

# Knowledge acquisition strategies from multiple stakeholders

Marieke Hendriks (ID: 871214324110)  
Management Studies (MST), Wageningen University and Research Centre  
[Marieke.hendriks@wur.nl](mailto:Marieke.hendriks@wur.nl)  
[Mhhendriks87@gmail.com](mailto:Mhhendriks87@gmail.com)

**Supervisor:**

Christos Kolympiris  
Management Studies (MST), Wageningen University and Research Centre  
Hollandseweg 1, 6706 KN, Wageningen (Building 201), De Leeuwenborch, Room 5059,  
Netherlands  
[christos.kolympiris@wur.nl](mailto:christos.kolympiris@wur.nl)

**Scientific Advisor:**

Domenico Dentoni  
Management Studies (MST), Wageningen University and Research Centre  
Hollandseweg 1, 6706 KN, Wageningen (Building 201), De Leeuwenborch, Room 5053,  
Netherlands  
[Domenico.dentoni@wur.nl](mailto:Domenico.dentoni@wur.nl)

**Abstract:**

To fuel their innovative efforts, companies are in a constant race to source knowledge to respond to the latest developments in their industry, support strategic goals and maintain sustained success. Companies acquire knowledge from external knowledge sources by interacting with multiple stakeholders. Various scholars already did some research related to this topic, however not much have been written on knowledge sources, degree of formality and stakeholder characteristics and resources. Therefore, in this study, we explore how, when and why companies acquire knowledge from different stakeholders and which impact the stakeholder characteristics have on the knowledge acquisition process. Following an inductive case study based “grounded theory” approach, we analysed the evidence collected from small knowledge intensive innovative companies in the high tech sector.

The analysis leads to the following results. First, we found that the sampled companies acquire external knowledge by using formal and informal knowledge acquisition strategies, but in general with a higher degree of formality. Second, the stakeholder characteristics have some impact on the knowledge acquisition strategies. We found that power and legitimacy play a role within the knowledge acquisition process, but that urgency doesn’t emerge. The results of this study are useful for start-up companies that are looking for a way of organizing and strategizing their knowledge acquisition from outside the company boundaries. Given the explanatory nature of the grounded theory approach we used, we recognize that the propositions in this research should be tested in further research to provide strong evidence.

*Key words: External knowledge, formal knowledge acquisition, informal knowledge acquisition, stakeholders, stakeholder characteristics, small sized enterprises, grounded theory*

## Introduction

Knowledge resources have become critical for companies in today's highly dynamic business environment (Collins *et al.*, 2006). In today's highly dynamic and increasingly knowledge-based business environment, companies are in a constant race to source knowledge to respond to the latest developments in their industry, support strategic goals and maintain sustained success. This quest for knowledge and subsequent innovation tend to be technically challenging because it relies heavily on a set of demanding resources potent among which is knowledge. In this perspective, knowledge is the most strategically important of the company's resources (Grant, 1996) and heterogeneous knowledge bases and capabilities among companies are the main determinants of sustained competitive advantage and superior corporate performance (Deeds *et al.*, 1999). Knowledge in addition to the required skills gives a company competitive advantage because it is through this set of knowledge and skills that a company is able to innovate new products, processes, services, or improve existing ones more efficiently and effectively (Nonaka *et al.*, 2000).

The rising importance of knowledge has increased the importance of identifying activities and sources that enhance the creation and acquisition of knowledge. Companies can obtain knowledge from their own internal knowledge sources or acquire knowledge from external knowledge sources. Internally, companies acquire knowledge through in-house research and development (R&D) activities and by learning from improvements in processes. These R&D activities are important because they represent the basic core of scientific and technological progress (Verma *et al.*, 2002; Zhong *et al.*, 2011). Externally, companies acquire external knowledge from sources outside their company boundaries. The acquisition of knowledge from external sources expands a company's knowledge base (Nonaka *et al.*, 1995), provides access to new ideas (Bierly *et al.*, 2009) and enhance the recognition of opportunities and treats (López-Sáez *et al.*, 2010). For many companies, internal R&D has long been the main source for new technologies and knowledge. However, because of the growing complexity and uncertainty of technological development and its increasing costs, this approach has evolved into a more diversified pattern of sourcing where

external knowledge is playing an increasingly important role (Jolly *et al.*, 1996). In this paper we focus on the acquisition of external knowledge and the stakeholder from who the knowledge is acquired.

