WHAT FOOD AND BEVERAGE PROCESSORS NEED TO KNOW ABOUT TODAY’S ERP
Food and beverage manufacturers face unique challenges when implementing enterprise technology that differ from those discrete manufacturers face. They require solutions that allow for track and trace of ingredients, optimization of shelf life and flexibility for changing ingredient formulas, among others. This paper outlines key considerations food and beverage companies must keep in mind when entering into an enterprise technology selection process. The focus is on finding the best fit that promises traceability, electronic document management, recipe management, and effective food safety planning. The paper also provides an overview of compliance challenges facing food and beverage processors, from SQF code and HACCP certifications, to federal and international standards.
The food and beverage processing sector faces an ever-changing set of requirements that impacts the selection and implementation of enterprise solutions. One of the most common issues food and beverage companies must contend with is the lack of an integrated toolset which streamlines recipe management, quality, lot track-and-trace, document control and other key functions. We see many processors relying on outdated, stand-alone systems, and siloed solutions to handle these key functions. Frequently organizations are depending on manual spreadsheets, resulting in error-prone and inefficient processes.

Ultra Consultants has guided top processors to go beyond technology selection and broaden the focus to identify ways for improving business processes. Purpose-built solutions address industry-specific processes and business requirements.

Noted here are the main functional areas that food and beverage processors need to address when seeking an ERP solution.

## RECIPE MANAGEMENT

The first area of focus for food and beverage ERP is recipe management. All manufacturing companies are defined by the products they produce, but food and beverage companies face a more stringent expectation in this area. Each recipe ingredient not only impacts the taste of the product, but also the nutritional value, a metric monitored strictly by numerous governmental regulatory agencies. Food and beverage ERP solutions must offer the following feature functions to aid in recipe management:

- **Version control of items such as batch sheets and recipes/formulas** which allows the processor to strictly manage which version is to be used in production.

- **Formulation** helps manage which ingredients are being used to create the product, meeting any requirement to calculate nutritional values that result from the formulation.

- **Alternate and reverse BOMs** assist the manufacturer in quickly and efficiently identifying other raw materials that can be substituted if an out-of-stock is encountered.

- **Alternate routings** provide a means to predefine multiple ways of manufacturing an item. These alternative ways could be driven by factors such as batch size, overcapacity of a work center, etc.

- **UOM conversions** (e.g., pounds to kilograms) assist with accurately managing different units of measure for items. Examples of this include selling in a specific unit of measure (e.g., in pounds) versus purchasing (e.g., in kilograms) versus warehousing (in cases).

As noted, a unique feature processors need from their ERP system is the ability to identify specific nutritional values that result from the composition of a recipe. Think of this in terms of the nutritional label required on all food products. For some processors, this is “simply” a matter of composing a formula and determining the nutritional values based on the ingredients in the formula. For others (further up the food chain), the companies must develop a formula based on target nutritional levels provided by their customers. This is a significantly more complicated exercise since different raw materials have different nutritional potencies, they may react differently with various...
raw materials and costs can fluctuate significantly. The ERP system must be able to easily handle this level of recipe and formula management.

Also important is multi-part formulation (pre-blend added to a main blend), in addition to closely monitoring allergens and kosher items labeling requirements. Stringent requirements related to allergens and food coloring greatly impact the optimal, least cost scheduling of processing.

The ERP system must offer ways to monitor potency, volume, and variable weights when developing formulas, as well as the ability to adjust formulas on the fly to account for concentration variations.

INVENTORY CONTROL

Inventory control addresses how the product is stored within the warehouse after production. Once the product has been made according to the recipe, it is extremely important for a food and beverage ERP solution to monitor the storage of the product to ensure an efficient packaging process. Among the specific functions that need to be monitored are:

- Lot Control
- FEFO/FIFO – First Expiration First Out/First in First Out
- Expiration date management
- Shelf life
- Barcoding and use of technology (e.g., RF) to increase accuracy of information

In addition to these items, kitting is also a process that requires extensive monitoring. Kitting is the grouping together of a predefined group of items. It is essential to the food and beverage process because clients frequently order multiple ingredients to create one product. The ability to create and track kits in a food and beverage ERP system is imperative.

QUALITY

With any manufactured product, quality is essential for customer satisfaction. When food and beverage ERP solutions are capable of quality control in the following areas, manufacturers thrive:

- Management of allergens, colors, gluten-free, kosher, etc.
- Testing by item, customer, vendor
- Incoming inspections
- Release control and goods delivery, based on audits/checks

“The ERP system must be able to easily handle complex recipe and formula management.”
PLANNING AND SCHEDULING

Food and beverage manufacturers must consider multiple tasks when planning and scheduling manufacturing runs. For one, they need to have the ability to manage runs based on the many constraints, like allergens, and change-overs that are unique to food and beverage production.

