



Building financial security for low-income communities

An AI-powered recommendation engine capitalizes on data to help financial coaches share inclusive and equitable fintech products most relevant to customers' goals

by Tom Farre

7-minute read

Financial insecurity is a daunting reality that people with low incomes must navigate. Systemic barriers to financial inclusion are real, particularly for Black and Brown women. Change Machine, a nonprofit tech organization, tackles these issues head-on.

Its mission is to build financial security for low-income communities through people-powered technology. Change Machine does its work through a software as a service (SaaS) platform that can transform how people achieve



financial goals. Used by financial coaches at social service organizations and public agencies, the platform features a social collaboration tool for practitioners, an education portal on various financial coaching topics and a case management app on the Salesforce AppExchange to assist coaches as they consult with customers.

The platform contains a range of fintech products and services that Change

Machine has vetted to be inclusive, safe and effective. The platform is people-powered in the sense that it reflects the insights and experience of financial coaches and customers, and it includes a feature that uses AI analysis of customer data to recommend relevant fintech products.

It wasn't always this way. At the beginning of 2020, Change Machine developed a set of standards

to evaluate fintech products for affordability, inclusivity and safety, as well as how each product aimed to build financial security. The first iteration of the recommendation engine, called Marketplace Relief, was launched to mitigate financial insecurity amidst the unfolding economic recession resulting from the Covid pandemic. Criteria were created to filter relevant, vetted products and services to meet customer needs. If the needs were to boost savings and improve credit, for instance, the recommendation engine would recommend savings and credit products and services.

Although the system worked well, the approach was limited. “Our original recommendation engine was designed by a small group of coaches from particular places and at a particular point in time,” says David Bautista, Director of Product Development at Change Machine. “To broaden the scope

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98%

as a result of more relevant recommendations

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of its knowledge and the products it could recommend, we wanted the recommendation engine to be able to update itself along the way.”

The recommendation rules raised another concern. “The coaches identified rules based on their expertise and experience working with customers, but we didn’t know how to also capitalize on customer data stored in our systems, such as which services customers most commonly used and what additional thresholds are needed based on common financial situations,” says Robert Zarate-Morales, Assistant Director of Product Development. “Using the data could provide better insights into customer needs.”

The recommendation engine also didn’t consider whether customers accepted or rejected the recommended products and services — an indication of the feature’s impact.

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Robert Zarate-Morales, Assistant Director of Product Development, Change Machine

Applying machine learning to improve recommendations

It was clear that the recommendation engine could be improved using AI data analytics. For development assistance, in March 2021 Change Machine engaged the [IBM® Data Science and AI Elite](#) team. IBM worked under the [IBM Data and AI for Social Impact](#) program, an apprenticeship collaboration in which IBM helps nonprofits use data science and AI to further their mission.

The project began with IBM and Change Machine personnel sharing knowledge and devising requirements. The goal was to rationalize organizational data into a coherent whole and develop machine learning



classification models that would customize the recommendations. The models would be self-learning and based on Trusted AI, meaning that the reasoning behind the recommendations would be explainable.

Scalability would let the engine handle the expected growth in partners and users. Plus, operational dashboards would display live data for insights into operations.

To develop the data and AI models, the IBM team chose [IBM Cloud Pak® for Data as a Service](#), which would link all data in a centralized data function. Developers used the [IBM Watson® Studio](#) solution with its [AutoAI](#) feature to ease development. The API-based [IBM Cognos® Dashboard Embedded](#) solution would power scalable dashboards. All tools reside within the IBM Cloud Pak delivered from [IBM Cloud®](#).

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David Bautista, Director of Product Development,
Change Machine

Fast development using IBM's agile methodology

Development proceeded quickly using the IBM Data Science and AI Elite engagement methodology of three agile sprints over six weeks:

- In the first two-week sprint, developers worked with Change Machine to understand the data connected to all its sources.
- The second sprint focused on developing baseline machine learning models to see if the data could actually make predictions.
- The third sprint successfully finalized the models, enriching them with new features and deploying them into production.



Next, the models were integrated into the Salesforce app that financial coaches use with customers. The IBM team also supported the Change Machine team in developing management dashboards. And as part of the apprenticeship collaboration, IBM transferred knowledge to the Change Machine team on data strategy and AI tools they will continue to use in the future.

“The engagement with IBM taught us how to leverage our data in new ways and how to build a framework for creating and managing machine learning models,” says Bautista. “The project also served as a springboard for our involvement in advanced cloud solutions and helped us deploy a real-world application of AI, something we previously considered to be years away at best.”

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David Bautista, Director of Product Development,
Change Machine

Quality recommendations help overcome financial barriers

AI analysis of Change Machine's data now powers the recommendation engine in Salesforce. The solution is so innovative that it was nominated for VentureBeat's AI Innovation Award in the AI for Good category.

With the former recommendation engine, customers actively used just 60% of fintech products recommended by their coaches. With the new version, the figure has risen to 98% — indicating that the recommendations are more relevant.

“Higher-quality recommendations advance our mission of helping people overcome financial barriers,” says



Bautista. “Not only do they increase product uptake, but they help ensure access to the products people need the most. And they help cement the relationships between our partners and those they coach.”

Another benefit stems from the recommendation engine’s connection to dynamic data about customers and fintech offerings. As this body of data is updated, so are the engine’s recommendations.

The dashboards are proving valuable throughout the organization. They help Change Machine’s managers visualize dynamic operational data where “the numbers alone don’t tell the whole story,” says Zarate-Morales. Developers

are building additional dashboards powered by a data mart under IBM Cloud Pak for Data.

Looking ahead, the IBM engagement will continue to drive innovation within Change Machine as its personnel apply what they’ve learned.

“For me, it was exciting to understand both the capabilities and the relative ease of using this technology,” explains Bautista. “Previously, data was something we would use reactively. If there were a question, we would ask, ‘Where’s the data?’ But today, we’re starting to proactively embed data in strategy decisions. Our partnership with IBM enables us to think about data more strategically.”



About Change Machine

Founded in 2005, [Change Machine](#) (external link) builds financial security for low-income communities through people-powered technology. Over 8,000 practitioners have used Change Machine's platform to amplify their impact, including putting \$45 million in the pockets of their customers.

Solution components

- IBM Cloud®
- IBM Cloud Pak® for Data as a Service
- IBM® Cognos® Dashboard Embedded
- IBM Watson® Studio

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