Since it is recognized that external knowledge acquisition is an important aspect, it has turned into an important aspect within the knowledge management literature. Recent theoretical and empirical contributions have highlighted the establishing of external linkages to improve innovation potential of companies. Theoretical papers have argued that external actors represent important sources for innovation and thus a positive relation between the extent of reliance of external linkages and company R&D performance should exist (Cassiman *et al.*, 2006; Chesbrough, 2003; Tödtling *et al.*, 2009). Empirical research has looked at the nature of linkages distinguishing between the role played by specific actors such as universities (Cohen *et al.*, 2002) and suppliers and customers (Von Hippel, 1988) as source of knowledge or as partners in formal linkages such as strategic alliances, contractual agreements and R&D joint ventures (Hagedoorn, 2002) as well as through informal networks of personal contacts. However, the analysis of the role of external knowledge acquisition strategies in the innovation process goes beyond the acknowledgement of their impact on company performance and entails several aspects not all equally well explored in the literature. A relatively neglected aspect in the literature is the issue of company's selection of which stakeholder to interact with and which with both formally and informally. Within this perspective, little is known about the impact of stakeholder characteristics and resources in a certain combination to carry out a specific external knowledge acquisition strategy.

With the purpose of start filling this gap, in this study we will pose the broad question how, when and why companies acquire knowledge from different stakeholders. The first aspect within this study relates to the role the different external knowledge acquisition strategies play and with which degree of formality the knowledge is acquired. Based on the principles of the stakeholder theory (Mitchell *et al.*, 1997), the second aspect which will be examined concerns the impact of the multiple stakeholders classified by their characteristics and resources on the knowledge acquisition strategies. To explore how, when and why the knowledge acquisition takes place and the specific aspects

mentioned, we conduct an inductive case study based “grounded theory” approach (Eisenhardt, 1989; Glaser *et al.*, 1967). Consistent with this method of inquiry, initially we broadly assess the actual stated broad questions after which we will search for further evidence to identify knowledge source, degree of formality and the impact of the stakeholder characteristics and resources. With this, we will bring a contribution to the existing literature on external knowledge acquisition strategies.

We proceed with the rest of the paper as follows. The next section discusses the methods, which is a presentation of the qualitative research design employed. The third section presents the key empirical background, while the following section presents the theoretical background needed to as context for the findings. The findings section follows, followed by the discussion and then we conclude.

## **Method**

The research is conducted following a “grounded theory” approach, which emphasizes inductive research focused on theory development as opposed to deductive theory testing (Eisenhardt, 1989). This method involves an interactive process with interaction between data analysis and data collection (Corbin *et al.*, 2008; Glaser *et al.*, 1967), which means a constant interchange between the theory and the data collected. The first round of data collection is on purpose to broad sense the contours of the situation and motivations for knowledge acquisition and within the second round of data collections and analysis there is a focus of analysis on the building blocks to build the new theory on (Glaser *et al.*, 1967). This approach is chosen as a result of a lack of theoretical knowledge with regard to the role of external knowledge acquisition strategies and the impact of the multiple stakeholders classified by their characteristics and resources, suggesting that a more exploratory theory building approach is appropriate (Corbin *et al.*, 1990; Eisenhardt, 1989). Furthermore, grounded theory is considered an appropriate approach to assess complex issues between organizations when a restricted number of data observations is available (Westgren *et al.*,

1999). In order to facilitate and stimulate the theory building, we entered the field without prior hypotheses, but with a good background knowledge of the literature. Initial hypotheses were set because any construct was helpful, but these were not prior hypotheses for hypotheses testing. The broad hypotheses helped to clarify the research focus, but the real research focus emerged after the data collection has begun and thus shifted during the research.

