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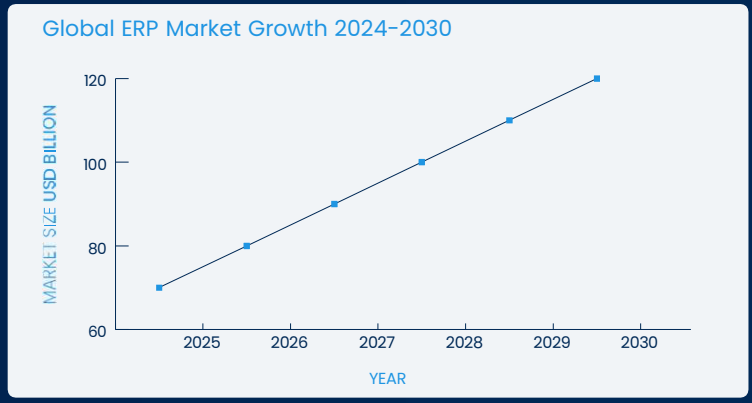
ERP buyer's guide for food and beverage manufacturers



Overview

The ERP (enterprise resource planning) software market is expected to grow from USD 64.8B in 2024 to over USD 123B by 2030 (CAGR ~11.7%). The food & beverage ERP segment alone is forecast to reach USD 2B by 2033, driven by compliance and traceability demands.

Food and beverage manufacturing faces strict regulatory requirements and operational complexity. ERP systems centralize data across production, quality, supply chain, finance, and compliance to improve efficiency and reduce risk. Increasingly, these systems are embedding artificial intelligence (AI) to analyze historical and real-time operational data, detect anomalies before they cause quality or compliance issues, and automate routine decision-making. For example, AI-driven predictive analytics can forecast equipment maintenance needs to avoid downtime, recommend optimal production schedules, and even suggest ingredient substitutions based on current market availability and cost trends—all while maintaining compliance with strict food safety standards.



Nearly 50% of manufacturing firms plan ERP upgrades or implementations within the next 12-18 months, according to industry research. This trend is fueled by the need for greater supply chain visibility, regulatory compliance, and improved responsiveness to changing market demands, and also by the potential of AI-enabled ERP to deliver competitive advantages. AI can provide granular demand forecasting, real-time quality monitoring using IoT sensor data, and intelligent supply chain adjustments in response to disruptions.

Overview

By automating data analysis and surfacing actionable insights, AI within ERP platforms enables decision-makers to move from reactive problem-solving to proactive, strategic planning—improving ROI and operational agility. Historical analytic methods have proven deficient as the volume of data can be too large to process in a realistic timeframe where AI is perfectly suited to yield more real-time results.

Research also shows that 83% of ERP projects meet ROI expectations when aligned with leadership's expectations, structured change management, and strong planning.

ROI typically comes from measurable improvements in:

- Inventory accuracy (reductions of 25–30% in stock discrepancies)
- Audit readiness and compliance efficiency, reducing audit prep time by up to 50%
- Production throughput improvements driven by better scheduling and shop-floor integration
- Lower waste levels, especially for perishable goods in food & beverage manufacturing

However, success is highly contingent on upfront planning. Organizations that conduct thorough requirements gathering, involve cross-functional stakeholders early, and invest in training are far more likely to achieve positive outcomes. Without leadership support or clear KPIs, ERP projects often overrun or fall short of expectations.

See more detailed ROI information in the chapter on ROI Drivers, beginning on page 27.

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Key insight



Food and beverage manufacturers can unlock ROI faster due to ERP's direct impact on compliance automation, lot traceability, and spoilage reduction, all of which translate quickly into cost savings and reduced regulatory risk.

Industry-specific compliance and regulatory needs

The Food Safety Modernization Act (FSMA), Hazard Analysis and Critical Control Points (HACCP) standards, and global food safety frameworks drive adoption of ERP systems, which automate compliance workflows and provide built-in traceability tools.



