Trends in Retail Cash Automation:

A market overview of
retail cash handling technologies

By Eric Cheng
February 2014

Technology and innovation strongly influence the payments system. This innovation creates two potentially opposing effects on cash: 1) increased competition from emerging mobile and other digital payment alternatives, and 2) the ability to automate certain aspects of cash handling. The benefits of cash automation include reduced costs, increased speed of transactions, increased accessibility to cash (e.g., ATMs) and improved security and control of cash balances.

Until recently, cash handling has been largely a manual and labor-intensive process. However, this has begun to change with a host of new devices that automate certain back office cash handling functions, such as till preparation and end of day counting and balancing, as well as front-line tasks like cash dispensing.

Because cash usage remains strong,[1] merchants, banks, and armored carriers are exploring ways to take advantage of new technologies to automate their cash handling functions.

This paper provides:

- a short overview of cash handling in the bank and credit union branch environment and in the merchant environment;
- an overview of how cash handling technology, like cash dispensers, recyclers, and smart-safes, is helping to support automation;
- a description of the three types of devices and how they are deployed; and
- industry feedback on the future of cash automation.

Banks and Credit Unions still handle cash

The roles of bank branches and credit unions are shifting from a transaction processing oriented model to a more sales and service oriented model. In addition, to improve customer access and convenience, banks have encouraged their customers to move towards the ATM, online, and mobile channels. In some cases, banks have been so successful that the challenge now is on working to get people back into their branches as a way of growing and reconnecting with their customer base. They have implemented new design strategies to offer a variety of amenities, such as coffee bars, internet stations, lounges, child play areas, and even coin counting kiosks, to attract customers into the retail branches.

Based on findings from the 2012 Diary of Consumer Payment Choice study, 12 percent of cash withdrawals still occur within the branches and through teller lines. Many credit unions and bank branches still rely on manually counting cash for those teller transactions, and tellers spend the majority of their time counting cash versus utilizing their time to interact with customers. They also spend time

---

[1] The 2012 Diary of Consumer Payment Choice study found that 40 percent of payments made by participants were in cash.

moving cash in and out of vaults to open and close shifts, and managers are required to oversee staff throughout this process.

Merchants still accept cash payments

Most merchants still receive cash payments and have customers who prefer to use cash as their primary payment instrument. In an environment where payments technology and innovation is growing, cash transactions remain very manual compared to other payment instruments for merchants. Merchants must devote staff time to counting and balancing cash drawers, and they spend large amounts of their time reconciling their books at the end of shifts and preparing deposits. If the merchant does not utilize an armored carrier service, they are required to physically bring the cash into bank branches for deposit. For these merchants, the threat of robbery is constantly looming, as is the risk of serious injury to the staff member(s) who take the daily deposit to the bank. The risk of theft and staff injury remains even for merchants with armored carrier service, as thieves know that cash is stored in drawers or safes where associates and managers have access.

Cash Dispensers, Recyclers, and Smart-Safes support automation

To address these issues, merchants, banks, and armored carriers have begun to experiment with - and to various degrees implement - different types of new cash handling technologies. Specifically, three types of cash handling technologies - Cash Dispensers, Smart-Safes, and Recyclers - have been at the forefront of the discussions when it comes to automating the cash handling process. When implemented, these devices provide two types of benefits to their users. The first type of benefit is derived from the functionality of the devices themselves, and the second type of benefit can be realized from the use of information and data captured by the devices.

By providing the capability to accept, authenticate, sort, count, and in some cases dispense cash, these devices automate back office cash handling and provide significant labor savings to the merchant or bank using them. In addition to increasing count accuracy and reducing staff time spent counting (and recounting) notes, the devices improve identification of potential counterfeit notes and function as secure storage units for cash, which reduces theft and increases safety for employees.

The second type of benefit is based on using and sharing the information and data captured by the devices. At a basic level, the devices are able to generate reports based on the transactions conducted, which can help speed up the process for balancing at the end of shifts. To build on that, when data can be transmitted to a central location, reports generated from the devices can be combined to provide a companywide view of cash at each location on a close to real-time basis. The devices also have the ability to be integrated with the user's internal cash management systems or point-of-sale systems. This integration can streamline reconcilement and research, and it facilitates better cash position

management. Finally, integration of the devices and sharing of data among merchants, banks, and armored carriers allows users to receive provisional credit on cash stored in these devices.

