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Edited by EurOMA 2013 Co-Chairs Brian Fynes, University College Dublin and Paul Coughlan, Trinity College Dublin

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R&D supply chain and innovation performance: the contingent role of the firm's position in the network

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ABSTRACT
This paper conceptualizes the supply chain of innovation as a sub-set of the whole innovation network. We focus on the relationship between the activities of purchasing/selling R&D and the firm's innovation performance. Specifically, we examine how the position of the firm within its innovation network moderates this relationship. Our empirical setting consists in cross-sectional data about 1772 agreements signed by biotech companies between 2006-2010. We find, first, anecdotal evidence of both the existence of the innovation supply chain and the phenomenon of firms' positioning along it. Second, we find that information richness positively moderates the effect of purchasing R&D services on innovation performance and negatively the effect of selling R&D. Largely supporting our theoretical predictions, this paper offers contributions to the scientific literature on both innovation management and supply chain management and also proposes pertinent managerial implications.

Keywords: Supply chain of innovation, network characteristics, innovation performance

Introduction
The recent research on innovation management empirically evidences that innovation is not the product of firm's autonomous research (Chesbrough, 2003; Hsuan and Mahnke, 2011). In today's fast high-tech industries, the innovation performance of a company cannot be understood without considering the external organizational relationships that it maintains with different kinds of partners such as suppliers, universities, private and public research centers, etc. In the open innovation paradigm it is well known that purchasing (inbound) and selling (outbound) R&D commodities influence firm innovation performance (Rothaermel, 2001; Laursen and Salter, 2006; Lichtenthaler, 2009).

Moreover, the tendency to create multiple inter-firm relationships with several partners has embedded companies in complex webs of inter-firm networks (Zaheer and Bell, 2005; Wu, 2008; Phelps, 2010). There is a wide consensus among researchers that firm's embeddedness and its position in a network of relations matter for its innovation performance (Ahuja, 2000; Bae and Gargiulo, 2004; Salman and Saives, 2005; Goerzen, 2007). Factors such as repeated ties with the same partners and being part of cliques are network

characteristics that may positively influence the innovation outcome of the firm because they increase the opportunities for learning, for joint development of the skills in managing the innovation process, and may also act as a signal and mechanism of trust (Koka and Prescott, 2002; Goerzen, 2007; Lawson et al. 2008; Wu, 2008; Malik, 2012). Because repeated ties between partners and the presence of cliques increase information richness, one may expect that such network characteristics also influence the effectiveness of the R&D purchasing/selling activities on innovation performance. However, while literature has in-depth investigated the influence of R&D purchasing/selling activities on innovation performance, exploring whether network characteristics enhance or cutback such an influence remains unexplored.

This paper focuses on the relationship between R&D purchasing/selling activities and the firm's innovation performance. Specifically, the aim of the research is to investigate how the position of the firm within its inter-firm network structure moderates this relationship. To this purpose, we conceptualize the Supply Chain of Innovation (SCoI), as a part of the whole innovation network, which only includes specific kinds of relationships, i.e. those related to the purchase and selling of R&D commodities in terms of services, projects, patents, licenses. We observe that the propensity of a company towards the purchase and selling of R&D brings the company to position itself along the SCoI. We argue that considering and studying the SCoI, over the whole innovation network, could bring very interesting insights in understanding the paradigm of open innovation and the evolution of the business models of companies belonging to high tech industries.

The supply chain of innovation: the biotech case

The new paradigm so called Open Innovation (OI) emphasizes how companies have shifted from so-called "closed innovation" processes towards a more open way of innovating. In the traditional closed models, both new business development processes and marketing of new products take place within the firm boundaries. According to Chesbrough (2003), the closed innovation paradigm is being eroded due to the following factors: increased mobility of skilled workers; expansion of venture capital; external options for unused technologies; and increased availability of highly capable value-chain partners. As a result, companies start looking for other ways to increase the efficiency and effectiveness of their innovation processes.

