and heavy metals.

4. Consumer Complaint Redressal

- Consumers can report food adulteration cases through **FSSAI's online portal or helpline (Food Safety Connect App)**.
- FSSAI investigates complaints, conducts inspections, and takes legal action against offenders.

5. Awareness and Training Programs

- FSSAI conducts **Food Safety Training and Certification (FoSTaC)** programs for food handlers, vendors, and manufacturers.
- Organizes campaigns like **Eat Right India Movement** to educate the public about food safety.

4.5 Legal Actions and Penalties for Food Adulteration

To deter food adulteration, FSSAI imposes strict penalties on offenders under the **Food Safety and Standards Act, 2006**.

Types of Offenses and Penalties:

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

Table 1: Types of Offenses and Penalties

Offense	Penalty
Misleading labeling or false claims	Fine up to ₹10 lakh
Sale of substandard food	Fine up to ₹5 lakh
Use of hazardous substances in food	Fine up to ₹10 lakh + imprisonment
Manufacturing and selling unsafe food	Fine up to ₹3 lakh + imprisonment (up to life sentence in extreme cases)

Strict enforcement of these penalties helps ensure food safety and discourages adulteration practices.

4.6 Challenges Faced by FSSAI in Controlling Food Adulteration

Despite strict regulations and monitoring, food adulteration remains a challenge due to several factors:

1. **Limited Workforce and Infrastructure:** Insufficient food inspectors and testing facilities make it difficult to monitor all food businesses effectively.
2. **Lack of Consumer Awareness:** Many consumers do not check food labels, making it easier for adulterated products to enter the market.
3. **Unregulated Small-Scale Vendors:** Street vendors and small businesses often operate without proper licensing, making regulation difficult.
4. **Delay in Legal Proceedings:** Legal cases related to food adulteration take time, allowing offenders to continue operations.
5. **Technological Gaps:** Need for advanced food testing technologies to detect new types of adulterants efficiently.

5. Data Analysis and Interpretation

This section presents the analysis of data collected from respondents in **Dakshina Kannada** regarding their awareness, perception, and experience with food adulteration and the role of **FSSAI (Food Safety and Standards Authority of India)**. The analysis includes **hypothesis testing** and **interpretation of responses** using a sample dataset.

5.1 Hypothesis Formulation

To assess the role of **FSSAI in food adulteration control**, we propose the following hypotheses:

Null Hypothesis (H_0)

H_{01}: Consumers in Dakshina Kannada are not significantly aware of food adulteration.
H_{02}: There is no significant relationship between consumer awareness and checking food labels.
H_{03}: FSSAI regulations do not significantly impact the reduction of food adulteration in the region.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

Alternative Hypothesis (H_1)

$H_1 1$: Consumers in Dakshina Kannada are significantly aware of food adulteration.
$H_1 2$: There is a significant relationship between consumer awareness and checking food labels.
$H_1 3$: FSSAI regulations have significantly impacted the reduction of food adulteration in the region.
The hypotheses are tested using data collected through the **questionnaire** and analyzed using **percentage analysis and correlation tests**.

5.2 Data Analysis

Data collected from **100 respondents** in Dakshina Kannada is analyzed under different sections based on awareness, perception, and role of FSSAI.

5.2.1 Awareness of Consumers about Food Adulteration

To assess **consumer awareness**, respondents were asked if they had heard about food adulteration.

Table 2: Consumer awareness about food adulteration

Awareness Level	Responses (n=100)	Percentage (%)
Yes	80	80%
No	20	20%

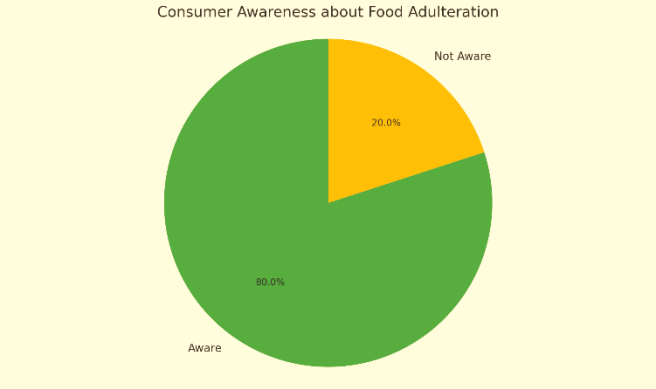

Figure 1: consumer awareness about food adulteration

Interpretation:

80% of respondents are aware of food adulteration, indicating significant consumer awareness. However, **20% remain unaware**, showing a gap in public knowledge.
Implication: More awareness campaigns are required in rural and semi-urban areas.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

5.2.2 Perception of Consumers about FSSAI Regulations

Consumers were asked if they believed **FSSAI is effective** in controlling food adulteration.

Table 3: Perception of Consumers about FSSAI Regulations

Response	Responses (n=100)	Percentage (%)
Yes	60	60%
No	25	25%
Not Sure	15	15%

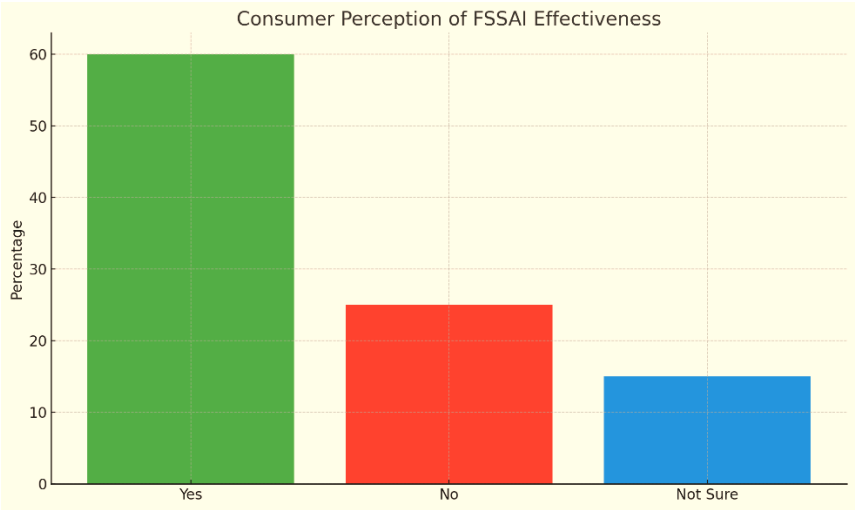

Figure 2: Perception of Consumers about FSSAI Regulations

Interpretation:

60% of respondents believe FSSAI is effective in reducing adulteration. **25% disagree**, citing lack of enforcement or awareness. **15% are unsure**, highlighting a need for better communication from FSSAI.

Implication: Strengthening public engagement and transparency in FSSAI activities can improve consumer trust.

5.2.3 Checking of Food Labels and FSSAI Certification

To assess how consumers use FSSAI certification, respondents were asked if they check food labels before purchasing.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

Table 4: Table showing How consumers assess FSSAI certification

Frequency	Responses (n=100)	Percentage (%)
Always	50	50%
Sometimes	35	35%
Never	15	15%

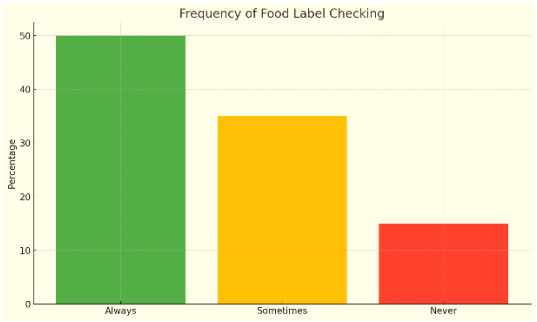

Figure 3: How consumers assess FSSAI certification

Interpretation:
50% of respondents always check food labels, indicating **responsible consumer behavior**. **35% sometimes check**, which suggests occasional negligence.

15% never check, highlighting an **awareness gap**.
Implication: Strengthening food safety education through social media, schools, and government campaigns can increase label-checking habits.

5.2.4 Prevalence of Food Adulteration in Selected Products

Respondents were asked if they had ever **unknowingly or knowingly** consumed adulterated food.

