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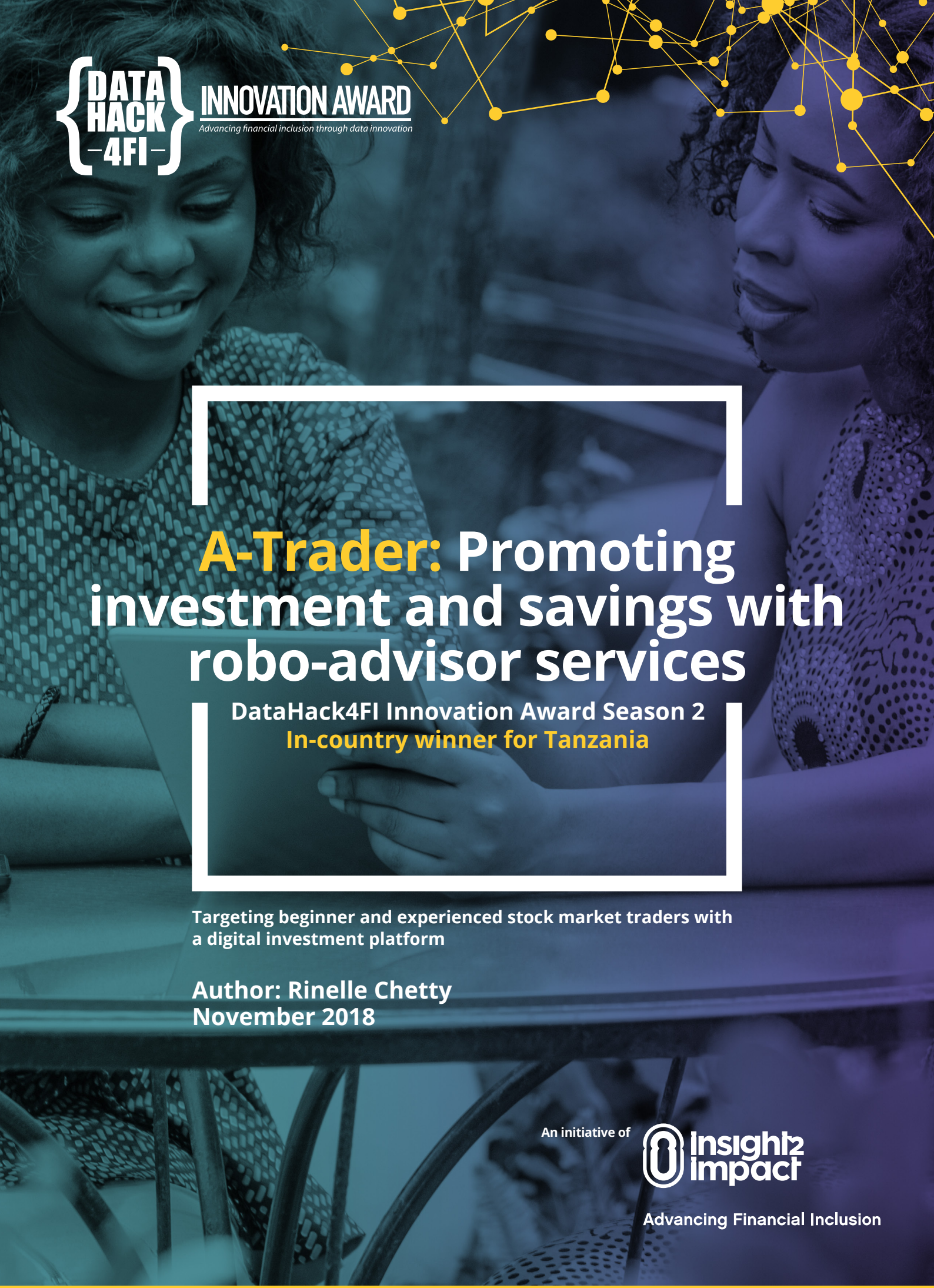

A-Trader: Promoting investment and savings with robo-advisor services

DataHack4FI Innovation Award Season 2
In-country winner for Tanzania

Targeting beginner and experienced stock market traders with a digital investment platform

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Advancing Financial Inclusion

Case Study

About A-trader

A-Trader is a Tanzanian start-up that participated in Season 2 of the DataHack4FI Innovation Award competition. A-Trader was founded in 2016 by Andrew Tesha, an IT graduate from Southern Cross University.

A-Trader seeks to assist fellow Tanzanians in reaching their financial and investment goals. In its two years of operation, the fintech and brokerage company has sought to provide financial education, savings and investment options for Tanzania's growing middle class. It seeks to do this by breaking down the barriers faced by these individuals in accessing investment opportunities.

Its flagship product, the A-Trader Digital Platform, allows beginner and experienced stock market traders to invest through their app, using the internet and a mobile device. A-Trader provides users with direct access to the stock market and financial planning tools.

