

# Eight Steps to Successful Cash Recycling



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ATM Marketplace



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There's no longer a debate about whether financial institutions should implement cash recycling systems (CRS) in their branches and ATMs. The question is how to do so.

FIs considering deploying CRS may be unaware of the complex migration process. Leveraging Diebold Nixdorf's learnings from multiple CRS projects, this paper provides guidance on the steps involved.

The biggest lever for reducing cash management costs is the automation of cash deposit transactions, which should be a key target. This can be achieved by introducing CRS technology.

A balance of cash-in and cash-out in a system's closed cash cycle should lead to perfect cash management. But this requires the migration of cash deposits from the counter to self-service.

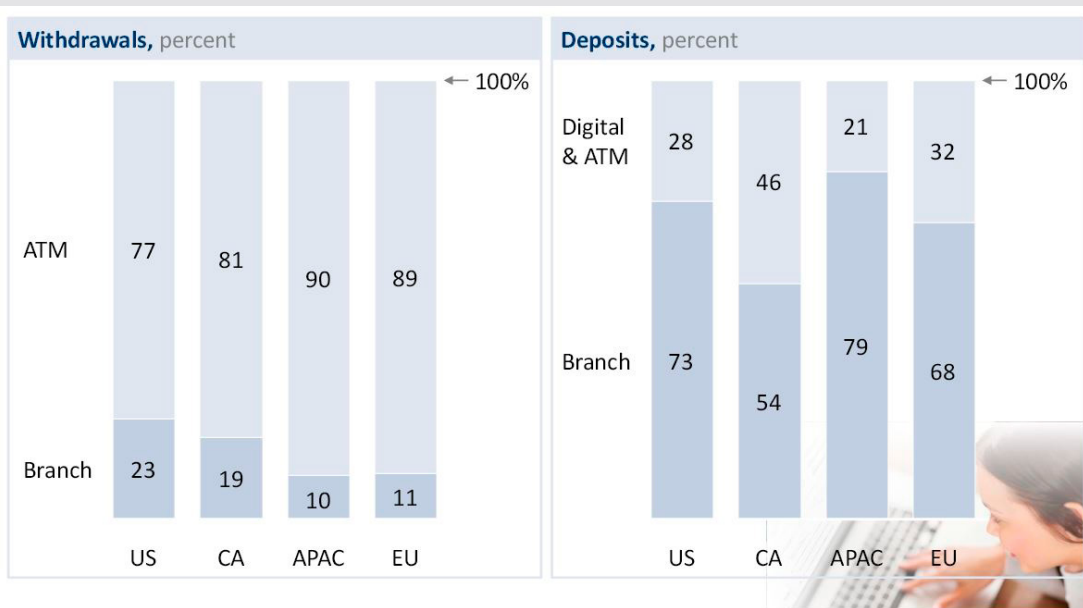
**“The question isn't whether to introduce cash recycling, but how.”**

– Stephan Okroy, Business Development Lead for True Cash Cycle Management, Diebold Nixdorf

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## Shift to alternative channels might still accelerate



Source: Finalta



## The future of cash

Despite growth in non-cash payments, cash is still the top payment method. Demand for easy 24/7 cash access remains high, presenting a real opportunity for retail FIs and other ATM deployers. Automated cash management including recycling will help them meet this demand.

According to [RBR's](#) "Deposit Automation and Recycling 2014" report, automated deposit ATMs (including recycling ATMs) will account for 42 percent of total ATMs worldwide by 2019, and automated deposit ATMs will grow at a compound annual growth rate (CAGR) of 11 percent between 2014 and 2019.

In its "Global ATM Market and Forecasts to 2020" report, RBR predicts the annual global volume of cash withdrawals will grow by 40 percent, or at a CAGR of 6 percent, between 2014 and 2020.

The ATM Industry Association's [Global Cash Demand Study](#) says there was an 8.9 percent year-on-year global growth in cash in circulation in 2009-2013.

Ovum and Giesecke & Devrient estimate the annual cost of cash-handling in Europe and the U.S. at more than \$60 billion and about \$300 billion globally.

