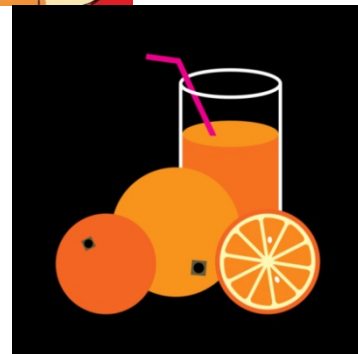


Product Traceability & Recall Planning



August, 2009



Food & Beverages (F&B) industry is recently witnessing an increase in the frequency of product recalls and other food safety related threats. Even the best and the biggest in the business are not impervious to quality failures in their food chains. With a staggering number of activities & supply chain players involved in the making of one bowl of soup, the conventional methods of quality control and partner relationships are rendered ineffective. To businesses faced with market forces of diminishing consumer loyalty, brand power & stringent regulations traceability is of practical importance today, more than ever before.

By embracing traceability, a manufacturer also benefits through unparalleled visibility of the inventory at various stages of the supply chain. The manufacturer is also required to establish a collaborative environment with all the entities in the chain. The need to encompass multiple entities requires capturing myriads of data through the system. This paper would talk about the various entities, drivers & benefits of Traceability & Recall Planning. We have also taken a practitioners approach in detailing out the difficulties faced by companies with legacy applications and the role of ERP in establishing links from a traceability standpoint. This paper also discussed the steps to recall Planning & Execution.

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Introduction

Consumers are becoming increasingly conscious of the quality of the food products that they consume. Thus, Safety & quality are the key focus areas of Food & Beverage (F&B) players today. This has gained importance with increased globalization leading to production shifting to low cost nations across the globe. Sensing the risk involved in food contamination, governments across the globe have (or in the process of having) strict laws that mandate Traceability. For example The EU General food law 178/2002, USFDA Country of Origin Labeling (COOL), Food Allergen Labelling and Consumer Protection Act (FALCPA). These stringent Labelling and food safety norms considerably increases the compliance overhead of the CPG company.



Through this white paper, we suggest simple and systematic ways of not just regulatory compliance but also ensuring that F&B companies de-risk their business from possible losses like: Physical recall of the product, Loss of brand equity , Loss of customer trust , Law suits and consumer backlash etc., Through our Point of Views on traceability & recall planning outlined in this paper, we suggest ways in which manufacturers can be prepared for any unpleasant eventuality and overcome it with minimal loss & damage.

Product Traceability



According to the International Standards Organization (ISO) traceability is, *"the ability to trace the history, application or location of an item or activity by means of recorded identification."*

Traceability involves the use of tracking and tracing systems and processes that match the attributes of incoming raw materials to outgoing product specifications for the purpose of improving business and/or product performance. In the food chain, traceability means the ability to trace and follow a food, feed, food producing animal or substance through all stages of production and distribution. Factors driving traceability implementation in the industry today are manifold.

The most important drivers as we see are:

- Food Safety
- Regulatory Compliance
- Efficient Recall Management
- High Customer Expectations
- Retail Mandates

