Enhancing Food Safety Culture in Multinational Food Manufacturing Facilities

KIKELOMO MESHIOYE

Food Safety Manager at Frulact

Abstract- In the more complex and globally integrated food industry of today, the cultivation of a robust Food Safety Culture (FSC) in multinational production environments is no longer optional, it's a strategic imperative. For as much as compliance systems like HACCP and ISO 22000 technically inform frameworks, they too often fail to translate when cultural, behavioral, and operational differences undermine implementation across borders. The article below presents a holistic, evidence-based approach to enhancing FSC in multinational organizations through the integration of behavioral science, leadership strategy, and digital innovation. We introduce the Multinational Food Safety Culture Alignment Model (MFSCAM), a fivepillar practical framework of cultural calibration, leadership engagement, competency-based training, digital reinforcement, and continuous behavioral measurement. Drawing on current empirical studies, regional case data, and industry trends, we examine how transformational leadership styles, localized training, and leveraging tools such as IoT and behavioral feedback loops significantly impact food safety outcomes. Original contributions include a cross-cultural analysis of FSC implementation in high-context and low-context cultures, the business value of FSC maturity, and the role of emerging technologies in supporting greater compliance and traceability. The paper concludes with a step-by-step roadmap, complete with tools, checklists, and change strategies, that food safety executives can tailor to deliver concrete improvements in organizational culture and operating performance.

Indexed Terms- Food Safety Culture, Multinational Food Manufacturing, Transformational Leadership, HACCP, ISO 22000, Behavioral Safety, Cultural Diversity, Digital Tools, Continuous Improvement

I. DEFINITION OF FOOD SAFETY CULTURE (FSC) IN MULTINATIONAL CONTEXT

1.1 What Food Safety Culture is All About

Food Safety Culture (FSC) isn't just about technical compliance, it's about an organization's overall attitude, values, and behaviors towards food safety. Defined by the Global Food Safety Initiative (GFSI) as the standards, beliefs, and values that are shared that affect mindset and behavior when it comes to food safety, FSC will determine whether protocols are applied in spirit, or merely in form. In multinational settings, this cultural layer is likely to be the difference between maintaining safety performance and recurring failure in compliance.

Recent research by DNV (2023) found that over 80% of food safety incidents worldwide were not triggered by system failure but by human or behavioral problems: lack of reporting of contamination, poor communication in audits, and inattention to hygiene protocols. In contrast, companies who consciously invest in FSC, via management, training, and feedback, have as much as 30% less audit nonconformity and improved supplier performance.

Original Insight: From Compliance to Culture-Driven Safety

Technical systems like HACCP or ISO 22000 will establish themselves on a homogenous organizational setting. However, the organizational culture surrounding those systems, the way frontline workers comprehend and react to their duties, determines the true safety outcome. A Swedish food processor and a Thai food processor may each have ISO 22000, but end up with drastically different results due to differences in labor behavior, management openness, and habits of communication.

This is a gap in terms of a primary need: building food safety not merely into documentation but into the

manner in which individuals think, speak, and act at different organizational levels.

1.2 Managing the Multinational Environment

Multinational food corporations possess special challenges developing a unified FSC across multicultural groups, geographically diverse sites, and alternate regulatory climates. A few of the greatest challenges are:

A. Diversity in Culture

Workforces tend to consist of employees from several ethnic, linguistic, and national backgrounds, each with their own assumptions regarding authority, hygiene, and accountability. Hofstede's cultural dimensions bring out the way uncertainty avoidance, collectivism, and power distance can impact safety behaviors. For instance:

- i. Workers from high uncertainty-avoidance cultures (e.g., Japan, South Korea) tend to perform well in formal SOP-based environments.
- ii. Lower uncertainty-avoidance society workers (e.g., Nigeria, India) may rely more on verbal guidance or improvisation, which can generate gaps if systems are not supported behaviorally.

B. Gaps in Communication

Language barriers and diverse communication styles increase training delivery and reporting incidents. English language standard safety training is mostly employed in the majority of facilities, even when it could be the second or third language among the employees. Misinterpretation of terms like "cleaning" and "sanitizing" can result in noncompliance with critical control points.

C. Hierarchical Constraints

In powerful-distance cultures (i.e., China, Mexico), employees are afraid to challenge management or voice concerns even when the issue is safety. This results in "silent failure," where frontline risk awareness never makes it up to leadership in time to prevent problems.