Following the grounded theory approach, data was collected by using two data collection rounds. We collected both primary and secondary data. Within the first round primary data included interviews with experts to understand the most important reasons for external knowledge acquisition and how stakeholders play a role in the knowledge acquisition process (appendix I). We conducted three expert interviews and got a better idea how to select the further sample. Secondary data were collected from the experts company's website and from the expert's linked-in page to collect background information to be as prepared as possible. Within the second round primary data included in-depth semi-structured interviews with the entrepreneurs, the company directors, to collect the data for the analysis and selection of themes to channel the study. We conducted five interviews with the entrepreneurs from five different companies. We interviewed some of the respondents twice to gain further detail. Secondary data was collected from the company's websites to get a better understanding of each company and the linkages they have with other people and organizations.

The company interviews consisted of the following: the interviews started with a short introduction of the interviewer, an explanation of the goal of the research and mentioned was that the interview was recorded for note taking. We continued with the questions which would provide insights in the process of knowledge acquisition of a specific company from multiple stakeholders. The goal was to understand which activities were used by a single company to acquire knowledge and from which stakeholders the knowledge was acquired. Questions were asked about a company's knowledge acquisition activities, the kind of knowledge that is acquired by a single company, the stakeholders of which a company acquires its knowledge from and about the accessibility of the

knowledge sources. Interview questions were derived from literature on knowledge management, knowledge acquisition strategies and stakeholder theory. An interview protocol was developed to safeguard consistent data gathering, but questions were left as open as possible in order to collect in-depth information (appendix II). The average time spend at each interview was 60 minutes. All interviews were taped and transcribed.

Selection of cases is an important aspect of building theory from case studies. The method of theoretical sampling is used to select cases which are likely to replicate or extend the emerging theory (Eisenhardt, 1989). As a dynamic capability often presents commonalities among companies within the same industry, we had to address some sample selection criteria. The first selection criteria was the focus on knowledge intensive companies. The category of knowledge intensive companies refers to those where most work is said to be of an intellectual nature and where well educated, qualified employees form the major part of the workforce (Alvesson, 2000; Swart *et al.*, 2003). Furthermore the company claims to produce qualified products (Alvesson, 2000). Knowledge creation and acquiring knowledge is critical to the performance of the knowledge intensive companies, which makes us including this companies in the sample. Second, we focus on innovative companies, as we expect that knowledge at all times plays a crucial role for these companies. Third, we focused on small companies with a total number of employees less than five. The decision to involve small companies in the sample is because we expected that small companies have to seek to source for external knowledge since they can not only rely on their internal research. This is based on studies which argued that small companies lack the necessary resources and expertise and may need to rely more heavily on external sources (Roy *et al.*, 2008). Where it is possible for larger companies to rely on their internal research it is often not likely or too expensive for smaller companies. The incentive to acquire knowledge from external sources is therefore higher by smaller companies since they are resources constrained, and cannot spend too much efforts to create knowledge, they must look outside the organization for it. Fourth, we limited our sample to companies in the high tech sector. We define "high-tech" as the "the most advanced technology currently available" and identify

high tech as all Standard Industrial Classification manufacturing and service producing industries (Chapple *et al.*, 2004). The high tech sector is interesting because often small high tech companies begin life as either a joint venture with a larger organization, or as a cooperate spin off through a licensing agreement. This suggest that these companies are dependent on others to acquire the complementary knowledge. Besides, high-tech companies often produce products through combining many tricks which ensures that they need many specific pieces of knowledge from multiple stakeholders. Fifth, we limited our sample to companies that claim to produce a “green” product. We liked to go for green because, according to the stakeholder theory, these companies who deliver a green product often interact differently with stakeholders. For example, some companies deal with environmental sustainability by themselves, others try to learn from the university how to implement green technologies, others deal with consortium to discuss and others start dealing with NGO’s for green certifications. Furthermore, we selected high tech companies who deliver a green product because there is not much research done before related to these kind of companies and external knowledge acquisition strategies from multiple stakeholders. To conclude, we included both start-up companies as well as established companies in our sample, controlling that there is still knowledge acquisition. Possible differences within the results were controlled by years of living.

