Effective Learning within Entrepreneurial Networks –
The Role of External Coordination and Internal Communication

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There is a growing interest in entrepreneurial learning – the acquisition and integration of knowledge in the context of start-up companies. Knowledge is one of the most crucial factors for achieving long-term competitive advantage (Grant 1996). Although the importance of learning in entrepreneurship research is broadly recognised (Ravasi/Turati 2005) empirical studies are still rare (e.g. Zahra et al. 2000, Yli-Renko et al. 2001).

Academic spin-offs are companies that are founded by employees of public research institutions in order to commercialise technology developed within the institution (Steffensen et al. 1999). As a potential catalyst of a region's economic development, academic spin-offs have been subject of increased interest over the past years. Positive economic effects however presume that spin-offs innovate successfully i.e. turn their core technology into marketable products. This can be quite challenging in the case of spin-offs. Very often technology used is far from commercially applicable and requires further development. At the same time academic spin-offs lack resources and experience in many areas, such as marketing, financial and technological know-how (Bollinger et al. 1985, Brüderl/Schüssler 1990).

A company's network can provide valuable information on technology and markets. External partners are an attractive means to better exploit market potentials by combining resources than by going alone. To maximise learning a spin-off therefore strongly depends on its network partners and the way those relationships are managed (Kale et al. 2000). However, partnerships per se do not automatically enhance performance. Knowledge transfer within networks is fraught with ambiguity and may bear considerable risks, such as outlearning or unintended spill-overs of know-how (Hamel et al. 1989, Hamel 1991). While it is undisputable that young companies must learn at an early stage and that this learning process requires partners as knowledge sources, to interweave with business partners is not sufficient to exploit network knowledge. Thus the question arises, which organizational capabilities improve external knowledge acquisition and thereby foster value creation and growth.

In this paper we therefore investigate the impact of a spin-off's learning network on its performance and how this relationship is influenced by organizational capabilities that foster the exchange of knowledge between partners (external coordination) and the dissemination of knowledge within the organization (internal communication). Learning networks are defined as the intensity of cooperation with external partners in order to gain and develop knowledge. Uzzi (1997) found that the closer, more often and intense cooperation with network partners the higher both quantity and quality of information exchanged. Accordingly, a positive effect of the spin-off's embeddedness (Granovetter 1985) in a learning network on its performance in terms of sales growth and sales per employee is expected. While sales growth captures the spin-off's ability to exploit market opportunities and get customer acceptance, sales per employee is an indicator of the efficiency of its business activities. We investigate how this effect is influenced by a company's external coordination and internal communication capabilities.

Coordination capabilities comprise boundary spanning activities (Tushman 1977) that have been highlighted in many studies (e.g. Walter et al. 2006). Well coordinated relationships facilitate information flows from one partner to the other and prevent misunderstandings (Ritter 1998). Further, those partnerships are more efficient, i.e. fewer resources are wasted, and provide the basis

for exchanging know-how. Accordingly, we argue that external coordination leverages the positive relationship of a spin-off's learning network on its performance.

While coordination is necessary to access knowledge from external partners in an effective way, this knowledge needs to be disseminated within the spin-off to improve business performance. Internal communication capabilities reflect the quality of knowledge exchange and diffusion in the organization. Information can be captured both by formal reports and informal information-sharing sessions between organization members. Joint reflection and analysis of new knowledge within the organization is further necessary to allow effective use of what has been learnt (Zahra et al. 2000). Thus, implementation of know-how in a company's business activities can only take place with adequate internal communication (Ritter 1998, Kale/Singh 1999). We therefore argue that internal communication positively moderates the impact of a spin-off's learning network on its performance.

We test our hypotheses on a sample of over 150 academic spin-offs in Germany using multivariate regression. Our analysis shows two major results. First, there is a positive direct effect of learning networks on sales per employee. This effect is significantly increased by the spin-off's external coordination capability. Second, there is a strong interaction effect of internal communication and learning network on sales growth. These results show that learning networks are indeed a useful means to enhance performance with respect to the company's efficiency. However, the productivity advantages gained from external knowledge acquisition are diminished when exchange processes between partners are not consciously coordinated. Moreover, we found that internal communication is crucial for transforming the outcomes of a learning network into spin-off growth.

The study's results indicate that networking in order to get knowledge is not sufficient if it is not accompanied by well coordinated external relationships and processes for knowledge integration within the spin-off. Entrepreneurs must ensure that coordination mechanisms are in place to fully transfer external knowledge and exploit productivity advantages. At the same time information needs to be disseminated across the organization. Positive effects will only be yielded if the know-how gained from external partners is also used and applied into to the spin-off business activities. Comprehensive and open communication between the different functions therefore is indispensable in order to transform knowledge into competitive advantage.

Our study sheds light on the formerly rather neglected area of learning into entrepreneurship research. We found that external coordination and internal communication capabilities are important for successful knowledge exchange and that these capabilities significantly impact a firm's performance. Thus, the findings improved our understanding why some spin-offs are more successful than others. From a management perspective our results indicate that academic founders need to consciously coordinate their external relationships in order to realise time and cost advantages. Furthermore, they should sensitize their employees to openly share knowledge with co-workers and develop favourable organizational structures for knowledge exchange.
Future studies should investigate if there is an influence of further organizational capabilities on the learning network – performance relationship in order to complete our understanding of successful new ventures.

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