FOCUS ON

FOOD SAFETY

THE CHALLENGES
OF IMPROVING FOOD SAFETY

Food recalls are an immense safety problem and a threat to profitability. Last year, Food Safety magazine counted **456 food safety recalls globally** due to contamination, with each recall estimated to cost an average $10 million[1]. In addition to the societal and business impact, huge stocks of food are wasted and consumer trust is crushed.

What's standing in the way of taking food safety concerns off the table?

Not all companies can quickly identify the cause of a food safety incident

Tracing food across the supply chain takes days, if not weeks, as companies struggle to track a mix of digital and paper-based food data documentation across a complex and growing network of suppliers and distributors.

Gaps in supply chain monitoring create vulnerabilities

Deficiencies in production and monitoring processes expose the food system to vulnerabilities that could be eliminated. For example, researchers found that a significant number of food safety alerts were due to a lack of supply chain transparency, which permitted food fraud and corruption to occur[2].

Outdated food traceability practices aren't built for the modern era

Regulators are now demanding state-of-the-art practices and modern technologies to ensure food safety, and blockchain can help bring organizations up to standard[3].

BLOCKCHAIN
FOR THE FOOD SYSTEM

With a digital food system, network participants have access to tools and data to improve food safety and become a proactive contributor to bettering the food system as a whole. Blockchain technology stores digitized records in a decentralized and immutable manner, promoting trust and transparency which in turn helps to better the food system and ensure safer food.

TRANSPARENCY

Know the provenance, real-time location, and status of any food product. A transparent food system is an accountable food system.

END-TO-END TRACEABILITY

If a food safety issue is reported, it is immediately clear who is impacted and who should take action.

FOOD CONFIDENCE

With IBM Food Trust, you have a trusted source for increased supply chain visibility. Additionally, organizations can know which foods have been grown or produced in a certified manner, eliminating contamination risks and potentially harmful food fraud along the supply chain.

"We strongly encourage the leafy greens industry to adopt traceability best practices and state-of-the-art technologies to help assure quick and easy access to key data elements from farm to fork."

- Scott Gottlieb, FDA Commissioner

IBM Food Trust creates a secure, shared, and permissioned record of transactions. This enables unprecedented visibility during each step of the food supply chain. IBM Food Trust achieves new levels of trust and transparency, making food safer and smarter from farm to fork.

For more information
contact your IBM representative or visit **ibm.com/food**

[1]https://www.foodsafetymagazine.com/enewsletter/a-look-back-at-2017-food-recalls/

[2]https://www.foodsafetymagazine.com/signature-series/recall-the-food-industrys-biggest-threat-to-profitability/

[3] https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm624867.htm

APPLYING IBM FOOD TRUST
TO FOOD SAFETY

IBM Food Trust consists of different modules designed to help everyone in the food system, such as suppliers, manufacturers, distributors, and retailers collaborate.

The **Trace** module has specific benefits to support food safety initiatives. Participants can securely and transparently trace the location and status of food products upwards and downwards in seconds to better manage food safety within their supply network.

The **Certifications** module helps you securely manage certificates and documents for your organization, and access other permissioned documents in your supply network.

The **Data Entry and Access** module allows you to securely upload, manage and access your transactional data, allowing you to get the most out of digitizing transaction records.

IBM

FOCUS ON FOOD FRAUD

UNCOVERING FOOD FRAUD
ALONG THE SUPPLY CHAIN

Driven by the complexity of today's global food system, food fraud continues to thrive: **It's a global business exceeding $10 billion dollars annually**[1]. As long as there is profit to be made (and there is), everything from honey and milk to peanuts and whiskey are at risk for adulteration. Regardless of the level of safety implications or where the vulnerability occurred, suppliers are largely liable for the impact - but everyone in the food industry suffers.

What's keeping food fraud alive?

