Chapter 2
The Role of Science and Technology Parks in the Generation of Firm Level Social Capital Through University–Firm Relations: An Empirical Study in Spain

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1 Introduction

Nowadays, science and technology parks (STPs) generally represent a kind of public–private partnerships that are designed to foster knowledge flows, mainly among park firms, as well as between these firms and external R&D institutions, and thus improve regional economic growth (Link and Scott 2007). Despite there is no official definition of what is an STP, some common denominators across different existing models suggest a set of minimum standards and requirements that any knowledge cluster should have to earn this formal recognition (Link 2009).

Among these common denominators it can be highlighted that STPs facilitate access for firms to key factors such as R&D, human capital, innovation infrastructures, venture capitalists, technological capital, and social capital (European Commission 2008). These factors are related to the capacity to adapt to technological, economic, and social changes in markets. Therefore, STPs have emerged based on new institutional arrangements that facilitate interactive relations between universities, industry and government (Etzkowitz 2008).

Considering that STP literature is in an emerging stage of development, during recent years researchers have stimulated an important academic debate concerning whether such property-based initiatives really enhance the performance of firms and economic growth of regions (Martínez-Cañas et al. 2011). To this respect, there are differences of results in empirical researches founding positive or non-significant effects of STPs on firm performance (Link 2009). This divergence

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implies that previous studies do not analyze STPs from the point of view of their active role in the knowledge-based economy where intangible and relational aspects are critical in the market (Hansson 2007).

Thus, the main contribution of this chapter is to focus on analyzing the value generated through relations between universities and tenant firms. Therefore, the use of social capital theory will enhance our understanding about the dynamism that is often a consequence of strong interactions between these actors (Bueno-Campos and Rodríguez-Pomeda 2007). From this perspective of analysis, tenants have to set up effective networking activities to encourage the transfer of knowledge, resources, and innovations from universities (Hansson et al. 2005). So this chapter also contributes to extend previous studies that have tended to measure the value of STPs for firms using traditional economic indicators (mainly at park level of analysis), such as annual growth, profitability, employment rate, or the number of new companies created (Hansson 2007). With the adoption of a social capital approach, it can be taken into account the growing importance of knowledge or intangible aspects derived from social relations, which can be the appropriate variables to indicate success in a network economy (Westlund 2006).

The next epigraph develops the role of intangible relationship aspects in university–firm relations, using social capital at firm level to identify the source, main dimensions and benefits. In the third epigraph, a conceptual model and hypothesis of social capital generation through relations inside science parks is proposed. The fourth epigraph includes the methods and empirical results obtained. Finally, the last epigraph includes the main conclusions, limitations, and lines of future research.

2 Social Capital Generation in University–Firm Relations

During the last 20 years social capital theory has provided a distinctive and valuable answer to the question of why some people and some organizations do better in the sphere of interorganizational relations (Nahapiet 2008). This conceptual approach has also helped researchers to explain why and how organizations connect effectively, work cooperatively, and coordinate their activities to achieve a superior performance in the market. From this theoretical perspective, oriented toward strategic relatedness, firms are motivated to generate, develop, and maintain relationships with other organizations because relations ease the access to key resources, information, markets, technologies, advantages from knowledge and learning, scale and scope economies, as well as risk sharing (Gulati et al. 2000).

In this chapter we try to converge two related lines of research: science and technology parks and organizational social capital. On the one hand, we study STPs as an artificial physical structure that facilitates interaction among the economic agents located inside (Hansson 2007) but from a relational perspective where tenants obtain and mobilize key resources from their relations with universities as an important source of competitiveness that impacts their performance. So, this approach is focused on

science parks using the view of networks and knowledge-based organizations as the main source of competitive advantage in the market (Nahapiet 2008).

On the other hand, this chapter is considering that the unit of analysis is interorganizational relationships between universities and firms. So, we propose an approximation of study from the relational view (Dyer and Singh 1998) and from the theory of social capital (Westlund 2006). This relational approach considers all interactions between economic agents that generate a type of capital that in the literature is known as social capital. Thus, we contribute to previous work considering that economic agents interact in environments that influence and affect their business (Burt 2005). In the chapter, the positive environment created by STPs facilitates access to valuable resources of universities and R&D centers. These specific valuable resources are the ones that firms need to surive, grow and compete (Powell et al. 1996), and extends the effect of resources available to the organization (Adler and Kwon 2002; Westlund 2006).