OI as a business model is currently gaining grounds in many industries. For instance, OI modes have been identified as one of the main trends in bio-pharmaceutical innovation (Gassmann and Reepmeyer, 2005); the aptitude of companies towards opening the process of innovation is increasing (Chiesa and Toletti, 2004; Birch, 2008). However, very few contributions can be found in OI literature that attempts to explain the adoption of OI practices in the bio-pharmaceutical industry (Bianchi et al. 2011). Numerous actors participate the process of innovation. They are biotech firms, bio-pharma firms, big-pharma firms, research institutes, universities, CRO, CMO, biotech platforms, etc. Also, different typologies of relations can be found, such as alliances, licensing agreements, research collaborations, production, marketing and distribution agreements, R&D outsourcing, R&D joint ventures, co-patenting, etc. Within the complex network of relationships constituting the innovation network, the SCoI can be extracted. It includes only specific kinds of relationships, i.e. those related to the purchase and selling of R&D commodities in terms of services, projects, patents, and licenses. No alliances or bi-lateral collaborations such as R&D joint venture, co-patenting, co-development are included since they do not explicitly concerns a pure supplier-customer commercial transaction, even if the co-development is conducted with a raw-material supplier of the company.

Many previous works focus on innovation issues in traditional supply chain, such as supplier innovation generation, early supplier involvement in new product development, or supplier integration. Here the term "supplier" is meant as a supplier of the material flow-supply chain. Instead, the object of the commercial transaction in SCoI should always be an innovation commodity, such as an R&D service, project, patent, technology, or license. Thus the term "supplier" in this paper is meant as a supplier of an innovation commodity.

The positioning of companies, such as for example Sareum Holdings, Genentech Inc., Amgen, and Takeda Pharmaceutical Co. Ltd., into different SCoI stages is most obvious when the formal structure of their R&D supply agreements is mapped. Using secondary data from the *Bioworld* database, we illustrate the direction of knowledge flow throughout Sareum Holdings, Genentech Inc., Amgen, and Takeda Pharmaceutical Co. Ltd. for the years 2006 to 2010 (see Figure 1).

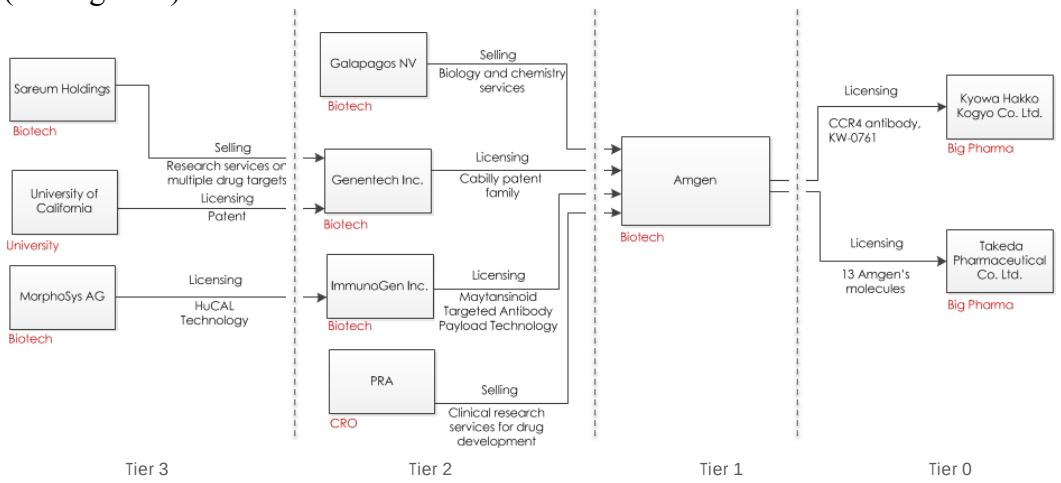

Figure 1 - Innovation supply chain: example from Bioworld 2006–2010.