Case in Point: Culturally Aligned Training in North Africa

A European food manufacturer with operations in Tunisia and Morocco reduced failure of critical control points (CCP) by 27% after redesigning training procedures to fit local communication styles. Instead of top-down training modules, they implemented:

- i. Peer-coaching groups.
- ii. Training videos in Arabic dubbed into English.
- iii. Post-training storytelling sessions where employees shared anecdotes of food safety successes and failures.

This shift not only raised awareness but established psychological safety, allowing workers to voice concerns when they saw danger.

Original Contribution: Culture Mapping for FSC Implementation

Based on these results, we advise organizations to initiate all multinational FSC implementations with a Culture-Behavior Map, a diagnostic test quantifying:

- i. Risk perception by region
- ii. Preferred communication style
- iii. Level of formality in reporting
- iv. Employee comfort in questioning authority

This map enables customized rollout plans, preventing corporate standards from being lost in translation to culture.



CULTURE-BEHAVIOR MAP FOR FSC IMPLEMENTATION

II. ORGANIZATIONAL COMMITMENT AND LEADERSHIP (LEAD FROM THE FLOOR INITIATIVE)

Leaders' dedication to food safety is most effective when leadership behavior is visible, stable, and part of the daily routine. In multinationals, where top-down communications can be diluted by cultural and communications differences, leaders must demonstrate that safety is everyone's responsibility by being out on the floor.

A multinational confectionery launched a "Lead from the Floor" initiative. Top managers spent a half-day shift each month working alongside frontline workers, carrying out safety audits using a standard checklist and shadowing employee practices. Managers documented unsafe practices, provided on-the-spot training right away, and rewarded safe behavior formally at a weekly team meeting with a "Safety Star" award. This deliberate visibility not only made safety expectations tangible but also built a culture of collective responsibility.

The impact was measurable: within six months, nearmiss reporting increased by 40%, indicating better situational awareness and psychological safety of staff. Employees began to more proactively recognize and report issues, and safety became a routine topic in the daily huddles. This project demonstrates how leadership behaviors—when purposefully instilled can drive cultural change and radically improve the food safety performance of an organization.

2.1 Leading with Purpose: Beyond Management to Influence

Food safety leadership requires something beyond policy enforcement; it requires strategic influence. time and time again, research has shown that transformational leadership, which is characterized by inspiration, individualized consideration, and behavioral modeling, is more successful in FSC development compared to transactional leadership alone.

In one such landmark study of 70 Dubai restaurant outlets, food handlers scored higher on their managers as transformational (versus authoritative or passive) had higher levels of hygiene compliance, hazard reporting, and role ownership. These leaders were seen to conduct checks, acknowledge employee contribution, and initiate lines of continuous learning discussions, a credibility builder and emotional investment in safety outcomes.

Leadership Principle: People do what their leaders do, not what they say.

Original Insight: The '3V Leadership Framework' for FSC

We propose a "3V Leadership Framework" for roll-out of FSC in multinationals:

V	Description	Application
Visibility	Leaders are physically present in operations and inspections.	Walk plant floors weekly, attend safety briefings, do surprise spot-checks.
Voice	Leaders actively communicate food safety values and invite feedback.	Use multilingual channels (e.g., posters, WhatsApp groups) and create anonymous input forms.
Validation	Leaders recognize safe behavior and respond to safety concerns quickly.	Establish a "Safety Champion of the Month" reward or issue instant praise badges.

This strategy transforms leadership into a day-to-day cultural signal, not a once-a-year audit check list.

3V Leadership Framework



2.2 Embedding FSC Through Organizational Systems

Leadership is necessary, but it must be reinforced with ongoing management practices that involve employees at all levels in becoming owners of food safety. This includes:

- i. Role-Specific, Cyclical Training: Training is not an initial onboarding process, it must be recurrent and used. Supervisors, line workers, and sanitation workers all require role-specific content linked to a real task and updated by incident trends.
- ii. Transparency Communication Systems: Transparent reporting systems, like electronic incident logs or suggestion boxes, allow for early intervention. At low-reporting plants, anonymous electronic forms can increase participation without retaliation.
- iii. Empowered Teams & Peer Engagement: Crossfunctional food safety committees breed shared accountability. An international bakery company deployed "regional food safety squads" in each of their facilities. The benefit? A 15% improvement in audit scores and a measurable decrease in nearmiss incidents in the first year.

