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# **The impact of unintentional knowledge leakages and spillovers on the longevity of inter-firm relationships**

## **Introduction**

Research suggests that forming strategic alliances and cultivating networks promotes learning and can help firms gain economic rents (Uzzi & Gillespie, 2002; Lavie, 2006). However, such ties can leave organisations susceptible to knowledge spillovers, defined as the unintended transfer of knowledge to a partner (Inkpen, 1998). If a firm inadvertently transfers valuable knowledge, especially to a competing firm, this could undermine its competitive advantage, as rare knowledge is made available to others. This paradox of openness has been highlighted in the growing literature on open innovation (Huang, Rice & Galvin, 2012). Some literature suggests that it is in the firm's interests to endeavour to capitalize on incoming spillovers from a collaborative relationship, and attempt to limit the amount of outgoing (outbound) knowledge, spilled out to the partner firm (Cassiman et al., 2002; Martin, 1999; Amir et al., 2003, Carrie & Lokshin, 2004 in Belderbos, Lavie, 2006). Consequently, some research recommends firms establish stringent protective measures to shut off their proprietary knowledge from partners (Sammorra & Biggiero, 2008). Following on from the logic of Lavie's (2006) spillover rents concept, that any significant, outgoing knowledge spillover should be of growing concern to a firm, if an organisation cannot effectively mitigate against this eventuality, it would be in their interest to terminate the relationship in order to protect their key knowledge. However, this reasoning may be too simplistic and overlook key contextual variables which may impact management's judgement to end or maintain an inter-firm relationship, especially in an increasingly open business environment where the sharing of firm resources is encouraged (Chesbrough, 2003).

This ongoing research investigates the impact knowledge spillovers have on the longevity of inter-firm relationships. Are ties severed, or diluted, once managers become aware their organisation is unwittingly transferring more than they intended? Or is it possible for a relationship to become stronger, or at least maintained, despite the fact that outbound knowledge spillover is occurring? Our objective is to explore some of the conditions which might act as a catalyst to these respective outcomes. The research project takes place within an open innovation context where sharing discrete sets of knowledge are standard.

## **Theory**

Leakages/spillovers may not impact longevity on the basis of:

*Value and perceived value of knowledge.* Whilst the transfer of knowledge that meets the VRIN criteria (Barney, 1991) may potentially erode a firm's competitive advantage, the reality is that such knowledge is likely to be redundant if it is not exploited. As Grant (1996) states, tacit knowledge can only be appropriated through application, and explicit knowledge can only confer a competitive advantage if protected by published property rights. If a partner firm does not recognize the value of the knowledge or have the capacity to internalize the knowledge, there is little chance it will be effectively utilized, thence providing no incentive for the focal firm to leave the relationship, as its competitive advantage is still in-tact. Similarly, if a partner recognizes that valuable knowledge has been transferred; inbound spill over rents (Lavie, 2006) may still not be secured if the knowledge is in no way central to the development of a competitive position of the firm. This may occur if the partner firm has insufficient complementary assets to capitalize on the valuable knowledge transferred (Teece, 1998), and is unlikely to be able to gain access to them easily.

Proposition 1: *Spillovers may not impact longevity if the partner firm doesn't recognise the value of the knowledge, or the knowledge is in no way central to the development of a competitive position of the firm.*

*Absorptive capacity of partner firm.* Absorptive capacity is defined as a firm's 'ability to value, assimilate and apply new knowledge' (Cohen & Levinthal, 1990), a simpler conceptualisation describes the phenomenon as the firms' ability to 'learn and solve problems' (Kim, 1998). Hamel (1991), akin to many other researchers (Mody, 1993), adopts a learning perspective of alliances, suggesting that it is a firms' prerogative to learn at a faster rate than its alliance partner, ideally whilst preventing its own core competencies from being acquired in the process. We purport that the focal firm will be more inclined to maintain an alliance, despite knowledge spilling over to a partner firm, if it *perceived* that the latter is unable to apply the new knowledge, due to possessing limited absorptive capacity. Lavie (2006) states that the greater the focal firms' absorptive capacity in relation to the partner firm, the higher their relative relational rents will be. Concordantly, in this case if the focal firm is otherwise benefitting from the alliance, their outbound knowledge spillovers will not warrant relationship termination or the implementation of protective measures which may weaken the relationship.

