

Using Radio Frequency Identification in Cash Management

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- Radio frequency identification (RFID) technology allows data about an object to be stored on a chip attached to the object and read using radio waves.
- RFID has certain advantages over other e-tagging methods; specifically, it is not dependent on optical scanning and multiple RFID tags can be read simultaneously.
- In the cash management industry, RFID technology can be used in “contactless payments” as well as to improve customer relationships, track documents and prevent fraud.
- While there remain some issues to be solved and the technology is still evolving, the technology is in a reasonable state of maturity and companies should start deriving benefits from initial RFID roll-outs today.

Radio frequency identification (RFID) is in the limelight. Judging by the developments taking place in RFID technology and the enormous interest it has ignited, RFID seems set to change the course of how technology can impact business processes across industries, and banking and cash management as an industry segment is no exception. As with any new technology, several issues must be addressed before large-scale adoption is considered. One needs to be able to put both the future promises as well as applicability today in the right perspective. While these issues will be resolved in due course, it is important to understand that RFID presents opportunities that can be leveraged today.

Understanding RFID

At a high level, RFID is an e-tagging technology that can be used to provide electronic identity to any object. Electronic information about an object is stored in RFID chips embedded or attached to the object. Using an RFID reader, the electronic identity (code in the form of several bits of data) can be read wirelessly using radio waves. This is where it differs from other e-tagging technologies like bar-code scanning, which uses optical recognition. Because it uses radio waves, no line of sight is required and RFID tags embedded inside an object can be sensed. Also, an RFID reader can read multiple RFID tags simultaneously, which is not possible using bar codes. An RFID reader at the gate of a warehouse, for example, can immediately sense all the RFID-tagged objects within a container as soon as the container passes by the gate. An RFID tag can either be passive (cheap, low

range and works without any battery) or active (costly, higher range, with an embedded power source). Further, the electronic identification stored in a tag can either be fixed or dynamically updatable.

An RFID reader can sense a RFID tag from a distance ranging from a few centimetres to a few metres, depending on the frequency of operation and the type of tags (active or passive). The amount of data that can be stored inside an RFID tag can range from few bits (typically 32 to 256 bits for passive tags, and one megabyte for active tags). It should be noted that RFID tags can be very rugged and come in several forms. Its versatility can be gauged from the fact that RFIDs can even be fabricated to be embedded in a piece of paper, or in a form that can be permanently tagged to a shirt.

Understanding RFID Adoption

The adoption of RFID across industries is fast moving from trials towards plans for large-scale deployment. While in several cases the adoption of RFID is primarily being fuelled by mandates coming out of the likes of Wal-Mart and the US Department of Defense, there are several instances of RFID adoption clearly being driven by the business process innovation and optimisation that RFID as a technology offers. In fact, these large mandates, in themselves, are an indicator to the fact that these organisations are seeing enormous business value in RFID.

An indication of the versatility of RFID is shown in Figure 1, which shows some of the areas in which the technology can be applied. With several large pilots or initial roll-outs in some of these areas already launched, RFID technology is fast moving towards real-world adoption.

FIGURE 1: RFID Technology – Areas of Application

- Fleet management
- Inventory and asset management
- Warehouse automation
- Asset tracking
- Quality control (tracking and counting articles)
- Packaging
- Security and access control
- Hazardous material management
- Advertising and promotion
- Delivery
- Smart-card-based payment systems

While most of the media coverage on RFID is related to application of technology in retail and typical supply-chain scenarios, the technology is making significant inroads in different industry segments in new and innovative application areas such as location identification, keyless vehicle operations, spare part management, preventive maintenance (RFIDs with integrated temperature, pressure or humidity sensors), telemetry, sensitive assets tracking, etc.

Initial RFID trials have raised several technological challenges that must be addressed for larger adoption. However, RFID technology today is fast evolving towards addressing these issues, such as tag costs, large-scale production, accuracy of sensing, and improving read-write performance, reader costs, and interoperability. Privacy is also an issue that has received media attention. Large-scale adoption of RFID therefore rests on several such factors – the lowering of tag and reader costs, RFID standardisation, addressing of RFID privacy concerns, integrated support for RFIDs in all popular enterprise software (enterprise resource planning, supply chain management and customer relationship management), and continued commitment for RFID adoption from leading supply chain vendors and influential marketers like Wal-Mart. Progress is happening, and the point to be

emphasised is that while the technology will continue to evolve towards addressing these challenges, the technology is sufficiently evolved for RFID pilots and roll-outs to begin today.

From a broad industry adoption perspective, RFID technology adoption can be seen happening in two stages. In the short to medium term, RFID tag costs will not have dropped enough to apply the technology for item-level tagging. It is only after RFID costs would have fallen to the USD0.01-USD0.05 level that item tagging will become economically viable on a large scale. Costs, however, are context dependent. One must look at the technology cost in the perspective of specific applications. In many cases, including applications like smart card payment, the per-tag cost may not be as significant as it will be, for example, in case of item-level tagging at a Wal-Mart store.

