

The Relative Efficiency of Decision-Making Units: A Case Study of TFT-LCD
Industry in Taiwan

Tsai, M. C, 林淑萍, Liu, S. Y., Chang, Ming, Chen, C. H.

Technology Management

Management

splin@chu.edu.tw

Abstract

The Thin-Film Transistors Liquid-Crystal Display (TFT-LCD) industry has played an important role for Taiwan in the worldwide LCD market share competition. This paper reports the study of the performance as well as the productivity changes of the TFT-LCD industry in Taiwan from 1999 to 2004. In this study, Data Envelopment Analysis (DEA), a technique for measuring relative efficiency of different Decision-Making Units (DMUs) with non-preset production function, is utilised to measure relative efficiency. The Malmquist Productivity Index (MPI), an extension technique of DEA, is used to measure the productivity changes of one DMU during different periods by different production functions. The results show that with the input of Taiwan's government support, the efficiency of the TFT-LCD industry in Taiwan is increasing through 1999 - 2004, and net operation income and scales are the key performance indicators of TFT-LCD industry.

Keyword : thin-film transistors liquid-crystal display; TFT-LCD; efficiency; data envelopment analysis; DEA; Malmquist productivity index; MPI; technology; decision-making.