2.3 Global-Local Leadership Alignment: Making It Work Regionally

A common error in multinational strategy is to deploy global procedures without local tweaking. For example:

- i. A European FSC guide can attempt to emphasize direct reporting, but that format is counterproductive in confrontational-skeptical East Asian or Latin American cultures.
- ii. A West African factory succeeds with grouporiented motivation and narrative-based encouragement but falls behind when using only formal SOPs.

Successful firms create "FSC Ambassadors" - local champions trained in global norms - but also local nuances - who walk this bridge of cultural divide. These ambassadors are employed to interpret global instructions and serve as trusted go-betweens for factory workers.

Case in Point: Nestlé's Tiered FSC Leadership Model Nestlé's global food safety program has a unified three-tiered leadership model:

- i. Corporate Directors define global standards.
- ii. Regional FSC Leads interpret those standards to legal and cultural realities.
- iii. Site-Level Champions monitor behavior and allow peer-based interventions.

This model has allowed Nestlé to have all its plants certified to ISO 22000 while translating practice into local conditions, more and more from Peru to Poland to the Philippines.

In short, it takes leadership fueled by purpose, augmented by systems that cultivate trust, conversation, and local stewardship to create and solidify a resilient FSC. Multinational organizations that invest in people, rather than policies, instill a culture in which food safety is a shared value, not a mandate.

III. MULTICULTURAL DYNAMICS (PICTORIAL SOPS AND PEER MENTORING)

In food processing multinational environments, cultural diversity introduces variable literacy levels, language skills, and learning styles that directly influence food safety training outcomes. To bridge these gaps, organizations must customize communication and training methods to fit the linguistic and cultural landscape of the workforce.

A European dairy processor created image-based Standard Operating Procedures (SOPs) with minimal text and translated root terms into three common languages used throughout their multicultural employees. These SOPs also included QR codes that linked to brief video tutorials, allowing employees to visually observe proper food safety procedures in real time. In addition to visual tools, the company implemented a peer mentoring program where new hires were paired with experienced workers who shared the same cultural or linguistic status. The mentors guided them through safety protocols, retaught them key behaviors, and provided continuous informal advice.

The result was a 30% increase in training retention scores within a three-month period, as indicated through post-training exams and observed performance at shift checks. Employees reported greater confidence in the application of food safety processes, and managers observed reduced misconceptions at audit. This approach modeled how safety communication can be adapted to suit cultural realities and thus significantly improve knowledge transfer, participation, and permanent behavior change on the shop floor.

3.1 Cultural Diversity: A Superpower or a Barrier? Multinational factories attract a quilt of nationalities and cultural perspectives. That diversity is stimulating for creativity and responsiveness, but it introduces conflicting norms about cleanliness, responsibility, hierarchy, and communication.

A research conducted by Foods Journal (2023) found variations in food safety knowledge among food handlers of the Philippines, Egypt, and India, even where they work for the same Kuwaiti food service firm. Though Filipino employees scored high on sanitation procedure knowledge, Indian employees struggled with identifying pathogens, and Egyptian employees scored low on time-temperature controls. These were not knowledge gaps, these were experience and cultural awareness gaps.

Awareness: Food safety isn't taught the same way everywhere. It's not a knowledge gap, it's a framing gap.

What to do instead:

- a. Conduct cultural audits alongside technical audits. Don't just check procedures, check perceptions.
- b. Avoid one-size-fits-all training. Create modular, culture-specific learning that adapts by region.
- c. Build cultural "bridges," not walls, capitalize on cultural strengths (e.g., narrative in Africa, learning in groups in Asia).

3.2 Communication Barriers: When Safety Gets Lost in Translation

Even the most well-planned safety procedures disintegrate if employees fail to comprehend them, or worse, don't feel safe reporting issues. Language differences, indirect communication, and fear of management can foster systemic silence.

Typical problems in international plants:

- i. Safety terminology such as "cross-contamination" or "critical limit" is lost in translation if translated poorly.
- ii. In power-distance cultures, employees might consider reporting an error as a lack of respect.
- iii. Verbal commands may be forgotten or misplaced if there is no visual reference.

Within cross-cultural assessment of three South American food crops, usage of pictogram-led instructions (allergen alerts, hand sanitizing) boosted task accuracy by 18% in 90 days.

Action Framework: The "CLEAR" Communication Strategy for FSC

We propose the CLEAR model to fix communication problems in multicultural teams:

Letter	Principle	Practical Application
С	Clarify concepts visually	Use icons, animations, and real photos in SOPs.
L	Localize the language	Translate training into workers' first language, use interpreters if needed.
Е	Empower peer mentorship	Pair new hires or low-literacy staff with veteran employees.
A	Ask for feedback	Use anonymous digital forms, QR codes, or team debriefs to gather insights.
R	Reinforce with consistency	Use reminders (posters, signals, digital nudges) daily,

Letter	Principle	Practical Application
		not just during audits.

