DATA HACK 4FI

INNOVATION AWARD

Advancing financial inclusion through data innovation

NFT Consult: Data solutions for mobile-money agent management

DataHack4FI Innovation Award Season 2
In-country winner for Uganda

Improving efficiency in mobile-money agent networks through data-driven solutions

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Advancing Financial Inclusion

Case Study

About NFT Consult

NFT Consult was founded in Uganda in 2005, providing human resources services to a range of companies that operate in finance, banking, networks, communications, energy and oil across East Africa. The company established the Mawazo Innovation Hub to help companies streamline their business processes with data solutions.

NFT Consult's Mawazo Innovation Hub participated in insight2impacts's 2018 DataHack for Financial Inclusion (DH4FI) and developed a solution that helps mobile-money super-agents to optimise their agent network. The solution ensures that mobile-money customers receive uninterrupted services from agents by ensuring that super-agents respond in good time to liquidity drawdowns at mobile-money access points.

The challenge: managing agent networks

Mobile money has played a key role in facilitating financial services for underserved communities across East Africa. In most markets it is difficult for agents to engage directly with mobile-operator-owned outlets. To fill this gap, mobile network operators usually appoint super-agents who buy and sell electronic balances to agents on their behalf. This enhances the reach of the mobile network operators to areas where they don't have branches. However, including more players in the mobile-money distribution channel also creates some efficiency challenges. One of the main challenges encountered by managing agent networks is liquidity or float management. This is due to the lack of real-time visibility of liquidity indicators, which prevents providers from refloating their agents on time. The result is that agents often lose potential customers when they run out of float.

The solution

NFT Consult sought to provide a solution that improves the efficiency of the super-agent and mobile-money agent relationship. The solution involved providing super-agents with real-time liquidity indicators that helped them to promptly identify agents who were likely to run out of float.

The float score pre-empts the agent's ability to serve the next customer. The data used to generate the float score is the agent's balance after a transaction and the agent's average transaction value over a period of seven days. The balance after the transaction is indicative of the cash and float position of the agent, while the average amount transacted shows the expected transaction value of the next transaction. The two variables

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are used to generate a liquidity index that is generated in real time as agents complete transactions.

Transactional data from four super-agents (Chims Africa, Nilecom Uganda, Telcare Limited and Samisa Telecom) was used to develop a float score. In total, there were 1 million transaction records for a period of two years. Of the 1 million, 30,000 were selected for the analysis and to develop the liquidity management score.

The analytical approach is a three-step process aimed at identifying the characteristics of agents that have recurrent shortages and those that have excess liquidity. Multiclass neural networks[1] are used to detect whether a transaction at an agent is a withdrawal or a deposit. After identification, the transaction is stored in the system and the balance at the agent is computed. The final step is to compute the liquidity score of the agent using the balance at the agent and expected value of the next transaction. The system is optimised by storing the score for use in the next iteration rather than running the full calculation again.

The float score is presented in a dashboard and shows liquidity indicators that enable providers to pre-emptively identify when an agent will not be able to serve their next customer (early warning sign on the agent's ability to serve customers). This enables float rebalancing, i.e. agents receive the required float before they run out. The dashboard also comes with the GPS location of the agent that requires liquidity. The GPS also enables agent monitoring to ensure that agents work within their specified locations and working hours. This, in turn, increases the efficiency of the agent network, which will improve the ability of the network to drive access to financial services.

Potential impact of the solution

Broadly speaking, this will improve the viability of agent networks and therefore help to increase access to products and services for financial inclusion target customers. The use of the float management system increases the volume of transactions processed by agents by maintaining uninterrupted service to customers. This leads to increased revenue across the mobile-money network. NFT Consult reports that, by using the float management system, users can increase revenues by almost 25% through reducing the time taken to refloat agents that are running out of liquidity.

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1 Multiclass neural networks are tools used in supervised machine learning to recognise instances in using specified criteria. This was used to identify transaction types at the agent, using set parameters.

This case study is part of the DataHack4FI Innovation Award competition Season 2 series. It describes the solution as developed by the tech startup and its partnered data fellows during the competition. The competition brings together data enthusiasts and financial service providers to promote the use of data-driven decision-making in financial inclusion. Find out more about the competition at datahack4fi.org.

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