

The ROI of Digital Food Safety Management

Most restaurants and foodservice operations may be missing a key ingredient in boosting their business performance, even though it's sitting right in front of them: their food safety management system (FSMS).

Indeed, the right FSMS isn't the sunk cost that itself eats into profit that many operators believe. Instead, the right system working in the right way can drive quantifiably better returns on investment (ROI).

"Food safety management systems improve business operations," says Dr. Hal King, managing partner at Active Food Safety and an Associate Professor of Public Health at the University of George College of Public Health.

"Something that can prevent foodborne illness can also potentially manage labor and reduce food waste."

Even better, multiple studies show that food safety improvements are associated with increased revenues. As a result, smart brands and restaurant operators can actually use their food safety systems to extract more profit and better performance from their stores.

But how does an FSMS reliably generate this positive ROI? Answering that question is a major challenge. Every foodservice operation would love to be able to quantify the ROI of their food safety tools. But *how*?

1

Save inventory from being lost because equipment goes down.

A strong food safety management system will also reduce the cost of doing business for a foodservice operation – sometimes dramatically. Here, however, the specific nature of the FSMS begins to play an even more pronounced role. That’s because it’s digital systems specifically that can incorporate automated processes, speed up human food safety practices, and reduce risk of error. The result provides a wide variety of cost savings.

That starts with saving inventory. If an operation discovers too late that a cold-holding unit has been malfunctioning, they might have to dispose of – and then replenish – inventory worth hundreds, thousands, or even tens of thousands of dollars (USD) just to continue operating.

Indeed, failures like broken compressors, power outages, or even human error alone can directly cause catastrophic failure or hasten the equipment’s end of life. Realistically, equipment failure is all but guaranteed at some point. Most commercial operations can expect some form of catastrophic

failure (meaning all inventory would ordinarily be lost) once every three to five years.ⁱ The costs of lost product can aggregate quickly: simply multiply the risk by the number of cold-holding units in the operation. Increase the risk if the operation has no means to monitor temperatures and alert operators in real-time.

As a result, many foodservice operations are blindsided when equipment actually fails, resulting in enormous losses. According to the National Restaurant Association, **the average restaurant loses 4% to 10% of the food they purchase.**ⁱⁱ Cutting that figure by even a few percentage points can yield huge dividends.

An automated FSMS that monitors temperatures can alert operators to malfunctions and failures *before* product has to be discarded. Even if equipment fails, inventory can be saved. No wonder one study found that for every \$1 invested in reducing food loss and waste, organizations save \$14.ⁱⁱⁱ **The ROI speaks for itself.**

Example Product Loss ROI Calculation

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Determine hardware cost based on number of cold-holding units.	Determine annual subscription based on the total number of sensors.	Determine product value based on amount of inventory stored.	Determine the average failure rate of the cold-holding equipment.	Amortize the preventable inventory loss according to the failure rate.	Compare aggregated costs over time vs. aggregated savings.
4 locations ~ \$3k	20 sensors ~ \$2,500	Avg. \$7k per unit = \$28k	Typically 60 months	~ \$467 per month	ROI achieved in 12 months

For a full explanation of this breakdown and a more comprehensive online ROI calculator that can estimate the amount and timeframe of *your* return on investment, visit www.compliancemate.com.

2

Complete food safety processes faster, saving significant labor and time.

A digital solution can cut staff time spent recording temperatures by more than half. It's not just the checks that move faster, either. A good FSMS increases the accuracy and quality of the checks by minimizing human data entry and incorporating controls against mistakes and fraudulent entries.

Altogether, if a store normally takes 90 minutes per day to conduct its normal food safety monitoring via paper-and-pen and manual checks, a digital HACCP FSMS can potentially collapse the time spent to 45 minutes while incorporating even more checks than possible to conduct and record via paper.

That enables workers to **spend less time on food safety tasks and more on other key areas of the business, like operational workflows, customer service, and business growth.**

Key drivers of the reduction in labor include:

- Switching from manually logging refrigeration temperatures to automatically checking them
- Corrective actions that guide the user on appropriate measures to take, which saves time of tracking down the knowledge needed to fix the problem
- Optimized checklists that take only seconds per item, compared to pencil/paper logs that can take up to a minute per item
- Digitized and customizable workflows that streamline kitchen processes

All of this can also reduce time spent on the *aftermath* of issues arising from food safety and quality failures. A major study between US Foods (formerly U.S. Foodservice) and the University of Michigan's Ross School of Business researched the impact of a new food safety program at US Foods. Researchers estimate that a large-scale company with 25,000 employees **would see an estimated \$3.5 million in savings each year due solely to the reduction in receiving and handling complaints.**

Example Labor Savings ROI Calculation

Step 1	Step 2	Step 3	Step 4	Step 5
Determine hardware cost based on number of tablets & probes.	Determine time spent on checklists (daily hours x 30 days).	Determine your average wage rate (e.g., \$12 per hour) to find labor cost.	Calculate time savings from using digital checklist solution.	Compare aggregated costs over time vs. aggregated savings.
3 locations ~ \$1,200	0.5 hrs/day x 5 lists x 30 days = 75 hrs/mo.	75 hrs/mo. x \$12/hr = \$900/mo.	50% time savings = \$450 saved per month	ROI achieved in 2 months

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These kinds of savings are digital-dependent. Analog food safety processes aren't enough.