2.1 Definition, Sources, Dimensions, and Effects of Interorganizational Social Capital

2.1.1 Definition

Social capital literature lacks a universally accepted definition of its central term. For that reason, some researchers discuss the core notion of social capital without using the term itself (Farr 2004). Trying to overcome this difficulty this chapter adopts the definition of social capital that has had a great influence over management studies and was proposed by Nahapiet and Ghoshal (1998). They consider that social capital is "the sum of the actual and potential resources embedded within, available through and derived from the network of relationships possessed by an individual or social unit. Social capital comprises both the network and the assets that may be mobilized through that network." This definition makes three distinctive contributions to management (Nahapiet 2008): its resource-based perspective, its ability to combine multiple dimensions of relationships, and its focus on performance outcomes. The definition is based on social capital's view of connections as both resources themselves and conduits to other resources that can be leveraged for material gain. It applies to individuals as well as groups and communities; we also add organizations (Nahapiet 2008). In this sense, and for our concrete study on STPs, social capital theory can address management questions related to access to resources and rent appropriation (Blyler and Coff 2003).

Social capital studies reflect different levels of analysis from an individual to a group, organization, community, region, or even international relationships (Zheng 2010). In that sense it provides a valuable way to characterize an organization's complete set of relationships, including those that cross institutional boundaries. Due to the vast quantity of research in social capital this chapter focuses on the

university–firm relationship as source, the dimensions of social capital and their effect on firm performance.

2.1.2 Sources

Social capital literature identifies three different ways in which social capital is created: historical ties, institutional facilitation or organizational facilitation (Scillitoe and Chakrabarti 2009). In this research, STPs constitute infrastructures that facilitate the development of valuable relationships for located actors. Furthermore, the main actors that can generate social capital inside STPs are (European Commission 2008):

- Universities, R&D institutions, and other higher education institutions that had created and/or participated in the commercialization of their research results. These institutions also want to establish a good environment for graduates that will enable them to participate in interesting applied projects, develop valuable relationships, attain good employment possibilities in the future, and offer the chance to create their own companies.
- Other tenants that are looking for new partners to upgrade their R&D with international ideas, good information systems, qualified labor pools, good locations, and excellent services and thus increase their profits.
- Professional managers of the STP who act as go-betweens for developing and facilitating relationships in order to follow a proactive strategy that enhances the global profit of the project, by offering premises and services needed to develop and consolidate the STP. Generally this staff is supported economically and financially by regional governments or corporate investors.

With this interpretation of social capital source, this study exclusively focuses on university–firm relationships that contribute directly and distinctly to the generation of social capital.

2.1.3 Dimensions

Nahapiet and Ghoshal (1998) define social capital as a type of capital that shows three different facets in relations: structural, relational, and cognitive. Each dimension is important for understanding the structure and content of mutual benefits in social relations (Lesser 2000):

- The structural dimension depends on the other subdimensions, such as a relative position within a relationship or network, individual relationships with other actors, and structural holes covered by firms (Lee 2009).
- The relational dimension derives from the interpersonal dynamics within the structure that lead to the formation of social capital through the generation of trust and reciprocity (Nahapiet and Ghoshal 1998).

– Finally, the cognitive dimension entails the common context within the structure, which includes but goes beyond language to address acronyms, subtleties, and underlying assumptions that constitute basic necessities for everyday communication within a firm (Lesser 2000).

These three core dimensions that form the social capital construct reflect differentiated but related aspects of relationships (Zheng 2010). Generally though, researchers consider each dimension separately; it is necessary to use a holistic view to obtain a complete understanding of the process-based linkages across structural, relational, and cognitive social capital (Lee 2009).