FSMA compliance and supplier verification

FSMA is a U.S. law enacted in 2011 that gives the FDA (Food and Drug Administration) greater authority to regulate and oversee how food is grown, harvested, processed, and distributed.

The main goal of FSMA is to shift the focus from responding to food contamination to preventing it, with requirements such as:

- Preventive controls for food facilities
- Produce safety standards
- Enhanced traceability and recordkeeping
- Mandatory recall authority
- Increased inspections and importer accountability

It's especially important for food & beverage manufacturers because ERP systems often need FSMA compliance modules to handle documentation, lot traceability, and recall readiness.

HACCP control point logging

HACCP is a systematic, preventive approach to food safety that identifies, evaluates, and controls potential hazards—biological, chemical, or physical—throughout the food production process.

Key elements of HACCP include:

- Conducting a hazard analysis (finding potential risks in processes)
- Identifying critical control points (CCPs) where hazards can be prevented or reduced
- Establishing critical limits (e.g., temperature, time)
- Monitoring CCPs
- Implementing corrective actions
- Verifying system effectiveness
- Keeping detailed records

It's a global standard for food safety management and is often a regulatory requirement—including under the U.S. FSMA.

Allergen flagging and labeling

Allergen flagging and labeling is the process of identifying ingredients in food products that can cause allergic reactions, clearly marking them in product documentation, labels, and compliance records so they can be communicated to consumers and regulators.

Modern Food & Beverage ERP systems include allergen management tools that automate and integrate the following processes:

- Recipe and formula management
- Lot and batch traceability
- Label management modules
- Production scheduling
- Supplier management
- Compliance reporting



Automated recall readiness reporting

Automated recall readiness reporting is a feature in many modern Food & Beverage (F&B) ERP systems that allows manufacturers to instantly generate the documentation and traceability reports needed to execute a product recall.

Instead of manually digging through batch logs, shipping records, and supplier invoices, the ERP system pulls all the relevant data into a single, regulator-ready report—often in seconds.

F&B ERP systems provide the following recall capabilities:

- Lot and batch traceability
- Integrated supplier management
- Distribution tracking
- Automated documentation
- Workflow automation
- Simulation tools

Use case example

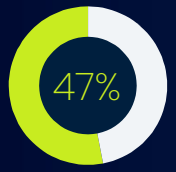
A dairy plant detects contamination in a single tanker of milk from Supplier A.

With an ERP system:

- The QA team runs a traceability query using the milk lot number.
- The system instantly identifies all cheese and yogurt batches that used that milk.
- The ERP generates a recall report listing the products, production dates, distribution destinations, and quantities.
- Notifications are automatically sent to downstream distributors with instructions.

Key considerations when choosing an ERP system

Core ERP features for food and beverage manufacturing



of ERP users are in manufacturing, with trends like IoT integration, mobile shop-floor tools, and AI-driven analytics redefining F&B ERP capabilities.

Artificial intelligence is no longer a "nice-to-have" add-on — it's becoming a strategic driver of efficiency, compliance, and profitability. AI's role in F&B ERP systems spans predictive maintenance for production equipment, real-time quality monitoring, automated demand forecasting, and anomaly detection in supply chain data. By continuously learning from production patterns, supplier performance, IoT, and consumer demand signals, AI allows manufacturers to make faster, data-backed decisions that reduce waste, minimize downtime, and respond more dynamically to market changes.

AI also enhances compliance and food safety. Integrated machine learning models can flag potential FSMA or HACCP nonconformance events before they escalate, improving recall readiness and reducing regulatory risk.

In financial areas, AI-powered analytics identify cost overruns or margin erosion early, enabling corrective action. When paired with IoT sensors on production lines and cold storage, AI can even predict spoilage risks based on temperature trends, humidity, and historical incident data.