For example, starting from Takeda Pharmaceutical Co. Ltd, we find that this company has licensed-in 13 molecules from Amgen (1-tier supplier), which, in turns, has licensed-in the "Cabily" patent family from Genentech Inc. (2-tier supplier), which, in turns, has purchased research services on multiple drug targets from Sareum Holdings (3-tier supplier). Of course, we are not claiming that this supply chain is complete; besides the ones reported in Figure 1, we found many other companies (biotech, bio-pharma, big-pharma, universities, clinical research organizations, etc.) that are involved in the supply chain, but we did not reported them in the figure for sake of clarity. We argue that due to the growth of the biotech market and due to the dual market structure (Pisano, 1991), nowadays we are assisting to the creation of complex supply chains of R&D (the SCoI) in which biotech companies position themselves in specific tiers as suppliers of specific R&D commodities.

Conceptual model

In order to develop our conceptual model we combine SCoI and innovation network views. We develop these combined views in two steps. First, we use OI literature to explain the influence of SCoI practices like purchasing and selling R&D on the firm's innovation performance. Second, we take network structure literature to consider how the position of the firm within the network of innovation may affect both information richness and firm's performance. Thus, we deduce that network characteristics moderate the relationship identified in the first step. Here, we specifically focus on the role of being part of a clique and having repeated ties with partners, as network characteristics (Coleman, 1988; Burt, 1998; Ahuja, 2000; Rowley et al. 2000), and analyze how they affect the effectiveness of SCoI practices on firm's innovation performance.

Based on that, we formulate a set of hypotheses, as described in what follows.

SCoI and innovation performance: the role of purchasing and selling R&D

In recent years, scholars' interest in the relationship between OI strategies and firm performance increased. The question of how openness influences the capacity of firms to innovate is at the heart of OI research (Dahlander and Gann, 2010). Besides collaborating with suppliers, competitors and universities, a firm also acquires external knowledge and technology by in-licensing and/or outsourcing and/or purchasing R&D commodities such R&D services, projects, intellectual properties, patents by other firms (Tsai and Wang, 2009; Chiaroni et al. 2010; Hsuan and Mahnke, 2011). In the biotech industry, for example, is very common that companies purchase different typologies of R&D commodities like test assays, preclinical programs, licenses for using technologies and platforms, etc. This leads to our first hypothesis as follows.

H1. The purchase of R&D commodities is positively related to firm's innovation performance.

There are a number of empirical studies on R&D external commercialization that focus on the results of this activity on financial performance (Lichtenthaler, 2009; Belderbos et al. 2010). Within the complex market structure of the biotech industry, those firms that focus their core business in selling R&D commodities, position themselves in the upstream stages of the SCoI. While outward knowledge, such as licensing-out own licenses, provides great financial opportunities, it brings negative effects on innovation performance in terms of the development of new products (Escher, 2003; Lichtenthaler, 2009) because the company has focused its business in a different market. We thus state our second hypothesis.

H2. The selling of R&D commodities is negatively related to firm's innovation performance.

SCoI and innovation performance: the moderating role of repeated ties and cliques

Koka and Prescott (2002) conceptualize social capital as multidimensional construct that yields different information benefits also in the form of information richness, i.e. the quality and nature of information that a firm can access through its relationships. Social capital is represented by the network structure that enables firms to exchange a variety of information, knowledge and other forms of capital (Adler and Kwon, 2002). Network structure includes buyer-supplier relationships, strategic alliances, and joint ventures, R&D agreements, licensing agreements, joint memberships in industry associations, and every form of collaboration. The network created by inter-firm relationships can be viewed as conduit for information.

Having repeated ties with partners enables firms to learn about each other, and, thus, increases history of understanding and value of information. The organizational experience comes from routines, and routines are the result of repeated activities (Nelson and Winter, 1982). The establishment of inter-organizational routines can increase organizational absorptive capacity in a network (Cohen and Levinthal, 1990). The history with current partners is another source of information richness. Indeed, repeated ties with the same partner imply co-specialization, i.e. the ability to learn from each other. Also, repeated ties with the same partner are a condition to create trust. Trust reduces the likely of opportunistic behavior among the partners and it allows lowering inter-organizational safeguard mechanisms and to build a relationship for a better knowledge flow (Gulati, 1995).