The food supply chain runs on outdated practices

Food fraud has increased by 60% over the last couple of years[2] due to the lack of transparency, accountability, and effective regulations. Though recently, regulators are demanding state-of-the-art practices and technology[3] to help bring organizations up to standard and ultimately create a more transparent food system.

Complex supply chains create blind spots

Many companies simply lack the awareness of where and how they are susceptible to food fraud; however, with up to 10% of the food system affected by food fraud[4], weak links can occur across raw materials, ingredients, products and packaging.

Vulnerable regulatory systems enable tampering

Current practices of storing compliance data either on paper or in centralized databases are susceptible to inaccuracies, hacking, and intentional errors motivated by corruption.

BLOCKCHAIN
FOR THE FOOD SYSTEM

A shared digital food supply chain powered by blockchain enables full transparency by digitizing transaction records and storing them in a decentralized and immutable manner, eliminating opportunity for fraud across the food chain.

END-TO-END TRACEABILITY
Increased surveillance shines a light on each link in the food chain, enabling real-time traceability of food fraud culprits - and creating accountability.

COLLABORATION
Secure data-sharing between food chain actors eliminates the possibility for participants to move fraudulent foods unknowingly.

TRANSPARENCY
Improved transparency allows fewer opportunities for fraudsters to penetrate your supply chain, and permanent records enable better management of material safety and quality standards.

IBM Food Trust creates a secure, shared, and permissioned record of transactions. This enables unprecedented visibility during each step of the food supply chain. IBM Food Trust achieves new levels of trust and transparency, making food safer and smarter from farm to fork.

APPLYING IBM FOOD TRUST
TO FOOD FRAUD

IBM Food Trust consists of different modules designed to help participants in the food system - from producers, suppliers, manufacturers, distributors, and retailers - to make their supply chains less susceptible to fraud.

With the **Trace** module, supply chain members can transparently trace food products in the supply chain upstream and downstream, shining a light on the authenticity of both raw ingredients and packaged goods.

The **Data Entry and Access** module enables participants to securely upload, manage and access transactional data, helping detect or mitigate fraudulent action along the supply chain.

Additionally, with the **Certifications** module, users can share inspections, quality certifications, and registrations, enabling accountability for acquired data at each step.

For more information
contact your IBM representative
or visit **ibm.com/food**

[1]https://www.forbes.com/sites/larryolmsted/2018/04/12/the-latest-food-fraud-and-what-you-can-do-to-protect-yourself/#140a67005618
[2]https://www.newfoodmagazine.com/video/74615/combating-global-food-fraud/
[3]https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm624867.htm
[4]https://fas.org/sgp/crs/misc/R43358.pdf

IBM

FOCUS ON

FOOD FRESHNESS

THE PURSUIT
OF FRESHER FOOD

The demand for fresher food is more than a passing fad. Fresh food purchases have steadily outpaced other food and beverage departments for the past several years, making up a third of all supermarket purchases in 2017[1]. Yet, even as consumers, distributors and retailers, alike, heighten their scrutiny for freshness from harvest to shelf, **$7 billion worth of fresh food still spoils** before ever reaching a consumer in North America alone[2].

What's spoiling our efforts to optimize food freshness?

Food travels far before reaching your plate

On average, American meals travel 1,500 miles from farm to fork[5]. This can contribute to increased spoilage in fresh food, due to extended time in transit and storage.

Food chains are becoming increasingly complex and global

Fresh produce now spends up to 50% of its shelf life in transit from paddock to retailer[3]. Complex supply chains, along with gaps between producers, distributors, and retailers, decrease the velocity of travel and increase challenges to maintaining food freshness.

Poor visibility creates product loss and decreases margin

As food begins its post-harvest transport, it basically becomes invisible, making it difficult to pinpoint what happens to the 5% of our global food supply that never hits shelves due to losses during transit and storage[4].

