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Is your ATM running? AI can catch it (if it's not).

By John Adams | November 17, 2023

Diebold Nixdorf is using artificial intelligence to predict ATM failures, subtly boosting availability at a time when self-service is seen as a way to absorb bank branch closures and keep ATM makers competitive.

The company is placing wireless sensors near and on machines, and applying cloud computing and machine learning to determine and diagnose challenges that may exist at an ATM, then upgrading or updating the machine remotely or on site — another decision that's aided by machine learning and AI.

The earliest deployments — a set of 200,000 machines that have had the technology for at least 18 months — predate the recent craze around ChatGPT, generative AI and large language models. And they have already proven their value, with increases to ATM uptime of between 1.3 % and 3.5%. Diebold Nixdorf has a total of about 860,000 ATMs deployed.

“When you think about a typical ATM that runs at about 96% or 97% availability, that's a significant uplift in performance,” said Joe Myers, executive vice president of global banking at Diebold Nixdorf.

The technology is embedded in DN Series ATMs, a newer model to which



Diebold Nixdorf is using AI to spot trouble at new ATMs before they break.

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Diebold Nixdorf has migrated for new deployments.

AI can help monitor an ATM's life-cycle by analyzing the data that the devices collect, Myers said. While the ability to update ATMs remotely has existed for years, what's changed is the ability to create a “personality” for each individual device. If a device fails, the cause can be determined in a few seconds remotely, and repairs can usually be made remotely. If a technician is needed, the amount of labor and

time required can usually be computed quickly, he said.

“The diagnosis can be immediate and we're able to put the right person or technician on the case,” Myers said. AI enables this work to be done faster and more accurately over time. It can also create a proactive service model that monitors patterns, trends and a device's history to anticipate impending failures. Repairs become upgrades that can be scheduled during times of low customer usage, according to Myers.

“The easiest way to translate this is to compare it to the ‘internet of things,’” the system of adding web connectivity to devices beyond computers or phones, enabling refrigerators and household appliances to access new features, Myers said. In this case, the ATM is a web-enabled device that can access AI-driven updates and repairs based on localized needs.

“One characteristic of preventative maintenance is there are certain characteristics that are predictable in terms of what needs to be replaced,” Myers said.

Diebold Nixdorf filed for bankruptcy in May and emerged after restructuring in August. Its rival NCR has also undergone corporate changes, most notably a split into two companies — one focused on payments innovation and the other focused on ATMs. NCR Atleos, the ATM offshoot of NCR, did not provide comment to American Banker for this article.

“Financial institutions can improve ATM uptime with AI technology, which allows for easier diagnoses of problems and precise solutions,” said Elisa Tavilla, director of the debit advisory services

at Javelin Strategy & Research. “AI also helps financial institutions improve operational efficiency and customer service by accurately forecasting cash supply for ATMs and enabling more self-service functionality.”

Diebold Nixdorf’s restructuring focused on digital payments and forging partnerships to boost access to financial services in underserved areas. It also has an opportunity to install ATMs where bank branches have closed, according to Myers.

“There is pressure on banks to drive efficiency ratios, so we see branch closures,” Myers said. “But there is also a need to have availability for services, not just deposits and withdrawals but other services.”

The ATM’s machine-learning analysis can also gather data on what types of financial products are popular at specific locations, Myers said.

The number of bank branches in the U.S. has fallen from more than 100,000 to fewer than 80,000 in the past 13 years, according to S&P Global Market Intelligence. Access to digital banking and a pivot away from physical offices

are driving the decline. But there is still pressure on banks to offer on-location service, according to Myers.

“ATMs are a high priority for people when choosing a bank,” Myers said. “People still want access to the bank.”

Forty-one percent of consumers based their bank choice on ATM and branch access, according to cash management technology company Arca, which cited data from digital consultant Credio.

“For many consumers, ATMs are the most common interaction point with their bank,” said Stewart Watterson, a strategic analyst at Datos Insights. “So anything that would improve uptime would be valuable.”

Reliable ATMs can also help banks manage overhead, Watterson said.

“Applying this technology to proactive maintenance can avoid more expensive outcomes later, as well as managing inventory,” Watterson said, adding that a close look at ATM usage patterns based on specific locations can also aid in fraud reduction. “ATMs are a revenue generator. If they’re down, they’re losing money.”