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Point of View Paper

How to Use AI to Better Service Credit and Debit Cardholders

Provide More Information and a Customized Experience

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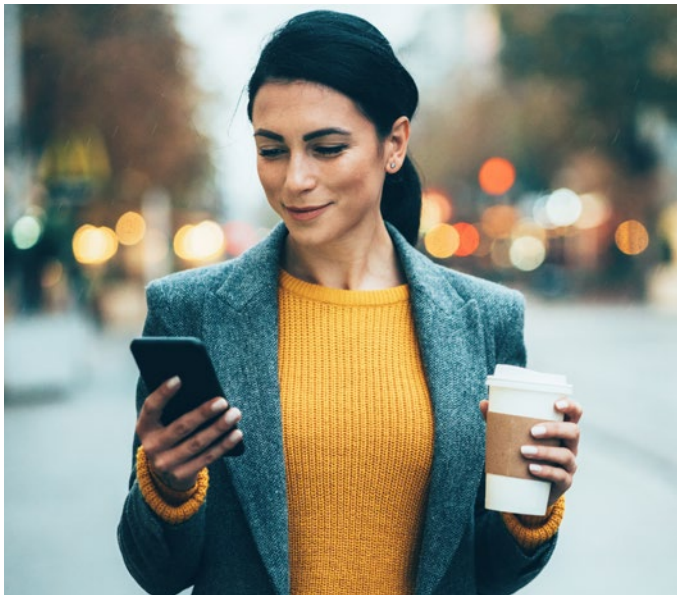
Digital consumers want customized, self-service financial experiences. They expect access to detailed transaction information that enables them to clearly see their debit and credit card spending – so they can use their cards more easily and confidently. One approach that can help meet these expectations is using AI, banking data and digital delivery to push detailed and personalized fraud detection, risk assessment, money management, and rewards and offers directly to consumers.

Consumers are understandably interested in their spending. Providing detailed transaction insights and enriched information they can instantly access online or using a mobile banking app can help them understand their purchasing patterns and make informed spending decisions.



But a major challenge in giving consumers the custom information they want is the quality of transaction data. The transaction data financial institutions receive usually contains a lot of "noise." For example:

- **Fragmented Merchant Names** – A merchant may use many different names. Some may include a store number, carry a serial number or contain soft billing descriptors
- **Ambiguous Merchant Names** – A merchant may use abbreviations or concatenated text to try to fit as much information as possible in the limited space provided by the ISO transaction standard. Some characters may even be cut off unexpectedly due to the space limit
- **Incorrect Merchant Locations** – A merchant terminal is often programmed with the location of its headquarters or regional office. A shipping terminal in California may have "Memphis, TN" as the location, and a vending machine in Florida may carry "Tukwila, WA" as its location
- **Incorrect Transaction Categories** – A merchant may use an outdated merchant category code, or a payment provider may send its own category code in the transaction. For example, a transportation transaction paid through a non-financial institution provider may carry a general money transfer category code, rather than a more accurate travel category code

The data quality issue doesn't only affect the quality of the AI model and the derivation and delivery of personalized insights. It can also cause consumer confusion with a bill or statement, and is a major source of transaction disputes and customer service calls.

A Better Approach

Traditionally, open banking and personal financial management solution providers have used labeling and rules engines to resolve some of these issues. But the limited data retrieved by screen scraping usually only contains names, amount and date. The process is imprecise and hard to scale.

In contrast, financial institutions and their processing providers can meet this challenge by balancing the unique interplay between real-time transaction authorization, user context, merchant databases and AI.

Here's how to put these elements together to enable this process to work:

- Financial processors see all the data elements in the authorization stream that are often abstracted away or not preserved in offline databases
- In real time, when an authorization occurs, the transaction and merchant can be correlated with user locations, where available
- A subset of mobile users who have enabled their location, when available, can help crowdsource enrichment of merchant data for all other card-present transactions without locations
- Natural language processing can be used to understand and recognize merchant name entities from the "noisy" transaction descriptions
- Semantic searches then leverage the state-of-the-art word and sentence embeddings learned from merchant databases, rather than just text similarity, to search for the best possible match
- A deep neural network-based computer vision model is trained to classify merchant logos and further establish the linkage between a merchant and a logo
- Clustering is used to identify the most likely centroid for a store location
- A time series detects the periodicity of transactions and, hence, recurring payments and merchants
- Machine learning classification models classify transaction types and merchant categories based on the data fields available in the real-time authorization stream, such as POS entry mode, condition code, terminal type and merchant category code

The AI methods used can then build deep-and-wide machine-learning models to produce results with the potential to achieve significant transaction enrichment. This process should cover names and categories, store locations, payment channels, payment methods, digital wallet type, card on file, recurring and other payment attributes, and should resolve the hidden errors in names, locations and categories in real time.

Knowledge Is Power

Providing enriched transaction information can make the difference between a panicked consumer who is worried about fraud, and someone secure in the knowledge that each purchase is one they've actually made. The transaction information should include real merchant names, retail locations for physical purchases, transaction amount and purchase date. The more information gathered and displayed, the better. Transaction details should also include contact information for the merchant, so consumers can make any inquiries about the purchase directly.

This approach can yield significant benefits. It can reduce cardholder disputes and customer service calls, prevent fraud, derive accurate spend insights for consumers, and personalize offers based on a consumer's profile.

About the Author

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