2.1.4 Effects on Performance

Social capital research emphasizes the performance outcomes of social connections (Lee 2009). There are important contributions in management and organizational literature to note the positive value of social capital at firm level. To cite just a few contributions, social capital reportedly has beneficial effects on interorganizational networks and resource exchanges (Tsai and Ghoshal 1998), the creation of new intellectual capital (Nahapiet and Ghoshal 1998), knowledge acquisition and exploitation (Yli-Renko et al. 2001), family firm success (Zahra 2010), interorganizational learning (Wu and Cavusgil 2006), knowledge acquisition and new product and service innovation (Martínez-Cañas et al. 2012).

Also, recent studies demonstrate the role of social capital in terms of how firms start to reconfigure three dimensions over time to affect value generation, in the form of start-up performance (Maurer and Ebers 2006), firm performance (Cooke 2007), and firm competitiveness (Wu 2008). This approach to study the benefits of relationships provides an interesting line of research in management to study how interactions of tenant firms in STPs create value through collaborative advantages.

3 Theoretical Model and Hypothesis Proposed

3.1 Theoretical Model

To study social capital generated in relationships we use as basis the conceptual model proposed by Adler and Kwon (2002). This model is structured into four main parts: (1) the generation of social capital, (2) the main dimensions (structural, cognitive and relational), and (3) the positive effect on business performance.

In the first part of our model we identify that organizational social capital is generated in relationships of tenant firms with universities. Adler and Kwon (2002) consider that the key sources of social capital are networks, norms, social beliefs, and rules. They consider that each of these sources makes a distinct contribution to the formation of social capital although all three are mutually interdependent. So,

the primary sources can be considered as direct sources generated with the important role of formal institutions (or more specifically rules) and trust as indirect sources or even direct sources of social capital.

In the second part of the model, the three main dimensions of social capital are identified: structural, relational, and cognitive. These dimensions are the effect or "more or less durable social relations" that influence the development of the mutual benefits of social capital (Lesser 2000): the structure of the relations, the interpersonal dynamics that exist within the structure, and the common context and language held by individuals in the structure. In the first dimension we consider social capital from an egocentric perspective in relations because we are concerned with the connections that firms have with universities. With the second, the relational dimension, we consider that social capital is not limited to the presence of contacts within the given network, and the positive interactions between individuals in the network lead also to the formation of social capital. In the literature, this facet of the relationship has been already discussed with concepts as trust and reciprocity (Nahapiet 2008). As, the third enabler of social capital we identify the "common language" that individuals can use. This use of "common language" includes but goes beyond languages and addresses also the acronyms, subtleties, and underlying assumptions that are the necessities of everyday communication (Lesser 2000). Trying to follow the structure of the theoretical model proposed by Adler and Kwon (2002) we are going to consider social capital as only one construct formed by his three main dimensions.

In the third part we analyze that organizational social capital can make collective action more efficient, because it becomes a substitute for the formal contracts and mechanisms of the market (Lesser 2000). Therefore, social capital at the firm level is an important input generator in the value creation process of firms; so we consider this effect on knowledge acquisition and exploitation (Yli-Renko et al. 2001), reputation (Wiedman and Hennings 2006), and new products and services development (Zheng 2010).

As a basic resume in Fig. 2.1, the three-part theoretical model of social capital generation inside science parks can be seen.

3.2 Hypothesis Proposed

For the hypothesis proposition we focus on the link between the second part of the model (social capital at firm level) and the third part (effects on firm performance), because it has been explained that the social capital originated in university–industry relationships and it has a multidimensional nature.

3.2.1 New Products Development

The value of social capital as an enabler depends on the willingness of exchange partners to engage in two-way interaction. The knowledge that firms can derive

