

**CITY UNIVERSITY OF HONG KONG**  
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**Persistency of R&D Investments: Influencing  
Factors and Economic Consequences**  
企業研發投入的持續性：影響因素和經濟  
後果研究

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## 摘要

企業的研發活動是企業實施差異化戰略、實現技術進步的主要手段，是企業在市場競爭中獲取競爭優勢的重要途徑。企業的生存和發展需要持續的技術進步，而持續的技術進步需要企業持續的研發活動予以支援，需要持續性的研發經費投入的保證。持續性的研發投入是創造可持續競爭優勢的要求，代表了良好的研發的投入模式，通常表明研發投入具有較小的不確定性和較大的成功可能性，表明管理者對研發項目具有長期的清晰的計畫和科學的決策，以及較高的研發管理水準，對研發產出和未來收益具有一定的信心，能夠有效地利用研發投入使其產生預期的效益。同時持續性的研發投入也是一種利好的信號，向市場傳遞了研發專案進展情況及未來盈利能力的信號，代表企業創新與可持續發展的能力，降低研發的不確定性和資訊不對稱，有利於提高企業市場價值。由此可見，研發投入的持續性對企業具有重要的意義。

持續性的研發投入作為研發投入在時間序列上的一種模式，很大程度上受到管理層計畫、決策、管理等行為的影響，而管理者的行為又是受到其動機、偏好等個人因素的影響。由於委託代理問題的存在，管理者更多地關注企業的短期績效而忽視長期價值創造，從而抑制研發的投入和研發活動的持續進行。而合理的公司治理機制通過監督和激勵方式，能夠有效地將管理者個人利益與股東利益統一起來，緩解代理問題，激發管理者進行研發投資的積極性，提高管理者關於研發投資的計畫、決策、管理的有效性，有利形成良好的研發投入模式，提高研發投入的持續性。由此可見，良好的公司治理機制是持續性的研發投入模式的保證。

本文從研發投入模式這個角度切入，研究研發投入持續性的影響因素，以及對企業績效的影響。本文利用實證研究方法，探究研發投入的持續性這一研發投入模式是否存在，並探討公司治理是否會對企業的研發投入持續性產生影響，以及研發投入持續性是否會影響研發活動給企業帶來的經濟效益。

本文以滬深兩市 2009-2015 年間有連續的研發投入的上市公司，通過實證研究得出以下結論：第一，研發投入持續性這一現象總體上在樣本公司中是存在的，說明探究研發投入持續性這一現象是可行的，是具有實際應用價值和現實意義的；第二，公司治理的層面的因素，包括股權結構、董事會結構、股權激勵、董事長和總經理的任期和更換會對研發投入持續性產生影響，其中，股權集中度、獨立董事比例、董事會人力資本廣度、董事長和總經理的更換對研發投入持續性具有負面的影響，而機構投資者持股比例、董事會規模、董事會人力資本深度、股權激勵、董事長和總經理任期對研發投入持續性具有正向的影響；第三，研發投入的持續性能夠對公司效益產生影響，但是這種影響並不是研發投入持續性直接產生的，而是作為一種調節變數，通過調節研發投入水準與其所產生的經濟後果之間的關係，間接地影響公司的創新成果的水準、經營業績的高低和市場價值的大小，實證結果表明，在一定的研發投入水準下，研發投入持續性越高的公司，創新成果產出越多，經營業績越好，市場價值和市場認同度越高。

本文的研究貢獻主要有以下三點：第一，本文首次提出“研發投入持續性”這一概念，作為研發投入在時間序列上的模式，考察研發投資在投入量之外的其他特徵的重要意義，豐富了研發的相關研究，拓寬了對於研發投資的認識和研究切入點；第二，本文從公司治理層面探究研發投入模式的影響因素，為探索企業良好的研發投入模式以及長期競爭優勢創造的驅動因素提供新的途徑，豐富了研發投入與公司治理關係的相關文獻，有助於更加深入地理解研發活動對企業價值創造的影響的路徑和內在作用機理；第三，本文研究了研發投入模式所產生的經濟後果，豐富了研發投入與企業績效的相關文獻，有利於全面地認識和研發投入對企業的價值作用，為探索研發價值創造的路徑和內在機理提供新的途徑。