Furthermore, 54 percent of global bank customers see the ability to withdraw cash as a key driver of trust in financial services providers, according to the report "Looking at the bank from the customer's point of view" by Ernst & Young and European banking industry association EFMA.



## See it e2e in all phases: Planning, Implementation, Operation

Planning	Implementation	Operation
<p><b>1. Business</b></p> <ul style="list-style-type: none"> <li>▪ Business case</li> <li>▪ Location (branch) analysis</li> <li>▪ Customer analysis/segmentation</li> </ul> <p><b>2. Security</b></p> <ul style="list-style-type: none"> <li>▪ Branch/cash security</li> <li>▪ Employees</li> <li>▪ Customers</li> </ul> <p><b>3. Legal</b></p> <ul style="list-style-type: none"> <li>▪ Central bank regulations, authorization &amp; standards</li> </ul> <p><b>4. Currency &amp; banknotes</b></p> <ul style="list-style-type: none"> <li>▪ Banknote classification &amp; quality</li> <li>▪ Currency templates</li> <li>▪ Money circulation, crediting and statistics</li> </ul>	<p><b>5. Technology</b></p> <ul style="list-style-type: none"> <li>▪ System configuration &amp; set-up</li> <li>▪ Host &amp; counter management</li> <li>▪ Client application &amp; operating platform</li> </ul> <p><b>6. Introduction (end customers, employees &amp; CIT)</b></p> <ul style="list-style-type: none"> <li>▪ Training &amp; marketing</li> <li>▪ Customer migration</li> </ul>	<p><b>7. Maintenance</b></p> <ul style="list-style-type: none"> <li>▪ Roles and responsibilities</li> <li>▪ Continuous skill management</li> </ul> <p><b>8. Cash management</b></p> <ul style="list-style-type: none"> <li>▪ Process &amp; monitoring</li> <li>▪ Verification</li> </ul>

Source: Diebold Nixdorf

### 1. Business

A real business case/return on investment depends on the holistic integration and transformation of operational procedures. Introducing CRS affects the daily operation of FIs' branch and self-service networks, requiring close involvement from branch staff, customers, IT, service team and CIT providers. CRS offer costs and savings that must be considered beyond their technological advantages and improved customer satisfaction resulting from features such as greater cash availability and 24/7 deposits. Recyclers cannot be operated as just another type of ATM.

A business case/ROI calculation must cover the following elements:

#### Investment

- Investment in hardware/software
- Integration into host environment
- Educating customers

#### Operational costs

- First/second-line maintenance
- Reduced cash-handling operation in branch and cash center

- Reduction in cash inventory/interest expenses
- Redundant equipment, such as night-safes/counter security area
- Reduced cash-in-transit visits

To define the business case, the first step is a per-branch location analysis covering:

- How many deposits currently are done via teller counter/night-safe?
- How many deposits can be done as self-service transactions?
- How many deposits can't be done as self-service transactions?

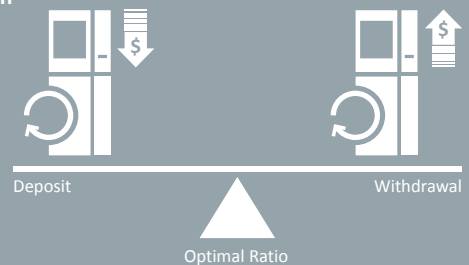
FIs should consider whether their CRS will be:

- Additional to existing services?
- Full replacement for counters?
- Replacement for existing ATMs?

The per-branch analysis will show savings such as the percentage of deposits potentially transferable from counters to CRS, reduced CIT costs, the percentage of night-safe deposits potentially transferable to CRS and possibly closing night-safes. Also, counter staff will have more time for higher-value transactions and cross-selling.

The balance of cash withdrawals and deposits is essential for a cash recycling solution to minimize the effort of de-/replenishment activities and demand for cash. Therefore, the definition and segmentation of customer groups is important:

- Retail and business customer segmentation;
- Additional deposit customers due to counter/night-safe migration;
- Addressing/supporting customers;
- Dealing with customer behaviour;
- Handling high-volume business transactions.