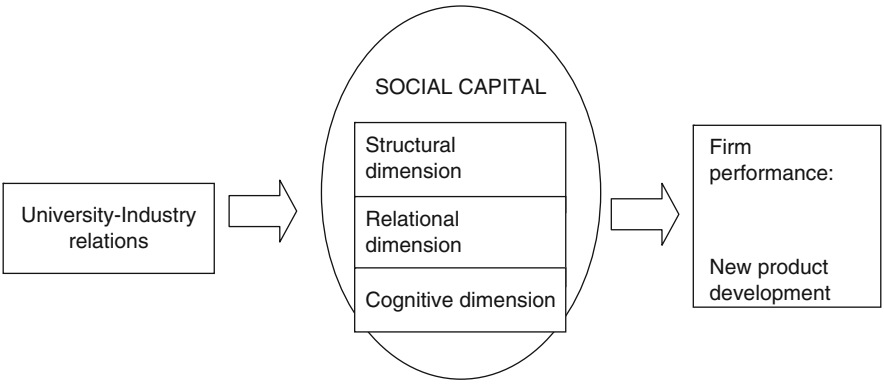

Fig. 2.1 Theoretical model of social capital. *Source*: Adapted from Adler and Kwon (2002)

from their relationships may be particularly valuable for the development of new products and services (von Hippel 1988). As a consequence, tenant firms can use laboratories, infrastructures and services that the university is offering inside science parks. For universities, firms can represent a source of timely, accurate, tacit, and confidential information on, e.g., developments in related technologies and customer needs. A high level of information exchange with a firm may thus enhance the ability of the firm to develop new products and bring them to the market. Also, as literature suggests, social capital enables innovation (Zheng 2010). We can express this idea formally as follows:

Hypothesis 1. The higher the level of social capital in university–firm relationships, the more will be the number of new products and services developed by the firm.

3.2.2 Technological Distinctiveness

Several studies provide empirical evidence implicitly linking learning with knowledge distinctiveness in new ventures. Value is enhanced by distinctiveness: the more distinctive the resource, the more readily it can be leveraged for rent-generating purposes. Because tenant firms located in science parks do not possess sufficient resources to compete with volume and cost-efficiency, distinctiveness is the primary mechanism for achieving competitive advantage, particularly in high-technology sectors. We can summarize that social capital enhances technological distinctiveness (Yli-Renko et al 2001), and we hypothesize:

Hypothesis 2. The higher the level of social capital in university–firm relationships, the more distinctive will be the technology of the firm.

3.2.3 Knowledge Acquisition

Learning increases the distinctiveness of the firm's knowledge base, as new intellectual capital is created by innovatively combining firm-specific knowledge with universities' knowledge and resources. According to the resource-based theory, four basic conditions enhance the rent-generating potential of resources: scarcity, non-substitutability, imperfect imitability, and resource value (Barney 1991). As literature supports, social capital facilitates knowledge acquisition of value-resource key for competitive advantage (Yli-Renko et al. 2001). In line with the above arguments we can postulate that:

Hypothesis 3. The higher the level of social capital in university–firm relationships, the more distinctive will be the knowledge acquisition of the firm.

3.2.4 Firm Reputation

In social capital literature some researchers support the idea that social capital generates a better firm's reputation (Wiedman and Hennings 2006). Their assumptions are that the more information a customer has about a tenant firm located in a science park, the more authoritatively it will be able to detail to other potential customers the benefits and strengths of dealing with the firm, thus improving the reputation of this firm. So we can suggest that:

Hypothesis 4. The higher the level of social capital in university–firm relationships, the more reputation will have the firm.

4 Methods and Results

4.1 Sample

For testing the theoretical model proposed a survey to the firms' CEO from a sample of 1,280 Spanish firms that were located inside 21 science parks was sent. Those firms were from sectors such as aerospace and automotive, training and human resources, information technology, medicine, biotechnology, engineering, consultancy, and environmental activities. The more comprehensive database of tenants that was available in the firm directory of the Spanish Association of Science Parks (APTE) was used. From the whole directory only those firms for the above industries and with a high added value in their activities were identified. We received 214 valid questionnaires (16.87 of response rate). A test for response bias was made and there were no differences among the mail, e-mail, or online questionnaire responses. Also a common method bias test was made using

a one-factor Harman test (Scott and Bruce 1994) and the factors obtained did not represent a problem.

4.2 Operationalization of Variables

For measuring latent constructs we used items previously accepted in the literature for dimensions of social capital (Nahapiet and Ghoshal 1998; Yli-Renko et al 2001; Chakrabarti and Santoro 2004), new products development (von Hippel 1988), technological distinctiveness (Wernerfelt 1984; Yli-Renko et al 2001), knowledge acquisition (Ye 2005) and firm's reputation (Wiedman and Hennings 2006).