The next few sections describe the functionality and highlight the benefits of the three types of cash handling technologies.

Cash dispensers are defined as computerized devices that supply cash for cash out transactions. Cash dispensers are designed to only dispense cash and provide for faster, more accurate, and efficient cash transactions. They are best suited for operations that process higher volumes of withdrawals than deposits and are therefore typically implemented by credit unions and certain bank branches. Cash dispensers improve productivity by speeding up banking transactions by up to 40 percent because tellers are no longer required to focus on the accuracy of transactions and manually count cash for the customers. In addition, with cash dispensers, the need for tellers to frequently transfer cash in and out of the vault decreases, which allows managers to focus on servicing customers versus overseeing the movement of cash. Also, if the cash dispensers are integrated with an institution's core processing system, the balancing and proof process at the end of day is automated and more accurate, which saves tellers and managers time when closing shifts. With less focus and time placed on manually counting cash, cash dispensers allow tellers to spend more time servicing customers and selling products. The end result is a more personal, engaging experience with the customer and typically a marked improvement in sales and service metrics for institutions. Cash dispensers also store cash in a secure safe with restricted access compared to teller cash drawers where cash is constantly exposed. This dramatically improves the security of the cash itself and the safety of the employees.

Smart-safes have both the ability to accept and validate deposits of currency (and in some cases checks) and electronically communicate with a merchant's bank, typically via the armored carrier's servers. When deployed, they are usually combined with provisional credit for the amount "deposited" in them before it has been physically deposited in the bank. They are best suited for operations that only accept deposits and are typically utilized by merchants rather than bank branches or credit unions. Merchants use them because it helps streamline end of day balancing and bank deposit preparation. It also enables them to receive early credit for their deposits, which helps lower the number of trips to the bank for deposits.

Typically, the smart-safe product is offered by both banks and armored carriers; however, a number of cash management software providers have also entered the market in recent years. These providers may offer a smart-safe solution, but their main role is assembling data from a variety of banks and armored carriers to help facilitate deposit credit and visibility across stores companywide. Usually armored carriers are contracted to monitor and service the safes, and they hold the liability for both the cash and the amount that is claimed to be in the safes. The bank's role is to accept the smart-safe data from armored carriers and credit the merchant's accounts. Banks have reported that having the

armored carriers own the liability for the cash in smart-safes is one of the main reasons they are able to partner with armored carriers to offer provisional credit to the merchants.

Smart-safes improve productivity by automating the cash deposits for merchants. With the adoption of smart-safes, merchants have cut costs by reducing staff time involved in counting and balancing cash tills and preparing bank deposits. In addition, if combined with provisional credit, smart-safes reduce deposit float for merchants, and managers no longer need to leave during operating hours to physically make deposits at bank branches. A number of quick serve restaurants have even mentioned that they have experienced significant improvements in the overall quality of services and food because managers no longer left the restaurant to make deposits. Smart-safes also improve cash management for merchants. With accelerated access to their funds, merchants can lower one of their largest costs for handling cash, which is the armored carrier pick-up fee. For merchants, those savings alone are more than enough to cover the costs of adopting smart-safes.

Another benefit of smart-safes is that they reduce opportunities for theft by internal and external parties. The cash is no longer exposed in cash drawers, and the number of times it is handled between when it is accepted at the point-of-sale until it arrives at the bank is dramatically lowered. A number of merchants have stated that shrinkage, whether through administrative errors or employee theft, has been eliminated since the deployment of smart-safes. Because they capture data on the employees who make deposits into them, smart-safes streamline reconcilement at the end of shifts and, when there are differences in a deposit, they make research faster and easier. Also, to deter crime from external parties, merchants tend to make the safes visible to customers and display signs throughout their stores notifying them of the safes. Thus, potential thieves are aware that the cash is fed directly into the smart-safes, and that employees, including managers, do not have access to the cash deposited. Merchants report that it has helped reduce crimes and insurance costs, especially for convenience stores who have listed this as one of the primary reasons they have implemented smart-safes.

By implementing smart-safes, merchants can also improve their business intelligence. Smart-safes provide merchants with a rich data set that they can utilize to track real-time cash transactions to determine how well store sales are performing, track employee performance metrics (like when they opened or closed shifts), and also track armored carrier metrics to see if they arrived to pick-up deposits during the proper times. Some smart-safe solutions have the capability of providing an overall view of real-time cash levels in all the smart-safes deployed across a merchant's footprint of stores. With the ability to customize various reports and receive email updates or notifications through mobile phones, merchants can now have real-time updates on all of their stores in one centralized location.