A change-over occurs when the processor moves from making one product in a work center onto another product. Sometimes this change-over could be as simple as brushing down the machine. Frequently, however, it involves taking all of the equipment apart and completely washing it down to sanitize it. This is especially important for manufacturing products containing known allergens. An enterprise solution must be nimble enough to accommodate these requirements.

FORECASTING

Forecasting is important for many reasons, but especially for manufacturing companies to allocate an accurate budget. Food and beverage ERP solutions need to address this area while taking these food/beverage related issues into consideration:

- Seasonality – The demand for certain products changes with the seasons, and a food and beverage manufacturer needs to account for this fluctuation.
- Customer Forecasts – Manufacturers need to be aware of the forecast cycles of their customers in order to know how much of their product to produce. A right fit ERP must integrate customer forecasts.

REPORTING

Food and beverage manufacturers are required to adhere to strict regulations and achieve certain levels of certification. Some examples of groups and documentation that detail these regulations and certifications include:

- British Retail Consortium (BRC)
- FDA's Code of Federal Regulations Title 21 (CFR)
- Global Food Safety Initiative (GFSI)
- Hazard analysis and critical control points (HACCP) certification
- Good Manufacturing Practice regulations promulgated by the U.S. Food and Drug Administration (GMP)
- Safe Quality Food (SQF)

U.S. FOOD SAFETY MODERNIZATION ACT (FSMA)

The regulatory environment is always changing, impacting compliance requirements related to food safety. This means food and beverage companies must implement the appropriate processes and systems to not only manage recalls, but also offer the flexibility to adjust and accommodate changing regulations and reporting requirements.

As noted, companies must comply with FDA regulations, and they are also regulated by Global Food Safety Initiative (GFSI) and British Retail Consortium (BRC) mandates.

To meet strict food safety mandates, the ERP system must enable lot control and traceability, both forwards and backwards all the way down to a container level. Food safety mandates also require advanced First Expiration, First Out (FEFO) inventory management.
SCOPE OF FSMA RECORD-KEEPING

Taking a closer look at FSMA record-keeping, today’s provisions address the following areas:

• Mandated facility inspections.
• Testing documentation.
• Documentation of characterization of high-risk sites based on known safety risks for the food made, processed, packed, or stored at a facility.
• Compliance history related to recalls, foodborne illness outbreaks, or violations of food safety standards.

To further consider the scope of FMSA record-keeping, processors are wise to select ERP solutions that help them track extensive quality testing with fully integrated Laboratory Information Management System (LIMS) capabilities.

Document management is critical to meeting food safety plan mandates. The ERP system must deliver tightly managed version control on key documents e.g., Certificates of Authenticity (CoAs) as well as recipes and formulations. Similarly, the ERP system must provide the ability to specify a lot for a customer based on the customer’s specifications. These specifications may differ from customer to customer.

In addition, ERP solutions must comply with extensive quality management requirements including a well-documented Non-Conformance Report and Corrective Action Preventive Action process, as well as the ability to generate Safety Data Sheets (formerly MSDS) based on a specific formula.

COST CONTROL

As a final consideration, processors must keep costs streamlined to protect margins. That’s why an ERP implementation must track ROI metrics for a reduction in operational costs, improved utilization of resources, reduction in waste, recall management and avoidance and other key metrics.

ROI must look beyond hard savings like reduced inventories, cycle times, etc., and recognize those benefits achieved from more accurate planning, integrated databases, streamlined information reporting, dashboard reporting and other uses of real-time data.

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ADDITIONAL FUNCTIONALITY

Additional critical requirements of food and beverage processing ERP systems, beyond the areas noted above, address the following functional areas:

- Customer relationship management
- Quoting and estimating
- Order Processing Available-to-Promise (ATP) and Capable-to-Promise (CTP)
- Forecasting and demand planning
- Materials management
- Mixed mode manufacturing
- Lean manufacturing
- Supply chain management
- Advanced manufacturing planning
- Warehouse management
- Plant equipment optimization

FINAL THOUGHTS

The food and beverage processing sector continues to be challenged in selecting and implementing enterprise solutions that meet the key considerations outlined here. We see many food and beverage manufacturers lacking integrated tools to streamline lot trace management, recipe management, document control and other related functions.

Changing market demands work to further challenge processors. Food and beverage manufacturing is investing more in product development to deal with rapidly changing food habits and the dynamic tastes of ever-changing populations and generations. This has led to the acquisition of Product Lifecycle Management (PLM) and R&D development tools, and the payback for mid-sized food and beverage manufacturing has been significant.

In all, for today’s top processors, the considerations must go beyond technology selection and instead encompass improving business processes. Business Process Improvement (BPI) services tailored to the food and beverage industry focus on understanding industry-specific processes and business requirements, and identifying areas of improvement based on best practices with a track record of reducing process waste.

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