Other core features include:

- Lot and batch traceability
- Recipe and formula management
- Inventory management (expiry, First Expired First Out/First In First Out)
- Production scheduling
- Supplier quality control
- Batch costing and profitability analysis

Key insight



Cloud ERP use grew to 41% in 2025, delivering ~20% IT cost savings while improving scalability. AI-driven automation within these platforms compounds ROI by streamlining repetitive tasks, reducing human error, and accelerating decision-making. As ERP buyers evaluate solutions, a vendor's ability to blend deep F&B industry expertise with advanced AI capabilities is becoming a defining factor in selection.

Deployment: Cloud vs. on-Premises

The deployment model decision impacts cost, scalability, accessibility, and long-term flexibility.

Cloud ERP



- Lower upfront costs (subscription-based)
- Access from anywhere, which is important for multi-site or remote work. This capability is available natively in cloud solutions and requires minimal in-house IT burden.
- Automatic updates and security patches are handled by the vendor
- Access to new features and capabilities on a scheduled basis
- Eliminates the need for costly and intrusive upgrades
- Increased agility. Easier to scale as production sites, users, or SKUs grow

On-premises ERP



- Greater control over data storage (important for some regulatory environments or sensitive IP)
- If an on-premises ERP has been configured with proper remote access tools, it can be accessed from anywhere, but this adds complexity, costs, and maintenance overhead
- Potentially lower costs in the long term for large enterprises with strong IT infrastructure
- Can be deeply customized, though upgrades can be more complex

Key insight



Cloud ERP is gaining adoption in F&B for its real-time access across production sites and supplier networks, but some highly regulated operations or those in regions with strict data laws still prefer on-premises.

Integration: PLM, MES compatibility

F&B manufacturing relies on multiple specialized systems, including PLM (Product Lifecycle Management) systems that manage recipes, formulations, and product specifications from R&D to launch, and MES (Manufacturing Execution System), which controls and monitors production processes on the shop floor.

ERP systems must provide the native capability or integrate seamlessly with PLM and MES to:

- Avoid duplicate data entry and reduce errors
- Sync recipe changes instantly from R&D to production
- Provide end-to-end traceability from raw material to finished goods
- Enable accurate costing by combining production data with supply chain and finance records



Key insight



If ERP can't "talk" to PLM and MES, then allergen management, compliance reporting, and recall readiness will be slower and more error prone.



User experience: mobile interfaces

ERP adoption fails if it's cumbersome to use.
Mobile-friendly interfaces:

- Allow real-time data capture from the production floor, warehouses, and delivery vehicles
- Reduce errors by letting operators scan barcodes, log batches, or update inventory on the spot
- Improve responsiveness—managers can approve purchase orders, view dashboards, or monitor KPIs without being at a desk

Key insight



Mobile ERP tools enable line supervisors, QA staff, and warehouse teams to update allergen logs, QC checks, and shipping records immediately, improving accuracy and compliance.

Evaluating ERP vendors

ERP vendors may offer generic solutions, but food & beverage manufacturing has unique compliance, traceability, and recipe management needs.
Vendors with proven F&B experience can provide:

- Pre-configured compliance workflows (FSMA, HACCP, GFSI)
- Industry-specific features like expiry-based picking, catch weight management, and allergen flagging
- References and case studies showing measurable results for similar businesses
- Knowledge of seasonal demand swings, shelf-life issues, and raw material variability

Two-tier ERP approaches (corporate + specialized site ERP) are emerging to balance scalability with F&B-specific flexibility.

Ask vendors:

- Can you show F&B case studies?
- How do you manage allergen compliance?
- How fast is recall traceability?
- Is support available globally 24/7?

It's especially important for food & beverage manufacturers because ERP systems often need FSMA compliance modules to handle documentation, lot traceability, and recall readiness.

Key demo asks:

- Lot traceability
- HACCP workflows
- Recipe scaling/versioning
- Expiry-based picking
- Recall reporting speed
- Batch costing analytics

Key insight



Choosing the vendor who has implemented ERP in companies with similar product types, regulatory requirements, and distribution models greatly reduces the risk of costly customization or poor fit.

