

摘要

近年來全球掀起無線通訊和物聯網風潮，帶動電信產業的成長，但各公司經營績效是否逐年提升值得我們探討。電信產業特性是高技術與高資本產業，在這技術競爭激烈的環境下，業者必須更謹慎評估營運的投入資源，以提高其經營效率。本研究應用資料包絡分析法探討亞太經貿地區 15 家電信業者之經營績效，評估年度從 2011 至 2018 年。我們採用二階段差額變數為基底的模式，計算各年度電信業者的生產效率和市場效率，發現只有遠傳電信的各年度生產效率和市場效率皆具有效率。其次，使用麥氏指數探討多年期的效率變化及其變化的趨勢，結果顯示大多數生產效率和市場效率都有逐年衰退的趨勢。最後應用 Tobit 迴歸分析影響經營效率的因素，結果顯示專利數、經濟成長率和人均國民所得毛額對生產效率有顯著影響，但 4G 的開設無顯著影響。藉由檢視各電信公司的經營效率，我們從實證中提出相關的改善方向與研究建議。

關鍵詞：電信產業、資料包絡分析、麥氏指數、Tobit 迴歸

ABSTRACT

In recent years, wireless communications and the Internet of Things (IoT) have become a global trend, driving the growth of the telecommunications industry. It is worth to study whether the operational performance of each company is improving year by year. The characteristics of the telecommunications industry are high-tech and high-capital. They must be more prudent in evaluating the resources invested in order to enhance their operational efficiency. In the study, the method of data envelopment analysis is employed to examine the performance of 15 telecommunication firms in Asia-Pacific for the period from 2011 to 2018.

A two-stage slack-based measure model is proposed to determine the production efficiency and the market efficiency in each year. It is shown that only Far EasTone Telecommunications is efficient in all years. Moreover, the Malmquist index is used to examine the multi-period efficiency changes and their trends. The results show that most of the production and the market efficiencies are declining year by year. Finally, Tobit regression is applied to analyze the factors that affect operational efficiency. It is indicated that the number of patents, economic growth rate and gross national income per capita have a significant impact on production efficiency. Based on the above results, some suggestions are proposed.

Keywords: Telecommunication Industry, Data Envelopment Analysis, Malmquist Index, Tobit Regression