Being a member of a clique (a sub-network in which any company is directly connected to any other company of the sub-network) increases connectivity density of members within the clique (Wasserman and Faust, 1994). This ensures that information introduced into the clique will quickly reach other companies in the clique. The multiple pathways between firms also

enhance the fidelity in the information received and the membership to a clique increases the trust of each company in each other (Schilling and Phelps, 2007). Furthermore, cohesive cliques facilitate the formation of trust and norms within a clique; cliques enable firms to gather superior information on each other by reducing in this way the information asymmetry that increases the likelihood of opportunism behavior (Gulati et al. 2000).

Highly information intensive industries need continuous flows of knowledge along the SCoI, from the upstream to the downstream stages (Arora and Gambardella, 1994; Stuart et al. 2007). Therefore, the information richness resulting from repeated ties and membership to cliques merits for a proper network structure be developed and used in such emerging knowledge intensive sector. Given that SCoI practices, such as purchase and selling of R&D commodities, allow knowledge in- and out-flowing, the information richness needs to be fully considered when studying the effects of such practices on innovation performance.

Therefore we expect that these network characteristics, which boost information richness, enhance the positive effect of purchasing R&D commodities on innovation performance. Summing up, this leads to our third hypotheses as follows.

H3a. The impact of purchasing R&D commodities on innovation performance is moderated by the number of repeated ties: the greater the number of repeated ties, the greater the benefit from purchasing R&D.

H3b. The impact of purchasing R&D commodities on innovation performance is moderated by the number of cliques: the greater the number of cliques, the greater the benefit from purchasing R&D

Going back to our conceptualization of the SCoI, we consider now those firms that re-focus their core business in selling R&D commodities and position themselves along the supply chain closer to upstream stages. Now we argue that, even in the case in which the company focuses on producing and selling R&D commodities, the information richness merits to be fully considered when studying the effects of such R&D selling practices on innovation performance. Being the main business of an innovation supplier the development and the selling of R&D commodities, the information richness positively influences its performance in conducting such business. This, in turns, enforces the company business position upstream in the SCoI and better distinguishes its role respect to that of a final drug developer. Therefore, we expect that network characteristics, which boost information richness, amplify the negative effect of selling R&D commodities on innovation performance in terms of the development of new products. We thus state our forth hypotheses.

H4a. The impact of selling R&D commodities on innovation performance is moderated by the number of repeated ties: the greater the number of repeated ties, the greater the damage from selling R&D.

H4b. The impact of selling R&D commodities on innovation performance is moderated by the number of cliques: the greater the number of cliques, the greater the damage from selling R&D.

Research method

Sample and Data

The research setting of this study is the biotechnology industry. We chose the biotechnology industry as research setting because it is characterized by a high level of innovation openness (Rothaermel, 2001; Sabatier et al., 2010) and because we found empirical evidences of the existence of SCoI within such industry.

We gather data from multiple sources about innovation performance, R&D purchasing and selling, and network characteristics. We obtain data on inter-firm collaborations through *BioWorld* database, an online information service providing daily news and analysis, stock

indices, company coverage, regulatory and patent reports, and other biotechnology information. The full dataset includes 1772 agreements among 1842 biotechnology firms signed in the years 2006-2010. From this dataset, we select only the public companies, specifically 366 firms, to ensure the availability and reliability of firm-attribute data. Thus, we collect data about new products, patenting, and firm-attributes of this selected sample. The SCoI and the innovation network data of each of these 366 firms are computed by considering their relationships with all the companies included into the full dataset. We retrieve data on new product development from the "biotech products" section of *BioWorld* database. The patenting data are retrieved from US Patents Office database. Finally, we collect firm-attribute data from the companies' annual reports.

Variables definition and operationalization

In literature, the innovation performance is approximated by a number of indicators, such as R&D inputs, patent counts or citations. We operationalize the innovation performance variable considering the total number of new biotechnological products introduced in the market throughout 2006-2012 (*New biotech products*).

As concerns the SCoI, we consider the two following explanatory variables: *R&D purchasing* and *R&D selling*. We measure the variable R&D purchasing by counting how many times each company purchases R&D commodities such as R&D services, test assays, preclinical programs, licenses, and so on. We measure the variable R&D selling by counting how many times each company sells R&D commodities.

