RFID Supply Chains of the Future

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With margins shrinking in the logistics industry as a result of strong competition, efficiency and information sharing has become the key to survival. Companies can no longer afford to plan on local or even national levels, and this calls for standardised procedures across operations. A need for efficient information flows requires a high level of knowledge management, and this is becoming impossible without the support of technology. As a result, any technology that promises to increase visibility across operations and indicates a potentially good return on investment (ROI) is highly attractive. Over the last decade, companies have extensively researched radio frequency identification (RFID) and its varied commercial applications. Adoption of this technology has primarily been driven by a need for increased visibility across the supply chain. Retail giants like Wal-Mart and Metro that have tremendous buying power have been instrumental in urging the implementation of RFID.

Despite concerns with the long-term benefits of RFID, it has begun to play an important role within modern supply chains. The future is likely to witness highly collaborated supply chains, heavily supported by RFID technology, thereby firmly establishing a business case for investment in RFID.

Increasing Visibility and Efficiency across the Supply Chain

Today, operations are primarily driven by customer demand. Companies are forced to focus on their core competencies, allowing third-party providers to steer nearly all their logistics functions. This has given rise to a new breed of providers that design and operate global distribution networks based on specific customer needs. Future supply chains will be highly integrated, and will be characterised by these "fourth-party" (4PLS) -type engagements that provide collaborative solutions by sharing both risks and rewards.

Globalisation is expected to heighten industry demand for 4PLs, especially since market barriers are slowly being lifted. As 4PLs are primarily non-asset based, they invest heavily in IT technology to run efficient networks with seamless information flows. Increasing competition amongst logistics providers has led to the need for companies to differentiate themselves from one another and highlight their unique value propositions. For providers like Vector SCM, RFID-based solutions may be the key to staying ahead of the competition. This is supported by industry giants such as Dell, Johnson & Johnson, and IBM -- they have gained enormous competitive leads with their strategic business models, featuring technology such as RFID as adding value in the long term.

The main driver for the adoption of RFID continues to be its ability to make supply chains more visible, thereby leading to the expansion of the customer base as a result of increased efficiencies. Web-based, real-time systems facilitate remote management of operations by ensuring accurate and effective receiving processes. RFID ensures that companies have the capacity to handle supplier schedules and cope with market demands by operating shorter lead times.

According to the IBM European Value Chain 2005 Survey, collaboration between supply chain partners is one way to ensure that customers adapt quickly to changing environments. Now a growing trend, joint ventures allow for shared risk and economies of scale.

Collaborated decision-making relies on smooth information flows, so a lack of knowledge management systems could be a threat to survival. If they are successful, these partnerships will convert logistics operations from "cost centers" to "revenue opportunities" for service providers. Combined with effective information technology solutions like RFID, these partnerships will ensure that levels of efficiency will be maintained, thereby driving their customers up the chain of excellence.

So Why is the Industry Still Afraid?

Despite common knowledge regarding the benefits of RFID -- i.e., reduction in the loss of inventory and increased efficiencies from producer to retailer -- deploying RFID is still heavily debated in the industry. In a recent study conducted by EyeForTransport, approximately 35 percent of the market is waiting to see what partners/ competitors will do about RFID before making their own decisions.

Software developers like Red Prairie and HID Corporation began to deploy RFID solutions

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several years ago, but at that time, very few companies saw the benefit of this technology. In 2004, concern with regards to the adoption of RFID was fuelled by unsuccessful initial pilot trials run by companies like Exel. Many companies argued that, after struggling with stretched budgets and technical difficulties, they finally had good enterprise resource planning (ERP) networks. They feared that introducing RFID would disrupt these systems and necessitate more investments.

There are also issues regarding privacy. Customers fear that if RFID trickles down to item-level tagging, their buying patterns can be easily read and exploited by companies. RFID tags are also not fully secure, and data can be altered.