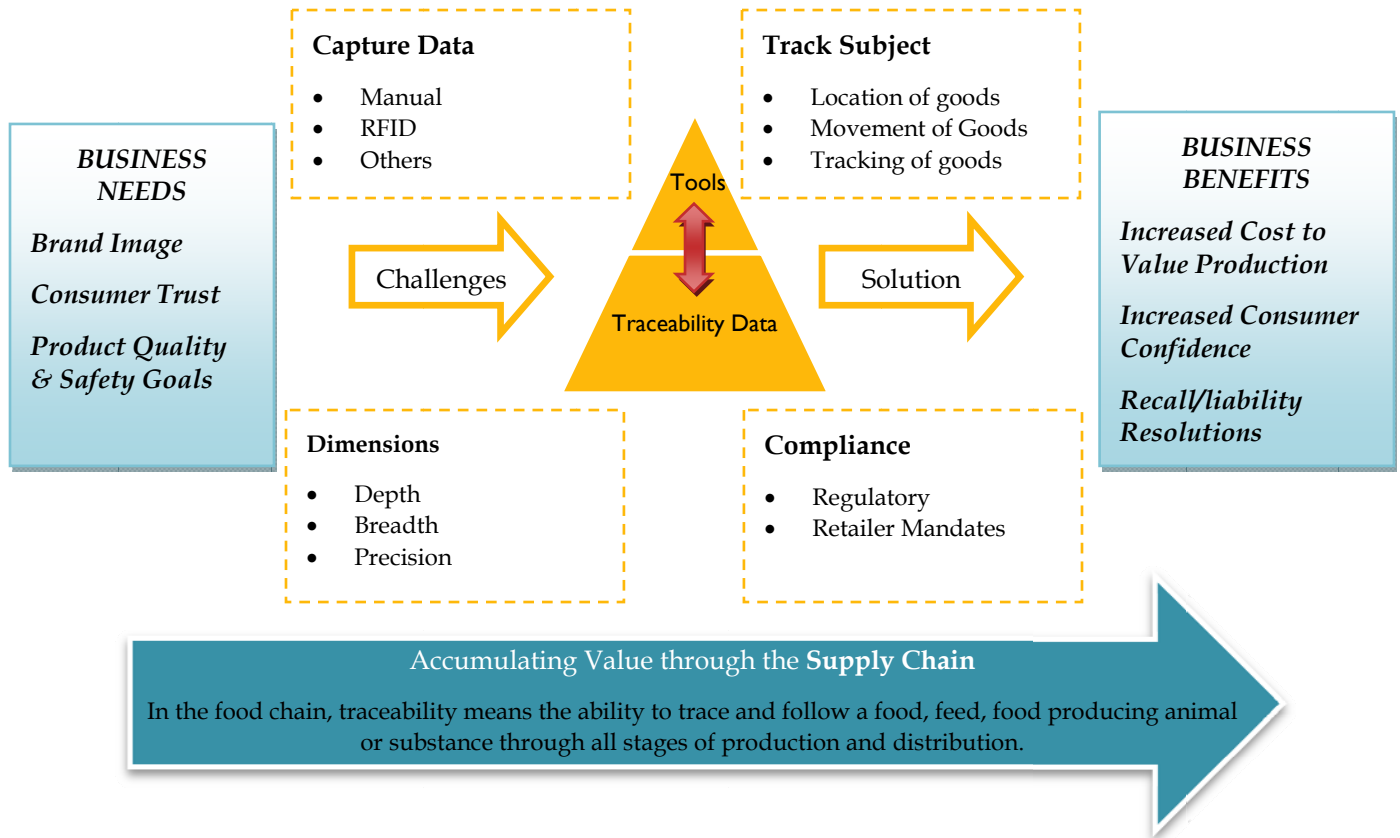


Figure: Traceability in F & B Industry – Drivers, Dimensions and Benefits

The foundation of traceability lies in identifying every object uniquely across the chain.

A traceable item may include a **shipment, logistic unit**, a trade **item not crossing the Point of Sale (PoS)** -for Example, batch, lot, carton or bag or a **trade item crossing the PoS** – like a consumer unit. There are a lot of players involved in getting the products to the final consumer, and each of them have their own priorities – meaning, in most cases, the onus is on the F&B companies to enforce standard identifiers for their products.

One-up & One-down traceability is one of the typical regulatory requirements in many countries. Every entity in the chain should keep track of the upstream source of their materials and the consumption point down-stream. To comply with the one-up traceability, a manufacturer who uses sugar as one of the ingredients should keep track of the supplier from whom he sourced sugar & the production batch that consumed sugar. To comply with the one-down traceability requirement, he needs to keep track of the supplies of finished goods (FG) that were sent to distributor warehouse. Extending the same to all partners in the chain, we achieve full value traceability.

Product Codes for Traceability

As illustrated in the sugar case above, product identification across the chain through unique product codes is the key in establishing traceability. In this light, Consumer Packaged Goods (CPG) companies are realizing the need to harmonize numbering & identification scheme by using global & industry standard product codes that would help in the following ways:

1. With in the company, across various business divisions, there is uniformity in the way a product is identified. Thus, data flows across applications seamlessly.
2. Seamless flow of transactional data through the supply chain as suppliers, manufacturers, distributors & retailers use the same notation to refer products.

