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## Modeling technological innovation performance and its determinants: An aspect of buyer–seller social capital

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## ABSTRACT

This study validates a research model that examines technological innovation performance from the aspect of buyer–seller social capital in business-to-business (B2B) contexts. Drawing on social capital theory, this study postulates that innovation performance is indirectly affected by buyer–seller social capital via the mediation of *commitment to innovation* and *customer knowledge development*. The commitment to innovation also has an influence on customer knowledge development. The model examines the data obtained from high-tech firms' personnel in Taiwan. The study's test results indicate that innovation performance is positively influenced by shared norms and trust through the mediation of customer knowledge development. Accordingly, innovation performance is also positively influenced by social interaction and shared norm through the mediation of the commitment to innovation. Lastly, managerial implications and limitations from the empirical findings are provided.

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### 1. Introduction

Innovation is a new way of doing something or a new thing that is made useful. It may be accomplished through developing new products, reformulating existing ones, and so on [1]. Given a high failure rate of innovation and the high costs associated with innovation development [2], maximizing innovation performance is often an important issue of theoretical and managerial interests. An original driver of innovation performance in business-to-business (B2B) contexts is buyer–seller social capital, which refers to the features of business societies that facilitate the social relationship and cooperation between buyers and sellers in industries (e.g., [3]). Customers (i.e., buyers in B2B settings) have fundamentally changed the dynamics of the market, which has become a forum in which the customers play an active role in the innovation of sellers (e.g., R&D teams) through co-design or

co-production [4]. This phenomenon suggests the importance of buyer–seller social capital (e.g., between R&D teams and their buyers in B2B contexts) in the innovation development processes. For example, previous research indicates that customer involvement can substantially serve as a vehicle for sellers' innovation development [5].

Over the last decade or so, the concept of social capital has captured the attention of sociologists (e.g., [3, 6]) and organizational theorists (e.g., [7]) as a way of understanding why people in social communities, organizations, and industry clusters share information and ideas with each other, even when there is no legal obligation or expectations of personal gains from doing so. Social capital is important in building intellectual capital of work groups or organizations [7, 8]. Based on the social capital fostered between customers and innovation developers, an understanding of customer experiences, perception, demand, expectations, and preferences (namely, customer knowledge) can be effectively obtained by the innovation developers such as R&D teams or work groups [2, 9], eventually enhancing the teams' innovation performance [2].

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Even if social capital ultimately leads to improve such outcome as innovation performance, the strength and nature of this association through its potential mediators still remain underexamined. This study proposes two critical mediators, commitment to innovation and customer knowledge development, which fully mediate the relationship between buyer–seller social capital and innovation performance in B2B contexts. For instance, some studies argue a positive relationship between the vendor's levels of customer interaction (i.e., a form of buyer–seller social capital) and the vendor knowledge of the customer (i.e., customer knowledge) [10]. Other studies further indicate that the greater the knowledge possessed by sellers for how customers think of a product (i.e., customer knowledge), the greater the likelihood there will be for a successful new product development (i.e., innovation performance) [10]. Similarly, strong buyer–seller social capital is likely to encourage sellers to fulfill their obligations towards innovation development (i.e., commitment to innovation), consequently enhancing their innovation performance. Collectively, these studies together imply an indirect linkage between social capital and innovation performance via the mediation of customer knowledge development.

Either commitment to innovation or customer knowledge development has been respectively included in previous research as a predictor of innovation processes (e.g., [2, 11, 12]), but none of the previous research has tried to simultaneously take both into account for explaining innovation outcomes in B2B contexts. Without a thorough evaluation about the influence of buyer–seller social capital on innovation performance and the mediators (i.e., commitment and customer knowledge development) in B2B settings, our understanding of these constructs will remain limited, and organizational initiatives directed at building buyer–vendor social capital will remain unjustifiable and therefore based on blind faith. Hence, this study's purpose is to clarify the indirect relationship between buyer–seller social capital and innovation performance via the two mediators, which has not yet been previously explored.

This study differs from previous studies in two important ways. First, while most studies have applied inter-employee social capital to examine performance issues in interorganizational or intraorganizational settings, few have tried to examine in-depth the role of buyer–seller social capital in influencing innovation performance in which the social capital in B2B contexts is fostered beyond the boundary of individual members. This study focuses on the social capital between work teams and their customers (i.e., buyer–seller social capital), substantially complementing previous studies (e.g., individuals' social capital). Understanding buyer–seller social capital is helpful for innovators (i.e., sellers) to leverage such social capital to effectively improve their innovation performance, because today's customers are likely to affect the success or failure of the innovation [4]. Second, previous research related to customer knowledge development (e.g., [2]) has examined its determinants purely from the aspect of organizational in-house action or project characteristics. Nevertheless, it is insufficient for truly understanding customer knowledge development when potential variables related to customers (e.g., buyer–seller social interaction) have not been taken into consideration. This study complements previous research by evaluating the influence of

buyer–seller social capital on customer knowledge development, providing supplementary insights about how to improve the customer knowledge development.

## 2. Research framework and hypotheses development

Drawing on social capital theory, we propose a model as shown in Fig. 1. In the model, innovation performance is indirectly affected by buyer–seller social capital via the mediation of commitment to innovation and customer knowledge development. The commitment has an influence on customer knowledge development. The rationale for our hypotheses is provided in the following.

A common reason for innovation success is that such innovation accurately reflects buyer expectations, perceptions, needs, and preferences (i.e., a part of customer knowledge) [2]. For example, Amazon's customer knowledge management increases its service innovation ability and performance [13]. Recent literature asserts that customer knowledge is a source of innovation (e.g., [14]), and therefore customer knowledge development is a key to innovation performance. For instance, innovation performance can be improved by market experiments (a characteristic of customer knowledge development) [15].

Customer knowledge development is defined as learning about customer expectations, perceptions, needs, and preferences, which entail lower costs and lower the strategic risk in the launch of innovation [16]. Empirical research indicates that customer knowledge development is essential to the creation of successful innovation [2, 17], it creates potential opportunities for the verification of customer knowledge, and it keeps pace with evolving customer expectations and preferences to ensure that any newly developed innovation can be well accepted in the market after the launch of the innovation [2, 18]. In other words, innovation performance is enhanced by customer knowledge development that improves the knowledge accuracy about customer expectations and preferences. Therefore, the first hypothesis is derived as below.

**H1.** Customer knowledge development is positively related to innovation performance.

In the global market where sources of competitive advantages can be rapidly imitated by competitors, a commitment to innovation is inevitable to sustain competitive advantages and innovation performance (e.g., [15]). Commitment to innovation refers to employees' duty (i.e., pledge or obligation) to work on innovation. It is a must to have such commitment to facilitate successful innovation in the era of globalization, deregulation, and increasing competition [19]. Due to their commitment to innovation, employees continue to refine their product design or marketing plan, eventually introducing a successful innovation [15]. In other words, the commitment to innovation forces work groups to become externally focused, and thus better innovation performance in the market will be accomplished [20]. For example, many successful high-tech firms such as Acer or 3M emphasize their commitment to innovation while setting their goal of innovation performance. Without strong commitment to innovation, the high-tech firms that count heavily on innovation to succeed are unlikely to survive in a competitive global market today. Therefore, the

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