Identifying Behavioral Drivers of Effective Food Safety Policy

Feed the Future Innovation Lab for Food Safety
April 27, 2021
If you are unable to hear, connect your speakers by selecting “Join Audio”.

Please submit questions for our panelists using the Q&A function.

Closed captioning is available and can be turned on using the Live Transcript function.
MODERATOR

Haley Oliver
Director of the Feed the Future Innovation Lab for Food Safety
Professor of Food Science
Purdue University
Food safety influencers

- Government
- Consumer
- Education
- Private Sector
Cleaning and sanitizing practices

Socioeconomic factors
- Race
- Education
- Urbanization
- Population density

Income

Hand hygiene

Food safety climate
- Commitment
- Training

Infrastructure
- Prevent cross-contamination

Amin et al., in prep; Wu et al., 2019
AGENDA

Meera Chandra – 10 min.
AAAS Fellow
United States Agency for International Development (USAID)

Lone Jespersen – 10 min.
Principal and Founder
Cultivate

Vivian Hoffmann – 10 min.
Senior Research Fellow
International Food Policy Research Institute (IFPRI)

Madan Dey – 10 min.
Professor of Agricultural Business and Economics
Texas State University

Panel discussion – 30 min.
Meera Chandra
AAAS Fellow
Food Safety Division, Center for Nutrition
United States Agency for International Development (USAID)
SPEAKER

Lone Jespersen
Principal and Founder
Cultivate
Identifying Behavioural Drivers of Effective Food Safety Policy

April 27, 2021
Today

<table>
<thead>
<tr>
<th>Connect</th>
<th>Culture and food safety.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss</td>
<td>Consequences of your current culture.</td>
</tr>
<tr>
<td>Share</td>
<td>Three steps you can take tomorrow to improve your culture of food safety.</td>
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</table>
The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations. Risks are understood and continually challenged by a cross-functional team through planned risk management. Understanding and reducing risks are an integral part of the organization’s continuous improvement efforts. The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

Culture dimensions: Risk and Hazard Awareness

Stage 1
The organization relies mostly on external sources and inspections to understand and act on its risks and doesn’t identify risks internally.

Stage 2
Actions to manage risks are mostly taken in response to external audits or inspections and internal identification is sometimes incorrect.

Stage 3
Risks are understood and continually challenged by a cross-functional team through planned risk management.

Stage 4
Understanding and reducing risks are an integral part of the organization’s continuous improvement efforts.

Stage 5
The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019
Consequences of your current culture

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QA is the sole owner of food safety and would likely not have caught the label issue on their own.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019
Consequences of your current culture

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All team members from CEO to frontline know their food would likely have understood the mislabelling issue.

Reference: “Path to financial gain through food safety culture maturity” Lone Jespersen et al, 2019
### Consequences of your current culture

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The issue would have been discussed and prioritised as a point for the supplier to improve.

Reference: “Path to financial gain through food safety culture maturity” Lone Jespersen et al, 2019
The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations. Risks are understood and continually challenged by a cross-functional team through planned risk management. Understanding and reducing risks are an integral part of the organization’s continuous improvement efforts. The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations. Frontline team member would as part of the HACCP team have raised the near-miss.

Consequences of your current culture

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Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019
Some behavioural drivers

- Make food safety personal
- Owner and Farm Manager behaviours
- Simply focus
Make food safety personal

One Family

Thousands of Lives

Farmer • Harvester • Grocer • Community

For more information: STOP CEO Mitzi Baum (mbaum@stopfoodborneillness.org)
Teach your leaders to behave...

Walk-the-Talk and become a food safety teacher.

Embrace the uniqueness of your industry e.g., multi-cultural, people intense by simplifying training and communication tools.

Ask, ask, ask...

Track delivery of training and connect with team members to discuss their unique responsibilities.

Weekly conversation with crew about food safety challenges.
Strictly Focus

General

• Site food safety principles (e.g., “never deviate from food safety procedures” and “see something, say something”)
• Product knowledge and associated hazards.

Job specific

• Picker – stones and glass (physical hazards)
• Tractor driver – pesticides (chemical hazards)
• Farm manager – water quality (biological and chemical hazards).
In summary
What can you practically go away and do tomorrow?

- **Make food safety personal**
  - Team member photos and family days

- **Owner and Farm Manager behaviours**
  - Walk the Talk
  - Become a food safety teacher

- **Simply focus**
  - Two tier training program; overarching and role specific
Vivian Hoffmann
Senior Research Fellow
International Food Policy Research Institute (IFPRI)
Behavioral drivers of food safety in poorly regulated markets

Evidence from Kenya and Ghana

Vivian Hoffmann
International Food Policy Research Institute

FSIL Webinar | April 27, 2021
Foodborne disease: a public health crisis in low-income countries

- Foodborne disease causes 6 million illnesses, 420,000 deaths per year
  - Similar health burden as (each of) HIV/AIDS, TB, malaria
  - Receives about 5% the US aid investment as “big 3"

- 95% of this burden is in low-income countries
  - Large informal sector
  - Weak regulatory enforcement