The Electronic Product Code (EPC) is a family of coding schemes designed to meet the needs of various industries, while guaranteeing uniqueness for all EPC-compliant tags. EPC tags were designed to identify each item manufactured. Another point to note is that the data required in the EPC tag is based on EAN.UCC GTIN (Global Trade Item Number) or SSCC (Serial Shipment Container Code) which are the codes contained in bar codes on shipping labels.

Why do CPG companies find it difficult to manage product codes?

1. Complex IT architecture

- A. **Specialized IT solutions to meet growing needs:** The F&B industry is witnessing an exponential growth in the product categories. Companies have started to realize that implementing an ERP solution cannot solve all the problems. To handle the growing business complexity, IT service providers have started to offer specialized solutions resulting in plethora of IT applications to be maintained. A lot of applications have thus evolved in the recent past to handle specific white spaces that were not handled by ERP. This has resulted in a complex IT architecture with too many functional application silos at various levels each having their own way of identifying/interpreting product codes.
- B. **Frequent Mergers & Acquisitions:** As more & more companies consolidate by mergers & acquisitions, the biggest task ahead is the integrating and re-wiring of their IT applications. This results in myriad of IT applications each having their own way of storing data.

2. Power at downstream

As retailers & distributors grow bigger, they tend to impose their internal product codes onto manufacturers; there are additional overheads involved in translation these codes to enterprise wise products codes recognized by legacy/ERP applications. Moreover, as distributors need to feed sales data to multiple CPG companies, it is impossible for them to maintain mappings of product codes of every vendor. Therefore, CPG manufacturer has to carry out the cumbersome task of mapping Distributor's product codes to his own codes.

Role of ERP in establishing links for Enterprise-wide traceability

Enterprise Resource Planning (ERP) systems cut across various departments of the company like Finance, Accounts, Operations, Sales & HR, providing a single view of the enterprise. Ergo, they are best suited for capturing and maintaining data related to traceability. ERP systems serve as a one-stop shop for data enabling forward & backward traceability.

1. Recipe (or **BOM**) information is generally maintained in the ERP system's **material management** module & identifies the items required to produce a finished good. If Recipe information is too

complex for ERP to handle, the hierarchy can be stored in a specialized application to meet the specific needs of that industry.

2. ERP also maintains the supplier details for all recipe elements. Material Resource Planning (**MRP**) releases the expected delivery schedules of each item to the suppliers. Once supplier delivers the items, a lot ID is generated.
3. Multiple lots from a supplier can be stored in a warehouse. A lot ID is generated at this point which identifies a particular batch from the supplier.
4. Production process consumes this inventory. Every batch of finished goods is allotted a production batch ID by **shop floor** modules. There are variations of how this ID is generated depending on production type. Continuous processing would rely on exact time of manufacturing to trace back the lot IDs. Batch processing is simpler as the link can be established even by a running number with dates embedded in them.
5. Finished goods are packaged and stored in the form of cases/pallets. Inventory lot ID is generated at this point by the ERP's **warehouse module** where these cases are stored.
6. Multiple lot IDs can form a truck that is dispatched to the distributor/Retailer. A Transportation lot ID is generated here by the **TMS** module. The ownership of this ID is based on who is transporting (Co-packer, 4PL, 3PL etc.). If the company employs 4PLs for logistics services, then 4PL can generate these IDs for the manufacturer.

How can legacy applications be modified to enable traceability?

Companies which are yet to jump onto ERP bandwagon don't have an option but to continue to use existing legacy applications to capture data related to traceability. We should note that these legacy applications were developed to address a specific functionality and not with traceability in mind. Moreover, these applications have their own way of storing data in a local database. As illustrated earlier, establishing links between various lot IDs is cumbersome & requires extensive re-wiring of legacy applications. Bigger companies who have larger IT budgets either implement ERP or tweak their legacy applications to comply with traceability norms. Traceability requirements are seen as an up-hill task especially for Small & Medium Enterprises who do not perceive financial benefits.