Case in Point: Multilingual FSC Training in Malaysia A multinational poultry processor with facilities in Thailand and Malaysia had audit failures due to temperature control. In an investigation, it was found that Tamil-speaking employees got confused between Celsius and Fahrenheit since only Malay and English languages were included as training materials. The company:

- i. Implemented multilingual graphics.
- ii. Placed NFC tags on refrigerators that flashed correct temperature ranges.
- iii. Hired a bilingual "food safety coach" by shift.
- iv. Outcome? A 22% reduction in cold chain mistakes in less than six months.

IV. TRAINING AND ONGOING LEARNING (ADDIE MODEL)

Effective training is a key to food safety culture in the multicultural multinational plant where levels of education, language comprehension, and learning patterns by culture vary. The ADDIE model—Analysis, Design, Development, Implementation, and Evaluation—is a strategy for planning competency-based training. With intent, it ensures training aligns with specific job functions, risk levels, and cultural dynamics.

But whereas the ADDIE model is so effective at structuring training content, a major flaw of much existing research is that it focuses too little on behavioral change and long-term skill maintenance. Much conventional food safety training overemphasizes knowledge transfer over measurable changes in work-related behavior.

To address this deficit, organizations can add behaviorally grounded improvements to the ADDIE process:

- i. At the Design and Development stage, use microlearning modules with routine low-stakes quizzes to engage and reinforce.
- ii. Use spaced repetition and scenario-driven simulations that mimic real production difficulties.
- iii. At Implementation, add on-the-job coaching and peer-to-peer feedback loops, especially following critical control point (CCP) events or near misses.
- iv. At Evaluation, go beyond test scores by monitoring outcomes related to behavior—such as reductions in deviation, increases in near-miss reporting, or supervisor observational data.

Through the improvement of the traditional ADDIE model through continuous reinforcement, learnercentered customization, and behavior focus, companies can shift from transferring information to changing habits—a transformation necessary for ensuring food safety within high-risk, high-speed environments.

4.1 Building Effective Programs: Applying the ADDIE Model

The ADDIE Model (Analysis, Design, Development, Implementation, Evaluation) is an effective model for instructional design, but it gets underutilized or abused in manufacturing environments. Here's how it's utilized in the example of FSC training for a multicultural, high-pressure food plants:

	Survey workers anonymously to identify knowledge gaps (e.g.,	
Analysis	allergen cross-contact, surface	
	sanitization). Segment data by	
	role and language group.	
	Map training modules to the	
	highest-risk behaviors.	
Design	Incorporate visual learning,	
	voiceovers in native languages,	
	and culturally relevant examples.	
	Use short, mobile-friendly	
	microlearning modules with	
Development	built-in quizzes. Create scenario-	
	based activities simulating real	
	production-line risks.	
Implementation	Integrate training into the shift	
implementation	schedule. Use peer trainers and	

© JUN 2025 | IRE Journals | Volume 8 Issue 12 | ISSN: 2456-8880

	supervisors as facilitators, not just HR.
Evaluation	Measure through audits, direct observation, and real-time performance metrics (e.g., hygiene nonconformance, CCP violations). Adjust in real-time.

4.2 Behavioral Reinforcement: Knowledge to Habit Training alone won't be enough if it doesn't transform everyday behavior into habit. And stress, exhaustion, and repetition in high-speed production settings make even trained workers take shortcuts. The solution? Reinforce behavior with tools from behavioral psychology.

Tactics That Work:

1. Storytelling: Employ actual case studies during toolbox talks, especially ones from that facility or region. People stories stick longer than statistics.

2. Feedback Loops:

- Managers need to give timely, constructive feedback, "Good job logging the temp. You caught the out-of-range early."
- Use visual feedback like green/red charts, shift performance graphs, or emoji boards for cleanliness points.

3. Recognition Programs: Reward the behaviors correctly.

- Monthly "Food Safety Hero"
- Team rewards for passing audits or zerocontamination weeks
- Spontaneous surprise announcements from plant managers

4.3 Tech-Enabled Learning: Not Harder, Smarter With thin margins and high turnover, training must be fast, effective, and scalable. Technology tools facilitate that.

What's Working in the Field:

i. Digital Training Platforms (e.g., Alchemy, SafetyCulture): Set learning paths, monitor completions, and send reminders automatically.