- Question: what can drive better food safety in these settings?
  - Consumers → Processors → Farmers
Aflatoxin: a major food safety problem

- Produced by fungus present in soil
- Common in maize, groundnut
- Simple post-harvest practices can reduce by 50% or more
- Testing is relatively low-cost and simple
Consumers: information on relative risk affects food choice

Experimental treatment and results (testing group) at baseline

- Control
- Safer brands info
- Safer brands info + test
- Compliant at baseline
- Non-compliant at baseline

* statistically different from control mean

Kariuki & Hoffmann, under review
Consumers: Food safety marketing claims not as effective

Hoffmann, Moser & Herrman, 2021
Processors: Reputation + threat of regulatory enforcement

Hoffmann & Moser, 2017
Farmers: Information, access to technologies, incentives

Magnan et al., 2021: Groundnut practices, Northern Ghana
Integrating value chains is key to pass-through of incentives

- Not easy – failures abound
  - Commercial maize flour market, Kenya
  - Therapeutic peanut-based food manufacturer, Ghana

- When successful, can achieve big results
  - Ugandan boarding schools: maize income ↑ 36% over 4 seasons (Bold et al., 2021)

- New opportunities
  - ICT-based platforms make it easier to link farmers directly to markets
    - Twiga Foods (Kenya)
Summary & Conclusions

- Consumers respond to credible information on relative risk
  - “A is better than B” more impactful than “A is good”
  - Can improve informal sector practices through training, certification, monitoring approach
    - ILRI projects in Vietnam, Cambodia, India, Kenya

- Regulatory enforcement need not be perfect to achieve results
  - Firms with brand equity are terrified of government recalls
  - Of large USAID food safety projects, 20% to gov’t, 65% to private sector (GFSP, 2019)

- Producers need access to information, tools, and incentives
  - Information alone can improve practices among semi-subsistence farmers
  - Access to food safety technologies has strong immediate effect
  - Incentives also highly effective, may take longer to achieve results (learning, trust)
Thank you
SPEAKER

Madan Dey
Professor of Agricultural Business and Economics
Texas State University
Behavioral Drivers of Effective Food Safety Policy along Seafood Value Chains: An Economist’s View

Madan M. Dey, Ph.D.
Texas State University
Presentation Outline

• Concept: value chain vs. supply chain
• Seafood Safety 101 (through the eyes of an economist)
• Market framework for seafood safety analysis
• Behaviors of different actors
• A very short introduction to a new FSIL project
• Take home messages
Value Chain vs. Supply Chain

- **Value Chain**
  - Strategic Components
  - Global Assembly
  - Finished Products
  - Successful Customer

- **Supply Chain**
  - Product Req'ts
  - Customer
Value Chain and Value Chain Analysis (Dey et al., 2015)

• Value Chain:
  • Strategic management of the supply chain in meeting the increasing requirements of consumers
  • Value chain literature focuses on the value added to the consumer and information exchange in the chain, in comparison with the focus of supply chain literature on production requirements.

• Value Chain Analysis:
  • How value is created and gains, distributed
  • Businesses participate or are integrated into existing value chains if they are able to obtain a sustainable role in adding value to a product
  • Also focus on barriers to entry and rents, governance, and upgrading
Quality Along the Seafood Value Chain

- Quality is a powerful engine in the food value chain
- Fish, as a product, is a bundle of characteristics which gives rise to utility
- Consumers’ preferences and prices are expressed though these characteristics
- Quality:
  - Intrinsic quality attributes (size, fat content, safety attributes, etc.)
  - Extrinsic quality cues (labeling, branding, packaging, etc.)
- Product safety includes various safety attributes (including quality perception of consumers)
- Food Safety: Credence (usually the case), search and experience attributes
Food Safety Concerns Along the Seafood Value Chain

• Concerns at the farm level (intensive farming in particular)
  • Increased use of inputs such as antibiotics, growth promoting hormones, pesticides, etc.
  • Incidences of heavy metals in feed ingredients, such as tannery byproducts
  • Farming conditions: water and soil quality

• Concerns at the retailing and wholesaling levels of the fish value chain
  • Use of preservatives such as formalin
  • Poor hygiene, especially at informal markets
  • Product traceability; Consumer trust of product quality
Motivation for improving food safety varies by party

Parties:
- Government
- Marketing Intermediaries
- Producer
- Consumer

All parties: benefit vs. cost
Benefit and Cost of Food Safety Measures

General Framework for Analyzing Seafood Safety Behavior
(modified from Dey et al. 2005)

- Export
  - Traders
  - Biological /Agroecological Environment
  - Aquaculture and Fisheries Technology
  - Government: Policy, Institutions & Support Services
  - Producers’ Behavior

- Import
  - Traders
  - Government: Policy
  - Consumers’ Behavior

- Production
  - Price

- Consumption
In the low-latitude developing nations, human nutrition is most dependent on wild fish, and fisheries are most at risk from illegal fishing, weak governance, poor knowledge of stock status, population pressures and climate change. These countries urgently need effective strategies for marine conservation and fisheries management to rebuild stocks for nutritional security.

