Traceability: Crucial component of supply chain

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To work effectively, a traceability system must be verifiable, result-oriented, cost-effective and applied consistently and fairly. The world is continuously evolving and the field of food value chain is exploding with multiple cutting-edge technologies such as traceable barcodes (GS1), DNA tracking, Microbiome, Internet of Things (IoT) and more.

Traceability solutions ensure that food or agricultural produce is traced and tracked throughout the supply chain. It is critical for food safety as well as operational efficiency, as the entire chain of custody is tracked with precision. Traceability ensures that all functions in the food value chain are monitored right from the farm to the end consumer. With real-time location tracking of a product at any stage of the food chain, be it procurement, production, processing or distribution, essential goals of food safety and assured quality are met within the food and beverage industry. It is not limited to product recalls or ensuring animal health and food safety alone. Traceability helps slash costs, enhance value chain productivity and boosts brand equity. Food majors are yet to explore the potential of traceability.

Who needs the most?

First and foremost, we must be most concerned with protecting unique produce ecosystems globally. Whether we are talking about mangoes from India, cocoa from Ghana, olives from Spain or seafood from Indonesia, every country wants to protect products considered uniquely theirs.

Several food safety outbreaks have been reported over the last decade. We must remember that one single food safety incident affects the entire sector, let alone the costs of recalls and transportation, wastages. Consider a few recent examples of salmonella outbreak from onions in the USA or of spurious soybean seeds in India, which failed to germinate.

The COVID-19 pandemic has put food companies across the sectors under immense strain because of lack of visibility into their own supply chains and the urgent need to upgrade their operational procedures. While information sharing is becoming a constant challenge, regulatory diligence is becoming increasingly critical for the food and beverage industry. With changing geopolitics and food trade laws, this will have a serious impact on global food traders in the coming months. Hence, end-to-end traceability comes to the rescue of countries and supply chains to confidently attest that their foods or produce are unadulterated, safe and adheres to food safety norms.

Understanding

Traceability, which essentially means bringing transparency into a value chain, can be understood in two different ways, namely, tracking and tracing. Tracing determines the history log of a product's steering all through the whole food chain. This data provides information like the product's origin, movement to processing, final packaging, among others, for a single unit or a batch. Tracking pinpoints the destination of a product, following its path through the food chain from the point of manufacturing to the final point of sale or point

of consumption. Akin to tracing, tracking also is possible for an individual item or a lot. In totality, tracing looks in reverse to a product's origin, but tracking looks forward to its destination.

Ensuring food safety

As the food supply chain increasingly becomes complex and more global in scope, the importance of traceability has catapulted. Added complexity requires a robust system and processes in place in case a food safety issue occurs. If it does, traceability helps isolate the source of the issue and the scope of any potential untoward incident. Adopting a traceability product, will make your food company prepared in the case of a potential issue, with visibility and transparency all through the food chain. Traceability allows for a prompt response, providing for diagnosis and mitigation, when an incident occurs. The system rescues food processors, and in a few cases, entire industries. It helps companies recover faster, by restoring public confidence in the product, company, industry, and food supply. Finally, traceability can be useful in future preventive procedures to secure the food chain.

Traceability, mapping and transparency

Of late, these concepts are gaining visibility in multi-tier supply chains. Let us look at these briefly along with a few relevant applications.

● *Traceability-* Traceability offers chances to find supply chain inefficiencies, meet regulatory requirements, to connect and comprehend the actors in the upstream supply chain, and obviously useful for storytelling to consumers about the provenance and journey of products, via scannable QR codes on packaging. Including the context of sustainability, traceability forms the backbone of the system to verify social and environmental claims (for example certified organic, carbon neutral, fair trade), while it must be authenticated by third party testing.

● *Mapping-* This is the process of forming the complete overall picture of the companies, suppliers, vendors etc. within the supply chain at every tier. Mapping does not show the flow of goods, but rather enables visibility of all the potential actors within each tier of the supply chain. This process is complicated to execute with smallholder farmers, artisanal miners, or homeworkers, hence in such cases, proxies like geographic location is used or a trusted collective point, such as a farming cooperative may be used. It is useful for risk assessment and prioritizing suppliers; it can aid a sustainable sourcing strategy too.

● *Transparency-* This refers to the strategy of how to disclose supply chain and sourcing information to stakeholders. Transparency is defined by what data can be shared, to whom, and how often and when. This is effective in demonstrating sustainability efforts and openness to stakeholders. Many companies have used transparency in response to criticism, where achieving full traceability is currently impossible—for example sharing supply chain mapping for a palm oil supply chain. For example, Nike is the first company to publish its supplier list, pioneering supply chain transparency. The supplier map on its website offers more insight on its supplier base. While, companies like Apple Inc, choose to publish periodic reports that share real-time progress and performances.

Implementing

While the value of traceability is beyond doubt, businesses are now exploring ways of implementing and overcoming the challenges involved. For example, traceability needs producers to have integrated systems in place for effective control, monitor daily operations and stakeholders, who are willing to collaborate.

Having a technology partner that educates, trains and walks you through the steps is critical to the project's success. In addition, the solution needs to be agile and work everywhere, be it urban collection centres or rural farms. In niche technologies like these, the devil does lie in the details. How do you make sure that people with different educational backgrounds and exposure to technology find it easy to use the applications? That is where we have put in an incredible amount of effort over the last seven years.

Evolving

Traceability systems can meet the needs of an increasingly dynamic food chain. As most processes need to be standardized among producers, suppliers, and distributors, to resolve an issue in case of a conflict, traceability is a potent asset in the diagnosis and recovery efforts. AS