The most important factor in reducing food safety compliance issues and generating operational efficiencies is the daily execution of a digital FSMS that uses automation, smart tools, and cloud-based monitoring and alerting functions. This requires a solution that allows foodservice operations to manage and monitor food safety at all times from any cloud-connected device, because it's not possible to get to that level of assurance of safety by paper checklist alone. Remember:

- Paper-based systems are not adequate to protect against negative outcomes or to facilitate positive ROI.
- The FSMS needs to be able to capture all relevant information in real-time and alert the supervisor or owner to the problem if corrective action isn't taken by staff.

3

Prevent the financial & reputational losses related to a foodborne illness outbreak.

A serious foodborne illness outbreak can be business-ending, especially for smaller chains and independent restaurant operations. But even if a food safety incident doesn't put the brand totally out of business, it will leave them bleeding money. Such outbreaks incur a wide range of costs, including:

- Productivity losses from workers too sick to work
- Health department inspection fees and fines
- Hospitalization and healthcare costs
- Consumer litigation and legal fees
- Worker retraining costs
- Risk-related insurance premium increases
- Lost revenue due to lost customers

That last point may be the most important: **a good FSMS is critical to retaining customers in the first place.** No one goes back to a restaurant where they got sick, and neither will any of their friends, family members, or contacts who hear about the outbreak through channels like social media or the news. But it is the totality of costs that are truly devastating, and most foodservice operations likely underestimate the

sheer extent of costs they'd face in the aftermath of a foodborne illness event. A 2018 study published in the journal *Public Health Reports* simulated foodborne illness outbreaks of varying sizes to determine what costs they would incur.^{iv}

Researchers from the John Hopkins Bloomberg School of Public Health found that costs ranged from almost \$4,000 up to \$2.6 million, depending on how many customers fall ill, the degree of impact on the organization, and the type of operation (fast food, fast casual, casual dining, or fine dining). See the chart on the next page.

"Even a small outbreak involving five to 10 people can have large ramifications for a restaurant," says Sarah M. Bartsch, research associate at the Global Obesity Prevention Center (GOPC) and lead author of the study.^v In other words, even a smaller outbreak that results in only five consumers getting sick, with no loss in revenue, no litigation or legal fees, and no regulatory fines or penalties, can *still* result in thousands of dollars in costs.

Example Aggregate Costs of Foodborne Illness (Fast Casual Restaurant)

	Severity of Outbreak (No. of Customers Who Fall Ill)					
Outbreak Impact	5	15	50	100	150	250
Very Low Impact	\$6,330	\$6,504	\$7,183	\$8,113	\$9,121	\$11,085
Low Impact	\$37,750	\$37,940	\$38,579	\$39,592	\$40,571	\$42,470
Moderate Impact	\$146,248	\$152,214	\$173,027	\$202,886	\$232,542	\$292,467
High Impact	\$1,773,644	\$1,786,000	\$1,829,056	\$1,890,279	\$1,952,502	\$2,075,028

As the impact of the incident grows, the costs skyrocket.

Costs associated with a foodborne illness outbreak can skyrocket very quickly. With a 250-person outbreak and 100 meals lost per illness, for example, costs could be as much as \$2.2 million for a casual-dining restaurant, and \$2.1 million for a fast-casual restaurant, amounting to an estimated 101% of annual profits and revenue.

"Many restaurants may not realize how much even just a single foodborne illness outbreak can cost them and affect their bottom line," says Bruce Y. Lee, MD, MBA, executive director of the GOPC. "Paying for and implementing proper infection control measures should be viewed as an investment to avoid these costs which can top a million dollars. Knowing these costs can help restaurants know how much to invest in such safety measures."

Many owners and executives at restaurants and other foodservice organizations harbor a view of food safety that belongs to an era long past. "Thirty years ago, if you had a little problem, you were not going to get discovered," says David Acheson, former associate commissioner for foods at the U.S. Food and Drug Administration. "Now the chances of

getting caught are significant, and it can be the end of your company."^{vi}

These aren't even all the associated costs. Often, the greatest expense in the aftermath of a foodborne illness incident is in *marketing*, as the brand must pour resources into sustaining and reviving a battered reputation.