Cases were analysed through within-case and cross-case analysis (Eisenhardt, 1989). Within-case analysis involved analysing the detailed case study results per case. The transcripts of the interviews and the secondary data documents were assigned to Atlas.ti 7, a program for computer-assistant qualitative data analysis. The transcripts were scored and coded within Atlas.ti 7 using in vivo coding. For each individual case a table was provided which provided an overview of the stakeholders from which the company acquired its knowledge from. Besides, the table showed the stakeholder characteristics and which knowledge acquisition strategies where used to acquire the knowledge. Furthermore the table gave an overview of other important stakeholders emerged from the interview which were strongly related to the company’s knowledge acquisition process, but from

who no knowledge was acquired. The indicators in the table were discussed and explained in an extensive analysis. After analysing the cases separately we coupled the within-case analyses and search for cross-case patterns. We then worked cooperatively over a period of three months on the report to further understand the results. During this period we have changed the research focus. In the first instance we were looking at the relation between intentional and unintentional external knowledge acquisition strategies and the impact multiple stakeholders have on these strategies. But the central idea of the study to compare theory and iterating toward a theory that closely fits the data could not be reached within this focus. Therefore, we changed the research focus from intentional and unintentional external knowledge acquisition strategies to formal and informal external knowledge acquisition strategies, from which we got more support in the literature to substantiate the findings from the cases. Based upon the grounded evidence collected from these case studies and supporting literature, we developed a set of propositions that can be quantitatively tested by future research.

## **Empirical background**

### **Environmental conditions**

All the sampled companies are originated and located in the Netherlands. The Netherlands is a prosperous country that economically competes with the world leaders and has long been acknowledged for its conducive business environment. The Dutch economy is characterized by a knowledge economy, in which knowledge is invested in through research and education. Dutch government policy is strongly oriented towards achieving a competitive knowledge economy and making the Netherlands one of the leading European countries with regard to knowledge (StatisticsNetherlands, 2011). Therefore, the government has deployed a new business policy. With this policy, investments are targeted to the top sectors of the Netherlands; High Tech, Energy, Chemistry, Life Sciences, Agro-food, Horticulture, Water, Logistics, and Creative Industry. The starting point of the top sector policy is an intensified collaboration in the fields of the coherent domains



knowledge, innovation and education and is based on an intensive collaboration between entrepreneurs, research and the government (FOM, 2012). The top sector policy also affects the business environment of the sampled companies. The top sector policy stimulates external knowledge acquisition of the sampled companies and therefore influences the knowledge acquisition strategies of the sampled companies in this research. Furthermore, the Dutch government has the ambition to encourage research and development, improve cooperate finance for SMEs and innovative entrepreneurship and come up with fewer and simpler rules (BrainFlow, 2012). This policy is currently put in motion and affects the current business environment of the sampled companies.

Moreover, all the sampled companies are located in or close to Wageningen, with the Wageningen University in close proximity who is influencing all the surroundings. The research domain of the Wageningen University is related to the products and/or processes produced by the sampled companies. This externality contribute to all the company's competitiveness and innovative performance through the local presence of specialized workers, intellectual capital and other sources of knowledge concerning market conditions and technological developments. Besides all the company directors have direct links to with the Wageningen University from their past experiences. We found that this strongly influences the knowledge acquisition strategies of the sampled companies.

### **Company descriptions**

Five companies are selected for this research. The companies are indicated as company 1, 2, 3, 4 and 5. Table 1 gives an overview of the characteristics of the companies, which is followed by a descriptive impression of the companies.