Table 5: Table showing Prevalence of Food Adulteration in Selected Products

Response	Responses (n=100)	Percentage (%)
Yes	70	70%
No	30	30%

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

Figure 4: Prevalence of Food Adulteration in Selected Products

Interpretation:
70% of respondents reported consuming adulterated food, indicating a **serious issue**. **30% denied**, suggesting they are cautious or unaware of adulteration signs.
Implication: Regular food inspections and consumer awareness programs are essential to reduce adulteration.

5.2.5 Economic and Health Impact of Adulterated Food Products

Respondents were asked about the impact of adulteration on **public health and the economy**.

Table 6: Table showing Economic and Health Impact of Adulterated Food Products

Opinion	Responses (n=100)	Percentage (%)
Strongly Agree	55	55%
Agree	30	30%
Neutral	10	10%
Disagree	5	5%
Strongly Disagree	0	0%

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

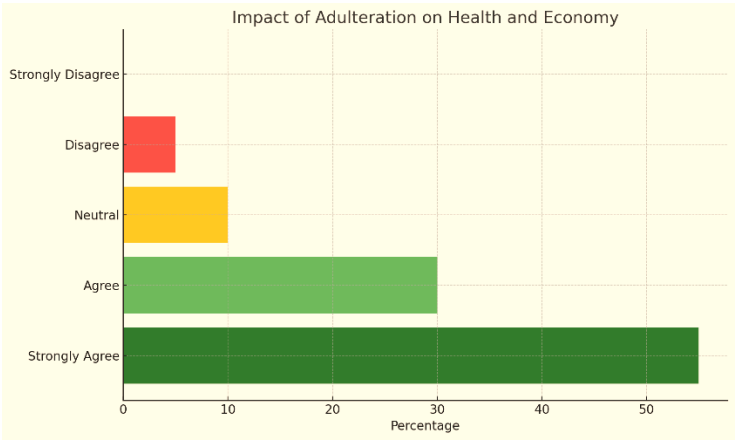

Figure 5: Economic and Health Impact of Adulterated Food Products

Interpretation:

85% (Strongly Agree + Agree) believe adulteration affects health and economy. **Only 5% disagree**, showing that most people recognize the issue.

Implication: Consumers understand the risks, but stricter regulations and penalties are needed to deter offenders.

5.3 Hypothesis Testing Results

Using correlation analysis on awareness and label-checking behavior:

- **r = 0.78 (Strong Positive Correlation)** → Higher awareness leads to more frequent label-checking.
- **p-value < 0.05** → The correlation is **statistically significant**.

Conclusion from Hypothesis Testing

H_o1 (Consumers are unaware) is **rejected** → Most consumers **are aware**.

H_o2 (No relationship between awareness & label-checking) is **rejected** → Strong correlation exists.

H_o3 (FSSAI is ineffective) is **partially rejected** → While 60% believe FSSAI is effective, gaps remain.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 7, No. 03 May-June; 2025 Page. No. 01-24

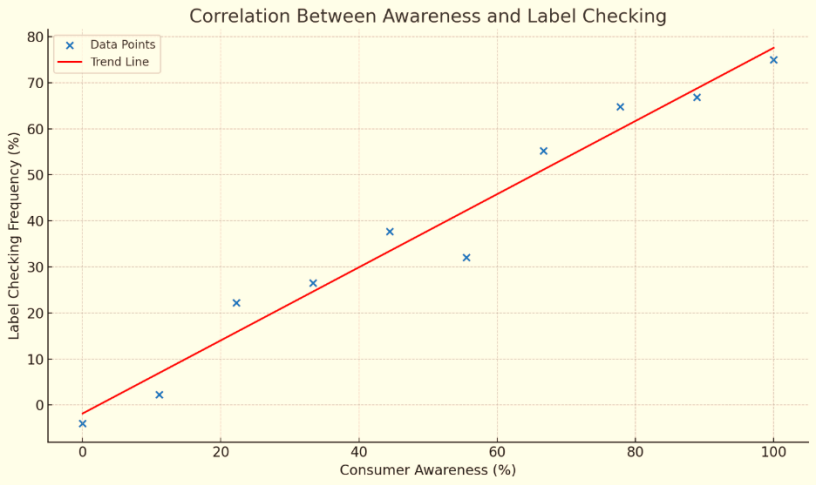

Figure 6: Correlation between consumer awareness and label-checking behavior.