As concerns the innovation network, we consider the two following explanatory variables: *Repeated ties* and *Cliques*. By following prior literature (Koka and Prescott; 2002; Kilduff and Tsai, 2003; Malik, 2012), we measure the repeated ties as the ratio of the total number of partners with whom the firm has repeated ties to the total number of partners. To measure the variable cliques we use UCINET (Borgatti et al. 2002), a network analysis program that computes network variables using dyadic data.

Results

The dependent variable is a count variable that takes only non-negative integer values, that is the number of new biotechnological products a firm successfully marketed between 2006-2012. A Poisson regression approach provides a natural model for such typology of data (Hausman et al. 1984; Henderson and Cockburn, 1996). However, a Poisson regression assumes that the mean and variance of the count variable are equal. This assumption is likely to be violated since over-dispersion usually occurs in new product count data. Over-dispersion requires the use of a negative binomial estimation (Kang and Kang, 2009; Un et al., 2010); therefore, we test our hypotheses by using a negative binomial regression.

Table 1 provides an overview of the results of the negative binomial analysis. We focus on the full model (model 4) to examine the theoretical expectations addressed earlier, but also show the basic model with only control variables (model 1), the model that includes explanatory variables related to the SCoI (model 2), and a model including explanatory variables related to the innovation network (model 3).

Table 1 - Results of negative binomial regression model.

	Dep. Var. - New Biotech Products			
	Model 1	*Model 2*	*Model 3*	*Model 4*
CONTROLS				
Firm patent stock	-0.001*	-0.001*	-0.001*	-0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
Age	-0.001	-0.001	-0.001	-0.002
	(0.003)	(0.003)	(0.003)	(0.002)
Size	0.434***	0.359***	0.352***	0.331***
	(0.068)	(0.061)	(0.061)	(0.058)
M&A	0.875***	0.690***	0.765***	0.728**
	(0.225)	(0.208)	(0.227)	(0.225)
Industry	0.821**	1.155***	1.117***	1.191***
	(0.257)	(0.262)	(0.257)	(0.273)
EXPLANATORY VARIABLES				
R&D purchasing		0.394***	0.398***	0.400***
		(0.075)	(0.080)	(0.099)
R&D selling		-0.167	-0.184	-0.379**
		(0.113)	(0.124)	(0.147)
Cliques			0.0521	0.387**
			(0.154)	(0.140)
Repeated ties			-0.291†	-0.524**
			(0.152)	(0.169)
R&D purchasing *X* Repeated ties				0.606**
				(0.198)
R&D purchasing *X* Cliques				-0.0302
				(0.0364)
R&D selling *X* Repeated ties				-0.795**
				(0.265)
R&D selling *X* Cliques				-0.0938†
				(0.0571)
Constant	-3.927***	-3.829***	-3.797***	-3.727***
	(0.368)	(0.367)	(0.363)	(0.364)
Alpha	0.938***	0.612**	0.601**	0.483*
	(0.183)	(0.212)	(0.210)	(0.228)
Num. obs.	366	366	366	366
Wald $\chi 2$	110.48***	145.57***	150.19***	223.63***
Log-likelihood	-307.908	-297.998	-296.761	-291.823
Likelihood ratio test		19.82***	10.22***	14.34***

Standard errors in parentheses $^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Discussion and conclusions

This study was inspired by our conceptualization of the SCoI. While nowadays we are assisting to the establishment of supply chains of R&D in which companies position themselves as suppliers of specific R&D commodities (the paper shows empirical evidence for this) the literature on innovation management does not explicitly consider supply chain issues in OI studies. This study addressed these limitations by examining the moderating influence of repeated ties and cliques (as drivers for information richness) on the linkage between SCoI practices and innovation performance. The conceptual model combines SCoI view and innovation network view. The results are mostly consistent with the predictions of the theoretical model, and we discuss them in the following sub-sections where we also identify implications for research and practice.