- QR Code Learning Stations: Display QR codes on equipment or in areas of hygiene that connect to 60-second videos describing proper use or how to clean.
- iii. IoT-Triggered Nudges: Upon triggering a CCP (such as temp violation), a screen auto-plays the proper response video in the area.

Nestlé's São Paulo factory saw a 40% reduction in protocol deviation after integrating just-in-time digital reminders into high-risk areas.

4.4 From Training to Continuous Learning Culture The goal isn't training, it's organizational learning. That means:

- a. Keeping food safety an everyday discussion, not an annual recap.
- b. Equipping frontline workers with the ability to train others, not simply to be trained.
- c. Dealing with each incident and near-miss as an opportunity to learn, not as something to discipline.

When learning is continuous, food safety is muscle memory, not just memory.

TRAINING AND CONTINUOUS LEARNING



V. SYNTHESIZING TECHNICAL AND BEHAVIORAL STRATEGIES

Food safety success relies as much on systems and procedures as it does on the way people apply them uniformly. While technical systems like HACCP and ISO 22000 do offer a sound structural foundation for identifying and controlling hazards, they falter when the variable is human behavior. In practice, even rigorously designed systems can fall apart if staff cut corners, misunderstand expectations, or choose convenience over procedure.

It is here that worth is added by behavioral science models, such as the Antecedent-Behavior-Consequence (ABC) model. The ABC system determines what drives dangerous behavior, how it evolves, and what punishment or reward reinforces or discourages it. In adding this model to technical systems, food safety professionals are able to not only set standards—but actually shape behavior to meet them.

However, the primary limitation in existing food safety literature is the partial utilization of behavioral science in food safety training and audit procedures. Formal education in behavioral psychology is received by most food safety professionals, and thus they are educated to spot procedural flaws but not diagnose or address the human factors that cause the flaws. This disconnect does not allow them to translate procedures into long-term behavioral change.

In order to rid itself of this gap, organizations must:

- i. Invest in foundational behavioral science training for front-line supervisors, QA managers, and safety leaders.
- ii. Embed behavioral audits into technical audits not just whether a step was done, but why it was left out or done incorrectly.
- iii. Implement digital tools (e.g., real-time alerts from CCPs) coupled with feedback systems that positively reinforce correct behavior through coaching, recognition, or praise.
- iv. Establish cross-functional FSC teams with behavioral skills, not just compliance or quality experts.

Furthermore, current research is still frail in quantifying the impact of combined behavior and technical systems on long-term food safety performance. Future studies should aim to measure how interventions informed by behavioral science (e.g., real-time coaching, feedback loops, and peer modeling) combine with systems like HACCP in reducing deviations and improving audit outcomes.

By filling these gaps, the food industry can begin to move toward an integrated approach that treats culture as more than a soft science but rather as a quantifiable driver of food safety results.

5.1 Technical Tools: Structured but Incomplete Without People

Tools like Hazard Analysis and Critical Control Points (HACCP) and ISO 22000 provide essential blueprints for identifying, minimizing, and verifying hazards. They enable traceability, standardization, and global credibility. But they do not ensure that human beings, stressed, fatigued, or poorly trained, will use them.

How Multinationals Utilize These Tools:

- i. HACCP: Used to establish CCPs and define critical limits (e.g., cooking temperature of 75°C for chicken).
- ii. ISO 22000: Incorporates food safety as a company-wide management objective, linking PRPs, risk assessment, and internal auditing.

Example: An international dairy company in France implemented electronic HACCP checklists on tablet computers along the production line. This reduced paperwork errors by 60% and helped supervisors identify gaps in near real-time. Deviations still occurred, due to "assumed knowledge" and frontline disengagement, not system flaws. Our company is implementing the ISO 22000.

5.2 Behaviour Models: FSC's Blind Spot

This is where the science of behaviour comes in. Understanding why workers follow or fail to follow food safety protocols, given that they have been trained, is critical.

The ABC Model (Antecedent \rightarrow Behaviour \rightarrow Consequence) is a behavioural psychology tool

 Element
 Description
 FSC Example

 What prompts
 Signage, training,

adapted for industrial safety and now commonly used

	1	1
Antecedent	What prompts the behavior	Signage, training, digital alert
Behavior	The actual action taken	Washing hands before entering production
Consequence	What happens after	Verbal praise, recorded compliance, or lack of feedback

Behavioral Insight:

Compliance with handwashing in a U.S. poultry plant dipped 35% at busy times. Insertion of motion-sensing reminder lights and a reward board increased compliance to 90% in a month, no retraining required.

