

# New product development: An innovation diffusion perspective

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## Abstract

This study examines the antecedents of the adoption of innovation diffusion in high technology firms in China and its effect on new product creativity and financial performance through a series of statistical techniques including logistic analysis, multivariate analysis of variance, and multiple regression analysis. The findings indicate that the adoption of innovation diffusion in high technology firms is significantly related to the competition intent of these firms including aggressive technology posture and product development frequency. The adoption of innovation diffusion also has been showed to positively contribute to the new product creativity and financial performance. The theoretical and managerial implications are discussed.

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## 1. Introduction

In past decades, knowledge creation has attracted increasing attention from knowledge and strategic management researchers. In a competitive setting, knowledge creation brings firms some advantages including enabling them to create unique, inimitable, and valuable intangible resources (Grant, 1997), create successful new products (Madhavan & Grover, 1998), renew organization (Dougherty, 1992), and in some firms obtain strategic advantage over their competitors (Nonaka, 1994).

In line with the paramount interest in knowledge creation, scholars are paying attention to new product development in high technology firms. Product innovation has been recognized as in essence for their renewal (Dougherty, 1992). These firms heavily rely on new product introduction and commercialization to survive in intensive competitive environment characterized by rapid product obsolescence and evolving customer needs. High technology firms pursue growth mainly through new product development, which in turn results in unprecedented levels of new product introductions (Varadarajan & Jayachandran, 1999). However, these firms still face problems in achieving their growth. First, evolving market needs make products obsolete quickly, firms face more intensive competition than ever before. Second, competition via new product launches intends to enhance firms' performance in their own product endeavors, but it has the unintended effect of exposing consumers to newness on a widespread scale (Redmond, 2002). As a result of

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this exposure, consumers are habituated to a continuous flow of new products and services and accept them more readily than in the past. Product development has become a dynamic capability of the firms, because of its ability to alter the resource configuration of the firms (Eisenhardt & Martin, 2000). Liability of newness has been used to describe the problems these firms face (Stinchcombe, 1965). Several studies have suggested that knowledge creation is a potential strategy for these innovation-driven high technology firms because it enables them to maintain dynamic innovation capability and come up with the evolving market expectations aiming at achieving competitive advantage (Krogh, Nonaka, & Aben, 2001). Empirical studies on high technology firms have found that knowledge creation plays an important role in their new products development (Madhavan and Grover, 1998).

Strategic innovation diffusion converts newly created knowledge into increase firm value (for example, through new product offerings). Within the knowledge creation literature, strategic researchers have focused on the different level when analyzing innovation diffusion processes (e.g., Drazin & Sschoonhoven, 1996). Intrafirm innovation diffusion has received limited research attention, and is the focus of the study.

Bandwagons effects (Abrahamson & Rosenkopf, 1993) contribute to explanation of firms' innovation diffusion. Bandwagons create self-reinforcing loops because the bigger the bandwagon gets, the larger the number of parties involved in the bandwagon. In their study, expected returns result from a given innovation trigger bandwagon effects which leads to wider innovation diffusion. The greater the uncertainty surrounding an innovation is, the greater the diffusion becomes in a firm. Drawing on the bandwagon effect (Abrahamson and Rosenkopf, 1993), I define innovation diffusion as a tacit knowledge transfer process turning innovation into new products in an effort to foster and advance the innovation. After the new products are introduced to the market, they will affect the market, and the evolving market needs require another round of innovation which results in evolving innovations.

Prior studies have fostered the understanding of innovation diffusion. However, several research gaps remain. First, prior research on knowledge creation and transfer among high technology firms has focused mainly on the sharing of existing knowledge (Lubit, 2001). Knowledge creation and transfer that involve innovation diffusion have received limited attention.

Second, a majority of prior studies have focused their attention on non-high technology industry with only a few showed their interests in high technology firms. Bruton and Rubanik (1997) regarded the development of high technology industry as a revitalization tool for developed market economies and as a driver of economic transformation in transitional economies. Yet, little research has assessed the driving forces which lead to a firm's innovation diffusion.

Third, little prior research has linked innovation diffusion with new product performance. Knowledge creation and transfer are thought to influence new product performance because they provide opportunities for learning, acquiring, sharing, and innovating (Krogh et al., 2001; Madhavan & Grover, 1998). Given the requirement of intellectual capital and the potential attractiveness of innovation diffusion to these firms, it is important to examine the relationship between innovation diffusion and new product performance.

This study contributes to the literature by examining the above gaps. The purpose of this study is to empirically examine: how the adoption of innovation diffusion matters in improving new product creativity and performance; and the antecedents of the innovation diffusion including environmental dynamics (competitive intensity and technological turbulence) and competition intent (aggressive technological posture and product development frequency) which drive the focus of innovation diffusion by a sample of IT firms in China.

## 2. Hypotheses development

### 2.1. Environmental dynamics and innovation diffusion

It is change that always provides the opportunity for the new and different, innovation therefore consists in the purposeful and organized search for changes. In the analysis of the opportunities, such changes might offer for innovation (Drucker, 1985). Environmental dynamics such as competitive intensity and technological turbulence have been pushing firms towards innovation as a form of change.

Competitive intensity was defined as the degree of perceived hostility in the environment stemming from competition (Pelham & Wilson, 1996). Technological turbulence refers to the degree of change associated with new product technologies (Glazer & Weiss, 1993). Knol and Stroeken (2001) have defined diffusion as the process by which an innovation is communicated through certain channels over time among members of a social system and stated that the

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