



EPC Changing the CPG Industry

Electronic Proof of Delivery (EPOD)

Situation:

In theory the receipt of product is the simple result of identifying a product, counting how many were received, and reconciling what was received against what was invoiced, resulting in payment.

In reality, receipt of product is more complex as there is a wide range of freight which can be identified and counted using different methods depending on the freight attributes. These different methods are often driven by valid business rules. For example: When receiving a truck load of 52 full pallets of the same item it would be a waste of time and money to count each individual case of product. Rather the whole shipment can be accounted for by counting the pallets and multiplying by the cases per pallet. If the truck is loaded with mixed pallets instead, then each pallet needs to be taken apart and each case needs to be identified and counted. There are many other instances of receipt based on the combinations of freight attributes. Once freight has been identified and counted the receiver needs to associate the freight with a purchase order. In high volume facilities it is possible that similar freight is being received on a regular basis. It is important that the freight being received is applied to the correct order. Many of these processes rely on human input and are prone to several exceptions:

1. Difficulty in correctly identifying the product (e.g. confusing two items)

2. Incorrectly counting the number of products.
3. Failing to correctly associate the product with the originating purchase order.

The above errors can be compounded by other supplier-caused factors including:

- Purchase orders that span multiple pallets or multiple trucks.
- Product line items filled with substitute products.
- Shipments that contain product overages and shortages.

These errors often lead to disputes that affect both retailers and suppliers as it takes additional resources to understand the cause of the error and potentially re-allocate product or funds. When these errors are detected at the store level, the cost to resolve them are significantly larger. This is due to the fact that many more people now have a hand in correcting the situation and has higher potential to cause an Out Of Stock.

How EPC Meets the Challenge:

EPC tags are encoded with both the product identification and a unique serial number which has the potential to improve receiving accuracy. As this technology is further adopted it will lead to automated receipt of product and electronic proof of delivery.

Through a collaborative proof of concept project, researchers from the Massachusetts Institute of

Technology (MIT) have been working with Wal-Mart and several top 100 suppliers to better understand how EPC technology can improve receiving processes. The objective of the research was to perform root cause analysis on deductions. As of this writing, the team has done a thorough analysis of 7 months of receiving information. The initial findings are presented in this document.

1. **Not all receiving discrepancies turn into deductions.** Both retailers and suppliers appear to have trigger points above which a deduction is created or disputed. Consequently there are many small discrepancies that are overlooked as the current manual effort to investigate the small discrepancies out weighs the cost of the products being investigated. EPC-facilitated processes may ultimately allow both retailers and suppliers to lower their trigger thresholds to capture these overlooked items.
2. **Overage information is as important as shortage information.** Both retailers and suppliers can benefit from improved communication of receiving discrepancies for shortages of product as well as overages of product. In reality, both types of data indicate a potential error and often are interrelated. In one example, the root cause for an initial deduction was an instance of

mistaken identity, as some cases were received as excess freight on a different line item. The additional overage information helped to identify where to look to resolve the deduction.

Analysis of the EPC data associated with these discrepancies and deductions lead to these directional findings.

- 58% of the discrepancies were due to incorrect identification of the product at receipt.
- Of all the discrepancies where EPC data was available, 53% of the time the EPC data could refute the received amount (over or short).
- Average EPC read rates of items associated with line item discrepancies was 89% based on product being read at any read point within the retailer's distribution network.
- The value of using EPC technology to reduce discrepancies can vary from \$0.01 to \$0.03 per case at least. Key factors in this swing in value are actual case cost, the difficulties inherent in physically receiving some shipping configurations, and how clearly individual cases are marked to distinguish them from other cases on a shipment. Please note the above value is based on one tag per case, and some product packaging configurations may result in cases containing more than one tag. In any instance, this cost savings per case can be a significant offset to the variable costs of EPC tags and further highlights a path forward for subsequent EPC adoption across other company processes.

The data from this project and RFID data in general has also been the key to resolving a number of mis-receipts and claims through an EPC driven tool.

Resolution:

The initial results of the project are promising as the EPC data helped resolve a real world dispute. Additionally the EPC data is adding value without having to achieve 100% read rates at each read station. Near term benefits are outlined below.

Retailer Benefits:

- Less down stream supply impacts including potential out of stocks.
- Greater accuracy in shipping the right product to the right store leading to better customer satisfaction
- Fewer hours spent administering claims.

Supplier Benefits:

- Fewer freight deductions due to more accurate receipt and payment for goods.
- Reduction in ambiguity in the evidence collected for claims reconciliation leading to greater recovery of funds.
- Faster reconciliation leading to decreased working capital DSO (Days Sales Outstanding)
- Lower threshold for research leading to greater fund recovery.
- Improve shipment accuracy of both pallet and truck load.

Process Changes:

The proof of concept project required minimal process changes as the majority of the analysis could be performed within the team. However, throughout this process the team is building use case examples which will guide future process change. The anticipated next phases are:

- Deduction resolution: Suppliers use EPC data to help refute and further understand root cause of deductions.
- Deduction prevention: Retailers use EPC data combined with EPC

enhanced Advanced Shipping Notification data to improve receipt accuracy and proactively prevent deductions, by correcting discrepancies shortly after receipt.

- Receipt/Inventory correction: The proof of concept has identified situations where inventory accuracy can be improved for several items and for stores if receiving issues are resolved early enough.

Conclusion:

EPC technology has allowed us to collaborate to better understand the receiving process and get root cause of discrepancies which lead to deductions. The result of the analysis of over 7000 line item receipts indicate that EPC technology can make significant improvements to reducing the number of discrepancies. Assuming that a large percentage of over and short shipping / receiving discrepancies will be eliminated, pennies per case of cost can be eliminated from the RFID-enabled supply chain. This example is just one of many ways EPC is changing the CPG industry.

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Bibliographic Reference

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