Artificial Neural Network and Analytical Hierarchy Process Integration: A Tool to Estimate Business Strategy of Bank

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ABSTRACT

The disruption has been occurring in financial services. Rethinking new strategy of banking is needed to make a sustainable competitive advantage innovation in organizations. The four types of business strategy for banks are prospector, analyzer, defender, and reactor. Studies mentioned that formulating strategy is very costly, time consuming, and comprehensive analysis. The banks have to get rid of execution time inefficiency, lack of flexibility, and lack of ability to present several scenarios in the dynamic business environment. The purpose of this study is to present an integrated intelligence algorithm for estimating strategic resources of the bank strategy in Indonesia. The algorithm has two basic modules which are artificial neural network (ANN) and analytical hierarchy process (AHP). ANN is utilized as an inductive algorithm in discovering predictive strategy of the bank and used to explain the strategic resources which improved in forward. AHP has the capability to handle multi-level decision-making structure with use of expert judgments in pairwise comparison process. AHP is used to measure the weight of the resources and the score is used to determine the strategy. The empirical results indicate that ANN and AHP integration is proved to predict the business strategy of the bank. The strategy choice appropriate with the condition of bank's resources. This framework can be implemented to help banker for the decision making in bank operation.

Keywords: business strategy, ANN, AHP, resources