Implementation roadmap

Small and medium enterprises (SMEs) can go live in as little as 6 months, though 9 to 12 months is more realistic. Implementation timelines for larger firms typically range from 12 to 24 months, with some multi-site enterprises taking as long as 3 to 5 years. Success rates reach 85% with expert consultants and strong change management.

Requirements gathering



Data cleansing



Pilot rollout



Training programs



Go-Live support and monitoring



Requirements gathering

This is where you define exactly what the ERP must do—covering workflows, compliance needs (FSMA, HACCP), reporting requirements, integration points, and user roles. In F&B, it helps capture specific needs like allergen management, lot traceability, and expiry tracking.

A thorough requirement gathering process can:

- Prevent scope creep and costly mid-project changes
- Ensure the ERP fits both operational needs and strategic goals



Data cleansing

Dirty or inconsistent data can derail an ERP launch. In F&B, maintaining accurate allergen data, batch histories, and regulatory records is essential for compliance and recall readiness.

Successful data cleansing includes:

- Standardizing item codes, supplier names, customer records, and formulas before migration
- Removing duplicate or outdated entries



Pilot rollout

Performing a pilot rollout tests the ERP in a controlled environment before full deployment to help Identify configuration issues, integration gaps, and user misunderstandings early.

- Validate workflows (e.g., QA checks, production scheduling, labeling)
- Reduce the risk of disruption when going company wide



Training programs

Even the best ERP fails if people can't use it effectively. In F&B, it ensures production staff, QA teams, and compliance officers know how to log critical safety and traceability data.

User training is also intended to:

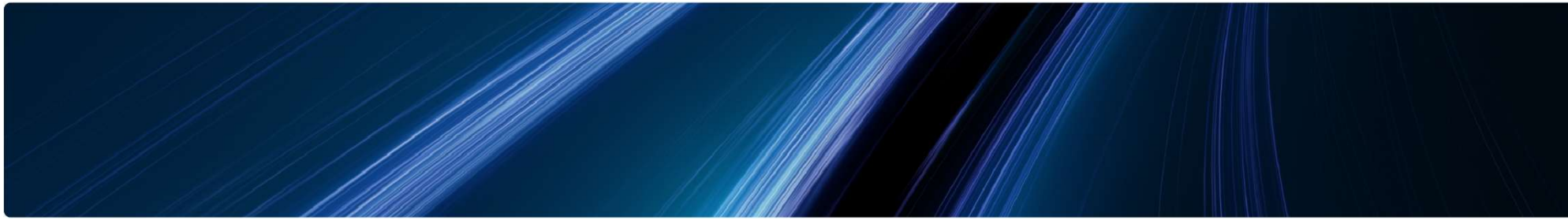
- Build user confidence and reduce resistance to change
- Cover role-specific workflows so employees understand how ERP supports their daily tasks



Go-Live support and monitoring

The go-live period is the most fragile stage.

- On-site or virtual "floor support" ensures quick problem-solving.
- Continuous monitoring helps spot errors, slow processes, or data mismatches early.
- For F&B, helps confirm that compliance-critical processes —like lot tracking and allergen flagging—are functioning as intended from day one.



Cost considerations

You can plan to spend between 1% and 2% of your annual revenue on an ERP project. This includes the implementation services and the first year of software fees. If your business is under $3 million in revenue, you'll be closer to 2%. As your revenue scales up, you'll move into the range of 1% or less.

Three considerations that have the biggest impact on cost:

1 Licensing (Cloud or perpetual)



2 Implementation and migration



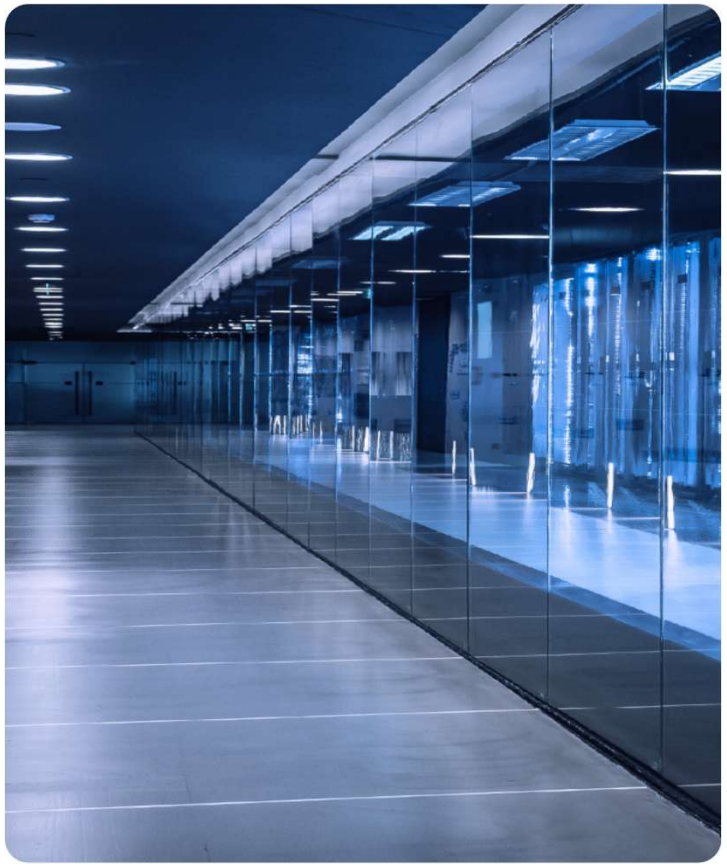
3 Training, adoption and change management



1. Licensing (Cloud or perpetual)

Licensing costs are one of the first factors to consider when budgeting for an ERP system, and the choice between cloud-based subscriptions and perpetual (on-premises) licenses significantly impacts long-term spending. Cloud licensing operates on a subscription model, typically billed monthly or annually per user or module. This approach reduces the initial investment and includes hosting, security, and regular updates, making it easier to manage cash flow and scale as the business grows. However, the recurring fees can result in a higher total cost over many years if the subscription continues without renegotiation.

In contrast, a perpetual license requires a larger upfront payment but grants ongoing ownership of the software, with additional annual maintenance costs typically ranging from 15–25% of the initial license fee. While potentially more cost-effective over the long term, perpetual licensing demands internal IT resources for hosting, security, and system updates, which can increase operational complexity.





2. Implementation and migration

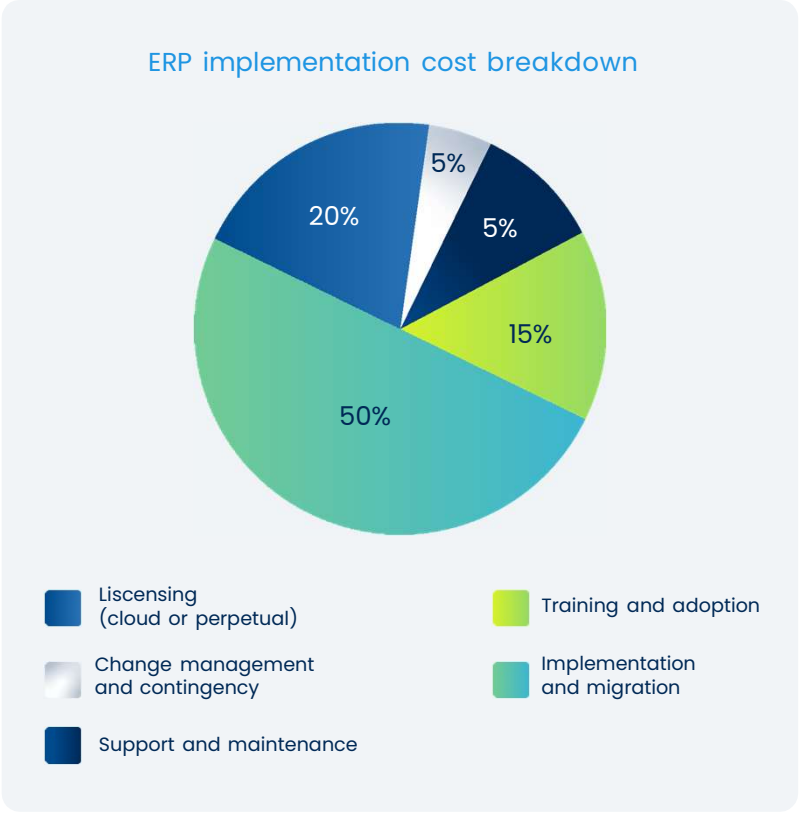
Implementation and migration expenses represent one of the largest portions of an ERP budget, often accounting for 40–60% of the first-year cost. These costs cover the configuration of the system, adding incremental functionality to meet specific business needs, integration with existing applications such as PLM (Product Lifecycle Management) and MES (Manufacturing Execution Systems), as well as the testing required to ensure a smooth launch.