**Table 1: Company description**

<b>Company</b>	<b>Spin off / entrepreneurial start-up</b>	<b>Founded</b>	<b>Number of employees</b>	<b>Technology/ product patented</b>
<b>1</b>	Spin off	2007	3	Yes
<b>2</b>	Spin off	2009	2	Yes
<b>3</b>	Spin off	2010	2	Yes
<b>4</b>	Entrepreneurial	2009	7	No

	start-up			
5	Entrepreneurial start-up	2002	4	No

Company 1 provides a technology that produces natural fibre reinforced plastic granules, a unique innovative product. The company is a spin-off from the Wageningen University. Knowledge is crucial within the company because their business is caused by existing knowledge and new created knowledge. The company claims to provide smart and green solutions.

Company 2 develops and produces products in which living plants generate electricity. The company is a spin-off from the sub-department of Environmental Technology of Wageningen University. The technology is patented in 2007 and is now held by the company. The technology is green since the technology is based on natural processes.

Company 3 develops a platform technology to produce sustainable biobased building blocks for the chemical industry. The company is a spin off from the Wageningen University. The Wageningen University patented the technology, but the patent is now held by the company. The company claims to provide a sustainable and profitable solution.

Company 4 is an innovative cleantech company. The company continues to work toward sustainable innovation solutions. The company was founded in 2009, but without any relation with the Wageningen University. The company located in Wageningen because they found an incubator who delivers business support. Besides, Wageningen is the city of life science and agro-food which was fits well to the company's business.

Company 5 is an company which focuses on R&D related to photosynthesis processes and light responses in plants. The company is located in Wageningen since the entrepreneurs had strong ties with the city and they business is strongly related with the research domain of the Wageningen University. Knowledge is essential within the company.

### **Company growth stages**

The five companies in this research are operating in different stages of a company's development. From the interviews we found that the stage of development, the growth stage, in

which a company operates has to a certain extent influence on the kind of knowledge acquisition strategy used and influences which stakeholders involved in the knowledge acquisition process. This is derived from the different kinds of knowledge needed by the high tech companies in the different growth stages. Therefore we adjusted, based on prominent literature of small business growth and the data from the interviews, the following five growth stages: creation, existence, survival, expand, maturity.

In the first stage (creation) of a company's development there is an idea and the company needs to explore the feasibility of building a technology product based on that idea. In the second stage (existence) it is proved that the idea is feasible and there is a credible business model to deliver the product to an attractive market. The companies have to stabilize either production or product quality. By reaching the third stage (survival), the business has demonstrated that it is a workable business entity. The companies are producing their products and sell them to their customers. The challenge is to shift from mere existence to the relationship between revenues and expenses and the major goal is to settle and survive. In the fourth stage (expand) the company is still successful and the decision facing owners at this stage is whether to expand the company or just focus on the current business. Companies are willing to expand their business start searching for opportunities to expand. The fifth stage (maturity) is characterized by full market potential and a profitable business. The company is established and is focused on the daily operations.

The companies 2, 3 and 4 are currently operating in the second growth stage. Company 1 is currently operating in the third growth stage and company 5 is currently operating in the fifth growth stage.

## **Theoretical background**

This section highlights the theory which is essential for the purpose of this study. The theory in this section refers to the research-based view and knowledge-based view of the firm, external knowledge acquisition strategies and the stakeholder theory and characteristics.