All concepts included in the present study, with the exception of innovation, were latent variables. Every statement-style item thus was measured on a Likert-type scale from 1 = "do not agree" to 5 = "completely agree." To measure social capital and knowledge acquisition, authors adapted statements from previous studies.

4.3 Statistical Method

The hypotheses were tested using structural equation modeling with the partial least squares (PLS) technique (Chin et al. 2003), which offers a flexible statistical approach with rigorous and robust procedures (Wold 1980). PLS was considered for the study as the best suitable method because this statistical tool is intended primarily for causal predictive analysis and has proved very useful in situations marked by high complexity but low theoretical information (Chin et al. 2003). Accordingly, the software PLS-Graph 3.00 was used (Chin 2003) and the stability of the estimates with a bootstrap resampling procedure (500 subsamples) was tested.

4.4 Assessment of the Measured Model (First Order Variables)

With regard to the measurement model, it is divided into first-order variables and second-order variables. All were reflective latent constructs (Chin 1998). As recommended by Chin (2010) we assessed the following for two types of variables: individual item reliability, construct reliability, convergent validity and discriminant validity of all the items from first- and second-order constructs. For the individual item reliability we considered it adequate when the value of its standardized load equals to or is over 0.707 (Carmines and Zeller 1979). For construct reliability, we evaluated it by examining their composite reliability of

Table 2.1 Measurement model: item loadings, construct reliability, and convergent validity

Latent variables	Item	Loading	Composite reliability	AVE
Structural dimension	SD01	0.8647	0.926	0.6584
	SD02	0.8567		
	SD03	0.7809		
	SD04	0.6865		
	SD05	0.6835		
	SD06	0.6955		
	SD07	0.8374		
	SD08	0.7787		
	SD09	0.6587		
Cognitive dimension	CD01	0.696	0.916	0.609
	CD02	0.8241		
	CD03	0.7938		
	CD04	0.8255		
	CD05	0.7618		
	CD06	0.7872		
	CD07	0.7656		
Relational dimension	RD01	0.7312	0.819	0.516
	RD02	0.8291		
	RD03	0.8809		
	RD04	0.7547		
Technological distinctiveness	TEDIS01	0.8525	0.912	0.722
	TEDIS02	0.8248		
	TEDIS03	0.8866		
	TEDIS04	0.833		
Knowledge acquisition	KNACQ01	0.8955	0.897	0.690
	KNACQ02	0.9124		
	KNACQ03	0.8576		
	KNACQ04	0.6251		
Reputation	REPUTA01	0.9265	0.920	0.852
	REPUTA02	0.9191		

the constructs (Werts et al. 1974). For convergent validity we evaluated by means of the average variance extracted (AVE) which should be greater than 0.5 (Fornell and Larcker 1981). Finally, for discriminant validity, according to Barclay et al. (1995), all reflective indicators should load more highly on their own construct than on others. In addition, AVE should exceed the variance shared between the reflective construct and other constructs in the model (Fornell and Larcker 1981). As it is showed in Table 2.1, both indicators and latent variables exceed the conditions proposed above to assess the four conditions that determines a good measured model.

For discriminant validity test, as it is shown in Table 2.2 (correlation matrix) the variance shared between any item in every focal construct and other latent constructs in the model (See bolded values in Table 2.2). Thus, the measurement model for the first-order variables of social capital is reliable and valid.