Many restaurants may also see a reduction in food safety claims and possibly insurance premiums thanks to a more effective FSMS, due either (or both) to better food safety practices and stronger documentation showing the foodborne illness claim was not due to the activities of the restaurant.

According to one study, insurance rates can increase by as much as 75% after a foodborne illness outbreak.^{vii}

More specifically, while a "very low impact" event might result in only a minor 5% insurance increase on top of a modest annual insurance premium of \$545 for a small restaurant operation, a large operation with a \$6,280 annual insurance premium experiencing a "high impact" event could see insurance rates nearly double.

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Bruce Y. Lee
Executive director of the GOPC

Reduce infrastructural and facility costs.

Restaurants use approximately 2.5 times more energy per square foot than other commercial facilities, so even incremental savings in this area can add up quickly.^{viii}

The smart sensors associated with digital FSMS programs can play a key role. *Science Daily* reports, "Advanced sensors and controls have the potential to reduce energy consumption of buildings by 20-30 percent."^{ix} That's because the electric motors in equipment like cold-holding units are typically designed to run at somewhere around 75% of rated load for maximum efficiency; but they often don't, and if the equipment goes above or below that, efficiency plummets. Sensors can help operators track spikes or drops in energy consumption and determine if equipment is being run optimally over time, reducing electricity costs.

The same system that can reduce power consumption can also protect equipment against failure and unnecessary wear-and-tear. In other words, as with electrical performance, an FSMS that produces equipment temperature and condition readings in real-time also makes it possible to identify wear-and-tear by monitoring temperature and performance fluctuation over time through a central

dashboard providing up-to-date, real-time temperature readings of all units.

At a glance, executives and sector leaders can view a graph line of equipment temperatures over a given period. They can see how often coolers go into defrost mode and can identify average temperatures over time. For example, if the average daily temperature of one unit was 36°F four months ago, but now it's 40°F, they can see that unit is struggling in one way or another, and they can act before it fails.

It's data collection that's key. Only with appropriate data can organizations perform root cause analysis to determine if the underlying problem is behavior-, process-, or equipment-related.

The ongoing costs of maintaining and running cold-holding equipment can be a significant fraction of the total cost of ownership of the equipment. "When you spend \$60,000 to \$70,000 for a piece of equipment, saving \$10,000 to \$20,000 on energy or maintenance over the course of its service life is significant," Dipak Negandhi, senior engineer, Unified Brands and a member of NAFEM's Technology Liaison Committee, told *Foodservice Equipment & Supplies Magazine*.^x



Measurably increase revenues and boost overall business performance.

The ROI of food safety is not just about cost reduction and risk mitigation; smart food safety programs will actually strengthen revenue generation.

“If you’re reducing all your risk factors, customers react differently,” says Dr. King. “The business benefit is not just about when the health department comes in, does its health measures, and gives better health scores. You should also get better purchase intent from customers, and sales should go up.”

Research backs up that assertion. A major study between US Foods (formerly U.S. Foodservice) and the University of Michigan’s Ross School of Business researched the impact of a new food safety program at US Foods. Designed to bring all food safety operations in line with standards set by International Features Standards (IFS), US Foods wanted to know if the new process would also bring about better business results.

According to the research, the answer was a resounding yes.

“The results of the study showed a strong correlation of certification and performance,” says Frank Ferko, US Foods Director of Distribution, Food Safety and Quality Assurance.^{xi}

Specifically, the study found that meeting IFS food safety certification guidelines:

- Reduced customer complaints by 23%,
- Reduced the amount of labor needed to handle those complaints commensurately, and

- Increased sales revenue by 2%, likely thanks to an increase in consumer confidence.

It’s likely that US Foods’ increased sales revenue reflects a conservative gain compared to what’s possible at restaurants, because consumer-facing restaurants have an even more immediate lever that can directly depress or increase sales: review and social media websites like Yelp.

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Hal King
Managing partner at Active Food Safety
Associate Professor of Public Health at the
University of Georgia College of Public Health

In his new book, *Food Safety Management Systems*, Dr. King describes a study from Harvard Business School that examined the relationship between health department scores and customer engagement on Yelp: “The investigators found that, of all restaurant scores posted, low scores led to a 13% decrease in purchase intentions for a restaurant. Clearly, improvement of health inspection data can help sustain and even grow sales in the restaurant.”

The presence of a “Hygiene Alert” on a restaurant’s Yelp profile reduces purchase intent even more (20%). In other words, consumers trust third-party ratings and indicators of food safety, and when those indicators suggest underlying problems, consumers will go elsewhere. In reverse, when they encounter signals that an operation takes its food safety seriously, it leads to more business.