Source: Diebold Nixdorf

The ratio of retail to business customers has a key impact on recycling efficiency. Withdrawals outweigh deposits for retail customers, whereas it's the opposite for business customers.

The ratio of retail to business customers usually directly correlates to the ratio of withdrawals to deposits. To benefit from a CRS, a cash balance ratio of 70:30 to 30:70 between the number of dispensed versus deposited notes is essential.

The migration of business customer deposits from counter to CRS is necessary in most environments to achieve the best balanced level.

## 2. Security

CRS reduce robbery and fraud risks:

- Due to reduced cash management tasks, cashiers' contact with cash is minimized. Branch staff even can be fully migrated to assisted self-service so they don't handle cash anymore.
- Banknotes are recognized and classified automatically by a central bank-certified CRS.
- Customers, especially business clients, have improved opportunities for secure cash deposit 24/7. Businesses no longer need to hold cash overnight or over the weekend in unsecured environments.

## 3. Central banks

Introducing recycling requires FIs to analyze their central bank's requirements.

The handling and accounting of banknotes in circulation generally is regulated by the central bank of an individual country. Country- and currency-specific regulations must be aligned for CRS solutions to be adopted by the involved parties: FI, vendor and central bank. The scope is usually the central bank's requirements for identification, storage and handling of different note categories and qualities. Once these requirements are met, the CRS can be deployed and operated.

## 4. Currency and banknotes

Individual central banks define categories and quality criteria for banknotes, which determine FIs' ability to recycle notes and related back-office procedures.

Banknote quality is essential if notes deposited by customers can be dispensed to other customers. Properties to be considered include maculation, mutilations, repairs and composed notes.

All note properties are defined in currency templates/currency data files. Each currency template holds a set of denomination descriptions representing a single currency. Depending on the business case, one or more currency templates must be loaded into the CRS's banknote identification module so the device can identify and classify each processed note.



## The European Central Bank has defined the following euro banknote categories and quality criteria:

**Category 1** – not banknote, not recognized as euro banknote (e.g., piece of paper)

**Category 2** – identified as suspect counterfeit euro banknote

**Category 3** – Euro banknote not clearly authenticated (possible counterfeit)

**Category 4a** – Euro banknote identified as genuine and fit (ECB criteria for recycling met)

**Category 4b** – Euro banknote identified as genuine and unfit (ECB criteria for recycling not met)

For each currency, it is necessary to check the feasibility during recycling implementation planning of handling:

- Currencies
- Denominations
- Banknote quality
- Backtracking (e.g., serial number)

Based on the central bank's regulations, different note categories must be handled differently. Certain note categories must be kept in the CRS and not returned to customers. There are no worldwide rules for standardization, as regulations vary country by country.

In the eurozone, notes in categories 2 and 3 must be kept in the CRS and not returned to customers, so as to withdraw counterfeits from circulation. Elsewhere, it is normal for notes not clearly identified as genuine to be returned to customers.

Validated banknote deposits are credited automatically to customers' accounts, a bonus for clients as they can directly dispose of deposited money.

## 5. Technology

### System configuration and setup

Depending on the FI's requirements and technical restrictions, there are different options for configuring CRS.

Due to central bank regulatory restrictions, FIs may be required to start without a recycling configuration and configure their systems in cash-in/cash-out mode, where cassettes are configured for cash deposit or withdrawal. This could be required if recycling isn't yet allowed or used currency isn't suitable for recycling.



## The CRS configuration depends on central bank requirements and the FI's requirements determined by:

- Frequency/number of deposited denominations
- Denominations chosen for withdrawal
- Currencies/denominations planned for recycling
- System/cassette capacity
- CRS location
- Used dispense algorithm

Diebold Nixdorf highly recommends performing a pilot to validate the FI's configuration efficiency.

An FI also may decide to use this configuration for business reasons or because of technical restrictions (e.g., host systems can't support recycling).

In a recycling configuration, one or more cassettes are configured as target cassettes for cash-in/cash-out transactions. The notes deposited to these cassettes can be dispensed to the next customer withdrawing cash.

In addition to recycling cassettes, it generally is necessary to configure cassettes or compartments for special deposit purposes, such as storing banknotes not used for recycling, separating counterfeit or low-quality (unfit) notes and storing notes rejected during cash-out transactions or forgotten by customers (retracts) during deposits/withdrawals.

