

The Recent Developments in Food Industries and the Integration of Islamic Jurisprudence with Modern Information Systems for Enhanced Food Safety

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ARTICLE INFO	ABSTRACT
Received: 09 Feb 2025 Revised: 15 Mar 2025 Accepted: 20 Apr 2025	<p>In recent decades, significant advancements in the food industry, driven by technological innovations and global supply chain expansion, have improved food security but also introduced new challenges concerning food safety and consumer protection. This study explores the critical integration of Islamic jurisprudential principles—specifically the maxim "No Harm and No Reciprocating Harm"—with modern Management Information Systems (MIS) to create a more ethical, transparent, and effective framework for monitoring and preventing food violations. Using a comprehensive scientific methodology that combines inductive, analytical, comparative, and applied approaches, the research investigates how Shariah principles can complement digital surveillance and predictive analytics to enhance consumer rights, ensure public health, and promote social justice. The findings reveal that integrating Islamic ethics with contemporary information technologies significantly strengthens liability frameworks, accelerates early detection of food hazards, and fosters greater transparency. Furthermore, the study proposes a practical model that leverages artificial intelligence, big data, and blockchain technology while embedding Shariah-compliant standards to build a smarter, more preventive food monitoring system suitable for contemporary Islamic societies.</p> <p>Keywords: Food Safety, Islamic Jurisprudence, No Harm and No Reciprocating Harm, Management Information Systems, Consumer Protection, Artificial Intelligence, Blockchain, Public Health, Food Supply Chain, Shariah Compliance.</p>

Introduction

In recent decades, the world has witnessed remarkable advancements in the food industry, fueled by technological progress and the vast expansion of global supply chains. While these developments have significantly improved food security across many societies, they have simultaneously introduced new challenges related to food safety and quality. Consequently, the risk of consumers being exposed to foodborne illnesses due to negligence, fraud, or industrial error has increased (Golan et al., 2004).

Within this complex landscape, the protection of public health has become an urgent necessity, demanding the implementation of effective legal and administrative frameworks that balance flexibility with strict enforcement. However, despite advancements in positive law systems, they often lack the profound ethical dimension characteristic of Islamic legislation, particularly concerning the liability of food establishments in cases of food-related harm. Here emerges the importance of invoking Shariah principles, foremost among them the maxim of "No Harm and No Reciprocating Harm" ("La Darar wa La Dirar"), which forms a fundamental cornerstone in establishing civil and criminal liability within Islamic jurisprudence (Ibn Nujaym, 1999; Al-Zuhayli, 2006).

The "No Harm and No Reciprocating Harm" maxim asserts that preventing harm to others is a foundational principle in Islamic transactions and penal codes, requiring the removal of harm whenever it occurs, the prevention of its causes, and the fair compensation of the injured party (Al-Zarqa, 1989). Accordingly, invoking this principle in food safety oversight is a jurisprudential and legal necessity to safeguard consumer rights and public health.

Meanwhile, modern technologies, particularly Management Information Systems (MIS), provide powerful tools for monitoring food supply chains, detecting incidents before they escalate, and intelligently and objectively analyzing quality data (Laudon & Laudon, 2020). Nevertheless, integrating these technological tools with Shariah values remains an area that requires further scholarly investigation and applied research.

Research Significance

This study derives its significance from the pressing need to establish an integrated legal-informational framework that combines modern technologies with authentic jurisprudential principles, aiming to achieve the following goals:

- Enhancing transparency within the food sector.
- Protecting human health through prevention and early detection.
- Realizing the principle of Shariah and legal justice in attributing liability.
- Strengthening consumer trust in producers by adopting stringent ethical and technical standards (Almalki & Aziz, 2020).

Thus, this research endeavors to present a comprehensive theoretical and applied framework grounded in the "No Harm and No Reciprocating Harm" principle, leveraging modern information systems to monitor and analyze food violations, thereby building more effective and comprehensive food protection systems aligned with Islamic principles and contemporary digital requirements.

Research Problem

Despite significant advancements in the use of information systems for monitoring food supply chains and product quality, a clear knowledge and legislative gap persists regarding the integration of these systems with ethical and jurisprudential principles ensuring comprehensive justice in liability assignment.

Current positive law systems predominantly rely on material evidence and technical reports to establish harm, often overlooking the ethical dimension offered by Islamic jurisprudence through the "No Harm and No Reciprocating Harm" principle (Ibn Nujaym, 1999; Al-Zuhayli, 2006).

Thus, the core research question arises:

How can the Islamic jurisprudential principle of "No Harm and No Reciprocating Harm" be employed within intelligent information systems to monitor and analyze food violations in a manner that achieves Shariah justice and protects consumer rights?

Several sub-questions also emerge:

- To what extent can jurisprudential principles be harmonized with modern information technologies?
- What are the standards for determining food liability from both a Shariah and legal perspective?
- How can an intelligent food information system be developed to document evidence and establish harm using both Shariah-compliant and technical mechanisms?