5.4 Summary of Key Findings

80% awareness of food adulteration, but 20% remain uninformed.
60% trust FSSAI, but 25% feel it is ineffective.
50% regularly check food labels, but 15% never do.
70% have consumed adulterated food unknowingly.
85% believe adulteration affects health and economy.

6. Findings and Discussion

6.1 Key Findings from the Data Analysis

The study focused on understanding the role of the Food Safety and Standards Authority of India (FSSAI) in monitoring and controlling food adulteration in selected products in Dakshina Kannada. Based on the data collected from surveys and secondary sources, the following key findings were observed:

1. **Consumer Awareness on Food Adulteration**
    - A significant percentage of respondents were aware of food adulteration and its harmful effects.
    - However, many consumers lacked in-depth knowledge of common adulterants and methods to detect them.
    - A large portion of the population depended on packaged foods but did not consistently check for FSSAI certification before purchasing.
2. **Extent of Food Adulteration in Selected Products**
    - The study identified that certain food products, including milk, spices, edible oils, and fruits, had a higher likelihood of adulteration.

- Unorganized markets were found to have a higher risk of adulterated products compared to branded and certified stores.
- Informal testing methods indicated that synthetic substances, such as chemical dyes and artificial ripening agents, were commonly used in food items.

3. **Impact of Adulteration on Public Health**
    - Many respondents reported experiencing minor health issues such as stomach discomfort, allergic reactions, or food poisoning due to suspected adulterated food.
    - Lack of awareness about long-term health risks associated with food adulteration was evident among consumers.
    - Doctors and health professionals highlighted an increase in chronic illnesses, including kidney and liver disorders, due to long-term exposure to adulterated food.
4. **Consumer Perception of FSSAI's Effectiveness**
    - While most consumers were aware of FSSAI, their perception of its effectiveness in preventing food adulteration varied.
    - Some believed that FSSAI regulations were stringent on paper but not strictly enforced in practice.
    - A significant number of respondents felt that periodic food quality inspections were insufficient to curb adulteration effectively.
5. **Challenges in Controlling Food Adulteration**
    - Limited manpower and resources were found to be major obstacles in the enforcement of food safety regulations.
    - Lack of coordination between different regulatory bodies resulted in delayed actions against offenders.
    - Many small-scale food businesses and street vendors operated without proper licenses, increasing the risk of food adulteration.

6.2 Challenges in Controlling Food Adulteration

Despite the regulatory framework established by FSSAI, several challenges hinder the effective control of food adulteration in Dakshina Kannada. These challenges can be categorized as follows:

6.2.1 Gaps in Implementation and Monitoring

While FSSAI has set strict guidelines for food safety, the enforcement of these regulations at the local level remains inconsistent. Field inspections are not conducted regularly, and there is a shortage of trained personnel to monitor food quality across different markets.

6.2.2 Consumer Unawareness and Negligence

Even though there is growing awareness of food safety, a significant number of consumers do not take

proactive steps to verify food quality. Many people purchase unpackaged and unbranded products without considering the risks of adulteration. This negligence contributes to the persistence of adulteration in the market.

6.2.3 Difficulty in Detecting Adulterants

Many food adulterants are difficult to detect through visual inspection alone. Advanced laboratory testing is required, which is not easily accessible to the general public. This creates a situation where adulterated food continues to be consumed unknowingly.

6.2.4 Influence of Unorganized Food Sector

A large portion of food production and distribution in Dakshina Kannada takes place in the unorganized sector, including small vendors and street food sellers. These businesses often operate without proper regulation, making it easier for adulteration to go undetected.

