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The Determinant Factors for the Issuance of Central Bank Digital Currency (CBDC) in Malaysia using Machine Learning Framework

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Abstract
In order to identify the factors influencing the establishment of the Central Bank Digital Currency (CBDC) in Malaysia, this study leverages the machine-learning technique to determine the most critical factors leading to CBDC issuance in Malaysia. The overall Central Bank Digital Currency Project Index (CBDCPI) was selected as a target variable, while two machine learning algorithms, Random Forest and XGBoost were utilized to identify the determining variables. These algorithms were chosen for their ability to handle high-dimensional data and provide feature importance scores, which were crucial in identifying the most significant factors. The models were trained and validated using a rigorous cross-validation process to ensure robustness. The accuracy achieved through the Random Forest was 83%, and subsequently, 80% in XGBoost. This study explored a new research frontier by creating two machine-learning models that treated retail and wholesale CBDCPI as target variables. The data used in the process are gathered from various official sources such as the Bank for International Settlements (BIS), the International Monetary Fund (IMF), and the World Bank. The Circulation of Cash, Prevalence of Cryptocurrencies, Effect of CBDC on International Trade, the Search Interest, Financial Development Index, Innovation Value, and Trade Openness are some of the most critical factors determining whether CBDC will be issued in Malaysia. Generally, are identified as important factors determining whether CBDC will be issued in Malaysia. Eventually, the factors identified will be used to develop a framework for the implementation of CBDC in Malaysia. © 2024, American Diabetes Association. All rights reserved.

Author Keywords
Bank Digital Currency; Framework; Machine Learning; Random Forest; XGBoost

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