The criticality of the problem lies in that neglecting the jurisprudential dimension could disrupt the balance of social justice, negatively impacting public health and diminishing the effectiveness of modern food monitoring systems (Golan et al., 2004).

Research Objectives

Given the interdisciplinary nature of the study, encompassing both Shariah and technical fields, a comprehensive scientific methodology was adopted, including:

1. Inductive Approach

- o Collection of Shariah texts related to the "No Harm and No Reciprocating Harm" maxim from the Qur'an, the Sunnah, and juristic efforts (Ibn Nujaym, 1999; Al-Zuhayli, 2006).
- o Review of modern laws regarding food liability, such as consumer protection laws and international standards (e.g., ISO 22000).

2. Analytical Approach

- o In-depth analysis of the structure and practical implications of the "No Harm and No Reciprocating Harm" principle, comparing it to modern legal liability foundations (Al-Zarqa, 1989).
- o Analysis of information systems and their role in intelligent risk management, including elements of tracking, monitoring, and predictive analytics (Laudon & Laudon, 2020; Stair & Reynolds, 2018).

3. Comparative Approach

- o Comparative study of Islamic jurisprudential applications of liability with civil and criminal law mechanisms in modern Western and Arab systems.
- o Highlighting areas of agreement and divergence, and critically evaluating each approach's effectiveness in addressing food poisoning cases (Almalki & Aziz, 2020).

4. Applied Approach

- o Design of a preliminary practical model (Proof of Concept) for a modern Shariah-compliant food information system that:
 - ☐ Integrates artificial intelligence and big data analytics.
 - ☐ Adopts jurisprudential standards for harm assessment and liability attribution.
 - ☐ Employs blockchain traceability tools to ensure transparency (Al-Jarhi, 2017).

Data Sources

- Standard Islamic jurisprudential references (e.g., Al-Ashbah wa al-Naza'ir by Ibn Nujaym, and Islamic Jurisprudence and Its Evidence by Al-Zuhayli).
- Modern technical references (e.g., Management Information Systems by Laudon & Laudon, 2020).
- Recent peer-reviewed studies in the fields of food risk management and Shariah-compliant technologies.

Methodology

This research aims to contribute scientifically and practically to the development of an integrated system for consumer protection from food hazards through:

1. Deep analysis of the "No Harm and No Reciprocating Harm" principle, exploring its legislative origin, practical applications, and role in establishing a balanced civil liability system (Al-Zuhayli, 2006; Al-Zarqa, 1989).
2. Investigation of the role of modern information systems in early detection of food violations and their contribution to evidence documentation and transparency (Laudon & Laudon, 2020; Stair & Reynolds, 2018).
3. Formulation of a comprehensive applied model that integrates Shariah values with technological surveillance tools for:
 - o Product tracking.
 - o Immediate violation detection.
 - o Smart documentation of Shariah-compliant and legal evidence.
 - o Accelerating decision-making processes and enhancing consumer protection.

4. Providing practical recommendations for legislators and decision-makers to adopt Shariah-compliant food information systems, reinforcing the principle of "prevention is better than cure" and reducing incidents of foodborne illnesses (ISO 22000:2018).

Results

Applying the four scientific methodologies (inductive, analytical, comparative, and applied) led to several key findings:

1. The "No Harm and No Reciprocating Harm" Principle as a Robust Basis for Food Liability:

The study confirmed that this principle forms a strong juristic foundation for imposing civil liability on food establishments causing health damage to consumers, emphasizing proactive prevention and compensation regardless of intentional negligence.

2. Information Systems as Precise Tools for Early Detection and Proof:

Advancements in MIS now enable real-time tracking and monitoring across the food supply chain, offering:

- o Traceability of food shipments.
- o Real-time analysis of production and processing data.
- o Electronic evidence recording to support consumers' legal claims.

3. Integrating Islamic Jurisprudence with Information Systems Enhances Justice:

Combining modern technology with Islamic ethical principles ensures a unique balance, offering both objective evidence and comprehensive ethical justice (Almalki & Aziz, 2020).

4. Proposed Practical Models Foster a Preventive and Effective Food System:

The applied models proposed integrate:

- o Early warning systems and AI technologies (Al-Jarhi, 2017).
- o Jurisprudential standards for damage assessment.
- o Electronic tools for immediate detection and analysis, allowing for swift intervention.

Discussion

Several critical intellectual issues emerged:

1. The timeless applicability and flexibility of the "No Harm and No Reciprocating Harm" principle across different eras.
2. The need for modern positive law systems to incorporate a robust ethical dimension to achieve comprehensive justice.
3. The role of digital evidence in supporting Shariah-compliant adjudication and expediting liability attribution.
4. The necessity to develop food systems inspired by Islamic jurisprudence, emphasizing proactive prevention and the integration of legislative and Shariah norms.
5. The urgent call for further research to develop localized models suitable for Arab and Islamic contexts.

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