

論文摘要

全球趨勢大師戴維斯 (Stan Davis) 曾預言說：「未來二十年將是生物科技的時代！」，也有人說：「二十一世紀是生物科技的世紀。」事實上過去幾年來，我國也將生物科技產業列為國家級重點發展科技之一，並投入相當大的金額輔助產業之發展，生物科技產業是技術與知識密集的產業，而知識是整個產業與企業發展最重要的元素，但由於生技產業在我國屬發展初期且創新能力尚嫌不足，因此，由技術知識本質來探討我國生物科技公司之創新行為便對產業會有所貢獻。

本研究主要採用文獻探討以及個案訪談作為主要的研究方法，先藉由文獻探討建立起論文整體之架構以及相關理論之說明定義所需探討之研究變項，之後再透過六間生技產業各領域之標竿企業的訪談加以實證。本研究所探討之創新行為是以Leonard-Barton之創新模式作為研究基礎，再以「技術知識特質」與「中小企業特質」來探索對創新行為之影響。而可得到以下初步之研究結論：

一、生技產業專案類型與中小企業特質之關係：

1. 生物科技公司會因不同類型專案之開發目的與需求而追求技術自主性；
2. 生物科技公司正式化程度會受法令與規範之影響；
3. 生物科技公司會因不同類型專案專案人員自主性不同。

二、生技產業專案類型與技術知識特質之關係：

1. 不同類型之生物科技公司，其技術知識特質亦不相同。

三、中小企業特質與創新行為之關係：

1. 高度的技術自主程度，也會明顯提高組織對失敗之容忍度；
2. 高度的技術自主程度，使得深奧技術知識變的容易溝通；

3. 高度的正式化程度，使團隊很重視非正式的互動與交流；
4. 高度的專案成員自主性，較鼓勵以摩擦性創造作為解決問題的方式。

四、技術知識特質與創新行為之關係：

1. 技術知識內隱程度會影響共同解決問題時創造性摩擦的鼓勵以及解決問題的方式；
2. 技術知識內隱程度並不會影響執行與整合新技術時使用者參與的程度；
3. 技術知識內隱程度越低，越鼓勵實驗風氣；
4. 技術知識內隱程度不同，外部學習的關鍵人物也不相同；
5. 系統複雜程度越低，會降低專案團隊成員異質性，問題解決方式傾向專業分工處理而非密集討論；
6. 系統複雜程度會影響組織進行創新型試驗的意願；
7. 系統複雜程度會影響組織進行知識吸收來源的廣泛程度；
8. 路徑相依程度不同，會影響技術執行與整合的方式。

關鍵字：生物科技產業、技術知識特質、中小企業特質、創新行為

Abstract

Stan Davis, The Global trend master, had prophesied: 「 The following 20 years will be the era of biotechnology ! 」, also somebody said : 「 The 21st century is the century of biotechnology. 」 In fact, over the last several years, the biotechnology industry is one of the national-level that will give priority to development industry in our country, and to assist the industry development by invest sizable amount of money. The biotechnology industry is technology and knowledge-intensive industry, and knowledge is the most important element whether whole industry and enterprise developed. However, the biotechnology industry goes along at initial stage and does not have enough innovation ability in our country. So it will contribute the biotechnology industry, if to probe the biotechnological corporation of our country by technological knowledge essence. This thesis attempts to take an exploratory study of the relationship between characteristics of technological knowledge and innovative behavior on biotechnological corporation in Taiwan.

This thesis adopts reference and case study as the main research approach. It set up the thesis whole structure by reference and relevant theory to define the factors. Afterward, to demonstrate the thesis structure by interview six biotechnological corporations which are the benchmark business in the each field. There are primary figures found in the thesis :

I.The relationship between characteristics of SMEs (Small & Medium-sized Enterprises) and project type of biotechnology industry :

1. The biotechnological corporations will pursue the technological independence because of development purpose and demand of

different kinds of projects.

2. Degree of formality in the biotechnological corporation will influence by decree and regulation.
3. The biotechnological corporations have different degree of project personnel independence by different kind of projects.

II. The relationship between characteristics of technological knowledge and project type of biotechnology industry :

1. Different kinds of biotechnological corporations, its characteristics of technological knowledge don't the same.

III. The relationship between characteristics of SMEs (Small & Medium-sized Enterprises) and innovative behavior :

1. High independent degree of technology will obviously improve tolerance degree of failing in the organization.
2. High independent degree of technology will made abstruse technological knowledge apt to communicate.
3. High degree of formality make the group pay attention to unofficial interaction.
4. High degree of project personnel independence relatively encourages creative abrasion as the way to solve problem.

IV. The relationship between characteristics of technological knowledge and innovative behavior :

1. Tacit or Codified Technology knowledge will influence the way to solve

problem and encourages creative abrasion.

2. Tacit or Codified Technology knowledge will not influence the degree of user participates.
3. Codified Technology knowledge encourage of R&D in a company.
4. Tacit or Codified Technology knowledge will make key personages of outside study do not the same.
5. The lower systematic complexity will reduce the project group member's heterogeneity and the way to solve problems is inclined to specialized departments to deal with.
6. Degree of systematic complexity will influence the aspiration of innovative test in a company.
7. Degree of systematic complexity will influence the knowledge source and extensive degree.
8. The path-dependency of technological knowledge in an innovative project has an influence the method to implement and integrate.

Keywords : Biotechnology, Biotechnology industry, Characteristics of Technological Knowledge, Characteristics of SMEs, Innovative Behavior