Positioning within the SCoI

We predicted (H1) a linear and positive effect of purchasing R&D commodities on innovation performance and we found evidence of this. This result shows that, in biotech industry, opening the innovation process to external actors, by specifically purchasing test assays or preclinical programs (but also licensing-in patents or technological platforms) stimulates the company to develop and market new final products. Consistent with prior works, this finding suggests that relying on external already developed knowledge and

technology enables a firm to improve its innovation performance since the firm uses suppliers' systems and mechanisms that facilitate the access to new and complex knowledge (Laursen and Salter, 2006; Aschhoff and Schmidt, 2008; Hung and Chiang, 2010). This evidence demonstrates that by purchasing R&D commodities, the firm positions itself downstream in the supply chain, closer to the final market, and thus it is more stimulated than others to develop new marketable molecules and drugs.

We predicted (H2) a linear and negative effect of selling R&D commodities on innovation performance and we found evidence of this. This result shows that, in biotech industry, opening the innovation process to external actors, by specifically selling and marketing own research services (but also licensing-out proper patents or technological platforms) inhibits the company to develop and market new final products. This evidence demonstrates that, by selling R&D commodities, the firm positions itself upstream in the supply chain farer from the final market, and thus it is less stimulated than others to develop new marketable molecules and drugs.

These first results have important implications also for practice. Managers should make precise decisions about the position of their company within the SCoI. Those firms that focus their core business in selling R&D commodities are also positioning themselves along the SCoI, distancing from the stage of developing new final products. In other words, by licensing out or commercializing own discoveries do not just generate additional revenues but also make this business own main business. This inhibits the company to develop discoveries into a final compound and brings negative effects on innovation performance in terms of the development of new products.

Information richness and the position of the firm in the SCoI

We predicted (H3a) a moderating and reinforcing effect of repeated ties on the linkage between purchasing R&D and innovation performance and we found evidence of this. The greater the number of repeated ties, the greater the benefit in terms of innovation performance coming from external knowledge acquisition. The firm, thank to repeated ties, better capitalizes the knowledge coming from purchasing R&D. Analogously, when the firm has few repeated ties, the benefits coming from knowledge external acquisition tumble because the firm is less able to exploit that knowledge and transform it into final products. Although we predicted the same effect for clique membership (H3b), we did not find evidence about this.

We predicted (H4a and H4b) a reinforcing effect of repeated ties and cliques on the linkage between selling R&D and innovation performance and we found evidence of this. The greater the number of repeated ties and cliques, the greater is the damage of purchasing R&D on innovation performance. This result demonstrates that selling R&D services yields lower potential for innovation performance under condition of high level of information richness. Being the main business of innovation suppliers the development and marketing of R&D commodities, the information richness positively influences the outcomes of these activities, thus damagingly conditioning the firm propensity in developing new final products, i.e. its innovation performance as meant in this paper.

When looking at the overall findings coming from H3 and H4 sets we can draw the following conclusions about information richness and innovation performance. Advantages from information richness have to be interpreted in the light of the position of the firm within the SCoI. Specifically, managers of downstream companies should consider that having repeated ties with innovation network partners bring paybacks in their SCoI practices. Analogously, managers of upstream companies should consider that information richness, while enforcing their core business performance also enforces their position in the SCoI. This,

in turns, brings drawbacks in their SCoI practices, in terms of they being enablers of innovation.

Finally, the research findings bring the following last managerial implication. Our results show that both R&D purchasing/selling and network characteristics influence the ability of the firm to exploit external and internal knowledge to enhance innovation. However, there are important differences between these two concepts. R&D purchasing/selling activities concern a set of decisions that can be directly controlled by the firms, since managers contract with suppliers and buyers to buy or sell R&D commodities. On the contrary, the characteristics of the network are not entirely under firm's control. Indeed, despite repeated ties are network characteristics that mainly depend on company's internal decisions (the company decides whether or not to keep signing agreement always with same partners), the existence of cliques mainly depends on external decisions (the company can not decide whether or not its partners are connected to each others, thus composing a clique). In other words, while some characteristics of the network are under the managers' control, others depend on partners' decisions. Thus, the effectiveness of managers' decisions regarding the purchase or selling of R&D commodities on innovation performance partially depends on exogenous factors. In some cases, managers have the power to combine specific supply chain practices (e.g. selling R&D) with some network practices (e.g. making repeated ties). In other cases, managers undergo their network structure characteristics (e.g. cliques) and, thus, have to make their supply chain practices according to these.