## Abstract

The R&D activities of enterprises are the main means for enterprises to implement differentiated strategies and achieve technological progress, and are an important way for enterprises to gain competitive advantage in market competition. The survival and development of enterprises requires continuous technological progress, and continuous technological progress requires the support of continuous R&D activities of enterprises, which requires continuous investment in research and development. Continuous R&D investment is a requirement to create a sustainable competitive advantage. It represents a good investment model for R&D. It usually indicates that R&D investment has less uncertainty and greater probability of success, indicating that managers have long-term, clear planning and scientific decision-making for R&D projects, as well as a high level of R&D management. Besides, it also indicates that managers have a high level of confidence in R&D output and future earnings, and can effectively use R&D investment to produce the expected benefits. At the same time, continuous R&D investment is also a good signal which conveys the information about R&D project progress and future profitability to the market, representing the ability of enterprise innovation and sustainable development, reducing the uncertainty of research and development as well as information asymmetry, helping improve the market value of the enterprise. It can be seen that the persistence of R&D investment is of great significance to enterprises.

As a model of R&D investment in time series, continuous R&D investment is largely influenced by management planning, decision-making, management, etc., and the manager's behavior is subject to personal factors such as motivation and preference. Due to the existence of the principal-agent problem, managers pay more attention to the short-term performance of the company and ignore the long-term value creation, thus inhibiting the investment in R&D and the continuous progress of R&D activities. By means of supervision and incentives, the rational corporate governance mechanism can effectively unify the personal interests of managers and the interests of shareholders, which can alleviate agency problems, motivate

managers to invest in R&D, and improve managers' effective and efficient plans, decisions and management on R&D investment, which is beneficial to the formation of a good R&D investment model and the persistence of R&D investment. It can be seen that a good corporate governance mechanism is a guarantee for a continuous R&D investment model.

From the perspective of R&D investment model, this paper tries to explore the influencing factors of R&D investment persistence and the impact on corporate performance of R&D investment persistency. Using empirical research methods, this paper aims to find out the existence of R&D investment persistence, and then explore whether corporate governance have an impact on the persistence of R&D investment and whether R&D investment will affect the economic benefits of R&D activities.

Using the companies listed on Shanghai and Shenzhen Stock Exchange in 2009-2015 which have continuous R&D investment, this paper draws the following conclusions. First, the phenomenon of R&D investment persistence is generally present in the sample companies, indicating that exploring the persistence of R&D investment is feasible with practical application value and significance. Second, the factors of corporate governance, including ownership structure, board structure, equity incentive, term and replacement of chairman and CEO have great impacts on the persistence of R&D investment. The equity concentration, the proportion of independent directors, the breadth of human capital of the board of directors, and the replacement of the chairman and CEO have a negative impact on the persistence of R&D investment, while institutional investors share, board size, the deep of human capital of the board of directors, equity incentives, and the tenure of chairman and CEO have a positive impact on the persistence of R&D investment. Third, the persistence of R&D investment has a great impact on the company's performance, but this impact is not direct. In fact, the persistence of R&D investment plays a moderator role, affecting the level of the company's innovation results, the level of performance and the value of the market by mediating the relationship between the level of R&D investment of its economic consequences indirectly. The empirical results show that under certain R&D investment levels,

the higher the persistence of R&D investment, the more the output of innovation results, the better the performance of companies, and the higher the market value and market recognition.

The contributions of this paper mainly include the following three points: First, this paper is the first to put forward the concept of R&D investment persistence, regarding it as a model of R&D investment in time series, and examines the significance of other characteristics of R&D investment beyond input, which enriches the research related to R&D and broadens the understanding and research entry point of R&D investment. Secondly, this paper explores the influencing factors of R&D investment mode from the perspective of corporate governance, and provides a new way to explore R&D investment model and the driving factors for the creation and maintain of long-term competitive advantage, and also enriches the relevant literature on the relationship between R&D investment and corporate governance. Third, this paper studies the economic consequences of R&D investment model and enriches the relevant literature on R&D investment and corporate performance, which is conducive to a comprehensive understanding of the value of R&D investment to enterprises, and helps to understand more deeply about the path and internal mechanism of the impact of R&D activities on enterprise value creation.

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