

Annelie Tallig

Department of Entrepreneurship and
Relationship Management
University of Southern Denmark
E-mail: ate@sam.sdu.dk

Syddansk Universitet
Universitetsparken 1
6000 Kolding

Annelie Tallig is a researcher in the fields of intellectual capital, knowledge management and high-technology entrepreneurship. She is affiliated with the research groups 'Accounting and Economics' and 'Entrepreneurship and Organization' at the Department of Entrepreneurship and Relationship of the University of Southern Denmark. She obtained an M.A. in Accounting and Controlling in 2010 from the Faculty of Business Management at the University of Applied Sciences Kiel, Germany. Before her PhD, Annelie worked as research assistant at the R&D Centre University of Applied Sciences Kiel GmbH in a cross-border project (Germany/Denmark) funded by the European Union investigating the managing and reporting of intellectual capital in small and medium-sized enterprises. This inspired her to continue this research into her Ph.D.

Department of Entrepreneurship and Relationship Management

The Department of Entrepreneurship and Relationship Management is located at the University of Southern Denmark, campus Kolding, and employs approximately 85 people. This location is central to the growth centres within the Triangle Region and offers a unique opportunity to close cooperation with the companies and public authorities in the region in respect to research and educational projects.

For several years the research of the department has been based on learning networks with companies and trade promotion institutions. In addition to this, the department has a long tradition of problembased cooperation across traditional business research areas and very often by means of external funding. The research of the department concentrates on two key areas: entrepreneurship and relationship management and originates from traditional research areas such as marketing, applied economics, accounting, operation management and organization.

 sdu.dk/ier



PHD DISSERTATION OF

ANNELIE TALLIG

AT THE DEPARTMENT OF
ENTREPRENEURSHIP
AND RELATIONSHIP MANAGEMENT

**INTELLECTUAL CAPITAL AND
KNOWLEDGE PROCESSES:
IMPACT ON HIGH-TECHNOLOGY START-
UPS' PERFORMANCE**

10 NOVEMBER 2015



Intellectual Capital and Knowledge Processes: Impact on High-Technology Start-Ups' Performance

High-technology start-ups (HTSUs) are regarded as essential drivers for economic wealth. Therefore, their survival is argued to be vitally important.

In order to increase performance, HTSUs need to have and manage the 'right set' of intellectual capital (IC). Therefore, the thesis differs from the usual approach to IC research, because it complements its predominantly static by a dynamic research perspective through considering knowledge processes (KPs). Furthermore, the thesis differs from previous work because it moves beyond thinking of performance as something merely economic. Rather, it refers to non-economic measures that represent multiple milestones that HTSUs aim at achieving. The research question is: *How do intellectual capital and knowledge processes impact the performance of high-technology start-ups?*

In addressing IC and KPs, the thesis draws on IC theory and the knowledge-based view (KBV). Additionally the body of start-up literature is considered in respect of the performance of HTSUs.

Article 1 systematically synthesises the empirical literature using the KBV. It includes the development of two categorisation schemes for knowledge characteristics and KPs, shows that empirical examination of knowledge, in terms of firm performance, is scarce, and virtually non-existent with regard to sustainable performance. Furthermore, the KBV is at a maturing theoretical level of metaphor and differentiation. Scholars need to agree upon aspects of the KBV in order to be able to better prove its grand claim that knowledge is the most strategically important resource for firms in achieving competitive advantage.

Article 2 presents a conceptual model comprising four IC dimensions (human, structural, relational and technological capital), five KPs (transfer, creation, utilisation, acquisition and protection), and four economic as well as nine non-economic performance measures. This sets the scene for a better understanding of how IC and KPs influence the performance of HTSUs.

Article 3 comprises a multiple case study and shows that unsuccessful HTSUs differ from those that are successful, both in their IC and KPs. Unsuccessful HTSUs are characterised by the loss of key personnel, lack of management

competences (human capital) and clear organisational planning (structural capital), and demonstrate insufficient market observation (relational capital). These factors all impact performance in a variety of ways. Additionally, unsuccessful HTSUs manage IC less frequently. As KPs are predominantly associated with relational capital, knowledge acquisition plays a particularly important role, and unsuccessful HTSUs seem to have fewer beneficial relationships outside of the company. KPs predominantly have a positive impact on prototype and product development.

Future research might benefit from considering insights such as those provided from within the entrepreneurship literature, because research on HTSUs is distributed among disciplines, and not only addressed by the IC literature. Furthermore, because of the knowledge gained from applying the conceptual model, the model's further development is possible.

Besides, the interaction of IC and KPs could be investigated at a deeper level. This thesis shows how IC dimensions influence each other, and that there seems to be a relation between knowledge acquisition and utilisation. There is also an indication that KPs increase technological capital.

Additionally, future research might focus on whether, and how, the importance of IC or KPs changes during the development of a HTSU. This thesis provides partial insights, e.g. how structural capital or knowledge creation can lead to the attraction of big customers later in the start-up phase. A further suggestion is to contrast the findings of this thesis that concern product-oriented and independent with service-oriented or less independent HTSUs.

The thesis presents evidence for the importance of researching the management of IC. The most vital suggestion is that investigating KPs requires HTSUs to be followed during the period of their development, and this calls for a prospective longitudinal study. Researchers need to become a 'live' part of the HTSUs unique stories in order to see their KPs from within, and thereby gain knowledge about how performance evolves.

The implication for managers of HTSUs is the raising of awareness about what they do and how this contributes to the company's development. This consciously addresses the management of IC from a broader perspective, because the interviews led to the impression that managers are not entirely aware of how the management of their IC can impact performance. Venture capital institutions can strengthen this issue; providing dormant equity holdings and increasing awareness of managing IC can constitute a strong combination.

Annelie Tallig