### **Host and counter management**

For recycling, the main change to the host protocol is that cassette counters no longer are only reduced by cash-out transactions but also can be increased by deposit transactions. This means the host system must react in a dynamic, flexible manner to manage different device and cassette configurations (cash-out/cash-in/recycling). If operating in a standard multivendor software environment, it is recommended to perform detailed checks, as multi-vendor environments usually support cash recycling.

Corresponding changes need to be applied to the client application operating the CRS. Introducing deposit/recycling functionality may involve implementing additional features, such as special handling of counterfeit/suspect notes.

A client application should not report "out of service" to the host simply because a recycling cassette becomes full or empty.

#### **Check:**

- Readiness of host system/protocol for cash-in/cash-out interface
- Smart, convenient customer interface via client application
- Correct and transparent counter management information for cash de-/replenishment activities

## **Leto Bank**

Russia's Leto Bank cut its cash management costs in half after installing Diebold Nixdorf cash-recycling systems at its branches. The project's ROI was expected to be achieved in 12 months.

The project was launched in February 2014, and Leto Bank's entire network was migrated to Diebold Nixdorf's CRS platform by July 2015.

By conducting a pilot, Leto found that a single CRS was able to operate for seven months, handling around 150,000 notes without de/replenishment and without service calls. The bank has installed 382 CRS units and has found that the units typically can go three to four months, handling 80,000-100,000 notes, between maintenance/cleaning visits and CIT replenishment.



## 6. Introduction

### Training and marketing

Based on the process changes resulting from CRS, cultural transformations and embedded behaviors and procedures will become the key success factors during the introductory phase. To achieve a successful CRS introduction, internal and external marketing for all involved parties are equally important.

One key learning in branches is that migrating customer deposits to self-service should provide staff with more time to take care of their customers and should not be seen as threatening their jobs. If this is the case, branch staff will incentivize their customers to use self-service.

### Customer migration

FIs must explain their CRS' benefits and usage to customers to encourage them to adopt the technology. Customers could have reservations about using CRS solutions as they look different — the input/output tray is larger than an ATM output tray. Best industry practice suggests that FIs dedicate staff to take care of customer migration, especially in the first weeks after deployment.

During rollout, customers should be guided when first using CRS. Customers depositing cash should be shown how to prepare cash bundles to avoid problems or jams.

Depending on the FI's decision as to what extent branch staff will operate and maintain the CRS, staff should be trained to:

- Advise customers how to use CRS.
- Take CRS in/out of service for maintenance.
- Fill/empty recycling cassettes.
- Handle retracted and rejected money.
- Clear jams.

CIT staff must learn to:

- Take CRS in/out of service for CIT tasks.
- Fill/empty recycling cassettes.
- Handle retract and reject cassettes.
- Clear jams.

To achieve cash balancing in a CRS, migrating deposit transactions from teller counters/night-safes is recommended for most branch formats. Migrating business deposit transactions will especially help achieve efficiencies from recycling.



Source: Diebold Nixdorf

Direct marketing should be used to promote to targeted customer segments the benefits of CRS: 24/7 deposit availability and secure transactions offering direct crediting to accounts.

## 7. Operations

Many different factors determine the efficiency of CRS solutions. The continuous, periodic review of the system's settings, availability and cash management operations is a key success factor. Remote access to real-time system and cash management data in combination with a monitoring solution and intelligent cash management software tremendously increase the process efficiency and related cost savings.

### Maintenance

Instructions for handling CRS must be created, or existing instructions updated, to cover day-to-day CRS tasks.

Employees working at teller counters must be retrained if they are to offer advice on CRS usage to customers.

The FI's IT, help desk and service teams need to be trained to support the CRS' functionality. Integration into monitoring is essential to achieve high availability levels.

## 8. Cash management

With recycling, changes must be considered for error-handling/recovery. Statuses previously received for "out of cash" and "deposit bin full" should be considered informational, not fatal.

Based on estimated usage, FIs should revise their existing CIT schedules and develop new schedules for their ATMs and CRS, as CRS need less frequent replenishment by CIT.