Data migration is a major component of this phase, involving the extraction, cleansing, and transfer of historical data from legacy system(s) into the new ERP. For food and beverage manufacturers, this is especially critical because data such as lot traceability records, supplier quality details, and allergen flags must be transferred with complete accuracy to meet regulatory compliance requirements. The more complex the data and integrations, the higher the cost, making careful planning and scoping essential for controlling expenses.

3. Training, adoption and change management

Training and adoption costs are often underestimated during ERP budgeting, but they play a pivotal role in ensuring the system delivers its intended benefits. These costs include structured training sessions, e-learning programs, on-the-floor coaching, and the development of role-specific instruction tailored to different departments such as production, quality assurance, finance, and management. Effective training not only increases user confidence but also improves adoption rates, reducing the risk of errors and inefficiencies after go-live.

Many organizations also invest in creating “super users” who can provide ongoing support and champion best practices internally. In the food and beverage sector, training is particularly important because users must be proficient in compliance-related tasks like HACCP logging, allergen labeling, and FSMA reporting from day one. A well-planned training strategy can reduce post-implementation support costs by 20–30%, making it a valuable investment for long-term success.



ROI drivers

The right ERP system, when implemented properly, can result in a huge return on your investment.

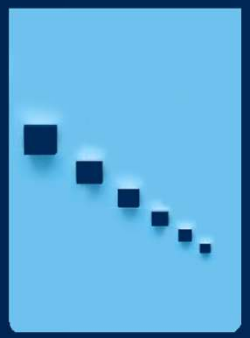
1 Waste reduction



2 Faster audits



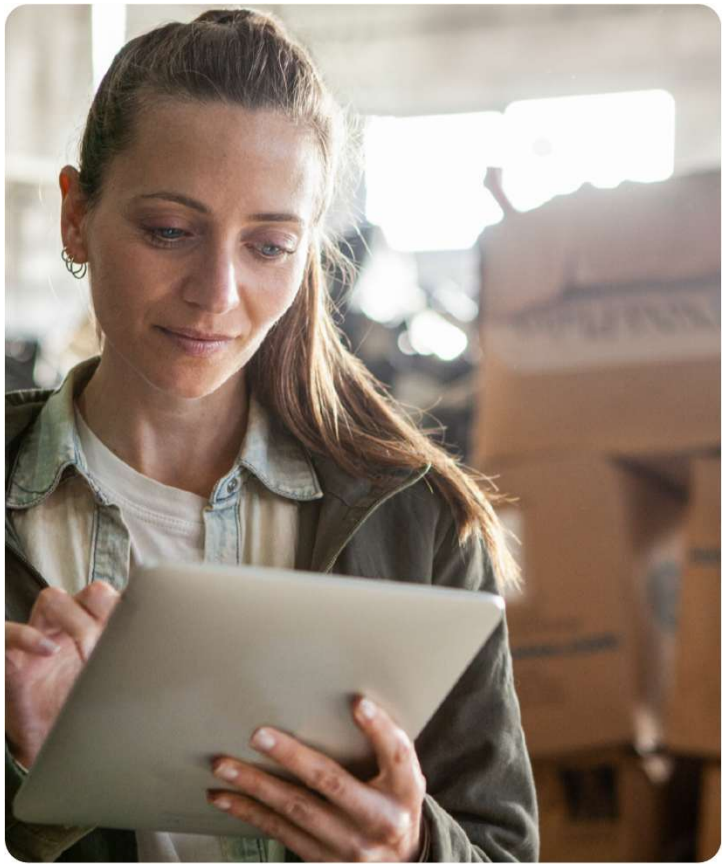