## **Resource-based view and knowledge based view of the firm**

One of the contributions to the theory of the firm to survive in a changing business environment has been the resource-based view. The resource-based view (Barney, 1991) describes that the competitive advantage and superior performance of a company is explained by the distinctiveness of its capabilities (Johnson *et al.*, 2008). The resource-based view suggest that the company's capabilities which are valuable, rare and inimitable will determine long term competitive advantage, including organizational processes and routines, and the information and knowledge it controls that can be used by a company to choose and implement strategies (Barney, 1991; Deeds *et al.*, 1999). By highlighting the importance of the company's specific capabilities, the resource-based view has focused significant attention on intangible resources which play a critical role in competitive advantage (Deeds *et al.*, 1999). This focus on intangible resources has led to an extension of the resource-based view, the knowledge based view of the firm. In this perspective, knowledge is the most strategically important of the company's resources (Grant, 1996) and heterogeneous knowledge bases and capabilities among companies are the main determinants of sustained competitive advantage and superior corporate performance (Deeds *et al.*, 1999). Knowledge and skills give a company competitive advantage because it is through this set of knowledge and skills that a company is able to be innovative (Nonaka *et al.*, 2000). Having the right knowledge provides competitive advantages, even if the company's underlying tangible resources are not unique (Zack *et al.*, 2010). The knowledge-based view provides a new view through which we may understand the primary rationale for a company's existence: "the essence of a company is its ability to create, transfer, acquire, assemble, integrate and exploit knowledge assets"(Inkpen, 2000; Meier, 2011). In such an atmosphere in which knowledge is of that importance, we would like to investigate how small knowledge intensive companies in the high tech sector who deliver a green product, deal with external knowledge acquisition strategies to acquire the knowledge to be innovative and to deliver a superior performance to kept the competitors behind.

## **External knowledge acquisition strategies**

In a knowledge economy, a company's ability to acquire knowledge from its environment is an important determinant of company growth, survival, and economic performance (Li *et al.*, 2010). As mentioned, the resource-based view advances that a company's unique resources and capabilities are key drivers of superior performance and the knowledge-based view expands this view by arguing that knowledge is the most important resource. An extension of this views suggests that companies may generate great returns from resources and capabilities that be present in their relations with other people and organizations (Inkpen, 2000). A company's relationship and interactions with its external environment plays an important role in bringing valuable resources into the company. These relationships and interactions allow a company to keep up with changes in their business environment and it gains access to valuable assets. The ability to search for knowledge outside the company boundaries is important as well for the direct benefits of discovering as well for the productivity of the process itself (Henderson *et al.*, 1994). Knowledge acquisition from external sources has been recognized as one of the most important activities to achieve a company's strategic renewal (López-Sáez *et al.*, 2010).

Applying this approach to our context, an company's external knowledge acquisition from multiple stakeholders contains multiple potential sources of knowledge and multiple potential activities to acquire the knowledge. Knowledge acquisition is about how the knowledge is collected (Hoe *et al.*, 2010). Companies seek to source knowledge from multiple sources like knowledge institutions, strategic business partners, customer, suppliers, public agencies and other collaborators. Amongst the various channels available for acquiring knowledge, the commercialisation of academic knowledge from universities and knowledge institutions, has attracted major attention within the literature as an important source of knowledge for innovative companies (Perkmann *et al.*, 2007). Furthermore, suppliers and customers are seen as the leading sources of new information, because the suppliers serve as a critical source for coordinating market operations (Dyer *et al.*, 2006) and customers provide important product innovation knowledge. The knowledge is acquired by

companies using various activities. Companies form research partnerships, strategic alliances and alternative network arrangements with other people and organizations. Companies also acquire knowledge on conferences or acquire knowledge through their network. Other activities include casual conversations with competitors at trade shows and conducting regular customer visits (Hoe *et al.*, 2010).

