

# Using Fuzzy Multi-Objective Data Envelopment Analysis on the Performance of Environmental Protection Administration

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## ABSTRACT

People always improve the quality of living and eco-awareness by the economical development and GNP advancement in Taiwan. The government established the environmental protection units to keep quality of living, include of air, noise, water, litter, environmental sanitation and so on. Recently, although every environmental protection unit makes the quality of living actively, people can not feel the effects. In this study, we make performance evaluation of environmental protection units and we can understand performance of environmental protection in all cities in Taiwan. There are few papers to discuss environmental protection performance in Taiwan. In this study, integration of all Public Nuisance Dispute items and use the Fuzzy Multi-objects DEA method to criticize performance of all countries environmental protection in Taiwan from 2002 to 2005. Calculation of the productive efficiency, technical efficiency, scale efficiency by CCR model and BCC model and compare with multi-periods by window analysis and make the direction of improving performance of all countries in the further in Taiwan. After analysis all data by Fuzzy Multi-Object DEA, we can find the rules of environmental protection performance. As result, we find there is not enough resource (per ten thousand people) in the best cities in Taiwan (beside of Taichung city): Hsinchu County, Yunlin County and Chiayi County. The effective rate 74.5% is not good, because that is no effective rate of technology. So the environmental protection units must find better managing method to help the bad performance cities. In this study, we use a group of same weight to solute the effective rate of all cities. Difference of other traditional DEA method, we find the new method is more effectively and functionally.

Keywords : Environmental Protection ; Performance Evaluation ; Fuzzy Multi-objects DEA ; Data Envelopment Analysis

## Table of Contents

第一章 緒論.....	1	1.1 研究背景與動機.....	1	1.2 研究目的.....	2	1.3 研究限制.....	2
第二章 文獻探討.....	3	2.1 台灣地區環境保護之現況及污染來源.....	3	2.1.1 環保機關之歷史沿革與組織概況.....	7	2.1.2 現階段環境保護政策目標.....	9
第三章 研究方法.....	7	2.1.3 環境概況.....	13	2.1.4 我國環境品質現況.....	17	2.2 環境績效評估.....	23
第四章 環保經營績效分析.....	23	2.2.1 績效評估之定義與方法.....	23	2.2.2 環境績效評估之相關研究.....	26	2.3 資料包絡分析法.....	30
第五章 結論與建議.....	30	2.3.1 資料包絡分析法.....	30	2.4 模糊多目標資料包絡分析法.....	32	3.1 資料包絡分析法.....	33
附錄.....	33	3.1.1 資料包絡分析法概念.....	34	3.1.2 資料包絡分析法模式.....	35	3.1.3 應用DEA模式之結果分析.....	43
		3.1.4 應用DEA模式之結果分析.....	43	3.2 模糊多目標資料包絡分析法模式建構.....	51	4.1 實證資料來源與對象.....	59
		4.1 實證資料來源與對象.....	59	4.2 投入與產出之評估指標.....	59	4.2.1 投入指標.....	60
		4.2 投入與產出之評估指標.....	59	4.2.2 產出指標.....	61	4.2.3 投入與產出之變數處理.....	64
		4.2.3 投入與產出之變數處理.....	64	4.3 評估結果與效率分析.....	69	4.3.1 投入與產出權重.....	69
		4.3 評估結果與效率分析.....	69	4.3.2 效率分析.....	70	4.3.2 效率分析.....	70
		4.3.2 效率分析.....	70	4.4 視窗分析.....	79	4.6 經營績效與經營策略.....	83
		4.4 視窗分析.....	79	4.6 經營績效與經營策略.....	83	4.5 敏感度分析.....	88
		4.6 經營績效與經營策略.....	83	4.5 敏感度分析.....	88	4.6 模糊多目標DEA與傳統DEA效率值比較.....	93
		4.5 敏感度分析.....	88	4.6 模糊多目標DEA與傳統DEA效率值比較.....	93	第五章 結論與建議.....	99
		4.6 模糊多目標DEA與傳統DEA效率值比較.....	93	第五章 結論與建議.....	99	5.1 研究結論.....	99
		5.1 研究結論.....	99	5.2 環保單位之建議.....	101	5.2 環保單位之建議.....	101
		5.2 環保單位之建議.....	101	5.3 後續研究之建議.....	101	5.3 後續研究之建議.....	101
		5.3 後續研究之建議.....	101	參考文獻.....	103	參考文獻.....	103
		參考文獻.....	103	附錄.....	108	附錄.....	108

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