3 Lower labor costs



1. Waste reduction

ERP systems can drastically reduce waste by improving inventory management, production planning, and quality control. In food and beverage manufacturing, waste can come from expired ingredients, overproduction, recipe errors, or poor demand forecasting. With an ERP, real-time data from the production floor, supply chain, and sales channels feeds into demand planning tools, allowing businesses to purchase only what they need and schedule production runs more efficiently.

Automated lot tracking and expiry management ensure that older inventory is used first (FIFO or FEFO), minimizing spoilage. Integrated quality management modules also help catch process deviations before they lead to large-scale rework or product loss. For many F&B companies, even a 1–2% reduction in waste can translate into significant year-over-year savings, directly boosting ROI.





2. Faster audits

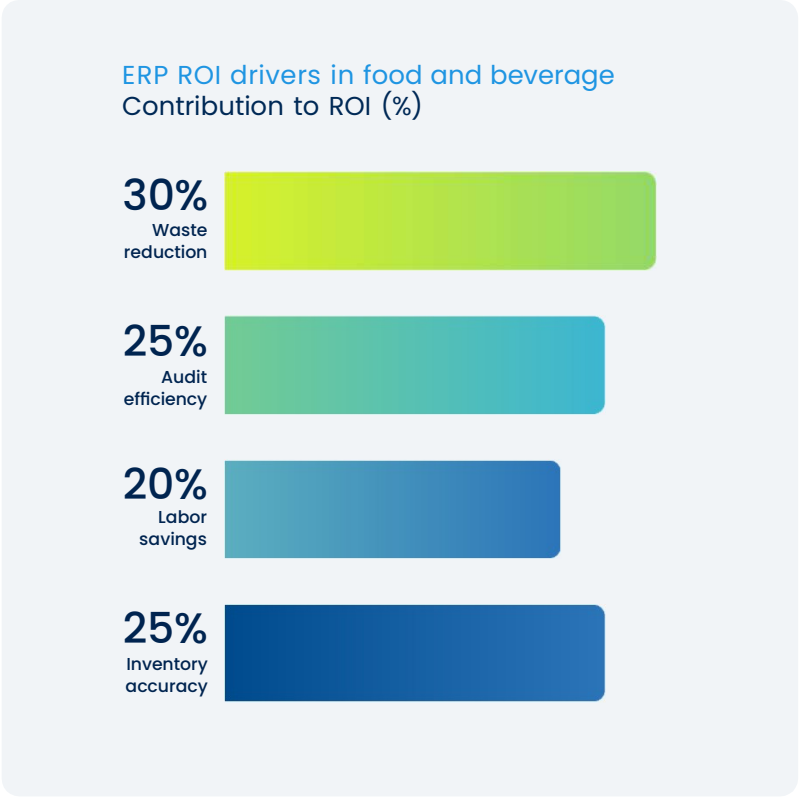
Compliance with regulations like FSMA, HACCP, GFSI, and allergen labeling laws often requires extensive recordkeeping, with proof of safety controls and traceability from supplier to customer. Without an ERP, audit preparation can take days or even weeks, pulling staff away from core work.

ERP systems centralize all relevant records—batch production logs, supplier certificates, QA checks, and shipping documents—into a single, searchable platform. This means auditors can access the necessary documentation in minutes rather than days. Faster audits reduce operational downtime, minimize disruption to production, and prevent costly penalties from missing compliance deadlines. In some cases, this speed also improves customer trust, since large retailers and distributors often require rapid proof of traceability before placing or maintaining contracts.