BLOCKCHAIN
FOR THE FOOD SYSTEM

A digital food supply chain powered by blockchain enables full transparency across the food ecosystem so that retailers are able to provide fresher options (with increased shelf life) to their consumers leading to reduced product loss and increased margins.

END-TO-END TRACEABILITY

Track how fresh food really is and how long it's been traveling in real-time to confidently understand remaining shelf life.

FULL TRANSPARENCY

Top-to-bottom visibility into the food chain enables companies to know exactly where food is coming from and the conditions under which it was shipped.

SUPPLY CHAIN EFFICIENCY

Access to secure transactional data, temperature data, inventory, etc. allows your team to make proactive decisions based on that data that can optimize and improve efficiencies in the supply chain.

What is IBM Food Trust?

IBM Food Trust works with each member of the food ecosystem to achieve new levels of trust and transparency, making food safer and smarter from farm to fork. It enables companies to collaborate and digitize records which increases visibility during each step of the food supply chain.

APPLYING IBM FOOD TRUST
TO FOOD FRESHNESS

IBM Food Trust creates a secure, shared, and permissioned record of transactions. It consists of different modules designed to help participants in the food system - from producers, suppliers, manufacturers, distributors, and retailers - provide fresher, sustainable, and safe food to the end consumer.

The **Trace** module allows users to securely and transparently trace the status of fresh products at all locations, and be alerted to those at risk of expiring.

With the **Certifications** module, users can prove food provenance and authenticity by securely managing certificates and documents along the supply chain. Having access to such documents and data helps to eliminate inefficiencies in your network that lead to food waste.

The **Data Entry and Access** module enables participants to upload, manage and access transactional data, gaining visibility into inventory across locations.

For more information

contact your IBM representative or visit **ibm.com/food**.

[1]https://www.newhope.com/market-data-and-analysis/food-transparency-drives-growth-fresh-departments

[2]http://www.vantrumpreport.com/walmarts-new-tech-could-save-2-billion-in-food-waste/

[3]https://www.logisticsbureau.com/7-things-that-matter-most-to-fresh-supply-chain-leaders/

[4]https://qz.com/1065320/this-is-why-5-of-the-global-food-supply-never-makes-it-to-store-shelves/

[5]https://cuesa.org/learn/how-far-does-your-food-travel-get-your-plate

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FOCUS ON
FOOD WASTE

THE PURSUIT
OF FRESHER FOOD

With up to a third of all food produced ending up in the trash[1], the global imperative to reduce food waste is gaining momentum, but lacking traction. In fact, researchers say food waste to is set to increase by a third by 2030, when **66 tons of food will either be lost or thrown away per second**[2].

What's standing in the way of toppling the food waste mountain?

Quantifying food waste is difficult

Even with companies and countries on board (the UK aims to halve food waste by 2030)[3], the lack of standards for reporting and measuring food loss and waste has companies tracking food waste by the dumpster load, rather than weight or dollars.

Insufficient infrastructures keep companies in the dark

Even though studies suggest widespread adoption of digital supply chain tools could reduce food loss and waste by up to $120 billion annually[4], companies have been slow to adopt digital tools that could enable visibility into the food chain and identify waste hot spots.

Questionable freshness leads to consumer waste

Every year, a third of fresh food is thrown away globally by consumers who are unsure about the quality of their food[5].

BLOCKCHAIN
FOR THE FOOD SYSTEM

With a digital food system, network participants can now better track the quantity of food wasted and of food rescued. Blockchain technology stores digitized records in a decentralized and immutable manner, promoting trust and transparency which in turn helps reduce food waste.

END-TO-END TRACEABILITY

A digital food supply network powered by blockchain enables full transparency across the food chain to maximize shelf life, optimize partner networks and increase recall response efficiency, helping reduce waste.

COLLABORATION

Selective data sharing enables all in the food system to adopt consistent standards, policies and procedures.

FULL TRANSPARENCY

With greater visibility into food waste, food producers, distributors and retailers can help identify opportunities to reduce food waste along the supply chain.