When it comes to traceability across the supply chain, it requires usage of global coding schemes for linking & identification across the chain. Hence, companies with legacy applications will have to modify the interfaces between these applications to maintain the mapping between their product codes and industry standard codes.

That explains how items are linked for traceability within a company.

What your current ERP cannot do for you?

Though an ERP is ideal for capturing traceability-related information through uniform pan-enterprise naming conventions, there are functions those are not easily handled by an ERP:

Practices such as mixing, blending, batching, and re-work challenge ERP systems to maintain **attribute identity**. Being able to track critical events like hormone injections, pesticide use, or receipt dates across transformative events provides an important foundation for solving challenges in traceability.

Continuous monitoring of co-packers, contract manufacturers, and upstream suppliers for compliance with your business rules and **regulation mandates is critical to prevent recall** in the first place.

Temperature monitoring at frequent intervals and across loading, transportation, cross-docking, and unloading, lets businesses verify that logistics partners are delivering goods in saleable condition. This provides the ability to forecast 'real' shelf-life and reduce shrinkage and aid in prioritizing inventory usage.

Profit optimization is possible by quickly identifying attributes, events, people, or locations associated with either favourable or adverse outcomes and further training and educating the poor performing people and correcting the wrong practices. This is not possible with your ERP today.

Figure: Traceability Challenges with ERP

There are a plethora of traceability solutions in the market for the F&B industry today:

1. Trace gains
2. Trace Tracker
3. Trace assured
4. Traceall
5. Softrace
6. FQCode
7. Ross enterprise
8. Tracewise
9. Trax-IT
10. Logicsoft

Benefits to the Supply Chain

Apart from the drivers mentioned earlier, having a full-fledged traceability system also has various benefits for the consumer goods industry especially in the area of supply chain management (SCM). A few of them are listed below:

- a) **Inventory Visibility:** By way of tracking the inventory lots that traverse through the chain, the companies also get a better visibility of inventory across the chain. Through better visibility, companies will be able to do their plan their supply chain better.
- b) **Improved Logistics efficiency - better shipping & receiving:** Logistics cost incurred by the company not only includes the cost of transporting goods, but also the costs associated with packaging, warehousing and handling. Traceability streamlines the whole process of warehousing through pre-fixed lot sizes. Eliminates ad-hoc or random ways of storage & enforces systematic way of warehousing goods. Thus, streamlining also helps in better utilization of warehousing assets.
- c) **Efficient Batch Sizes enforced by traceability:** The limitation being that every lot that is sourced from suppliers needs to be identified with the corresponding downstream lots in the chain, Companies need to trace forward all the lots that were made from the specific inbound lot from a supplier. Thus traceability has added more constraints to the already complex logic of determining the optimum batch size. Thus, the scientifically derived batch sizes (with traceability constraints) would go a long way in streamlining the logistics operations.

Introduction to Recall



A recall is the last step in the traceability chain that attempts to limit liability for corporate negligence and avoid negative publicity. Even though the idea of having a traceability system in place is to avoid the costly scenario of a recall, the eventuality may arise in any food chain. It is prudent that every company be prepared with a robust recall plan. A recall plan that has been tested well in advance is critical in efficient, quick and timely crisis prevention and public safety. A recall could be:

1. Voluntary action i.e. proactive decision by the company management
2. It could be imposed by government regulatory agencies

However, recalls are always conducted in co-operation with federal and state agencies.

Recall Planning

A well-defined recall plan is indispensable for a company's survival in the face of potentially paralyzing circumstances.