Cash recyclers are similar to cash dispensers, but they have the added ability to accept, authenticate, sort by denomination, and to some extent evaluate the fitness of the currency notes received from customers. At present, they are primarily used in bank branches to automate transactions for both cash withdrawals and cash deposits. Cash recyclers are an ideal solution for operations that have a large

amount of cash receipts in addition to cash payouts. The benefits for cash recyclers include the ones previously discussed for cash dispensers with the addition of a few enhancements.

Since cash recyclers provide branch operations with the ability to automate all cash transactions, productivity gains for tellers and managers are significantly increased compared to cash dispensers. Managers are relieved of their vault management tasks when tellers transfer cash in and out of cash vaults throughout the day and can focus on servicing customers and increasing sales. Cash recyclers can completely replace cash drawers and remove the risk of having cash exposed. Tellers no longer need to spend time after their shifts manually balancing cash inventories since all the transactions are automated and balanced in real-time through the device.

With the ability to authenticate currency notes, cash recyclers have helped organizations lower their losses by accepting fewer counterfeits. Another benefit of cash recyclers is that they allow the branches to better manage cash inventories and lower the overall amount of cash holdings. Cash recyclers allow the same currency accepted in cash deposits to be dispensed to other customers without any intervening recounting, storage, or transportation. This allows branches to decrease the number of armored carrier runs needed and use them mainly to move unfit and excess cash out of the branch. In some cases, a cash recycler even creates "cash equilibrium" where the branch needs almost no cash shipments. Lastly, where space is limited or if the location of a branch is susceptible to robberies, institutions have elected to install cash recyclers as an automated vault instead of a standard cash vault to lower their costs and risks.

While adoption of recyclers for merchants is not as widespread as it is with banks and credit unions, the merchants who do use recyclers typically use them to streamline back office tasks. Recyclers help merchants with till prepping, end of day balancing, and prepping bank deposits. Automating these tasks allows merchants to significantly reduce labor and redeploy back office employees to other areas in the store. The labor savings experienced from the automation of the back office cash handling tasks alone have helped merchants make the business case for implementation. However, a segment of merchants are beginning to look for a more full service solution that includes both provisional credit for deposits and the ability to recycle cash. Merchants that can take advantage of the technology will be able to combine the benefits previously mentioned for both recyclers and smart-safes. Yet the costs may be a deterrent for adopting such a solution, unless a merchant has high enough cash volumes that would justify the investment.

Future of Cash Automation

Cash dispensers, smart-safes, and recyclers have provided banks, armored carriers, and merchants with new opportunities to automate and improve the process for handling cash. Dispensers and recyclers have helped banks and credit unions reshape their branches towards a sale and service business model, rather than a transactions processing model. Smart-safes and recyclers have helped merchants mitigate risks for handling cash transactions and helped to increase the productivity of their operations.

Despite the documented benefits, widespread adoption has yet to be realized. Many organizations have listed: 1) the return on investment, 2) overall cost of implementation, and 3) effectiveness of the products, as the main concerns when they consider whether or not to implement cash dispensers, recyclers, and smart-safes.

In a cash handling workshop conducted by the Federal Reserve's Cash Product Office (CPO) in 2013, depository institutions and armored carriers echoed a similar set of concerns regarding the future of retail cash automation. The industry acknowledged inherent challenges that could limit the adoption of cash automation technologies, including a segmented market for different features (dispenser vs. smart safes vs. recyclers). Workshop participants also expressed concerns on changes in interest rates; with current interest rates near record-lows, a hike in interest rates could lead to a decrease in capital investments for these machines in the future. Merchants and banks alike may also resist adoption because the technology continues to evolve and develop. Currency authentication, in particular, raised specific concern among workshop participants regarding the equipment's ability to detect counterfeit notes.

However, equipment manufactures and solution providers continue to innovate and are working to address their customers' concerns. Functionalities for the devices are expanding and prices of the equipment are adapting. Participants of the CPO workshop suggested that new leasing options, for example, are lowering investment costs that could enable more businesses to adopt cash handling equipment. The CPO will continue to monitor these developments in the market to better understand the future of retail cash automation.