The challenge being addressed

There is a lack of awareness of investment opportunities for the African population at large. This is particularly true in Tanzania, where more than half of the population report having some form of savings but are unable to invest and further grow these savings.[1]

The stock market provides an accessible, but relatively unfamiliar, space for individuals to easily accumulate their long-term savings. However, the stock market is often daunting and can be overwhelming for first-time investors.[2] These individuals are not always aware of their potential trading options. For both new and experienced traders, it is not always clear what the most appropriate option would be for them to invest in, given their individual characteristics and needs. A-Trader helps individuals to overcome these issues by making the stock market more familiar to them and by making it easier for them to make financial decisions.

Data and analytical approach

Through the DataHack4FI competition, A-Trader sought to innovate its data collection processes and recommendations algorithm to provide users with a more personalised trading experience. A-Trader's data collection process consisted of capturing a combination of external company data and internal customer data, which was used to compile an investment profile for the user. Company data consisted of Dar es Salaam Stock Exchange data and company financials, while customer data consisted of user-inputted data captured in a questionnaire.

Data capturing of the company data included extracting data points such as the price of shares, volumes and values of transactions, bids and offers made in trading sessions, and other price indexes. A-Trader also extracted information such as profit, revenue, dividends and financial health from online financial reports of companies listed on the stock exchange.

The questionnaire, on the other hand, asked users for the purpose of their investment (e.g. whether it is for retirement or for dependants), their age, employment status, attitudes towards risk, etc. Responses from the questionnaire were then analysed to segment users based on their associated risk preferences – low, medium or high.

Through the DataHack4FI competition, A-trader learned about, and applied, approaches such as web scraping.[3] This has allowed A-Trader to capture large sets of stock exchange data and company financial data much faster: A-Trader found that in the same amount of time it used to take to capture one week's worth of company data it could now capture four years' worth of company data.

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1 FinScope Tanzania. (2017). Available at: http://i2ifacility.org/data-portal/TZA/2017

2 Alliy, A. A. (2016). Analysis of factors affecting stock market development in Tanzania: the case of Dar es Salaam Stock Exchange.

3 Web scraping is the process of extracting different data points from a variety of websites. Upwork. (N.D) What is Web Scraping and How Can You Use It? Available at: https://www.upwork.com/hiring/for-clients/web-scraping-tutorial/

Furthermore, to improve this recommendation process, A-Trader developed and incorporated artificial intelligence (AI) and times series analysis[4] into its micro-investment algorithm. Its AI model sought to replicate an expert stockbroker's thinking when deciding how and where to invest on the stock market. This was done by implementing a decision tree – a visual tool used to represent decisions and the decision-making process.[5] This decision tree maps out all possible outcomes, starting with a single decision or node and branching off into other potential outcomes or decisions, dependent on the choice made.[6]

This decision tree matches all potential combinations of the user's investment profile with the external company data and then proposes the appropriate shares for investment. These recommendations include where and how to invest, and how the user could benefit from the investment.

The product

This robo-advisor service, built by artificial intelligence, seeks to provide users with more personalised trading and investment options. The user can also access financial education and management advice, depending on whether they are a new or experienced investor, which seeks to address common misunderstandings that new investors have of the stock market.

A-Trader also provides micro-investment options to cater to middle-to-low-income earners. This allows for micro-investment opportunities that start at TZS2,000 or approximately USD1.

The impact

This product allows for middle-to-low-income users with little to no knowledge of trading or the stock market to have access to investment advice – across their free and premium accounts – that matches their individual preferences to specific shares. It seeks to give these individuals the opportunity to invest and grow their savings by more than they would through saving at home or other informal mechanisms. Through this, it seeks to incentivise individuals to save more and plan for their future.

In addition, A-Trader aims to assist in providing know-your-customer (KYC) accreditation[7] for individuals who did not have this previously, thus bringing down a common barrier faced by individuals in accessing formal financial services.

The future

As more customer behaviour and investment decisions data become available, A-Trader plans to build on its AI model to ensure that the analysis and recommendations be available in real time. It also plans to develop the model further by incorporating past successes and failures experienced by the platform's users into the recommendation algorithm.

Lastly, A-Trader plans to develop this solution further by working within a regulatory sandbox environment in the Dar es Salaam Stock Exchange. A-Trader seeks to be provided with a testing area in which the app can be evaluated and improved upon, without affecting any live data or trading.

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4 A time series technique is an analytical method used for forecasting and predicting when dealing with time-based data. Analytics Vidhya. (2015). A Complete Tutorial on Time Series Modeling in R. Available at: https://www.analyticsvidhya.com/blog/2015/12/complete-tutorial-time-series-modeling/

5 Gupta, P. Decision trees in machine learning. Towards data science. Available at: https://towardsdatascience.com/decision-trees-in-machine-learning-641b9c4e8052

6 Lucidchart. What is a decision tree diagram? Available at: https://www.lucidchart.com/pages/decision-tree

7 KYC is the process through which businesses or financial service providers verify the identity of clients, by collecting basic information on clients, such as names, identity numbers, birthdays and addresses. (Comply Advantage, n.d. What it means to "Know Your Customer". Available at: https://complyadvantage.com/knowledgebase/kyc/)

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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