Table 2.2 Correlation matrix for first-order variables

	SD	CD	RD	TD	KA	RE
SD01	**0.865**	0.743	0.584	0.150	0.503	0.450
SD02	**0.857**	0.714	0.542	0.122	0.520	0.440
SD03	**0.784**	0.619	0.490	0.057	0.472	0.462
SD04	**0.687**	0.540	0.542	0.140	0.375	0.320
SD05	**0.682**	0.516	0.334	0.223	0.397	0.328
SD06	**0.696**	0.557	0.407	0.218	0.462	0.376
SD07	**0.839**	0.713	0.523	0.182	0.497	0.370
SD08	**0.780**	0.626	0.550	0.145	0.464	0.439
SD09	**0.659**	0.521	0.556	0.228	0.377	0.499
CD01	0.511	**0.696**	0.551	0.130	0.338	0.378
CD02	0.710	**0.824**	0.719	0.237	0.434	0.425
CD03	0.670	**0.794**	0.686	0.243	0.419	0.427
CD04	0.637	**0.829**	0.702	0.140	0.394	0.464
CD05	0.621	**0.761**	0.502	0.142	0.433	0.307
CD06	0.651	**0.790**	0.524	0.180	0.450	0.327
CD07	0.623	**0.766**	0.489	0.169	0.470	0.345
RD01	0.391	0.496	**0.732**	0.061	0.268	0.288
RD02	0.516	0.640	**0.829**	0.095	0.310	0.321
RD03	0.605	0.682	**0.882**	0.123	0.377	0.387
RD04	0.576	0.626	**0.755**	0.125	0.410	0.356
TEDIS01	0.149	0.160	0.050	**0.853**	0.025	0.019
TEDIS02	0.163	0.178	0.091	**0.825**	0.083	0.148
TEDIS03	0.151	0.184	0.097	**0.887**	0.065	0.123
TEDIS04	0.237	0.243	0.184	**0.833**	0.123	0.134
KNACQ01	0.525	0.463	0.354	0.085	**0.896**	0.586
KNACQ02	0.546	0.485	0.372	0.072	**0.912**	0.619
KNACQ03	0.516	0.473	0.352	0.093	**0.858**	0.626
KNACQ04	0.372	0.354	0.377	0.048	**0.626**	0.381
REPUTA01	0.499	0.463	0.451	0.156	0.608	**0.926**
REPUTA02	0.497	0.443	0.333	0.077	0.640	**0.919**

4.5 Assessment of the Measured Model (Second-Order Variables)

Second-order constructs involve more than one latent dimension and can be distinguished theoretically from unidimensional or first-order constructs (Wetzels et al. 2009). The main utility of using social capital as a second-order construct is that it provides more theoretical parsimony and enables us to analyze the joint effect of several latent variables. Because social capital dimensions are closely interrelated (Lee 2009; Zheng 2010), it was regarded the construct as reflective, determined by the effect of its three dimensions. Therefore, a step-by-step approach was used, including all the latent variable scores of the manifest variables of the underlying lower-order latent variables related to the structural, relational, and cognitive dimensions (Wetzels et al. 2009). As was done for first order construct, the measurement model was tested in terms of individual

Table 2.3 Measurement second-order model: loadings, reliability, and convergent validity

Second-order construct	Item	Loading	Composite reliability	AVE
Social capital in university–industry	SD	0.9187	0.936	0.831
	CD	0.946		
	RD	0.8682		

Table 2.4 Correlation matrix (AVE on diagonal)

	PRODSERV	DT	AC	RE	CSREE
PRODSERV	**1**				
DT	0.055	**0.959**			
AC	0.225	0.096	**0.947**		
RE	0.244	0.133	0.674	**0.954**	
CSREE	0.208	0.219	0.580	0.538	**0.967**

reliability, construct reliability, convergent validity (Table 2.3), and discriminant validity (Table 2.4).

As shown in Table 2.3, loadings, composite reliability, and AVE exceed the conditions above proposed that determine a good measured model. For discriminant validity (Table 2.4) the AVE should be greater than the variance shared between the latent construct and other latent constructs in the model (i.e., squared correlation between constructs) (Barclay et al. 1995); all latent variables satisfy this condition. In summary, the measurement model for the reflective second-order (as was for the first-order) variables used in this research is reliable and valid.