Truth bomb: We don't need more rules. We need smarter cues, stronger consequences, and faster feedback.

5.3 Integrated FSC: Marrying Tech and Behavior in Real Time

Let's no longer keep technical and behavioral approaches as distinct silos. This is how leading food manufacturers merge both in everyday activities:

Strategy	Technical Element	Behavioral Reinforcement
Digital HACCP	Real-time logging of CCPs via tablets	Instant feedback and alerts for supervisors to intervene
IoT Temperature Monitoring	Automated alerts when fridges exceed limits	QR-code-linked videos that show what actions to take
ISO Audit Feedback	Identifies PRP or system gaps	Turn audit results into peer-led improvement sprints
E-learning Platforms	Role-specific, scalable training	Gamification, badges, and leaderboards to boost engagement

Case in Point: Mars Global Safety Pilot

Mars Wrigley launched a pilot on 3 continents, integrating behavior-based safety observations (BBSO) with HACCP logs. Supervisors were asked to observe hand washing, PPE wear, and equipment disinfecting, neither to scold nor to criticize, but to coach in the moment.

After 6 months:

- a. Audit scores increased by 18%
- b. Repeat non-conformities decreased by 35%
- c. Employee-reported issues doubled (a sign of increased psychological safety)

Original Contribution: The Dual Lens FSC Model We present the Dual Lens Model for FSC:

- a. Process Lens: What the system is supposed to do (SOPs, audits, certifications)
- b. People Lens: What actually occurs day-to-day (habits, perceptions, accountability)

Actual food safety culture is carried out when both lenses are aligned, monitored, and continually improved.

VI. ECONOMIC IMPACTS OF FOOD SAFETY CULTURE (FSC)

Food manufacturing safety failures don't just cost compliance fines, they result in damaged brands, expensive recalls, and lost consumer confidence. Building a mature Food Safety Culture (FSC) isn't just the right thing to do; it's a bottom-line choice that provides tangible cost savings and competitive advantage.

6.1 Cost of Quality (CoQ): What FSC Truly Saves

The Cost of Quality (CoQ) model allocates costs into four buckets:

- i. Prevention Costs: Risk assessment, training, audits
- ii. Appraisal Costs: Inspections, third-party certification, quality checks
- iii. Internal Failure Costs: Rework, waste, batches rejected
- iv. External Failure Costs: Brand damage, legal action, complaints, recalls

More mature FSCs will invest more in prevention and appraisal, but a lot less in failure costs.

Real Data:

A pilot study of five EU food manufacturers (2024) found:

Company	FSC Score	Prevention Cost (% of sales)	Failure Cost (% of sales)
A (High FSC)	91/100	4.1%	1.3%
B (Low FSC)	52/100	1.2%	5.9%

6.2 Return on Investment (ROI): Culture as a Competitive Asset

Compliance and cost aside, robust FSC is now a competitive differentiator. Consumers are increasingly demanding transparency, ethical behavior, and safety assurance. FSC translates directly to brand equity.

Tangible ROI Benefits:

- Less Recalls: One Canadian GFSI-certified business indicated it had reduced product recalls by 74% within 2 years of implementing FSCreform based reforms.
- ii. Faster Crisis Recovery: Brands that are wellperforming and have strong FSC recover from crises sooner. (Chipotle took over 2 years following the crisis. Try comparing with companies like Nestlé and Danone who responded through culture rebooting and transparency within less than 6 months.)
- iii. Retail & B2B Leverage: FSC maturity is a rising standard qualifier in private label and retailer contracts. Several retailers now insist on a FSC audit as well as technical audits.
- iv. Talent Retention: Organizations with a culturefirst approach have lower turnover rates. Turnover among line workers decreased 22% in facilities that had formalized FSC engagement programs in one study.

6.3 The Hidden Cost of Cultural Neglect

Companies are willing to invest large sums in technology and systems, but forget the human factor. That's where the hidden costs creep in:

- a. Silent Noncompliance: Employees shun problems out of fear or confusion.
- b. Poor Training: Misadjusted materials waste time and fail to change behavior.

c. Wasted Productivity: Firefighting to correct past mistakes takes the place of forward-thinking safety planning.

Bottom Line: Culture differences cost you in ways an audit can't measure, but customers will.

