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ANNs-Based Early Warning System for Indonesian Islamic Banks

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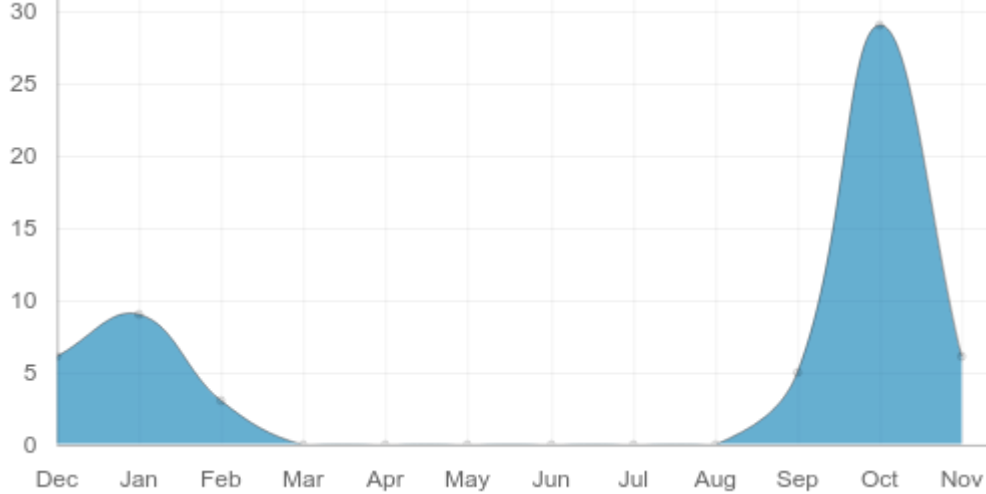
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Abstract This research proposes a development of Early Warning System (EWS) model towards the

financial performance of Islamic bank using financial ratios and macroeconomic indicators. The result of this paper is ready-to-use algorithm for the issue that needs to be solved shortly using machine learning technique which is not widely applied in Islamic banking. The research was conducted in three stages using Artificial Neural Networks (ANNs) technique: the selection of variables that significantly affect financial performance, developing an algorithm as a predictor and testing the predictor algorithm using out of sample data. Finally, the research concludes that the proposed model results in 100% accuracy for predicting Islamic bank's financial conditions for the next two consecutive months.

Downloads



References

Al-Osaimy, M. H. & Bamakhramah, A. S. (2004). An Early Warning System for Islamic Banks Performance. *Islamic Economics*, 17(1), 3-14.

Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, 589-609.

Altman, E. I. & Brenner, M. (1981). Information Effects and Stock Market Response to Signs of Firm Deterioration. *Journal of Financial & Quantitative Analysis*, 16(1), 35-51.

Altman, E. I. (1993). *Corporate Financial Distress and Bankruptcy: A Complete Guide to Predicting & Avoiding Distress and Profiting from Bankruptcy* (2nd Edition ed.). New York: John Wiley & Sons. Inc.

Anwar, S., & Mikami, Y. (2011). Comparing Accuracy Performance of ANN, MLR, and GARCH Model in Predicting Time Deposit Return of Islamic Bank. *International Journal of Trade Economics and Finance*, 2(1), 44-51.

Anwar, S., & Ismal, R. (2011, May). Robustness Analysis of Artificial Neural Networks and Support Vector Machine in Making Prediction. Presented at Parallel and Distributed Processing with Applications (ISPA), 2011 IEEE 9th International Symposium on (pp. 256-261). IEEE.

Arena, M., (2008). Bank failures and bank fundamentals: A comparative analysis of Latin America and East Asia during the nineties using bank-level data. *Journal of Banking and Finance*, 32, 299-310.

Beaver, W. H. (1966). Financial Ratios as Predictors of Failure. *Journal of Accounting Research*, 4, 71-111.

Bellovary, J. L., Giacomino, D. E., & Akers, M. D. (2007). A review of bankruptcy prediction studies: 1930 to present. *Journal of Financial Education*, 1-42.

Chapra, M. U. (2009). The Global Financial Crisis: Can Islamic Finance Help Minimise the Severity and Frequency of Such a Crisis in the Future?. *Islam and Civilisational Renewal (ICR)*, 1(2).

Cybinski, P. (2001). Description, explanation, prediction—the evolution of bankruptcy studies?. *Managerial Finance*, 27(4), 29-44.

Espahbodi, P. (1991). Identification of Problem Banks and Binary Choice Models. *Journal of Banking & Finance*, 15(1), 53-71.

- Frydman, H., E. Altman and D. Kao. (1985). Introducing recursive partitioning for Winter 2007 15 financial classifications: The case of financial distress. *The Journal of Finance*, 40(1): 269-291.
- Gunther, J. W., & Moore, R. R. (2003). Early warning models in real time. *Journal of banking & finance*, 27(10), 1979-2001.
- Hall, M. J. B., & Muljawan, D. Suprayogi, & Moorena, L. (2009). Using the artificial neural network to assess bank credit risk: a case study of Indonesia. *Applied Financial Economics*, 19(22), 1825-1846.
- Keuangan, Otoritas Jasa. (2015). Statistik Perbankan Indonesia, from <http://www.ojk.go.id/data-statistik-perbankan-indonesia>.
- Liao, S. H., Chu, P. H., & Hsiao, P. Y. (2012). Data mining techniques and applications—A decade review from 2000 to 2011. *Expert Systems with Applications*, 39(12), 11303-11311.
- Martin, D. (1977). Early Warning of Bank Failure: A Logit Regression Approach. *Journal of Banking & Finance*, 1(3), 249-276.
- Meyer, P. A., & Pifer, H. W. (1970). Prediction of bank failures. *The Journal of Finance*, 25(4), 853-868.
- Othman, J. (2012). Analysing Financial Distress in Malaysian Islamic Banks: Exploring Integrative Predictive Methods. Doctoral dissertation. Durham University.
- Pettway, R. H., & Sinkey, J. F. (1980). Establishing On-Site Bank Examination Priorities: An Early-Warning System Using Accounting and Market Information. *The Journal of Finance*, 35(1), 137-150.
- Takahashi, K., Y. Kurokawa and K: Watase. (1984). Corporate bankruptcy prediction in Japan. *Journal of Banking and Finance*, 8(2): 229-247.
- Tsang, E., Yung, P., & Li, J. (2004). EDDIE-Automation, a decision support tool for financial forecasting. *Decision Support Systems*, 37(4), 559-565.
- Wen, W., Chen, Y.H., and Chen, I.C. (2008) "A knowledge-based decision support system for measuring enterprise performance". *Knowledge-Based Systems*, Vol 21, p.148-163, 2008.
- West, P. M., P. L. Brockett, and L. L. Golden (1997), A comparative analysis of neural networks and statistical methods for predicting consumer choice, *Marketing Science*, 16(4), 370-391.

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