A SWIFT KICK INTO SUPPLY CHAIN MANAGEMENT

"Radio Frequency Identification"

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Overview

The promise of being able to deliver real-time information to address the "true demands" of the customer as well as the "true needs" of the supplier has finally shown through into Supply Chain Management by means of Radio Frequency Identification (RFID) technology. The use of RFID in tracking and access applications first appeared during the 1980's when newer technology was needed to handle greater amounts information with more complexity. Since that time, there has been a greater requirement for efficiency and accuracy in:

- Tracking products both within Distribution Centers and their End Stores,
- Increasing inventory turnovers,
- Improving the quality of product data, and
- Increasing the quantity of product data.

As this concept continues to evolve, RFID will be the staple of technology to enable numerous companies to successfully move products not only within their facilities, but within the various cost-cutting, revenue-boosting environments of supply chain-dependent industries - retail, manufacturing, transportation and logistics, security, health care, and pharmaceuticals. The popularity of RFID stems not only from the read/write capability of the active as well as passive RFID systems, which enable the use of interactive applications, but also the tag which can be read from and/or written to a distance and through a variety of substances--such as snow, fog, ice, or paint, where bar-codes have proven useless.

RFID systems have been grouped into four major sectors

- Electronic Article Surveillance (EAS) systems – generally used within retail stores to sense the presence or absence of an item. Products are tagged and large antenna readers are placed at each exit of the store to detect unauthorized removal of an item.
- Portable Data Capture systems – characterized by the use of portable RFID readers, which enables the system to be used in variable settings.
- Networked systems – characterized by fixed position readers which are connected directly to a centralized information management system, while transponders are positioned on people or movable items.
- Positioning systems - used for automated location identification of tagged items or vehicles.

Using RFID technology within supply chain operations will enable suppliers to retain major retailers such as Wal-Mart, Target, and Home Depot which are now dictating its utilization for increased accuracy of shipments. Indeed, other product manufacturers will want to take on more of the burden of pre-pricing products. Another application anticipating the use RFID is the Department of Defense, who is in the midst of evaluating, with the intent of requiring, its utilization by its multitude of vendors in order to decrease shipping errors as well as to insure the accuracy of each shipment.

Unfortunately, compliance to the RFID requirement alone is insufficient in generating "any true business value," as perceived by most companies, due to its multi-million dollar price tag and extensive time requirement for full-fledged implementation. Thus, there will be extremely limited ROI for compliance-only application companies. Companies will have to go beyond this single initiative and engage in additional opportunities this technology provides.

"Business leaders need to understand that RFID is not a solution – it's an enabler that allows you to change your business processes for the better," says Bob Cornick, vice president of RFID for Zebra Technologies Corp. Within today's environment, there are always means and methologies for companies to use RFID in order to create some degree of attainable benefits. This is further illustrated by various proponents of the technology that view early adopters of RFID as gaining the most. This is a prime strength of RFID; the ability to change processes which enhance productivity as well as profitability.

Concept

RFID tags products and goods with tiny chips (some as small as one-third millimeter) that function as an antennae/communication link while exchanging information with "in-range", but not necessarily "line-of-sight" RF readers. The information they exchange is comprehensive as well as structured in design; this encompasses not only basic data that describes a pallet or carton's contents; but also sophisticated information that summarizes the manufacturing details of a product.

Current Applications and Future Development

Within the supply chain application, the promise of RFID is to cut costs and deliver a wealth of information that helps businesses more efficiently predict, understand, and respond to a customer's demand. It is important to note that RFID is a new application of an existing technology. The estimated cost saving opportunities attributable to RFID can span and directly impact, but are not limited to, the following processes.

- Receiving and processing receivables, thus reducing shrinkage losses by approximately 11 – 18%.
- Reduction in Logistics delays by approximately 5%.
- Decrease the occurrence of out-of-stock product by approximately 9 – 14%.

The intangible benefits that can be reaped from this technology are only beginning to be realized. Higher visibility into the direct needs of the customer, thus shaping decision making processes for key business applications.

- Knowledge of business processes that require re-engineering in order to gain maximum value from the technology.
- Quicker response to "demand" signals generated by the customer.

- Reduction in "human error," thus ensuring improved accuracy of inventories and related data.

Within a closed-loop application, such as a manufacturing plant or a customer service environment, RFID technology can be used to streamline and/or better manage a business process. With embedded RFID tags in their products, manufacturers would be able:

- To quickly identify as well as track multiple products simultaneously moving through their facility without the need to visually inspect each individually; resulting in a major savings in handling and shipping costs created by handling batches versus individual pieces.
- To pick multiple items into one carton and then be verified for accuracy without having to touch the carton again prior to its shipping.
- To insure the quality of products being processed accurately, due to their visibility at any time, as they follow the process routing across the production floor.
- To "write" specific information, such as price, on the tags to eliminate the need for separate price tags.
- To insure the accuracy of shipment quantities by comparing the RFID tags prior to loading and after unloading, thus reducing theft as well as shipping shortages.

By reducing the amount of time a product needs to be handled RFID reduces the cost of the product; thus increasing profit for the distributor.

Opportunities for this application have yet to be fully-realized, but the potential for an ROI is there. "We're finding that there's real ROI there now. And interestingly, picking off the ROI on the closed-loop side is fairly straightforward. When we're talking to someone about supply chain RFID, they want us to give advice on gaining ROI. On the closed-loop side, customers already know where the value is. It's a much faster time to value," says Rob Douglas, president of Psion Teklogix Americas.

Additional areas for this application being investigated and developed by various companies are:

- Implanted devices within apparel. (Privacy concerns must be considered within this application).
- Developing "smart shelves" for tracking consumer packaged goods inventory levels.
- RFID transponders manufactured into light truck and passenger tires to tell where and when a vehicle is traveling.
- Embedded "human hair thin" tags within currency to prevent money-laundering, black market transactions, and bribery demands for unmarked bills.
- Tracking personnel and patients entering specific departments such as A&E (Accident and Emergency) in the wake of disease outbreaks such as SARS.
- Payment Systems such as Speedpass, which Exxon/Mobil developed.

Additional Benefits to be Realized

Another tangible benefit of RFID tags is the capability of a company to have visibility of each pallet, lot, and unit after it has left its manufacturing plant or warehouse. Manufacturers could gain a better understanding of successes as well as defects within their production processes. Product recalls could be far more effective in their ability to directly identify the defective components; thus, saving massive amounts of money as well as lives, especially in the health care and automotive sectors.

When used with a Global Positioning System (GPS), it may be possible to determine the location of the products in transit, thus determining when a particular component will be arriving for use in the production process. This could eliminate the uncertainty created by transportation issues which can directly impact a Just-in-Time (J-I-T) sequenced production line.

Next Step for the Interested

A good way for a company to proceed is to establish a multi-functional, internal Pilot Project Team with a structured charter. A minimal investment of a Reader, Printer, and several rolls of smart labels should be made to provide the necessary tools for this Pilot Project. The Pilot Project should be used with several vendors that have excellent reputations as well as experience with this technology as the "beta test".

With this, data can be collected and analyzed to determine the impact that RFID might have on overall operations as well as strategies of the corporation. Here are some opportunities you might consider:

- Collaborative planning as to material usage with the Vendor.
- Forward forecasting of material requirements based on accurate demand projections.
- Re-establishing replenishment targets for inventoried material.

From this as well as other determinates, a decision can be made as to the course to proceed with this application.

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