Those signals can include indirect effects from improved food safety, like an overall improved customer experience. As customer experience improves, the customer will come back more often.

This may have even more of an impact than many restaurant operations realize. Not all critical food safety violations result in major foodborne illness

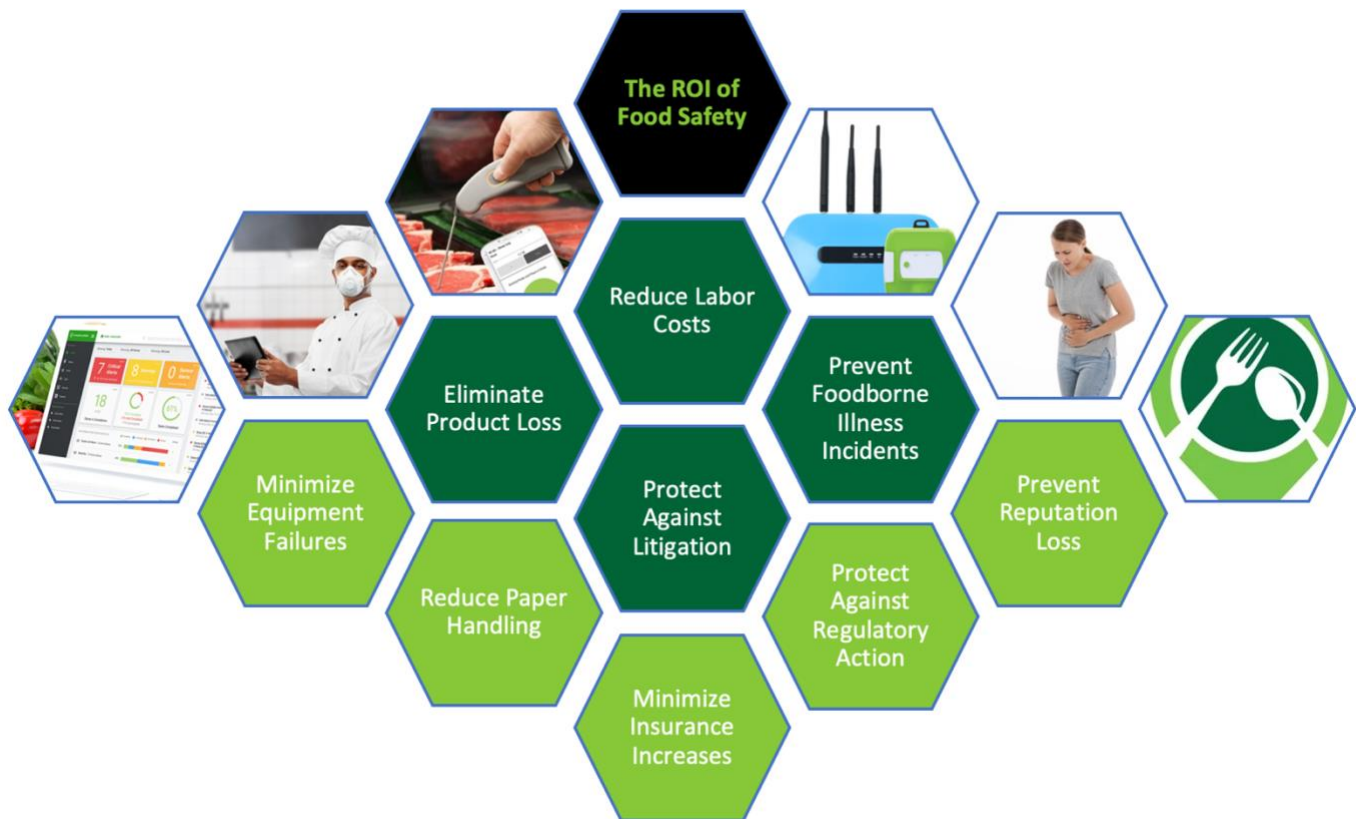
outbreaks or customer litigation. An inadequate FSMS at many locations might cause only small-scale and sporadic cases of food illness that the operator never even learns about. Foodservice operations can then become “complacent” about their food safety, until and unless a major incident strikes.

But even sporadic cases will erode a restaurant’s customer base, reduce its review ratings, and depress overall business compared to potential. “Issues the operator ignore as ‘noise’ might actually represent the tip of something more serious coming,” says Dr. King. In the end, “customer experience is the direct

basis of sales.” Anything that improves overall experience will strengthen total business performance.

US Foods would probably agree.

“It’s difficult to find anyone who says food safety is not important,” US Foods Senior Vice President of Food Safety and Quality Jorge Hernandez told *Quality Assurance & Food Safety* after the research study was published.^{xii} “But people don’t always realize that when you do good for food safety, you do good for the business.”





About ComplianceMate

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