

A GROUP DECISION SUPPORT SYSTEM USING HYBRID KANSEI-SOM MODEL FOR STOCK MARKET INVESTMENT STRATEGIES AND ITS APPLICATION

HAI V. PHAM¹, THANG CAO², IORI NAKAOKA³, JUNICHI KUSHIDA²
ERIC W. COOPER² AND KATSUARI KAMEI²

¹Graduate School of Science and Engineering

²College of Information Science and Engineering

Ritsumeikan University

1-1-1 Noji-higashi, Kusatsu, Shiga 525-8577, Japan

{ hai; thangc; kushida; kamei }@spice.ci.ritsumei.ac.jp; cooper@is.ci.ritsumei.ac.jp

³Research Institute of Faculty of Commerce

Waseda University

1-6-1 Nishi-Waseda, Shinjuku-ku, Tokyo 169-8050, Japan

nakaoka@aoni.waseda.jp

Received February 2010; revised August 2010

ABSTRACT. *In this paper, we propose a Hybrid Kansei-SOM model, using Kansei Evaluation integrated with Self-Organizing Map (SOM) for stock market investment strategies. The proposed approach, using a group Decision Support System (DSS), aims to aggregate experts' preferences with the selection of the most suitable stocks, matching with investing strategies to achieve investment returns by dealing with complex situations in stock market dynamics. The new contribution in this study using Kansei evaluation is to quantify experts' sensibilities and preferences in stock trading with uncertain values in various stock market conditions, matching with appropriate stock market investment strategies for investment. To evaluate companies for investment, the fuzzy evaluation model of stock market investments is applied by using fuzzy rules on stock market dynamics to represent stock market factors in fuzzy weights and Kansei weights for Kansei stock matrix construction. The matrix is visualized by SOM, together with aggregating experts' preferences in order to select potential companies that match appropriate stock market investment strategies. The proposed approach has been tested and performed well in daily stock trading on the HOSE, HNX (Vietnam), NYSE and NASDAQ (US) stock markets to validate the method in various stock markets. In order to evaluate the effectiveness of this approach, experimental results show that the proposed approach performs better than other current DSS methods to deal with various stock market conditions.*

Keywords: Intelligent decision support system (DSS), Kansei evaluation, Self-organizing map (SOM), Group decision support system (GDSS), Stock market investment

1. **Introduction.** Stock market investment strategies play significant roles in stock markets, economics and engineering. Stock investing strategies focus on developing approaches to successfully forecast/predict stock prices, index values and market trends, aimed at higher profits based on stock trading decisions. Most existing approaches to select superior stocks at the right time for investment are broadly classified by trading activities, such as fundamental and technical approaches [1,2]. Fundamental analysis aims to select potential stocks based on study of the fundamental data of a company such as financial weights, macroeconomics, financial proportions and stock-market news. Contrary to this approach, technical analysis attempts to predict price by analyzing historical data of the correlation between prices and market volume behaviors for trading stocks. In