References

Adler, P. S., and Kwon, S. W. (2002). Social capital: prospects for a new concept. *Academy of Management Review*, *27*, 17–40.

Ahuja, G. (2000). Collaboration networks, structural holes, and innovation: A longitudinal study. *Administrative Science Quarterly*, *45*(3), 425–455.

Arora, A., and Gambardella, A. (1994). Evaluating technological information and utilizing it: scientific knowledge, technological capability, and external linkages in biotechnology. *Journal of Economic Behavior & Organization*, *24*(1), 91.

Aschhoff, B., and Schmidt, T. (2008). Empirical evidence on the success of R&D cooperation – happy together?. *Review of Industrial Organization, 33*, 41-62.

Bae, J., and Gargiulo, M. (2004). Partner substitutability, alliance network structure, and firm profitability in the telecommunications industry. *Academy of Management Journal*, *47*, 843–59.

Belderbos, R., Faems, D., Leten, B., and Van Looy, B. (2010). Technological activities and their impact on the financial performance of the firm: exploitation and exploration within and between firms. *Journal of Product Innovation Management*, *27*(6), 869–882.

Bianchi, M., Cavaliere, A., Chiaroni, D., Frattini, F., and Chiesa, V. (2011). Organisational modes for open innovation in the bio-pharmaceutical industry: An exploratory analysis. *Technovation*, *31*(1), 22-33.

Birch, K. (2008). Alliance-driven governance: applying a global commodity chains approach to the U.K. biotechnology industry. *Economic Geography*, *84*, 83–103.

Borgatti, S. P., Everett, M. G., and Freeman, L. C. (2002). *Ucinet 6 for Windows*. Harvard, MA: Analytic Technologies.

Burt, R. S. (1998). *The network structure of social capital*. Chicago: University of Chicago.

Chesbrough, H. (2003). *Open Innovation*. Cambridge, MA: Harvard University Press.

Chiaroni, D., Chiesa, V., and Frattini, F. (2010). Unravelling the process from closed to open innovation: Evidence from mature, asset-intensive industries. *R&D Management*, *40*(3), 222–245.

Chiesa, V., and Toletti, G. (2004). Network of collaborations for innovation: The case of biotechnology. *Technology Analysis and Strategic Management*, *16*, 73–96.

Cohen, W. M., and Levinthal, D. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, *35*, 128–152.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*, 95–120.

Dahlander, L. and Gann, D. M. (2010). How open is innovation?. *Research Policy, 39*(6), 699-709.

Escher, J. P. (2003). Design and implementation of technology marketing organizations. In Tschirky, H, H-H Jung and Savioz, P. (Eds.), *Technology and Innovation Management on the Move*, Zurich: OrellFussli, pp. 215–228.