3. Lower labor costs

ERP automation reduces manual data entry, spreadsheet reconciliations, and redundant administrative work across purchasing, production, warehousing, and finance. In manufacturing, this can translate into fewer overtime hours, a smaller clerical staff, and more efficient use of skilled workers.

For example, instead of warehouse staff manually counting inventory for monthly reports, ERP systems update stock levels in real-time through barcode or RFID scanning. In the production area, recipe scaling and scheduling can be automated, reducing the need for constant supervisor intervention. By cutting administrative tasks and streamlining workflows, companies can reassign labor to higher-value activities like process optimization or customer service—further amplifying the return on ERP investment.



Next steps

Cloud adoption, AI integration, and traceability focus are reshaping F&B ERP. Early adopters gain cost, compliance, and agility advantages.



Next steps:

1. Assess gaps.
2. Shortlist vendors.
3. Schedule focused demos.

Microsoft technology solutions for food and beverage manufacturers

Microsoft Dynamics 365 for food and beverage

Microsoft Dynamics 365 offers an integrated suite of ERP and CRM applications designed to meet the unique challenges of food and beverage manufacturers. By utilizing cloud-based scalability, artificial intelligence-driven analytics, and comprehensive integration with Microsoft's productivity suite, this solution enables organizations to optimize their operations, uphold regulatory compliance, and improve customer engagement.

Core features include:

- Comprehensive production and supply chain management with real-time batch and lot tracking, enabling traceability from raw materials to finished goods, and supporting rapid recall capabilities
- Built-in compliance and quality control tools aligned with FSMA, HACCP, and other global food safety standards, including automated documentation and audit trail generation
- Advanced demand forecasting and production planning powered by AI and Azure Machine Learning to reduce waste, optimize inventory, and ensure on-time delivery
- IoT and connected factory capabilities via Azure IoT, allowing real-time monitoring of equipment, temperature controls, and production line efficiency to prevent spoilage and downtime
- Seamless integration with Microsoft 365 (Office, Teams, Power BI) for enhanced reporting, cross-department collaboration, and embedded analytics dashboards for decision-making
- Microsoft Copilot embedded across Dynamics 365, offering natural language interaction, contextual recommendations, and generative AI assistance for tasks such as generating reports, analyzing compliance documentation, or drafting supplier communications.
- Agentive AI capabilities that proactively monitor workflows, flag anomalies in production or compliance data, and autonomously trigger corrective actions, helping manufacturers prevent disruptions before they occur.

Microsoft Dynamics 365's modular, cloud-first architecture supports multi-site and multinational operations with multi-currency, multi-language, and regional compliance configurations. Its flexibility allows organizations to start with core ERP functionality and expand as business needs evolve, making it a strong choice for both mid-sized and enterprise-level food and beverage manufacturers.

With Copilot and agentive AI, the platform goes beyond decision support—transforming into a proactive partner that anticipates challenges, accelerates responses, and continuously optimizes supply chain performance.

Alithya expertise

Since 1992 Alithya has helped food and beverage manufacturers successfully navigate the new digital landscape. Our manufacturing consultants and technology experts are some of the most knowledgeable in the industry. From developing your strategy to building your roadmap and from selecting the technology that best fits your needs to implementing systems designed to move your company into the future, Alithya is ready to be your trusted advisor every step of the way.

Alithya is a strategic Microsoft technology partner and was recently named a 2025-2026 Inner Circle member. This is the 20th time Alithya has been recognized by Microsoft as a member of this elite group of global partners. We have also developed a unique range of Alithya digital solutions to best meet your needs. Harnessing the power of artificial intelligence and machine learning, our solutions help clients in any industry tackle their most pressing challenges and surpass their business objectives.

Our business systems technology expertise is supported by three service pillars, including

- strategic consulting,
- enterprise transformation
- business enablement

Let's talk about how we can help put your food and beverage company on track to create and optimize more streamlined, efficient, and profitable manufacturing processes.

Contact us today.

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ERP buyer's guide for food and beverage manufacturers 2025