Investigating Risk Assessment in Post Pandemic Household Cryptocurrency Investments: An Explainable Machine Learning Approach

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Abstract

This study provides an applicable methodological approach applying Artificial Intelligence (AI)-based supervised Machine Learning (ML) algorithms in risk assessment of post pandemic household cryptocurrency investments, identifies the best performed ML algorithm, and the most important risk assessment determinants. The empirical findings from analyzing 13 determinants from 1,000 dataset collected from major cryptocurrency communities online suggest that the Logistic Regression (LR) algorithm outperforms the remain six ML algorithms (i.e., Discriminant Analysis (DA), K-nearest Neighbor (k-NN), Classification Tree (CT), Random Forest (RF), and Bootstrap Aggregating Ensembles (BAE), and Neural Network (NN)) by using performance metrics, Lift chart, and ROC chart. Moreover, to make the ML algorithm results explainable and tackle the "black box" issue, the top five most important determinants are discovered, which are the interaction between investment amount and investment duration, investment amount, perception of traditional investments, cryptocurrency literacy, and perception of cryptocurrency volatility. This study contributes to the newly emerged body of knowledge on post pandemic household cryptocurrency investment risk assessment and behavior analysis, as well as provide implications for household cryptocurrency investors to make better investment decisions, and for financial regulators and investment managers to reduce cryptocurrency market distortion and effectively conduct risk controls during extreme situations, such as pandemics.

Biography

Lin Li (lin.li@kfupm.edu.sa) is an assistant professor in KFUPM Business School, King Fahd University of Petroleum and Minerals. Her research interests include platform for online marketplaces, artificial intelligence, business analytics, information privacy, and e-business strategies. Her research has been published in The Service Industries Journal, Information Processing & Management, International Journal of Hospitality Management, Electronic Markets, Information Technology for Development, and many other journals.