

# 運用改良式資料包絡分析法評估台灣一百大科技公司

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## 摘 要

經濟是台灣生存發展的命脈，也是台灣發展過程中最耀眼的成果。回顧台灣經濟發展的歷程，從勞動密集的農業經濟、資本密集的重工業，到今日以知識經濟為主的高科技資訊產業，台灣在不斷追求改革與進步的過程中，創造了傲視全球的『經濟奇蹟』。辛勤而且聰明的台灣企業家胼手胝足地打造台灣科技版圖，經過二十年的努力創造出資訊全球第三、半導體全球第四的產業王國。

由於企業經營績效的評比關係著社會大眾對科技公司的認同及投資意願，也關係著企業家的經營理念，更直接影響員工對公司的向心力，因此在台灣為企業做營運績效調查分析的機構及雜誌很多，但以往都是依照企業的「營收」來決定排序的排名，無法真正提供量化的資訊來輔助決策者及投資大眾做決定。

本研究以「數位時代」所列舉之「台灣科技一百強」為研究對象，將科技公司分類為電腦與周邊設備、軟體、網路設備、電訊及設備（含電信設備與電訊服務）、半導體、服務通路和其他等七項產業，使用作業研究方法中的 DEA（Data Envelopment Analysis）對台灣科技公司重新進行評比，並以 Rank-DEA 模式來改良 DEA 的缺點，最後再利用 Rank-DEA 模式所計算出的權重、得分與既有的實際資料值，對所有的評估目標做排序，並以一個 3-D 球面的方式來呈現評比的結果。而在決策球模式中，我們除了可以看出公司間排名的高低外，也可以看到公司間群聚的現象，希望藉此提供量化的資訊來輔助決策者做決定及提高科技公司評比的可靠度。

# **Use of Improved Data Envelopment Analysis to Evaluate Top 100 Technological Companies in Taiwan**

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## **Abstract**

Economy has been the lifeblood to the survival and development of Taiwan, also the most proud achievement of Taiwan. In the progress of economic development, from labor-intensive agricultural economy, capital-intensive heavy industry, to today's knowledge-based high-tech information industry, Taiwan has created economical miracle that astonishes the world in continuous reform and advancement. Hardworking and intelligent Taiwanese entrepreneurs together created the technology domain of Taiwan, and achieved number three in information technology, and number four in semiconductor industry in the world.

Operational efficiency evaluation relates to the public consensus and investment motive to high-tech companies, the business principle upheld by the enterprisers, most importantly, the unity of employees in support of the company. Therefore, a number of organizations and magazines have conducted operational efficiency analysis, yet most of them determine the rank by the "revenue", thus, are unable to provide quantified data to decision-makers and the private investors.

This study researched "Technology 100" companies listed by "Business NEXT" magazine, and divided the companies into seven industries, namely computer and accessories, software, Internet equipment, telecommunications and equipment (including telecommunications equipment and service), semiconductor, service channels, and others. DEA (Data Envelopment Analysis) was applied to evaluate the companies, and Rank-DEA was employed to improve the flaws of DEA. Lastly, the weight, rating, and data generated by Rank-DEA model were applied to rank the companies. a 3-D spherical method was used to present the results. The decision ball model revealed the ranking and the clustering of companies. The quantified data generated this study could be used as guidelines to decision-makers and to improve the reliability of high-tech companies rating.