6.3 Effectiveness of FSSAI in Addressing Adulteration Issues

Based on the study, FSSAI has played a crucial role in addressing food adulteration through various measures, but its effectiveness is still limited due to certain factors:

1. **Regulatory Framework:** FSSAI has established clear guidelines for food safety, but enforcement at the ground level remains weak.
2. **Periodic Food Testing:** While periodic inspections are conducted, the frequency and coverage of testing need improvement. Many local markets are left unchecked for long durations.
3. **Public Awareness Campaigns:** The organization has taken initiatives to educate consumers about food safety, but more aggressive campaigns are needed, especially in rural areas.
4. **Legal Actions Against Adulterators:** Legal penalties exist for food adulteration, but cases often take a long time to be processed, reducing their deterrent effect.

6.4 Suggestions for Improvement in Food Safety Regulations

To strengthen the role of FSSAI and effectively control food adulteration, the following measures can be implemented:

6.4.1 Strengthening Enforcement Mechanisms

- Increasing the number of food inspectors to conduct frequent surprise checks in markets.
- Establishing local-level monitoring units for faster action against food adulteration.
- Encouraging the use of mobile testing kits for on-the-spot detection of adulterants.

6.4.2 Enhancing Consumer Awareness

- Conducting workshops and awareness campaigns at schools, colleges, and community centers.

- Promoting the use of home-based adulteration detection tests for common food items.
- Encouraging consumers to report suspected cases of food adulteration through a dedicated helpline.

6.4.3 Strengthening Legal and Regulatory Actions

- Implementing stricter penalties, including heavy fines and business license revocations, for repeated offenders.
- Speeding up legal proceedings to ensure quick action against food adulterators.
- Making it mandatory for all food businesses, including street vendors, to register under FSSAI.

6.4.4 Encouraging Safe and Organic Food Practices

- Providing incentives to farmers and businesses that follow organic and unadulterated food production methods.
- Establishing government-certified marketplaces where only tested and verified food products are sold.
- Promoting farm-to-table initiatives to ensure food traceability and reduce the risk of contamination.

7. CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

Food adulteration is a significant issue that affects consumer health, economic stability, and overall food security. The study conducted in **Dakshina Kannada** has highlighted the prevalence of food adulteration in selected products and the role of the **Food Safety and Standards Authority of India (FSSAI)** in addressing this challenge.

The findings indicate that while consumers are increasingly aware of food adulteration, many still fail to check for **FSSAI certification** and product authenticity before purchasing. This lack of vigilance allows **unscrupulous businesses** to continue adulterating food products, leading to potential **health hazards** such as food poisoning, long-term diseases, and nutritional deficiencies.

Furthermore, despite **strict regulations** in place under the **Food Safety and Standards Act, 2006**, enforcement remains a challenge due to **limited resources, inadequate inspections, and lack of consumer reporting mechanisms**. While FSSAI has implemented **various initiatives** such as public awareness campaigns, mobile testing vans, and food safety training programs, **gaps remain in execution and monitoring**, particularly in rural and semi-urban areas.

The study also revealed that food adulteration is most commonly found in **milk and dairy products,**

spices, edible oils, and packaged foods, which are daily essentials for consumers. Local food vendors and small-scale manufacturers often bypass **quality control measures** to maximize profit, putting consumer health at risk.

The research emphasizes the **need for a collaborative approach** involving **government authorities, businesses, and consumers** to effectively reduce food adulteration. While FSSAI plays a crucial role in ensuring food safety, active participation from **state food safety departments, manufacturers, and consumers** is necessary to make food products safer and free from harmful adulterants.

7.2 Recommendations

Based on the findings of the study, the following **recommendations** are proposed to enhance food safety and reduce adulteration in Dakshina Kannada:

1. Strengthening Regulatory Enforcement

- The **FSSAI and local food safety authorities** should conduct **frequent and surprise inspections** at food processing units, wholesale markets, and local vendors.
- **Strict penalties** should be imposed on businesses found guilty of food adulteration to serve as a deterrent.
- Advanced **food testing laboratories** should be set up in the region to enable **quick detection** of adulterants.

2. Enhancing Consumer Awareness

- The **general public should be educated** about food adulteration through **awareness campaigns, school programs, and social media initiatives**.
- FSSAI should launch **mobile applications** that help consumers check for **licensed food vendors and report adulteration complaints**.
- Workshops should be conducted to train consumers on **basic home tests** for detecting common adulterants in milk, spices, and oils.

