



# Alliance strategy as a competitive strategy for successively creative new product development: the proof of the co-evolution of creativity and efficiency in the Japanese pharmaceutical industry

Makoto Takayama <sup>a, b,\*</sup>, Chihiro Watanabe <sup>a</sup>, Charla Griffy-Brown <sup>c</sup>

<sup>a</sup> Tokyo Institute of Technology, Department of Industrial Engineering and Management, 2-12-1 Ookayama, Meguro-ku, Tokyo 152 8552, Japan

<sup>b</sup> Yamanouchi Pharmaceutical Co. Ltd, Nihonbashi-Honcho 2-3-11, Chuo-ku, Tokyo 103-8411, Japan

<sup>c</sup> Pepperdine University, USA

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## Abstract

Aimed at analyzing the continuity of core competence in a core field, the behavior of 11 Japanese pharmaceutical firms over the last two decades was analyzed. This study demonstrates that firms could maintain originality as a core competence in ongoing new product development (NPD) by utilizing a licensed alliance product as a tool for maintaining or injecting this originality. This finding was demonstrated by a comparative study of the core fields of each firm in the Japanese pharmaceutical industry. © 2002 Elsevier Science Ltd. All rights reserved.

*Keywords:* Alliance; Co-evolution of creativity and efficiency; Pharmaceutical competitive strategy; Core field

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## 1. Introduction

The significance of enforcing core competence for creativity in new product development (NPD), while hedging against the risk of dynamic changes in customers' preference, has emerged as a key strategic consideration (Hamel and Prahalad, 1994a,b; Hamel, 2000). For continual growth, creative and original NPD is essential for the following reasons:

1. For ongoing economical growth, ongoing original NPDs are essential from the point of the continuity of the existing R&D core competence (Lester, 1998; Porter, 1998; Porter and Takeuchi, 2000).
2. For adapting R&D activities to rapid market changes by technological innovation and novel technologies, the importance of core competence for creative NPDs became seriously has been a consideration from the viewpoint of creative destruction (Schumpeter, 1935).

Creativity is of essence for original NPD for all indus-

tries. However, the process of successive or cumulative NPD is different between material-based industries and assembly-based industries. For material industries, creativity in original NPD is recognized as a critical component of core competence (Cockburn and Henderson, 1994). Thus, creative and original NPD is indispensable for material industries which inevitably stimulates high R&D intensity. Among material industries, an externally high level of creativity is the core particularly for the pharmaceutical industry. Thus, the pharmaceutical industry is compelled to maintain an extremely high level of R&D intensity level as illustrated in Fig. 1.

While ongoing and continuous R&D investment is indispensable for the pharmaceutical industry to maintain a high level of R&D intensity thereby enhancing its core competence, firms must also secure a risk hedge against unexpected dynamic changes in customer preference. These dual contradictory requirements compel the pharmaceutical industry to depend more on alliance strategies than other industries. This paper focuses on the role of these alliance strategies in the pharmaceutical industry in order to satisfy the dual and contradictory requirements of continuity and yet flexible and extreme changes in NPD.

Notwithstanding a number of studies on the significance and the role of creativity in NPD, the key factors

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\* Corresponding author. Tel.: +81-3-3244-3247; fax: +81-3-5203-7164.

E-mail address: takayama@yamanouchi.co.jp (M. Takayama).

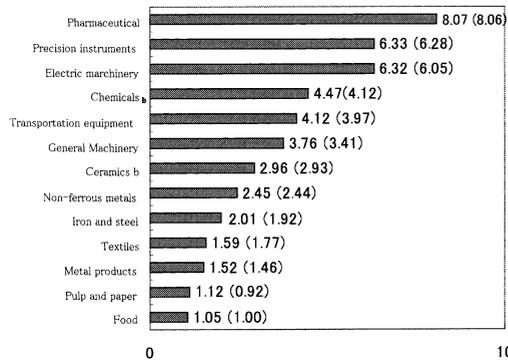


Fig. 1. R&D intensity in the Japanese Manufacturing Industry in 1998. R&D expenditure per sales (%). <sup>a</sup>Figures in parentheses indicate R&D intensity in 1997. <sup>b</sup>Not include pharmaceutical. <sup>c</sup>Average R&D intensity for whole manufacturing industry is 3.89% in 1998 (3.67 in 1997). <sup>d</sup>Sources: report on the Survey of Research and Development.

for ongoing and cumulative creativity in NPD has not yet been analyzed. Although the Japanese economic decline and the rise of American economical growth are often explained by fundamental differences in creative abilities and competitive structure (Lester, 1998; Porter, 1998; Porter and Takeuchi, 2000), these assertions still remain non-practical philosophical postulates.