During pilot phase and rollout, the FI's operations team must closely monitor the dynamic cashflow in CRS and branches to adjust CIT visits or CRS configuration. After the initial launch, FIs should verify the results and identify any improvements.

### In-branch closed cash cycles

An option is for branch staff to switch "overflowed" cassettes from automated teller safes, the counter and CRS to ATMs to further reduce CIT visits.

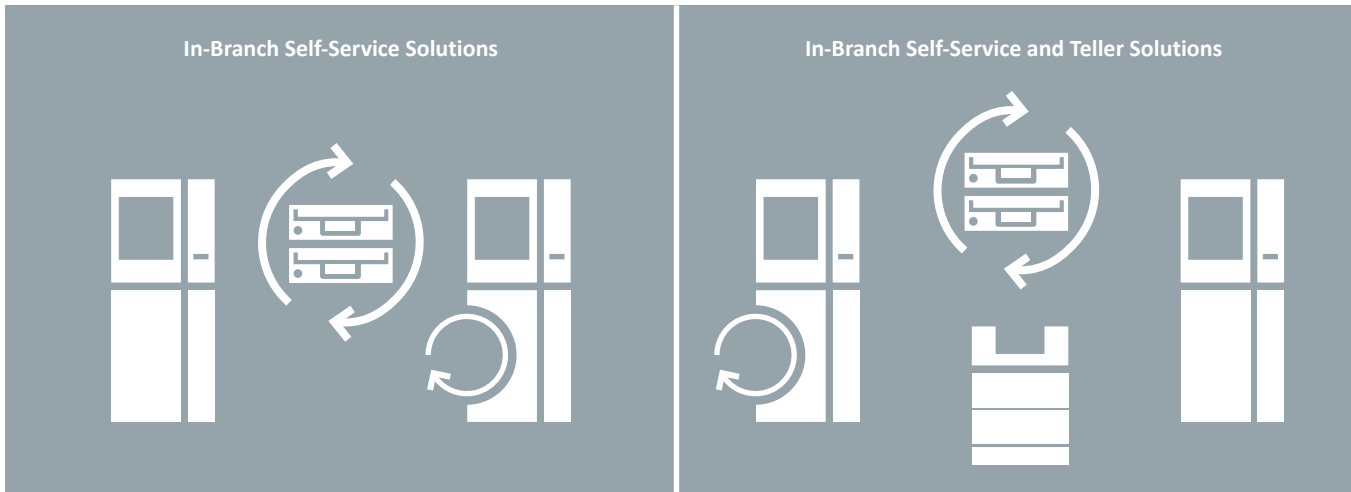
Diebold Nixdorf's innovative banknote storage system enables FIs to achieve "in-branch closed cash cycles" integrating their ATMs, CRS and automated teller safes, whereby the

**“Customer satisfaction with a new CRS plays an important role in the overall, long-term success of cash recycling.”**

— Christin Drücke, Marketing Manager, True Cash Cycle Management, Diebold Nixdorf

same cassette can be swapped between specific Diebold Nixdorf systems of the cash cycle management portfolio. The technology, which is unique in the market, facilitates two scenarios:

- Establish closed cash cycle within self-service systems.
- Establish closed cash cycle within the entire branch, where cash points are interlinked, offering at least 20 percent savings in cash-handling costs and reducing error frequencies.



Source: Diebold Nixdorf

## About the sponsor:

Diebold Nixdorf is a world leader in enabling connected commerce for millions of consumers each day across the financial and retail industries. Its software-defined solutions bridge the physical and digital worlds of cash and consumer transactions conveniently, securely and efficiently. As an innovation partner for nearly all of the world's top 100 financial institutions and a majority of the top 25 global retailers, Diebold Nixdorf delivers unparalleled services and technology that are essential to evolve in an 'always on' and changing consumer landscape.

Diebold Nixdorf has a presence in more than 130 countries with approximately 25,000 employees worldwide. The organization maintains corporate offices in North Canton, Ohio, USA and Paderborn, Germany. Visit [www.DieboldNixdorf.com](http://www.DieboldNixdorf.com) for more information.