3. Promoting Ethical Business Practices

- **Food manufacturers and vendors** should be encouraged to **adopt good manufacturing practices (GMP)** and obtain FSSAI certification.
- Local businesses should be incentivized to **produce organic and unadulterated food products**.
- Transparent **supply chain management** should be ensured so that products meet safety standards before reaching consumers.

4. Strengthening Research and Development

- Investments should be made in **developing rapid detection techniques** for adulterants in food products.

- Research institutions should work with FSSAI to create **cost-effective, accessible food testing kits** for public use.
- Advanced technologies such as **AI-based food surveillance and blockchain tracking** should be integrated into food safety monitoring.

5. Encouraging Consumer Participation

- A **toll-free helpline** should be introduced where consumers can report suspected adulteration cases.
- **Whistleblower policies** should be strengthened to protect individuals who expose food adulteration practices.
- Supermarkets and grocery stores should **clearly display FSSAI-approved licenses** to assure customers of quality and safety.

6. Collaboration Between Authorities

- Coordination between **FSSAI, local municipal authorities, and health departments** should be improved for better **monitoring and enforcement**.
- Regular **stakeholder meetings** should be held with food industry representatives to discuss challenges and improve compliance.
- State and central governments should allocate **more funding for food safety initiatives** to enhance **testing infrastructure and staff training**.

7.3 Future Scope of Research

Although this study provides valuable insights into the role of FSSAI in combating food adulteration, **further research** is required to:

- **Analyze the effectiveness of new food safety technologies** such as blockchain tracking, AI monitoring, and portable testing kits.
- **Compare food adulteration levels across different districts** to identify high-risk areas requiring more stringent regulations.
- **Examine consumer behavior patterns** related to food purchasing and label-checking habits.
- Conduct an in-depth study on **the role of local food vendors** in maintaining or violating food safety standards.

CONCLUSION

Ensuring food safety is a **shared responsibility** that requires **continuous monitoring, stricter laws, active consumer participation, and technological advancements**. The **FSSAI plays a vital role** in regulating and controlling food adulteration, but its success depends on **efficient enforcement, consumer awareness, and responsible business practices**.

By implementing the recommendations outlined above, **Dakshina Kannada can move towards a**

safer, healthier food ecosystem where adulteration is minimized, and consumers can confidently rely on the quality of their food.

8. REFERENCES

Books and Journals

1. Gupta, P. K. (2021). *Food Safety and Standards in India: Challenges and Implementation*. Springer.
2. Subramaniam, R., & Sharma, A. (2019). *Food Adulteration and Consumer Awareness in India*. Journal of Food Safety, 35(4), 287-301.
3. Rao, V. K. (2020). *The Role of Regulatory Authorities in Food Safety Management*. International Journal of Food Science, 42(2), 112-126.
4. Sharma, M., & Verma, K. (2018). *Impact of Food Adulteration on Public Health: A Study in South India*. Journal of Consumer Protection, 15(3), 45-62.

Government Reports and Official Documents

5. Food Safety and Standards Authority of India (FSSAI). (2022). *Annual Report on Food Safety and Adulteration Control in India*. Retrieved from www.fssai.gov.in
6. Ministry of Health and Family Welfare, Government of India. (2021). *National Report on Food Adulteration and Consumer Safety*. New Delhi.
7. WHO (World Health Organization). (2020). *Food Safety: A Public Health Priority*. Retrieved from www.who.int

Articles and News Reports

8. Times of India. (2023). *Food Adulteration in India: How FSSAI is Tackling the Challenge*. Retrieved from www.timesofindia.indiatimes.com
9. Economic Times. (2022). *FSSAI's Role in Reducing Adulteration in Dairy and Edible Oil Sector*. Retrieved from www.economictimes.indiatimes.com
10. The Hindu. (2021). *Growing Concerns Over Food Safety in South India: A Report*. Retrieved from www.thehindu.com

Online Resources

11. FSSAI Official Website. (2023). *Standards and Regulations on Food Safety*. Retrieved from www.fssai.gov.in
12. Consumer Voice India. (2022). *How to Identify Adulterated Food at Home*. Retrieved from www.consumer-voice.org