4.6 Structural Model: Hypothesis Testing

In Fig. 2.2, and on the basis of this empirical data, the proposed model is partially supported. On the left side of the model, first-order constructs (structural, cognitive, and relational dimensions) are significant and reflect the second-order latent construct (social capital). On the right side of the model it shows a positive and significant association in support of Hypothesis H3 ($\beta = 0.292$; $p < 0.001$) and Hypothesis H4 ($\beta = 0.148$; $p < 0.05$). So, the positive relationship predicted between the social capital and knowledge acquisition and firm's reputation was confirmed. Contrary to our expectations we have found a positive but not significant association in support of Hypothesis H1 and Hypothesis H2 (new products development and technological distinctiveness). Analyzing the R^2 values (Table 2.5) of the endogenous constructs, it can be stated that our research model has a weak predictive power, because only firm's reputation construct is explained in a percentage higher than 10 % which is the optimal minimum according to Falk and Miller (1992).

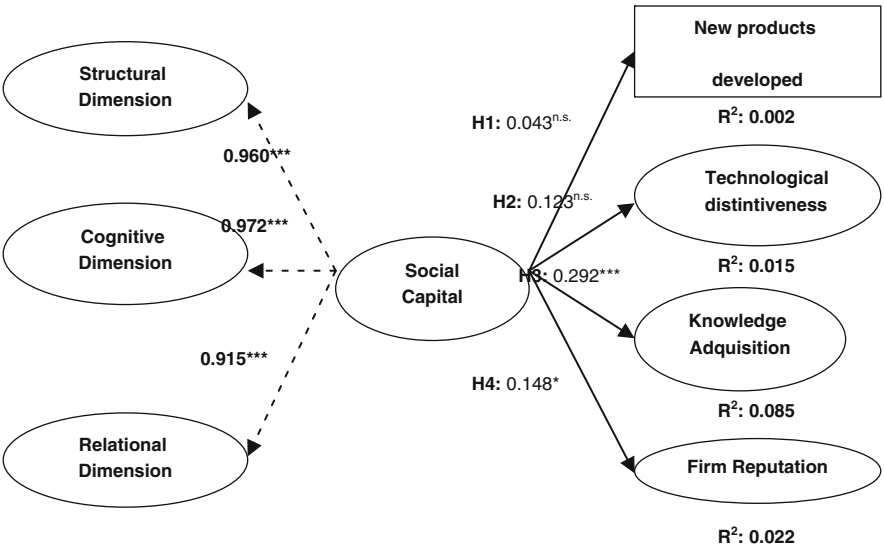

Fig. 2.2 Social capital in university–firm relationships

Table 2.5 Explained variance, hypothesis testing, and *t*-values[a]

	R^2	β/factorial loadings	*t*-Student bootstrap	Supported hypothesis
Hypothesis 1	0.002	$0.043^{\text{n.s.}}$	0.5541	No
Hypothesis 2	0.015	$0.123^{\text{n.s.}}$	1.3536	No
Hypothesis 3	0.085	0.292^{***}	3.8225	Yes
Hypothesis 4	0.022	0.148^{*}	2.1384	Yes

$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$

[a]*Notes*: (*Student* $t_{(499)}$, one-tailed test): $t(0.05; 499) = 1.64791345$; $t(0.01; 499) = 2.333843952$ and $t(0.001; 499) = 3.106644601$

5 Conclusions, Limitations, and Lines of Future Research

We can conclude that the main results obtained in this chapter are that social capital can be generated in relations with universities. Also, we found that social capital has positive and significant facets (structural, cognitive, and relational) reflected in each dimension. Furthermore, social capital generated through relationships with universities has positive and significant effect on knowledge acquisition and reputation. Contrary to what we have hypothesized, social capital has no significant positive effect on the development of new products and technological distinctiveness.

We think that we need to include in further studies more constructs and variables to explain these variables. We believe this research has positive implications for both park managers and for tenant firms. Park managers should adopt proactive strategies that facilitate the promotion of relations between universities and firms

for obtaining better results due to the interaction. These activities complement their formal activities for advising, space management, and creating high-value services. And for firms located, the results of our investigation show that firms should be proactive with relationships they establish with universities because they contribute greatly to improving their performance.

To finalize we conclude with some limitations of this research that it is difficult to extrapolate the results of capital social in other industries or even countries. Another limitation is that the study is only measuring social capital in one moment of time.

As future lines of research we should include more independent variables and we should analyze relations with other economic agents (inside and outside the park). We also need to develop a more complex model that should include other variables that can moderate the relationship between social capital and firm performance variables.

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