The objectives of a recall plan include:

1. Protect consumer health and safety as well as provide them with correct information about the product consumed
2. Comply with government regulation
3. Ensure minimal damage to brand and reputation
4. Minimize cost of the recall
5. Trace the cause of contamination or safety issue so that a repeat episode is avoided

A Recall Plan

The following are some of the key details that should be described in detail in the recall plan:

Plan Element	Details
Recall Committee	The roles and responsibilities of every individual participating in the execution of the recall should be clearly specified in the recall plan. The recall coordinator is the key person to devise a recall plan and co-ordinates activities in the committee.
Defect Analysis	<p>A mechanism by which all the necessary details of the defect could be captured should be detailed. If this involves external entities, then their responses are to be captured. Details include:</p> <ul style="list-style-type: none"> • What are the UPC (Universal Product Code)/GTIN (Global Trade Identification) numbers? • Who placed the complaint? • What is the nature of the complaint? • How do we ensure the validity of the complaint? Are there necessary proofs?
Initial Assessment and recall classification	A template which can capture the potential hazards of the defective product should be in place. That would also decide the corresponding recall class. The above two factors would also determine the depth of the recall. The depth would be greater if the product is already sold to consumers or distributed to the retailers/distributors
Recall communications	<p>The plan should clearly specify the details of the authorities who should be notified with all the details about the recall. There should be a template to provide the following details to the regulator:</p> <ul style="list-style-type: none"> • The defective product • The defect noticed • At what level is the defect? • What is the level of distribution? Quantity and depth. • Public communication <p>Handling public relations is the most important activity in recall execution. This is one key activity that would minimize the loss of brand equity. There should be a designated spokesperson that would coordinate the PR activity with the Recall coordinator. Essential messages like PoS notice, warning notice, media (print, electronic and cyber) alerts.</p>
Recall Execution Analysis	During the process of recall and aftermath, it is imperative to keep all the stakeholders informed about the recall activities and its effectiveness. The data from POS systems help in connecting the dots to minimize the volume of recall. These reports would contain the following information:

	<ul style="list-style-type: none"> • Number of customers/ distributors notified about the recall • % response from these entities • Recall effectiveness - % of stocks already recalled • Costs incurred (as on date) • Status of returned products (Disposal / further processing)
Recall Exit Criteria	The recall plan should clearly specify the metrics for a successful recall termination. After the criteria are met, the recall coordinator is expected to submit a report to the senior management detailing the activities carried out during the recall along with the losses incurred. A root cause analysis presented that would guide the management on how can the company avoid similar recalls in the future.

Recall Committee

As in case of any project, event or program, related expertise and knowledge from cross-functional departments should be brought together in the form of a “Recall Committee”. Every food manufacturer, importer, distributor, and retailer should form a recall committee and a plan detailing the actions to be taken and the responsibilities of individuals in the event of a recall. The constitution of a recall committee varies from company to company and may depend on size and scale of business, industry, etc.

The table below summarizes the responsibilities of each Recall Committee member.

Recall Coordinator	<ul style="list-style-type: none"> • Decision –maker on initiating recall, level of recall, ending recall & plays a co-ordinating function
Production	<ul style="list-style-type: none"> • Providing information on lot, batch, date information • Quarantine and sanitizing affected production areas
Quality Assurance (QA)	<ul style="list-style-type: none"> • Investigating the cause and maintaining record • Working with regulatory agencies • Overseeing safe disposal of affected products
Marketing & Distribution	<ul style="list-style-type: none"> • Track penetration of questionable material in the distribution chain • Arrange for collection of product back to the company • Prepare status reports, consumer communication and formulate reimbursement plan for customer
Regulatory	<ul style="list-style-type: none"> • Regulatory agencies play a role in determining if a recall is necessary • Aid in setting up customer hotlines, media attention • Maintain record of all recall details
Public Relations	<ul style="list-style-type: none"> • Handles media queries, press-releases and consumer redresses through hotlines
Legal Counsel	<ul style="list-style-type: none"> • Work on legal implications & plays advisory role in the committee • Assesses the insurance coverage and works with firm’s insurance provider for claims • Validates statements to be issued to media and public
Nutrition	<ul style="list-style-type: none"> • Determines health consequences of the contamination issue • Assists in formulating necessary corrective action

Purchasing

- Suppliers communication when the raw materials are the root of the problem
- Responsible for contamination free raw material sourcing plan

Recall Execution

The following diagram illustrates the flow of events from the time the complaint is logged to the point when the recall is terminated. As evident from the diagram, Recall Committee plays a critical role in coordinating the recall process.