RFID Application in Banking and Cash Management

Applying RFID in the financial services industry, this section looks at the potential areas where the technology could make a meaningful impact in cash management, with a specific focus on payments, where the use of RFID has been steadily growing in stature.

Customer Relationship

Many banks are exploring ways to use RFID technology to better manage and enhance their relationships with their customers, especially their blue-chip clients. The general idea is to provide the customer with a RFID-tagged object, like a card or cheque book, so that the customer can be identified on their visits to the branch. It would also be possible to use the technology to differentiate the level of attention that a privileged customer would receive. For example, if a high-net-worth customer enters the branch, the technology can be used to trigger an alert to the branch manager for his special attention instead of the customer service officer in the normal scenario.

Tracking and Tracing

Misplaced documents can prove to be extremely costly for banks and can lead to financial loss and, more importantly, the loss of reputation. RFID can play a significant role in tracking and tracing the most important operational assets of a bank – documents. This would be of particular interest to departments such as: credit administration, which is normally the custodian of security documents; custody services, where securities are held in the physical format; and in retail operations, where the sheer volume of documents processed makes tracking and tracing a difficult operation in itself.

RFID technology can also be a fraud-preventive tool. There have been instances when an employee, in collusion with a fraudulent client, has passed on security documents prior to the repayment of dues, thereby passing on the title to the security. When an important document arrives in the office, a smart label can be placed on them. By checking against a document management database, it would be very simple for staff to query the location of a document. Also, the technology can be used to generate an alert when a sensitive document is removed from its designated storage space or possibly to track its movement outside the office premise.

Countering Counterfeiting

It is reported that the European Central Bank is investigating how RFID tags can be embedded in high-value currency notes to stem counterfeiting. The idea is that the RFID tag would contain most of the data that is on the face of the note. While this may not prevent counterfeiting in itself, it would certainly raise the bar for counterfeiters.

One of the areas where banking fraud is widely prevalent in developing economies is in the encashing of warrants issued by corporates. The banking industry reportedly loses huge sums of money every year as a result of giving value to counterfeit dividend warrants presented to them by

individuals. Again, the adoption of RFID technology would make counterfeiting more difficult and would contribute to a significant reduction in false claims.

Payments

The impact of RFID technology has been more profound in the area of payments than any other segment in banking. For some time, the industry buzzword in the payments area has been “contactless payment”. In early 2003, MasterCard conducted a pilot study to test the acceptance of a new RFID-tagged smart card programme called Paypass. More than 5,000 customers of three different banks (Chase, Citibank and MBNA) were issued credit cards that communicated with readers by simply waving the card near the payment terminal. Merchants were given adapters that plugged into conventional magnetic-strip credit-card terminals. The adapters were RFID readers that turn the data from the card into pulses on the magnetic coil that can be read by the magnetic-strip reader. The reading of contactless cards was much faster than swiping a magnetic-strip card. The Paypass card complies with the ISO 14443 standard for contactless chip cards, which includes sophisticated encryption algorithms.

In pilot programmes of the PayPass system conducted by MasterCard, PayPass transactions were six to 10 seconds faster than other payment methods in stores and 12 to 18 seconds faster than other payment methods in drive-throughs. The amount spent by users of the PayPass devices, which included key fobs and PayPass-enabled cell phones, was 25% higher than the amount spent by customers using cash. PayPass wirelessly transmits payment details, including the account number and transaction code, between the PayPass device and the merchant’s RFID-enabled sales terminal. The transaction is then processed through the MasterCard network for clearing and settlement. The PayPass cards are embedded with an RFID inlay that meets ISO 14443-A and ISO14443-B standards, which includes cryptographical authentication between the terminal and the inlay to avert the copying and emulation of the chip and the modification of the chip’s data by unauthorised parties.

Conclusion

The above examples of the use of RFID in the banking industry is an indicator that the technology is gathering momentum and banks are seriously looking at the promise that RFID as a technology has to offer. From a banking and cash management industry perspective, aside from the operational efficiencies it can bring, RFID could turn out be a distinct positive differentiating factor among service providers. While RFID will continue to evolve both technologically as well as in terms of its commercial viability, the important thing to note is that businesses have already started realising the value from RFID roll-outs. Also, it is important to note that several technical, standardisation and business processes-related aspects, which are specific to certain industries or contexts, still need to be ironed out before an organisation can start deriving the maximum value from RFID. So while the technology evolves, experimentation with the technology in terms of pilots or specific roll-outs is critical so that your organisation can accrue the benefits when large-scale deployment takes place.