IBM Food Trust creates a secure, shared, and permissioned record of transactions. This enables unprecedented visibility during each step of the food supply chain. IBM Food Trust achieves new levels of trust and transparency, making food safer and smarter from farm to fork.

For more information
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or visit **ibm.com/food**

[1]www.manilatimes.net/13-of-worlds-food-ends-up-as-trash-un-report/39243/
[2]https://www.bcg.com/publications/2018/tackling-1.6-billion-ton-food-loss-and-waste-crisis.aspx
[3]https://www.foodnavigator.com/Article/2018/09/27/UK-pledges-to-halve-food-waste-by-2030
[4]https://www.bcg.com/publications/2018/tackling-1.6-billion-ton-food-loss-and-waste-crisis.aspx
[5]U.N. Food and Agriculture Organization (F.A.O) http://www.fao.org/save-food/resources/keyfindings/en/

APPLYING IBM FOOD TRUST
TO FOOD WASTE

IBM Food Trust consists of different modules to help suppliers, manufacturers, distributors, and retailers increase visibility within the food chain.

Using the **Data Entry and Access** module, participants in the supply chain can securely upload, manage, and access transactional data to create shareable records of where food has been when, identifying areas of waste in the food chain.

The **Trace** module provides participants with a way to securely and transparently trace the location and status of food products on the supply chain to better manage - and reduce - food waste.

With the **Certifications** module, users can prove food provenance and authenticity by securely managing certificates and documents along the supply chain. Having access to such documents and data helps to eliminate inefficiencies in your network that lead to food waste.

IBM

FOCUS ON

SUPPLY CHAIN EFFICIENCIES

RUNNING A MORE EFFICIENT FOOD NETWORK

Inefficiency in the food system is a pervasive problem worldwide. With so many participants, there are endless opportunities to lose efficiency and profits. Inefficiencies negatively effect consumer pricing, the carbon footprint, food waste, and expected freshness. And with the absence of consistent and well-designed certification processing, **inefficiencies between producers and suppliers are estimated at $60 billion annually**[1].

What's feeding the fire for food chain inefficiencies?

Legacy supply chains slow companies down

Though some large retailers are deploying new technologies like blockchain[2] to create automated and intelligent supply chains, most companies are bogged down in manual paper-based processes that make it difficult and time-consuming to identify issues and manage inventory.

Slow adoption of digital supply chain tools keeps companies in the dark

Even though studies suggest widespread adoption of digital supply chain tools could reduce food loss and waste by up to $120 billion annually[4], companies have been slow to adopt digital tools that could enable better supply and demand matching and identify waste hot spots.

Poor coordination across the food chain network creates waste

Irregularities in the global food system make hand-offs far from seamless. Enabling a system that tracks product loss, waste, and expiration dates could save $150 billion annually[3] in food waste.

BLOCKCHAIN
FOR THE FOOD SYSTEM

A shared digital food supply chain powered by blockchain helps supply chain players better collaborate with each other to operate more efficiently and reduce waste.

WORKING SMARTER ACROSS A SHARED ECOSYSTEM

Easily identify process inefficiencies, eliminate bottle-necks, and optimize your supply chain for continuous growth.

REAL-TIME DEMAND FORECASTING

All food system participants can now know the provenance, real-time location, and status of their food products. Armed with better data, companies can develop more accurate supply and demand forecasting models, localize the sourcing of ingredients, and restructure contracts.

SCALABILITY

Automated processes and end-to-end synchronization can create efficiencies at every step.

For more information

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IBM Food Trust creates a secure, shared, and permissioned record of transactions. This enables unprecedented visibility during each step of the food supply chain. IBM Food Trust achieves new levels of trust and transparency, making food safer and smarter from farm to fork.

APPLYING IBM FOOD TRUST
TO INCREASE EFFICIENCIES

IBM Food Trust consists of different modules designed to help participants in the food system - from producers, suppliers, manufacturers, distributors, and retailers - to make their supply chains more efficient.