Case in Point: Kellogg's Lean + Culture Strategy Kellogg's instilled FSC in its global Lean Manufacturing program. By linking FSC KPIs with OEE (Overall Equipment Effectiveness) and visual behavior dashboards, they:

- i. Reduced total quality losses by 19%
- ii. Decreased external complaints by 31%
- iii. Improved employee suggestion submissions by 400% within one year

Original Insight: FSC Investment Multiplier Curve We present the FSC Investment Multiplier Curve:

- i. Phase 1 (Ignorance): Low investment, high risk
- ii. Phase 2 (Compliance Focus): Reactive spending on failures
- iii. Phase 3 (Proactive Culture): Strategic investment in people/process
- iv. Phase 4 (Integrated FSC): FSC fuels profitability, brand equity, and agility

VII. MEASURING AND CONSTRUCTING FOOD SAFETY CULTURE (FSC) MATURITY

Good Food Safety Culture (FSC) does not materialize overnight, it is constructed, experimented with, recalibrated, and consolidated in the long term. To accomplish that, multinationals food business corporations must adopt systemically based maturity models with measurable indicators and geographically targeted strategies. You cannot repair what you do not measure.

7.1 Measurement: From Guesswork to Benchmarking High-performing companies leverage formal FSC maturity tools to move beyond gut feel and towards evidence-based culture metrics.

Best FSC Assessment Tools:

© JUN 2025 | IRE Journals | Volume 8 Issue 12 | ISSN: 2456-8880

- i. Surveys & Pulse Checks: Monitor employee sentiment, safety ownership, and psychological safety (anonymous, mobile-friendly best practice).
- ii. Behavior-Based Audits: Get beyond paperwork, inspect hygiene habits, PPE wearing, decisionmaking in high-stress scenarios.
- iii. KPI Monitoring: Combine traditional metrics (e.g., recalls, audit scores) with behavior-based measures (e.g., near-miss reporting, training participation, peer observations).

Case Example

A global snack brand deployed a biannual FSC pulse survey translated into 7 languages. Within one year:

- i. Near-miss reporting increased 300%
- ii. Self-initiated hygiene audits jumped 45%
- iii. Sites with highest engagement scored 15% better in third-party certifications

7.2 Popular FSC Maturity Models GFSI's FSC Maturity Model Breaks culture into five pillars:

- a. Vision & Mission
- b. People
- c. Consistency
- d. Adaptability
- e. Hazards & Risk Awareness

Each pillar is rated from "Beginning" to "Leading", helping organizations benchmark and plan next steps.

PAS 320 Framework (BSI, 2022)

A public standard definition to assist organizations in measuring, defining, and improving FSC. It's handy, proven, and audit-ready.

Important Insight: Organizations overestimate their FSC maturity. In the absence of third-party verification or open internal critique, blind spots remain hidden, and dangerous.

7.3 One Size Does Not Fit All: Customizing Strategy Not every site needs the same interventions. What works for a 1,200-employee factory in Brazil may not work for a 45-employee bakery in the Netherlands. That's why post-assessment plans must be customized by local dynamics, including:

Variable	Why It Matters	Tailored Approach
Company Size	Larger orgs need systems; smaller ones thrive on team culture.	Large: Audit dashboards + e- learningSmall: Toolbox talks + daily huddles
Employee Literacy	Impacts training and signage effectiveness	Use more visuals, local dialects, hands- on demos
Cultural Norms	Affects reporting, feedback, and hierarchy	Adapt reporting systems and coaching methods

7.4 Continuous Improvement: FSC as a Living System FSC doesn't stand still, it needs to change with people, technology, and world threats. Here's how leading organizations keep momentum:

- i. Set FSC Goals Quarterly: Not only "train everyone," but "reduce deviation incidents by 15%," or "increase near-miss reports by 25%."
- ii. Assign Responsibility: FSC maturity is included in site managers' KPIs, supervisors', and even frontline team leads'.
- iii. Failures as Fuel: Leverage incidents as opportunities to learn. Turn digressions into weekly team debriefs with activities on problemsolving.

Case in Point: Danone's FSC Maturity Lifecycle Danone employed a 3-stage lifecycle:

- i. Assess All the sites conduct annual FSC selfassessment + third-party audit.
- ii. Activate Based on results, local teams implement interventions (training, digital assets, peer audits).
- iii. Advance Benchmarking websites are asked to coach others and co-chair local FSC forums.

In 18 months:

- a. Incident reports increased by 220% (a gauge of greater transparency)
- b. ISO 22000 compliance problems decreased by 37%
- c. Employee engagement surveys ranked FSC as one of the top 3 strengths

Bottom Line: The strongest food safety cultures don't develop overnight – they build iteratively. Measured. Customized. Repeated.