Gassmann, O., and Reepmeyer, G. (2005). Organizing pharmaceutical innovation: from science-based knowledge creators to drug-oriented knowledge brokers. *Creativity and Innovation Management*, *14*,(3), 233––245.
Goerzen, A. (2007). Alliance networks and firm performance: The impact of repeated partnerships. *Strategic Management Journal*, *28*(5), 487–509.
Gulati, R. (1995). Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal, 30,* 85–112.
Gulati, R., Nohria, N., and Zaheer, A. (2000). Strategic networks. *Strategic Management Journal, 21*(3), 203-215.
Hausman, J., Hall, B., and Griliches, Z. (1984). Econometric models for count data with an application to the patents-R&D relationship. *Econometrica*, *52*, 909–38.
Henderson, R., and Cockburn, I. (1996). Scale, scope and spillovers: the determinants of research productivity in drug discovery. *Rand Journal of Economics, 27*, 32–59.
and R. Nelson (Eds.), Sources of industrial leadership (pp. 267–311). Cambridge: Cambridge University Press.
Hsuan, J., and Mahnke, V. (2011). Outsourcing R&D: A review, model, and research agenda. *R&D Management, 41*(1), 1-7.
Hung, K. P., and Chiang, Y. K. (2010). Open innovation proclivity, entrepreneurial orientation, and perceived firm performance. *International Journal of Technology Management*, *52*(3), 257–274.
Kang, K. H., and Kang, J. (2009). How do firms source external knowledge for innovation? Analyzing effects of different knowledge sourcing methods*. International Journal of Innovation Management*, *13*(1), 1–17.
Kilduff, M., and Tsai, W. (2003), *Social Networks and Organizations*, Sage Publications, London.
Koka, B., and Prescott, J. E. (2002). Strategic alliances as social capital: A multidimensional view. *Strategic Management Journal*, *23*, 795–816.
Laursen, K., and Salter, A. (2006). Open for innovation: the role of openness in explaining innovation performance among U.K. manufacturing firms. *Strategic Management Journal, 27*, 131–150.
Lawson, B., Tyler, B. B., and Cousins, P. D. (2008). Antecedents and consequences of social capital on buyer performance improvement. *Journal of Operations Management*, *26*, 446-460.
Lichtenthaler, U. (2009). Outbound open innovation and its effect on firm performance: examining environmental influences. *R&D Management*, *39*(4), 317–330.
Malik, T. (2012). Disparate association between alliance social capital and the global pharmaceutical firm's performance, *International Business Review*, *21*(6), 1017-1028.
Nelson, R. R., and Winter, S. G. (1982). *An Evolutionary Theory of Economic Change.* Cambridge, MA: Belknap Press of Harvard University Press.
Phelps, C. (2010). A longitudinal study of the influence of alliance network structure and composition on firm exploratory innovation. *Academy of Management Journal*, *53*, 890–913.
Pisano, G. (1991). The Governance of Innovation: Vertical Integration and Collaborative Arrangements in the Biotechnology Industry. *Research Policy*, *20*, 237-250.
Rothaermel, F. T. (2001). Complementary assets, strategic alliances, and the incumbent's advantage: an empirical study of industry and firm effects in the biopharmaceutical industry. *Research Policy*, *30*, 1235–51.
Rowley, T. J., Behrens, D., and Krackhardt, D. (2000). Redundant governance structures: an analysis of structural and relational embeddedness in the steel and semiconductor industries. *Strategic Management Journal*, *21*, 369–386.
Rowley, T. J., Greve, H. R., Hayagreeva, R., and Baum, J. A. C. (2005). Time to break up: social and instrumental antecedents of firm exits from exchange cliques. *Academy of Management Journal*, *48*, 499–520.
Sabatier, V., Mangematin, V., and Rousselle, T. (2010). Orchestrating networks in the biopharmaceutical industry: small hub firms can do it. P*roduction Planning and Control*, *21*, 218–28.
Salman, N., and Saives, A. L. (2005). Indirect networks: An intangible resource for biotechnology innovation. *R&D Management, 35*(2), 203– 15.
Schilling, M., and Phelps, C. (2007). Interfirm collaboration networks and knowledge creation: the impact of large scale network structure on firm innovation. *Management Science, 53*, 1113–1126.
Stuart, T. E., Ozdemir, S., and Ding, W. (2007). Vertical alliance networks: the case of university–biotechnology–pharmaceutical alliance chains. *Research Policy*, *36*, 477–498.
Tsai, K. H., and Wang, J. C. (2009). External technology sourcing and innovation performance in LMT sectors: an analysis based on the Taiwanese technological innovation survey. *Research Policy*, *38*, 518–526.
Wasserman, S., and Faust, K. (1994). *Social Network Analysis: Methods and Applications*. New York: Cambridge, University Press.
Wu, W.-P. (2008). Dimensions of social capital and firm competitiveness improvement: the mediating role of information sharing. *Journal of Management Studies*, *45*(1), 122–146.
Zaheer, A., and Bell, G. G. (2005). Benefiting from network position: firm capabilities, structural holes, and performance. *Strategic Management Journal*, *26*, 809–25.