Using the **Data Entry and Access** module, participants can securely upload, manage and access transactional data.

With the **Trace** module, food system members can securely and transparently trace the location and status of food products on the supply chain.

Additionally, with the **Certifications** module, users can prove sustainability and provenance with ease by securely managing certificates throughout the entire supply chain.

[1]https://www.bcg.com/publications/2018/tackling-1.6-billion-ton-food-loss-and-waste-crisis.aspx

[2]https://news.walmart.com/2018/09/24/in-wake-of-romaine-e-coli-scare-walmart-deploys-blockchain-to-track-leafy-greens

[3]https://www.bcg.com/publications/2018/tackling-1.6-billion-ton-food-loss-and-waste-crisis.aspx

[4]https://www.bcg.com/publications/2018/tackling-1.6-billion-ton-food-loss-and-waste-crisis.aspx

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FOCUS ON SUSTAINABILITY

BUILDING A SUSTAINABLE FOOD NETWORK

Across the globe, consumers are demanding to know more about their food – where it came from, the effect of its production methods on our planet, and how workers and animals were treated in the process. In fact, a survey reported that **70% of consumers said they want retailers to be more transparent about their sustainability efforts** [1]. Sustainability is no longer a bonus; it's an imperative for both the consumers who demand it and for future business models.

What's bringing sustainability to the forefront of food conversations?

Consumers are becoming more "sustainable-conscious"

Driven by recent sustainability awareness efforts, consumer attention to the matter is growing. Currently, 59% of people think it's important for food to be produced in a sustainable way, up from 50% in 2017[2].

The cost of unsustainable food practices is adding up

"True Cost Accounting" is shedding light on the price of unsustainable food practices. Unsustainable sourcing and biodiversity loss, due to unsustainable production methods, result in hidden costs. Research shows that consumers unknowingly pay twice as much for their food due to such costs[3].

A growing population

With the global population expected to boom from 7 to 9 billion by 2050[4], companies are looking for ways to decrease their ecological footprints.

BLOCKCHAIN
FOR THE FOOD SYSTEM

A digital food supply chain powered by blockchain enables new levels of trust and transparency across the food ecosystem, increasing awareness of sustainability opportunities and practices during each step of the food chain.

FULL TRANSPARENCY
With end-to-end transparency, users can guarantee provenance and gain a clearer view of where inefficiencies and lack of sustainability exist across the entire supply chain.

CERTIFIED RESPONSIBLE PRACTICES
Farmers, producers, and other food actors can automatically digitize and easily share audits, certificates, and other records proving that they utilize and promote sustainable and ethical practices.

FOOD CONFIDENCE AND TRUST
By tracking each step of the food supply chain and sharing data on an immutable ledger, participants can ensure the promised quality of goods is indisputable.

"They {consumers} want companies who balance the social, environmental and economic impact of responsibly producing nutrient-rich foods to nourish people while protecting the planet.[5]"

- Erin Coffield, National Dairy Council

APPLYING IBM FOOD TRUST
TO SUSTAINABILITY

IBM Food Trust creates a secure, shared, and permissioned record of transactions. This enables unprecedented visibility during each step of the food supply chain. It consists of different modules designed to help participants in the food system - from producers, suppliers, manufacturers, distributors, and retailers - so food can be fresher, safer, and more sustainable.

Using the **Data Entry and Access** module, participants in the supply chain can securely upload, manage and access transactional data, ensuring sustainability claims are genuine.

With the **Trace** module, users can securely and transparently trace the status of food products upwards and downwards to trace goods.

With the **Certifications** module, users can share inspections, quality certifications, and registrations, boosting confidence and transparency throughout the supply chain.

