

## APPLICATION OF A FUZZY MCDM MODEL TO THE EVALUATION OF PLANT LOCATION

CHIEN-CHANG CHOU

Department of Shipping Technology  
National Kaohsiung Marine University  
482, Chung Chou 3rd Rd. Chi Chin, Kaohsiung 805, Taiwan  
chiench1@ms58.hinet.net

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**ABSTRACT.** *In the past, although a number of studies focus on the subject of location choice, most studies examined the determinants of location choice. Only few have attempted to evaluate the risk of investment location. Furthermore, human judgments are often vague and it is not easy for decision makers to express the importance for evaluation criteria and the risks for candidate locations by using an exact numerical value. It is more realistic to use linguistic terms to describe the importance weights for criteria and risk values for candidate locations. Due to this type of existing fuzziness in the risk evaluation of investment location, fuzzy set theory is an appropriate method to deal with uncertainty and the subjective evaluation data can be more adequately expressed in linguistic variables. Thus this article attempts to fill this gap in the current literature by establishing a fuzzy multiple-criteria decision-making (MCDM) model for the risk evaluation of investment location. A case study of Taiwanese FDI in China is conducted to demonstrate the effectiveness of the proposed fuzzy MCDM model. The results show that the proposed fuzzy MCDM model can be used effectively to evaluate the risk of investment location of Taiwanese FDI in China.*

**Keywords:** Location selection, Fuzzy sets theory, Multiple-criteria decision-making, Risk evaluation

1. **Introduction.** Since China began to open its door to the foreign inventors in 1979, it has attracted a spectacular amount of FDI. China, as the largest transition economy in the world, has drawn substantial FDI flows. From 1979 to 2003, China absorbed a total of USD 501.5 billion in FDI (UNCTAD [57]). In 2003, 31.1% of FDI going to developing countries actually went to China and 9.6% of worldwide FDI was sited in China. China's development can be viewed as going through three stages. The first stage starts with the promulgation of The Law on Sino-Foreign Equity Joint Ventures in 1979. Four special economic zones (SEZs) were quickly set up at Shenzhen, Zhuhai, Xiamen and Shantou in the early 1980s. In 1984, 14 more coastal cities and Hainan Island were opened to foreign investment. Furthermore, three zones were opened to FDI in early 1985, including the Yangtze River delta, the Pearl River delta and the Zhangzhou-Quanzhou-Xiamen region. FDI hence spread out from the SEZs but the boom ended in late 1985 due to high inflation. During this stage, foreign investments were concentrated in small-sized assembling and processing for exports.

In response to a decline in FDI, the government promulgated the PRC Law on Foreign Enterprises in April 1986, formally granting legal rights to wholly owned foreign enterprises in China. Wholly owned subsidiaries were not allowed until 1986 when the related law was put into effect. As a result, equity-based joint ventures were the dominant entry