CONCLUSION

In an industry where a single error can trigger recalls, lawsuits, and long-term reputational damage, the cultivation of a strong Food Safety Culture (FSC) is no longer a compliance wish, it is a strategic imperative. As has been demonstrated throughout this article, in multinational food manufacturing operations, creating a lasting FSC requires more than SOPs, certificates, or audits. It demands an integrated combination of leadership, behavior, culture, and systems.

We began by redefining FSC not as a passive byproduct of organizational behavior but as a measurable, manageable, and improvable force that must be deliberately cultivated. From operating across cultural diversity to working beyond language barriers, every section made it evident that FSC must be contextual, not procedural. It's about the way people think and act, not what they are instructed to do.

Leadership became a cornerstone, whereby influence rather than power underpins the day-to-day decisions that affect food safety. Using models like the 3V Framework and CLEAR communication skills, we offered organizations practical pathways to lead culture change, even across oceans.

Training and behavioral reinforcement were brought to the next level from checkbox activities to dynamic, technology-enabled systems of continuous learning and feedback. Merging legacy systems like HACCP and ISO 22000 with behavior-based solutions like the ABC model demonstrated that the real power is in the connection of process to people.

Economically, we debunked the myth that FSC is a cost burden. With models like the FSC Investment Multiplier Curve, real-world data showed that companies with mature safety cultures have measurable decreases in the cost of failure, faster recovery from incidents, improved brand equity, and even employee retention.

Next, we closed the loop with FSC maturity assessment models, showing how world-class organizations don't just measure their culture once, but continuously. Models like PAS 320 and GFSI's fivedimensional model are what transform safety culture from an intangible concept into a concrete, strategic asset.

Key Takeaway: In food manufacturing, systems may set the standard, but culture dictates the outcome.

As the global food industry grows more complex, digitized, and regulated, the most effective companies will be those that not only institute safety systems, but instill safety values. For multinational manufacturers seeking resilience, reputation, and results, food safety culture isn't a department, it's a differentiator.

REFERENCES

- [1] Spagnoli, P., Defalchidu, L., Vlerick, P., & Jacxsens, L. (2024). The Relationship between Food Safety Culture Maturity and Cost of Quality: An Empirical Pilot Study in the Food Industry. Foods, 13(4), 571. https://doi.org/10.3390/foods13040571
- British Standards Institution (BSI). (2023). PAS
 320:2023 Developing and Sustaining a Mature
 Food Safety Culture: Guide.
 https://webstore.ansi.org/standards/bsi/pas32020
 23
- [3] Global Food Safety Initiative (GFSI). (2023). GFSI Annual Report 2023. https://mygfsi.com/wpcontent/uploads/2024/08/GFSI-Annual-Report-2023.pdf
- [4] Jacxsens, L. (2024). Food Safety Culture: The Human Dimension in Food Safety. https://scicom.favvafsca.be/scientificcommittee/symposia/2024/_d ocuments/FS6-FSChumandimension-L.Jacxsens.pdf
- [5] FDA. (2025). Collaborating on Culture in the New Era of Smarter Food Safety. https://www.fda.gov/food/workshops-meetingswebinars-food-and-dietarysupplements/collaborating-culture-new-erasmarter-food-safety-01292025

- [6] QAssurance. (2024). Food (Safety) Trends 2024. https://www.qassurance.com/food-safetytrends-2024/
- [7] Food Safety Magazine. (2024). Food Safety Culture: Moving from Checklist to Practice in 2024. https://www.foodsafety.com/articles/9102-food-safety-culturemoving-from-checklist-to-practice-in-2024
- [8] ScienceDirect. (2024). A Multi-Case Study Exploring the Effect of Interventions on Food Safety Culture Improvement. https://www.sciencedirect.com/science/article/a bs/pii/S0963996924013565
- [9] ScienceDirect. (2024). Food Safety Culture Maturity and Its Relation to Company and Employee Characteristics. https://www.sciencedirect.com/science/article/pi i/S2405844023087698
- [10] MDPI. (2024). A Comprehensive Review of Food Safety Culture in the Food Industry. https://www.mdpi.com/2304-8158/13/24/4078
- [11] Keywords: Food Safety Culture, Multinational Food Manufacturing, Transformational Leadership, HACCP, ISO 22000, Behavioral Safety, Cultural Diversity, Digital Tools, Continuous Improvement