For more information
contact your IBM representative
or visit **ibm.com/food**

[1]Hartman Group, National Syndicated Research: Sustainability 2017 Report: www.store.hartman-group.com/content/Sustainability-2017-Overview.pdf
[2]www.foodinsight.org/sustainability-soars-2018-food-and-health-survey-results
[3]www.sustainablefoodtrust.org/key-issues/true-cost-accounting/
[4]www.mdpi.com/journal/sustainability/special_issues/food-chains
[5]https://www.naturalproductsinsider.com/foods/good-food-movement-emphasis-global-impact-transparency-drives-ethical-food-production

IBM

FOCUS ON

BRAND TRUST

BUILDING
CUSTOMER TRUST IN FOOD

Now more than ever before, consumers have numerous options when it comes to where to buy their food. With such a competitive food industry, brand differentiation is important to remain top of mind for buying decisions. In fact, **84% of shoppers consider the impact of how and where food was produced when making a purchase**[1]. Trends show that consumers want to know more than just the nutritional information - they want to know the food's origin, when it was grown, and how[2].

How are you innovating your company to stay ahead of the curve?

Consumers are becoming more "sustainable-conscious"

Driven by recent sustainability awareness efforts, consumer attention to the matter is growing. Currently, 59% of people think it's important for food to be produced in a sustainable way, up from 50% in 2017[3].

Companies are moving beyond compliance

The bar is rising for both safety and quality. Food companies are setting their own independent standards, programs for food safety, and freshness beyond those needed to be compliant.

Brand loyalty doesn't exist without the presence of food quality and safety

55% of people claim they would switch brands following a recall[4]. Consumers, along with other key players in the food system, want more details and visibility about the food they consume in order to make informed decisions.

BLOCKCHAIN
FOR THE FOOD SYSTEM

A digital food supply chain powered by blockchain enables full transparency so that consumers, retailers, manufacturers, and suppliers all have confidence and trust in the companies that we purchase and consume our food from.

FULL TRANSPARENCY
Top-to-bottom visibility into the food chain enables brands to quickly and proactively manage damaged products without disrupting the entire supply chain.

COMPETITIVE ADVANTAGE
When consumers and supply chain partners know that brands are transparent about the quality and origin of their foods, it builds brand equity and trust, creating differentiation.

FOOD CONFIDENCE AND TRUST
By tracking each step of the food supply chain and sharing data on an immutable ledger, participants can ensure the promised quality of goods is indisputable.

"Consumers don't just buy on brand name anymore. They buy on brand attributes.[5]"
- O'Shea-Kochenbach, Food & Health Specialist

APPLYING IBM FOOD TRUST
TO BRAND TRUST

IBM Food Trust creates a secure, shared, and permissioned record of transactions. This enables unprecedented visibility during each step of the food supply chain. It consists of different modules designed to help participants in the food system - from producers, suppliers, manufacturers, distributors, and retailers - provide innovative and trusted solutions to the end consumer well before the consumer realizes there was ever an issue that needed to be solved.

With the **Trace** module, supply chain members can securely and transparently trace food products upstream and downstream to provide the food details consumers and partners demand.

The **Data Entry and Access** module enables participants in the supply chain to securely upload, manage, and access transactional data, creating organized records for swift action in the face of an incident to minimize brand damage.

Then, with the **Certifications** module, users can prove sustainability and provenance with ease by securely managing certificates throughout the entire supply chain.

For more information
contact your IBM representative
or visit **ibm.com/food**

[1]https://j-sainsbury.co.uk/media/1767151/sainsbury_s_takes_tesco_price_promise_to_judicial_review.pdf
[2]https://www.fooddive.com/news/from-messages-to-conversations-how-food-marketing-has-evolved/437878/
[3]www.foodinsight.org/sustainability-soars-2018-food-and-health-survey-results
[4]https://packagingeurope.com/total-recall-impact-product-recalls-food-industry/
[5]https://www.fooddive.com/news/from-messages-to-conversations-how-food-marketing-has-evolved/437878/

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