Proposition 2: *Spillovers may not impact longevity where the recipient firm has insufficient absorptive capacity to effectively use the leaked knowledge.*

*Accessing other alliance members.* Firms rarely have single alliances and in numerous industries there are very extensive alliances to the point that strategic networks form where there are dense sets of alliances between certain members of industries (Nohria and Garcia-Pont, 1991). Firms that are centrally located in a network (as opposed to those on the periphery) are well positioned to enable (or limit) access to other players within the industry network. Ending a relationship with a central player may resolve the problem of knowledge leakage and spillovers, but it may also limit the firm's ability to build relationships with other firms in the future. Building upon the notion of social control, if a firm ends a relationship for reasons that were not seen as well justified, then the aggrieved 'partner would inform others in the industry, and no one would consider that company for further partnerships' (Boyd, 2004: 134). The potential for a firm to engage with other industry members within a network with whom they are not formally aligned with will depend upon such things as the recommendations of others in the network and their reputation as a trustworthy firm. The resulting cross-recommendations and the potential to be ostracized by the network creates a situation of lock-in whereby once firms are initiated into the strategic network they must continue to cooperate given the negative impact should they start ending relationships with key players. Thus, knowledge spillovers may simply be a price to pay to remaining in a larger network that brings with it other advantages.

Proposition 3: *Knowledge spillovers may not impact alliance longevity where the benefits to remaining in the relationship through enabling alliances with other firms outweighs to disadvantages associated with the knowledge spillovers.*

Leakages/spillovers may impact longevity when:

*Spillover of critical knowledge.* When the knowledge spilled over to a partner represents core capabilities of the focal firm, defined here as ‘the knowledge set that distinguishes and provides competitive advantage’ (Leonard Barton, 1992, p.111), it is predicted that the latter will attempt to implement strict controls in an attempt to prevent more knowledge from spilling out (Sammorra & Biggiero, 2008). These typically appear in the form of partitioning of tasks and the physical separation of experts (Sammorra & Biggiero, 2008), or more formal IP protection mechanisms (Leiponen and Byma, 2009). Huang, Rice & Galvin (2012) assert that these protective measures, whilst warranted, can undermine the open approach, restricting the flow of knowledge between partners. If a partner recognizes this protective behaviour, they may respond in kind and further stem the knowledge flows. Such behaviour can easily result in a strategic stalemate where the transaction costs involved in maintaining the relationship, especially if stringent protective measures are being implemented (Kale, Sign & Perlmutter, 2000), are not worth the limited knowledge gains (Khanna et al., 1998). Alternatively, it stands to reason that managers may decide to end the relationship altogether, as the threat of losing further core assets is too great or sufficient valuable partner knowledge isn’t being gained in return.

Proposition 4: *Spillovers may impact longevity when knowledge is critical to the focal firm.*

*Knowledge spillover and leakages destroy trust between partners.* The transfer of information and knowledge through interorganisational relationships tends to assume the presence of trust (Welter, 2012). Trust is important as it underpins effective interorganizational relationships (Anderson, et al., 2007; Jack, et al., 2004; Sanzo et al., 2011). Trust would be expected to emerge over time when firms behave in ways perceived as “fair” by the exchange partner, and do not take excessive advantage of an exchange partner even when the opportunity is available (Dyer and Chu, 2000). Thus taking advantage of knowledge spillovers or leakages is likely to eliminate trust over time and given its central role of interorganizational relationships, this may lead to a premature end to the interorganizational relationship.

Proposition 5: *Spillovers may impact alliance longevity by degrading the necessary levels of trust for effective knowledge transfer.*

## **Further work**

This research represents the initial phase of a (full-time) PhD project. It is expected that by the time of the Conference, a full literature review will have been undertaken and the initial pilot study will have been undertaken. It is anticipated that further clarity around the types of firms, the nature of the relationships and the nature of the knowledge investigated will provide significantly more precision regarding the impact that knowledge leakages and spillovers are likely to have upon firms utilizing an open innovation model.

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