建構矽晶太陽能電池產業的後進者技術獲取策略

Constructing The Technology Acquisition Strategy for Followers of CSSC Industry

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摘要

矽晶太陽能電池產業為綠色能源重點產業。如何增強後進者台灣的競爭力為產業及專家學者所關心。後進者獲取技術能夠幫助企業在激烈的競爭中取得優勢，然而，如何獲取適合企業發展的技術是一大挑戰。本研究以臺灣為例，建構基於 FAHP 方法的技術獲取模型，為企業提供技術追趕策略。本研究使用專家問卷法決定各影響要素的權重。一共搜集 85 份與此領域相關的研究人員、學者和專家問卷。研究結果發現自行開發為重要的技術發展策略。企業必須對新材料的發展進行大量投資，並把增加矽晶太陽能電池的蓄電能力作為目標。策略聯盟能夠在短期為企業帶來技術，但是如果企業在整合的過程中出現爭議，則會引起負面效應，並妨礙長期合作。此外，中小企業可以和已發展國家的上游供應商合作以降低成本，並組建完整的產業生產鏈。技術獲取策略不僅需要考慮企業的發展，同時應重視市場需求。

關鍵字：矽晶太陽能電池產業、技術獲取策略、模糊層級分析、多標準決策

ABSTRACT

The crystalline silicon solar cell (CSSC) industry is critical to the renewable energy field, and enhancing Taiwan's competitiveness in this field is an important issue for professionals and researchers. Technology acquisition can help followers to obtain competitive advantages in the intense environment. Thus, the approach of getting technologies that are suitable for firms' development is a challenge. This study employed Taiwan's CSSC industry as a case study and developed a fuzzy analytic hierarchy process (FAHP) model to supply firms with appropriate technology acquisition strategies. Expert questionnaire method was used to identify the weights of influencing factors. There were 85 samples collected from researchers, academics, and professionals from the industry. The study found that internal R&D is regarded as a crucial technology acquisition strategy. Firms need to increase investment to develop new materials and increase solar cell's capacity. Strategic alliances would bring firms with technologies in the short-term; however, if conflicts arise during the integration process, it would arise negative and unconducive to the long-term cooperation. Moreover, small and medium enterprises (SMEs) can cooperate with developed countries' suppliers from upstream to lower costs and construct a comprehensive production chain. The technology acquisition should not only consider firms' development, but also pay more attention to the market demands.

Keywords: CSSC industry, Technology acquisition strategy, FAHP, Multi-criteria decision making