



## Absorptive capacity, innovation, and financial performance

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### ABSTRACT

This study here examines the role of absorptive capacity as both a mechanism to identify and translate external knowledge inflows into tangible benefits, as well as a means of achieving superior innovation and time-lagged financial performance. Using path analysis in a sample of 461 Greek enterprises participating in the third Community Innovation Survey, this study demonstrates that external knowledge inflows are directly related to absorptive capacity and indirectly related to innovation. Absorptive capacity contributes, directly and indirectly, to innovation and financial performance but in different time spans. This study, therefore, contributes to the understanding of absorptive capacity's antecedents and outcomes by providing empirical evidence of longitudinal form that offers important research and practical implications.

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### 1. Introduction

In the contemporary knowledge-intensive business environment, firms increasingly depend upon external sources of information to promote innovation and improve their performance (Cassiman and Veugelers, 2002; Morgan and Berthon, 2008). Many of them, however, confront strong difficulties in benefiting from external knowledge flows, even in industries of easy-to-access sources of information (Cassiman and Veugelers, 2006; Escribano et al., 2009). To outweigh such deficiencies, enterprises need to develop their absorptive capacity, that is the “ability to recognize the value of new information, assimilate it, and apply it to commercial ends” (Cohen and Levinthal, 1990: 128). The concept of absorptive capacity (ACAP) is a prominent topic of scientific inquiry (e.g., Camisón and Forés, 2010; Jansen et al., 2005; Zahra and George, 2002). The concept is gradually gaining recognition as a key driver of a firm's competitive advantage (Lichtenthaler, 2009).

Although prior research provides theoretical models to explicate the nature, antecedents, and consequences of ACAP (Lane et al., 2006; Zahra and George, 2002), few empirical studies examine the specificities of these models (Jansen et al., 2005). For instance, evidence is scarce for explaining the role of different sources of external knowledge flows (Grimpe and Sofka, 2009), and, more importantly, whether ACAP intervenes to translate these flows into realized benefits, such as innovation (Todorova and Durisin, 2007).

This empirical deficit amplifies considering firms' variation in successfully identifying and utilizing external knowledge inflows (Escribano et al., 2009).

In addition, research on absorptive capacity outcomes still lacks integrative examinations of innovation as well as financial measures of performance, while extant work falls short in exploring the interrelationships between them (Lane et al., 2006). Most studies consider innovation as the only outcome of ACAP, a fact that “stands in marked contrast to Cohen and Levinthal's (1989) and 1990 texts that discuss the general commercial application of acquired knowledge” (Lane et al., 2006: 858). Lastly, pertinent research primarily utilizes technology-intensive research settings. However, in order to enhance ACAP's validity as a construct, scholars should further test and replicate it's basic theoretical assumptions in environments of diverse technological, economic, and cultural conditions (Tsang and Kwan, 1999).

The present study, therefore, aims to address the previously mentioned gaps and add to the literature in three important ways. First, this study investigates the effects of different external knowledge inflows on absorptive capacity, and demonstrates the bridging role of ACAP in generating value out of these inflows. Extant research includes starts at empirically assessing such relations (Abecassis-Moedas and Mahmoud-Jouini, 2008; Escribano et al., 2009; Camisón and Forés, 2010). The current work extends this research by assigning to ACAP the role of the mediator in the relationship between external knowledge inflows and innovation, hence providing an accurate test of this fundamental theoretical proposition of ACAP (Todorova and Durisin, 2007; Zahra and George, 2002).

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Second, contributing to an emerging body of literature on the outcomes of absorptive capacity (e.g., [Arbussa and Coenders, 2007](#); [Fosfuri and Tribó, 2008](#)), this research provides a combinative, time-based investigation of innovation as well as financial performance outcomes of ACAP. Using time-lagged financial indicators drawn from a separate database, the present study tests for direct and indirect effects of ACAP on innovation and financial performance, respectively. In this manner the work at hand adopts a research design of a longitudinal form, which offers more valid empirical evidence that illustrates absorptive capacity's role in leading to innovation and, through this, to time-lagged financial advantages. To date, such longitudinal designs are missing from most of research on ACAP ([Lane et al., 2006](#)); thus, their implementation in the present study constitutes a significant contribution that improves the understanding of ACAP as a source of competitive advantage.

Finally, this study tests related theory on a large sample of Greek manufacturing and services firms that participated in the third Community Innovation Survey (CIS), which is the official survey on firm innovation activities coordinated by Eurostat for all EU member states. Greek CIS offers an excellent opportunity to extend the study of ACAP and innovation in national contexts of reduced technology intensity, while, at the same time, draw statistical conclusions from a dataset containing detailed (perceptual and objective) information about different firm knowledge and innovation activities measured within the reliable CIS framework.

The remainder of this paper is organized as follows. [Section 2](#) presents the research hypotheses. [Section 3](#) focuses on the empirical study, outlining data and variable measurement, followed by the presentation of results based on the path analysis method. The paper concludes with a discussion of the findings as well as with a number of implications for research and practice.