Clearly, the adoption of RFID will not be without challenges. Despite the fact that companies like DaimlerChrylser have begun deploying the technology across their auto manufacturing lines, technical issues persist. For example, RFID cannot read the order of packages moving along the belt, making it difficult to arrange package sequences. Additionally, various frequencies are in use, as there are few standards. Although EPC Global is active in this area, all problems have not been fully solved.

The retail sector, however, has already had some success with this technology. In the same year as Exel's failed pilot test, retailer Marks & Spencer's declared its pilot trial a success, although modifications to the hardware and software needed to be made. During 2005, German retailer Metro introduced case-level tagging rather than the now-common pallet-level tagging, driving implementation several steps forward. Market surveys show that 50 percent of European retailers believe that they will see benefits from RFID within five to six years of deployment.

While fears with regards to RFID deployment are not unjustified, the returns from the technology are slowly emerging. 2005 was a big year for RFID. According to the same EyeForTransport study, 19 percent of companies interviewed were already rolling out solutions in 2005 – compared to 7 percent in 2004. Today, 27 percent are looking deeper into RFID and its potential benefits.

Reaping the Benefits

Today, several examples show how positive the industry's attitude is towards RFID. UPS (USA) is now looking to integrate RFID into its supply-chain operations, and extensive pilot projects are underway. Nokia has released an RFID software development kit to enable companies to develop applications using various Nokia phones. In early 2006, BT successfully pilot-tested assets tracking within the construction industry, which promises to radically improve efficiencies in materials and vehicle management. Wal-Mart now believes that RFID can cut working capital costs by nearly 8 percent.

In addition, innovative new applications are surfacing. In March 2006, RFID Ltd (USA) and Smart -Tek solutions announced that they would offer a solution to track H5N1 avian influenza ("bird-flu") in China; SurgiChip Inc. has now designed a solution by which it can use RFID to reduce errors in identifying patients for surgery; Danish software developer Lyngsoe Systems has come up with an RFID solution to prevent desecration of graves by tagging gravestones as well as valuable artefacts inside churches.

Regardless of RFID's seemingly unlimited potential, research indicates that the RFID market for supply chain applications is likely to be the most promising. This segment is expected to generate revenues of € 4.1 billion in 2010, with a healthy compound annual growth rate (CAGR) of 35.2 percent from 2005. This is supported by the fact that businesses are starting to re-think their business models in favour of strategies that will affect their bottom lines more positively. Aided by vendors like OAT, companies are beginning to establish frameworks that integrate RFID software, empowering businesses to achieve a competitive advantage.

Although concerns regarding potential violation of privacy still persist, the fear that RFID will disrupt operations is no longer justified. Vendors like SAP and Sun Microsystems released RFID packages within weeks of each other in 2005, with new software packages encapsulating the RFID functionality – all targeted at easy use with effective results. Prices are pegged to fall as low as 10 cents per tag, and by 2010, RFID is expected to have an 80 percent adoption rate within supply chain operations and over 50 percent within manufacturing and retail.

Conclusion

As information flows grow heavier, it will be harder and harder to avoid deploying RFID at some stage during the logistics process. Future business processes will be more consolidated, and being a late adopter of technology puts a company at risk of losing customers and market share. The future is likely to witness large-scale adoption across all processes and integration with real-time satellite-based technology, which necessitates that companies evaluate what RFID could mean for them.

Despite issues surrounding the deployment of RFID, the industry has begun to keep a more open mind.

How can companies make their supply chains more adaptable and dynamic? The answer lies

in building strong knowledge management tools into current business models. Companies need to be responsive in real time and focus on maximising supply chain performance -- awareness is the key . Businesses need to fully assess what RFID means for them and packages need to be chosen carefully.

RFID is an enabling technology -- useless by itself, but when it is combined with organisational business models, it will make supply chains truly integrated and adaptive. It will also prepare ERP systems for future electronic upgrades.

Frost & Sullivan's study of the European RFID Market for Automotive, Aerospace & Industrial Manufacturing (B968-11) is expected to be published in May 2006. For more information about this study, or to give us feedback on this article, please contact **myfrost@frost.com**.

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