CHANGING TIMES mean new ways

While technology has brought about innovations in the financial services industry, it has also enabled more sophisticated methods of fraud. Consequently, we need increasingly sophisticated technology to detect fraud. That's why the Retail Payments Office (RPO) asked Philadelphia to lead an investigation into ways to prevent check fraud. Arun Jain, vice president, Retail Payments, talked about the Bank's role in two pilot programs.

Since Philadelphia has a close working relationship with the Treasury Department, it made sense for us to jointly undertake this project. Furthermore, Treasury checks are a major target for fraud.

Basically, detecting check fraud has two facets: the application of fraud-prevention technology and machines that can read new security features. Right now, there are four types of technologies in this area: laser ink, two-dimensional barcodes, seal encoding, and digital watermarking. Our pilot programs involved these last two technologies. Initially, we used test checks from the Treasury. The seal encoding pilot used production checks issued by the Federal Reserve Bank of Philadelphia for Treasury-related payments, and the digital watermarking pilot used simulated test checks.

Seal encoding technology conceals information (for example, the dollar amount, account number, payee name, or issue date) within the body of the check in order to detect altered or counterfeit checks. It's similar to two-dimensional barcoding, but not as visible. (See sidebar.) For instance, you can hide data in a corporate logo on a check. Someone looking at the check may not see a difference, but the right detection software can read the hidden information and match it to what is on the magnetic ink character recognition (MICR) line that's printed on the bottom of a check. The pilot showed that seal encoding works in some situations, but not all.

The second pilot applied a digital watermark to the body of the check. The idea is that photocopiers and high-resolution scanners won't pick up and subsequently print the watermark, thus making it harder for counterfeiters to copy checks.

High speed sorters such as this one process checks using magnetic ink character recognition.

One advantage here is that digital watermarking can cover a wide area of the check. Since checks can be mishandled and mutilated, it's better to have the fraud-detection feature in more than one part of the check. One problem with both of these technologies is that good checks are sometimes flagged as altered or counterfeit, and it costs both time and money to verify the so-called false positive checks.

RESULTS

Working with other Reserve Banks, we tested seal encoding and digital watermarking on both IBM and Unisys sorters. That way, we could note differences between the types of sorters.

of detecting fraud

These pilots involved true research and development work. Although these technologies are used for fraud detection in other industries, we are trying to validate their applicability in the checks arena. Cost/benefit analyses will be important determinants of which technologies are finally adopted.

Our initial report of the outcome will go to the RPO and Treasury. Subsequently, we'll share the outcome with the banking industry. The results for these various pilot programs will determine if Treasury is ready to adopt one or both of these technologies.

Our goal is to aid the banking industry by helping to develop new methods for reducing fraud, which costs the industry — and consumers — millions of dollars every year. ■

Chemical Inks and Two-Dimensional Barcodes

Chemical Inks. The idea behind chemical inks is to invent a process that places an invisible mark on a check that cannot be reproduced and is manufactured only in secure printing arrangements.

Testing for the chemical ink would be accomplished via special scanning devices licensed by the technology owner. Low-cost scanners would shine a special ultra-violet or laser light spectrum onto the paper to test for reflection from the chemicals. Checks expected to have this invisible chemical ink would be considered genuine if the test is positive and assumed to be counterfeit if the test fails.

Two-Dimensional Barcodes. Two-dimensional barcodes are the modern equivalent of the universal product code (UPC) found on most products in grocery stores and other retail outlets. But unlike the long, varying-width lines that code eight to 12 digits of product code data, 2-D barcodes can carry a payload of hundreds of bytes of data.

Low-cost digital scanners and decoding software would be used to test the 2-D barcode. Existing digital scanners on high-speed check-processing equipment could be used to test for the existence of a 2-D barcode and to compare it with the MICR line at the bottom of the check and visual data.