In Bangladesh, much farmed high-value fish is exported to wealthier nations. Smallholder systems, including fish farmed in flooded rice fields, have improved local food security.

In developing small island states of the Pacific, wild fisheries will move poleward because of a rise in sea temperature, and aquaculture in deltas and floodplains will be affected by rising sea levels.

Golden et al., (2016), Nature
Golden et al. (2017), Frontier in Marine Sciences
Projected Fish Consumption in Bangladesh, 2030 and 2050 (Chen and Dey)

Bangladesh: Actual and projected per capita consumption (kg)

- Indian major carps
- Other carps
- Tilapia and barbs
- Koi
- Pangas
- Other freshwater
- Livefish and snakehead
- Small indigenous species
- Hilsha
- Small shrimps
- Big shrimps/prawns
- High value marine
- Low value marine
- Dried
Price of a product in a market depends, among other things, on price elasticity of demand. How do fish consumers respond to changes in Prices?

Engle, Quagrainie and Dey (2016): Chapter 11
## Food Safety Behavior of Processing Plant Operators

**Table 6** Per Unit Cost of Fish Processing with and without HACCP Compliance in India (US$/kg)

<table>
<thead>
<tr>
<th>Plant capacity</th>
<th>Without HACCP compliance (US$/kg)</th>
<th>With HACCP compliance (US$/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (&lt;10 t/day)</td>
<td>0.142</td>
<td>0.331</td>
</tr>
<tr>
<td>Medium (10–15 t/day)</td>
<td>0.095</td>
<td>0.226</td>
</tr>
<tr>
<td>Large (&gt;15 t/day)</td>
<td>0.072</td>
<td>0.167</td>
</tr>
<tr>
<td>Average</td>
<td>0.093</td>
<td>0.216</td>
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Dey et al., 2005
Food Safety Behavior of Consumers

• Empirical studies have shown that product characteristics, consumer characteristics, and the market environment determine prices of fish/seafood products—in different levels of the seafood value chain

• \[ WTP = f \text{ (product characteristics, information about the products, consumer characteristics)} \]

• Consumer characteristics include:
  • age
  • gender
  • race
  • education level
  • grocery shopping involvement
  • frequency of eating fish
  • family size
  • annual household income
Do consumers pay premium price for U.S. farm-raised catfish compared to other farmed white fish species? (Wald test with an error rate of 5 percent or less) (Chen, 2016; based on Nielsen Scanner data)

<table>
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<tr>
<th></th>
<th>Premium</th>
<th>Indifferent</th>
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<tr>
<td>U.S. catfish vs. other catfish</td>
<td></td>
<td>All markets</td>
</tr>
<tr>
<td>U.S. catfish vs. tilapia</td>
<td>Atlanta (+13%)</td>
<td>All markets except Atlanta</td>
</tr>
<tr>
<td>U.S. catfish vs. pangasius</td>
<td>Detroit, Pittsburgh, Washington, D.C.: +20% (average)</td>
<td>Other 7 markets</td>
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Seafood Safety in Bangladesh: A new USAID/FSIL Funded Project

A new project with steps to enhance food safety in Bangladesh.

Title: Enhancing Food Safety in Fish and Chicken Value Chains of Bangladesh

Objectives:

• Identify nodes along the value chain that need improvements in terms of food safety issues
  • Mapping the knowledge, attitude, and practices (KAPs) towards food safety
  • Microbiological, chemical analyses of fish products along value chain for safety hazard levels
  • Socioeconomic analyses of value chain actors
• Analyze consumer demand for improved safety in fish products, welfare implications
• Calibrate food safety training programs

Partners:

Texas State University (Dr. Madan M. Dey, Dr. Pratheesh Sudhakaran; Mr. Prasanna Surathkal)
Bangladesh Agricultural University (Dr. Mohammad Saidur Rahman, Dr. Md. Akhtaruzzaman Khan, and Dr. KHM Nazmul Hussain Nazir)
University of Dhaka (Dr. Samina Luthfa)
Bangladesh Food Safety Authority (Dr. Md. Abdul Alim)
Take Home Messages

• Value chain analysis is based on consumer’s perspective and flows from consumers to the producers
• One Size fits for All does not work
• Need to assess costs and benefits of various food safety measures by commodity, country, scale of operations, socio-economic condition of consumer
• Fish/seafood is a heterogeneous product
• Differential price response
• Role of information
Acknowledgements

My current and former team members for their substantial contributions to the materials presented today
Behavioral Drivers of Effective Food Safety Policy

Panel Discussion

Meera Chandra
USAID Perspective on Behavioral Drivers of Food Safety

Lone Jespersen
Food Safety Culture

Vivian Hoffmann
Food Safety in Poorly Regulated Markets

Madan Dey
Seafood Value Chain
THANK YOU

A link to the recording and presentations will be emailed to attendees next week

Feed the Future Innovation Lab for Food Safety
Next webinar:

Funding Opportunity: MSI-Led Partnerships for Global Food Safety Research

April 29, 1-1:30 PM EDT

Register through link in the chat.