

New product development in the pharmaceutical and telecommunication industries: A comparative study

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Abstract

This paper provides a comparative analysis of new product development (NPD) practices in the pharmaceutical and telecommunication industries by carrying out a ‘two pronged study’. Micro study (with case studies) in the two sectors, respectively to understand the operational issues; macro study (theoretical embeddedness and induction of key themes) to contextualise a strategic understanding of the industry dynamics. Whilst the micro study informs and reinforces the contextual understanding for the macro study, the interplay between them has resulted in the development of a conceptual framework, which has been ‘empirically guided and theoretically induced’.

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1. Introduction

Recent research for new product development (NPD) in the pharmaceuticals (PCL)/biotech industry has hinted a dearth in the development of safe and efficacious therapeutic agents which can address the unmet medical needs with scientific rigour, innovation and timeliness (Pharma 2010, IBM report; Accenture, 2002; Tollman et al., 2001). Globalisation has created a state of flux, in which the number of new products developed has rapidly declined, and the cost of developing them has dramatically increased. The regulatory climate is growing more unfavourable and uncertain. This is mainly because the regulatory and patient expecta-

tions for safety are proving to be not only unrealistic but also unachievable. It is a commonly held viewpoint that patents on existing major blockbuster will be expiring in the next 5–10 years. This would invite a plethora of generic formulations which erodes the profitability and consequently innovativeness (R&D revenue) of the PCL industry. Both the industry and those who support it, such as the biotechnology sector, have witnessed a pressing need to improve both product and process innovation. In particular, the pertinent issue for the bioPC firms has been with regard to building future capacity, i.e., as they follow an evolutionary growth path, they are confronted with the challenges of exploiting product innovation capability and further exploring opportunities for developing process innovation capability (e.g., small-scale and large-scale manufacturing). In the face of these arguments, there has been some recognition of the

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need for the PCL industry to learn from other industries that have managed operational excellence in terms of cost-effective development and faster lead-times, in the face of price competition and product obsolescence (Pisano, 2000). Perhaps the PCLs industry should benchmark its performance against other industries, and adopt similar practices to improve the way they develop new products (Powell et al., 1996; Owen-Smith et al., 2002; Chiesa and Toletti, 2004). This paper contextualises such research and undertakes a comparative study between the dynamics of NPD practices for the PCL and telecommunications (TLC) industry. The research presents a conceptual framework which has been '*empirically guided and theoretically induced*', to encapsulate the dynamics of the NPD process in the PCL and TLC industries. The choice of the two industries, is unique, as they are both in high technology sectors, and have firm roots in R&D in order to remain competitive. The paper provides a theoretical background featuring the good practices and future challenges associated with NPD in the PCL and TLC industry. The research methodology undertakes a 'two pronged study', micro study (with case studies) to understand the operational issues and macro study (theoretical embeddedness and induction of key themes) to contextualise a strategic understanding of the industry dynamics, in the two sectors. Finally, conclusions are provided.

2. Research problem and theoretical background

The literature on NPD has provided the theoretical underpinning for the research. The environment for NPD has been characterized by many factors such as increased competition, rapid technological advances, higher costs, shorter product life cycles, etc. (Gupta and Wilemon, 1990). The rules of the game in NPD are changing and many companies have discovered that it takes more than the accepted basis of high quality, low cost, and differentiation to excel in today's competitive market (Nonaka and Takeuchi, 1995). Technology has a key role in bringing about this change. Scott (2000) conducted a study which focused on those activities that are perceived by NPD practitioners and academic researchers as being in greatest need of improvement in many high-tech companies. The study results have identified '*Number One Issue*' as Strategic Planning for Technology Products. The study resonates the findings of Pisano and Wheel-

wright (1995) who have for long emphasised that shorter product life cycles, increasingly hard-to-manufacture product designs, fragmented markets, and growing technological parity are changing the nature of competition in many high-tech industries. Examples of high-technology industries include TLC, specialty chemicals, semiconductors, advanced materials, PCL and biotechnology. The NPD of two such industries TLC and PC was taken up for research. The scene for the research was set on two grounds. The first was personal motivation and the second was research need. Personal motivation arose since one of the researchers had industrial contacts with a major PC corporation. In addition to this, the researchers had also participated on a pan-European research project *CORMA*¹ which was funded by the European Commission. The European Union (EU) project aimed to develop a knowledge-management environment consisting of integrated methods, tools and representation models for the TLC sector. It was therefore considered reasonable to conduct research which could be contextualised in both these industrial sectors—PCL and TLC. This background facilitated the research aim of investigating the NPD practices in the PCL and TLC industries. NPD was considered as a focal theme of research since both the industries are predominantly high-technology industries with significant R&D activities. Both the industries are geared towards bringing innovative and cost competitive products to the market place. A narrower literature review on the NPD of the PCL and TLC industry was conducted. Discussion has been drawn on the macro level industry characteristics in terms of: evolution, distinctiveness and dynamics of NPD processes for the respective sectors. The researchers have attempted to structure the literature on PCL and TLC in a comparative fashion along the same strands. This has been useful so as to understand across both the sectors as to how the industry operates its NPD process. What are the key challenges threatening the industry and also what strategies of survival can it avail. Literature has been quite elaborate on these issues, and it is encouraging to see great academic/practitioners'

¹CORMA: Practical Methods and Tools for Corporate Knowledge Management—Sharing and Capitalising Engineering Know-How in the Concurrent Enterprise. CORMA is the European RTD project funded by the European Commission through IST, Project Number 1999-12685.

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