According to traditional knowledge creation theory, creative NPD is mainly focused on the assembly industry (for reviews, see Nonaka, 1991; Nonaka and Takeuchi, 1995; Von Krogh et al., 2000). Successive NPD is successfully performed by knowledge creation as a source of value (Von Krogh et al., 2000).

Contrary to this performance in the assembly industry, NPD in the material industry is performed not only by knowledge creation but also by the creation of discontinuous new products, or products outside the usual range. However, discontinuous NPD often obstructs business practice because of the high-risk and sometimes limited returns (Pfeffer and Sutton, 2000). In view of the process of NPD, NPD is made by a problem-solving process in the assembly industries (Allen, 1966; Clerk and Fujimoto, 1991). NPD in the assemble industries is characterized by a method or product platform, often represented by concurrent engineering system (Ohno, 1988; Clerk and Fujimoto, 1991; Fujimoto, 1993).

From the viewpoint of discontinuous NPD, the pharmaceutical industry is a typical industry in the material industries subset. However, the pharmaceutical industry has to maintain continuity for NPD (Pisano, 1997) because of the long duration of development period and the huge expense for NPD (Takayama and Watanabe, 2001). Accordingly, two contradictory factors are essential for NPD in the pharmaceutical industry (Henderson and Cockburn, 1994; Henderson et al., 1994; Pisano, 1997). Notwithstanding the above discussions, it has not yet proven whether there is a key strategy for creativity in the co-evolution of contradictory aspects as discontinuous and cumulative (ongoing) NPD.

This paper starts by defining these two contradictory aspects of creativity in NPD. According to the common treatment of creativity, a core competence of creative and original NPD is the opposite of a core competence of the continuity of the existing core competence.

This paper demonstrates the co-evolution of these two contradictory aspects of creativity in firms through the alliance strategy in the pharmaceutical industry. This paper also demonstrates the co-evolution of creativity and efficiency in pharmaceutical NPD by analyzing successive NPDs in the Japanese pharmaceutical industry. The significance of this alliance strategy for successive NPD is that firms can maintain originality as a core competence for ongoing NPD by utilizing the alliance product, or a product licensed from another firm, as a tool for maintaining or creating the originality. This alliance strategy serves as a competitive strategy for maintaining and creating core competence for NPD. This novel finding is demonstrated through a comparative analysis of the product area and product pipeline for each firm in the Japanese pharmaceutical industry.

Section 2 proposes a new classification for this kind of creativity in the continuum of the business practice by analyzing ongoing NPD in the Japanese pharmaceutical industry. Based on this classification of creativity, we conclude that the core competence for creativity in cumulative NPD is actually original or unique NPD by comparing the originality of NPD for each firm. Section 3 demonstrates the significance of this alliance strategy for successive NPD by proposing a product spiral model. Section 4 briefly summarizes the results of this analysis, presents conclusions and discusses implications.

## 2. Creativity in successive NPD

For the continuity of a firm as a going concern (Barnard, 1935), successive NPD is essential (Utterback, 1994; Bower and Christensen, 1995; Christensen, 1997). From a viewpoint of successive NPD, a new product is divided into two categories (Takayama and Watanabe, 2001). One is a new product with a superior point and another is a new product with a differentiated point. From the marketing point of view, NPD is categorized as a “market substitution type” and a “market creation type” (Table 1). According to Ansoff’s product-market matrix (Ansoff 1966, 1988; Ansoff et al., 1993), a superior product corresponds to a new product with the same mission. A differentiated product corresponds to a product with a new mission that develops or creates the new market. Our previous survey (Takayama and Watanabe, 2001) demonstrated that an existing product inhibits differentiated product development. This means that core competence for successive NPD works by enhancing or even inhibiting innovative NPD as summarized in Table 1.

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