## 2. Theoretical background and hypotheses

The primary input of ACAP is external knowledge inflows ([Cohen and Levinthal, 1990](#); [Zahra and George, 2002](#)). Several studies document the importance of external knowledge flows for various firm operations, such as strategic decision-making ([Cassiman and Veugelers, 2002](#)), innovation success ([Love and Roper, 2004](#)), increased novelty of products and services ([Landry and Amara, 2002](#)), or higher returns on R&D investments ([Nadiri, 1993](#)).

However, what authors identify as external knowledge inflows varies somewhat across studies. For instance, some research focuses on certain types of knowledge such as the transfer of skills and technology ([Tsai, 2002](#)), the exchange of business practices ([Szulanski, 1996](#)), or the acquisition of tacit knowledge ([Kogut and Zander, 1993](#); [Subramaniam and Venkatraman, 2001](#)). Following the work of prominent scholars in the field (i.e., [Gupta and Govindarajan, 2000](#); [Schulz, 2001, 2003](#); [Mom et al., 2007](#)), this study adopts a broader perspective on external knowledge inflows to denote the aggregate amount of (tacit and explicit) complementary knowledge—pertaining to several domains such as technology, products, processes, strategies, and markets—that a firm receives or gathers from other persons and/or organizations. Complementary knowledge refers to new external knowledge that is related to and at the same time different from the firm's existing knowledge bases ([Lofstrom, 2000](#)). A firm may use different sources to accumulate external knowledge as conceptualized in the present study, including, for instance, suppliers, clients, competitors, universities, other research institutions, specialized journals, conferences and meetings ([Von Hippel, 1988](#)).

In order to produce tangible benefits, however, firms need to identify, process, and exploit these external knowledge inflows ([Cohen and Levinthal, 1989](#); [Gottfredson et al., 2005](#)). This focus refers exactly to absorptive capacity's role in enabling firms to recognize the value of new external knowledge, acquire, and assimilate this external knowledge in concert with existing knowledge stocks so as to generate commercializ-

able outputs ([Todorova and Durisin, 2007](#); [Zahra and George, 2002](#)). Firms, however, may vary in their ability to identify and exploit external knowledge inflows; even those firms belonging to the same sector or experiencing the same amount of knowledge inflows ([Escrignano et al., 2009](#)). Therefore, absorptive capacity can be a source of gaining increased competitive returns from external knowledge.

### 2.1. External knowledge inflows, ACAP, and innovation

The exposure of firms to external knowledge within their environment contributes to the quality of decision-making ([March and Simon, 1993](#)), extends the array of available resources ([Brown and Eisenhardt, 1995](#)), facilitates the development of future capabilities ([McGrath et al., 1995](#)), and, ultimately, promotes the level of experiential learning accumulated to manage and generate value from outside information ([Fosfuri and Tribó, 2008](#); [Norman, 2004](#)). For example, a firm that consistently creates and sustains close relationships with suppliers of state-of-the-art technology or with specialized research or market institutions is in a better position to readily identify and assimilate new external knowledge (e.g., technological advancements, regulation changes, and customers' preferences) in case it needs it. [Cohen and Levinthal \(1990\)](#) recognize the value of such relationships by postulating that those firms that maintain a broad and active network of external partners will become aware of each other's unique competencies and knowledge, hence increasing their incentive to build absorptive capacity. In a similar fashion, other scholars argue that enterprises systematically participating in knowledge-intensive collaborations are more likely to increase the breadth and depth of their knowledge bases, and thus improve their internal competences and knowledge-processing skills ([Van Wijk et al., 2001](#); [Kumar and Nti, 1998](#)).

The complementarity (relatedness and diversity) of the new knowledge acquired from external sources with the firm's existing knowledge or current innovation activities (e.g., complementarity with internal new product development projects or R&D contractual agreements in progress), should further amplify these beneficial effects ([Lofstrom, 2000](#)). Research drawing from resource-based theory provide support for this argument, by suggesting that benefits from resource combination (e.g., combining new with existing knowledge) are more likely to occur when based on complementarity rather than similarity ([Teece, 1986](#); [Harrisson et al., 2001](#)). When a firm has access to complementary knowledge inflows from various external sources it is more likely to engage in knowledge acquisition, assimilation, and exploitation because of the value and growth opportunities that these inflows could create ([Lane and Lubatkin, 1998](#); [Zahra and George, 2002](#); [Abecassis-Moedas and Mahmoud-Jouini, 2008](#)); hence, stimulating the level of its absorptive capacity.

**Hypothesis 1.** Complementary external knowledge inflows positively relates to a firm's absorptive capacity.

A firm's ACAP is not a goal in itself but can generate important organizational outcomes ([Fosfuri and Tribó, 2008](#)). [Cohen and Levinthal \(1990\)](#), for example, relate ACAP to, among others, innovative capabilities and innovation performance. The core rationale is that ACAP promotes the speed, frequency, and magnitude of innovation, which in turn may produce knowledge that becomes part of a firm's future absorptive capacity ([Zahra and George, 2002](#)). However, this relationship between ACAP and innovation receives relatively limited empirical attention, thus hindering the testing and practical implications of important theoretical arguments ([Fosfuri and Tribó, 2008](#); [Lane et al., 2006](#)). This work focuses specifically on this relation, examining whether absorptive capacity translates into innovation outcomes.

A high level of absorptive capacity facilitates firms to achieve superior innovation performance coupled with first mover advantages,

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