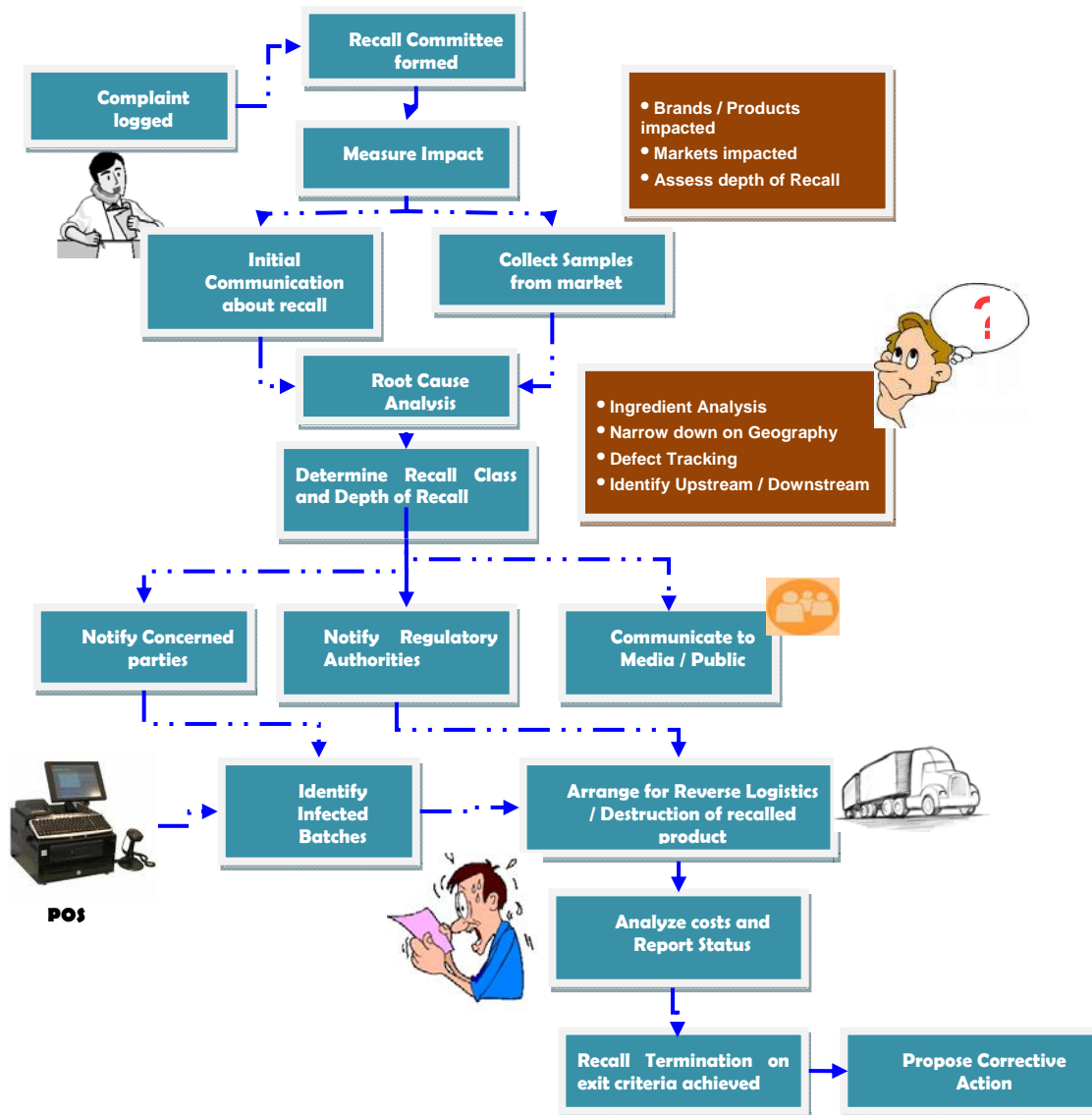


Figure: Recall Execution – Flow of Events

Need for Tight Integration between Retailer and Manufacturer:

With the help of ERP and specialized traceability solutions, the manufacturer is able to define links for forward and backward traceability. Once the goods reach the retailer warehouse, it's the onus of the retailer to track the forward movement of the goods to the respective stores as the ownership of the goods changes to retailer's hands. Wipro perceives that there should be a tight integration of retailer and manufacturer systems during this point.

In the unfortunate event of a recall, on getting the batch codes from the manufacturer, retailer should be able to clearly determine the exact stores to which this batch has been dispatched. Accurate store identification would minimize the depth of recall. In order to narrow down on the stores, the handshake between the Manufacturer and retailer systems should be strong and robust. Wipro envisions every retailer to be mandated with systems that identify the retail DCs/stores that have a particular batch supplied by the manufacturer.

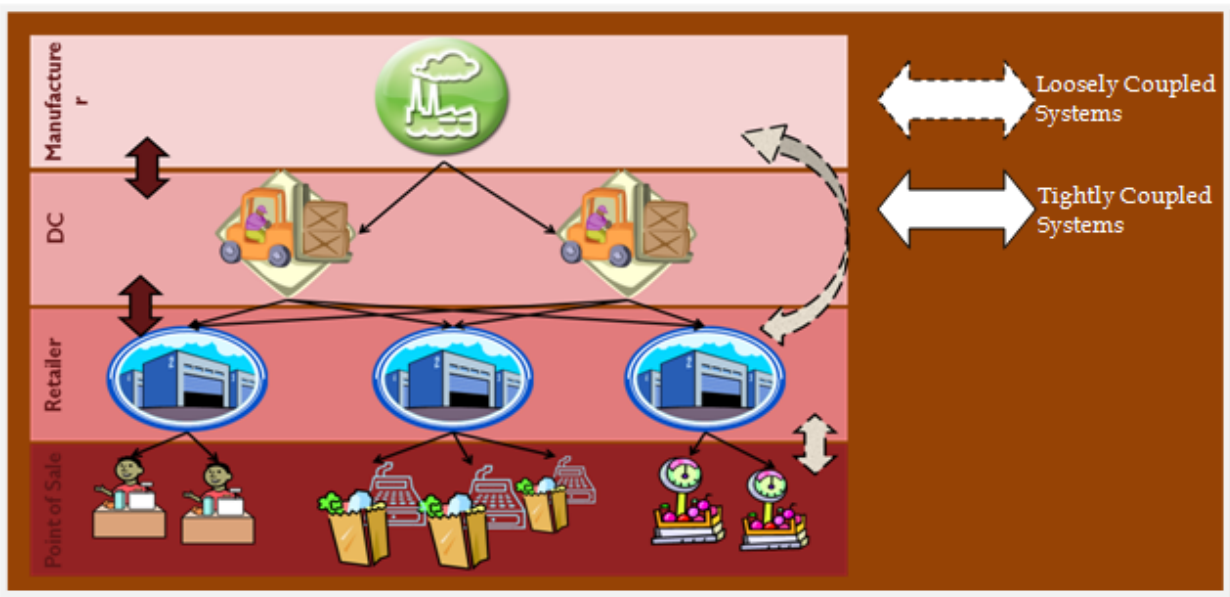


Figure: Integrating Retailer and Manufacturer Systems

Conclusion

Through this paper, we have provided illustrations for product identification, data capturing & linking as applicable in the F&B industry. We have also given key insights on practical problems faced by the industry today in maintaining legacy applications to enable traceability and ways to solve complexities involved with product codes.

The second half of the paper emphasizes on the importance of preparedness for recall and the activities that go into recall prevention & planning. Further, we provide a comprehensive, step-by-step guide to executing a recall.

In addition to focusing on removing costs and improving supply chain efficiencies, the foods & beverages industry is trying to figure out ways to handle the crisis of a series of recalls & regaining customer confidence on their brands. Traceability definitely plays a major role in the organization's objective to improvise on business operations. Apart from the traditionally known benefits of traceability; we have also discussed the supply chain benefits that can be derived.

Appendix

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