The process to acquire knowledge, including the sources as well as the activities, tend to employ two main strategies: formal and informal strategies to acquire knowledge. Formal knowledge acquisition strategies are a planned, organized and or systematic way of acquiring knowledge (Hoe *et al.*, 2010). Activities to acquiring knowledge using the formal knowledge acquisition strategies include activities such as collaborative research, contract research and consulting (Abreu *et al.*, 2009; D'Este *et al.*, 2007; Perkmann *et al.*, 2007), but also organized formal meetings and systematic environmental scanning activities to monitor market activities (Hoe *et al.*, 2010). Informal knowledge acquisition strategies are the more spontaneous and ad hoc way of acquiring knowledge. Informal knowledge acquisition activities are activities like providing ad hoc advice and acquiring knowledge from network contacts (Abreu *et al.*, 2009; Perkmann *et al.*, 2007) as well as talking to people in the industry and reading books and articles (Chandler *et al.*, 2009). A main difference is that formal knowledge acquisition strategies are often contractually defined whereas informal knowledge acquisition strategies show a more public character of knowledge. Knowledge derived from formal collaborations is associated with the use of ideas and developments resulting from access to infrastructures, human capital and innovative capabilities of partners. Informal use of sources is associated with internal capabilities of companies to access and absorb the knowledge from out of the environment immediately (Freitas *et al.*, 2011).

### **Stakeholder theory and stakeholder characteristics**

The origin of the stakeholder theory in management can be traced to the work of Freeman (2010). The central message of the stakeholder theory is that companies should aim not only at maximizing their own profits, but also maximizing the benefits or minimizing damages to other

organizations and individuals affected by the company as possible effects of their activities. The stakeholder theory deals with the nature of the relationships between the company and its various stakeholders, especially in terms of the processes and outcomes for the company and the stakeholders (Hult *et al.*, 2011).

The knowledge sources, people and organizations where company's acquire their knowledge from, constitute "a unique and productive resource for value creation" (McEvily *et al.*, 2005). These people and organizations are important organizational stakeholders, since these groups or individuals can affect or are affected by the achievement of the company's objectives (Freeman, 2010). However, in the case of knowledge acquisition, this definition of stakeholders can potentially include every group or individual with whom is an interaction or from who a company receive incentives to acquire knowledge. Narrower definitions identifying stakeholders in terms of their necessity for a company's survival. Narrower views accommodate that resources, attention and time to deal with external constraints are limited. Therefore, company managers may prioritize those stakeholders that are most important to their activities (Hult *et al.*, 2011). In line with these definitions Donaldson and Preston (1995) arose some stakeholder categories. They mentioned national governments, international organizations and NGO, competitors, employees, investors, supply chain partners, shareholders, customers and consumers as categories of any company's stakeholders.

According to Mitchell *et al.*, (1997) stakeholders can be identified by their ownership of at least one of three attributes in relation to the company: power, legitimacy and/or urgency. Mitchell *et al.* (1997) explains power with the help of the resource dependence and transaction costs theory. The resource dependence theory suggests that power accrues to those who have the control over the resources needed by the organization and the possession of the resource makes a stakeholder important for managers. The transaction costs theory argues that if a stakeholder delivers a unique resource, this stakeholder can increase the transactions costs, to levels that justify the absorption into the company. Our definition of power is a combination of these two theories and argues that a

stakeholder has power over the company when a stakeholder controls the resource, which is unique within the meaning of it is not easy to attract that resource from other people or organizations. In such a situation we control this through verifying both that the company is dependent on the stakeholder and that the stakeholder is not dependent on the company. The concept of legitimacy is loosely referring to socially accepted and expected structures or behaviours and is often coupled implicitly with that of power. The definition of legitimacy given by Mitchell *et al.*, (1997) is “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed systems of norms, values and beliefs”. However, this definition is often discussed in the stakeholder literature and stated is that the concept of legitimacy remains imprecise. Therefore, Phillips (2003) examined the concept of legitimacy and made a distinction between normative and derivative legitimacy. Normative legitimacy is derived from normative stakeholders which are those stakeholders to whom the organization has a moral obligation, simply of their being human. These stakeholders make some legitimate claims on the company, because the company still may not break promises without sufficient cause, violate rights or act immorally towards these groups. But the company has no special obligation to attend to their well-being which when violated affects the company’s well-being. Derivative legitimacy is derived from derivative stakeholders which are those stakeholder whose actions and claims must be accounted for by companies due to their potential effect upon the company and its normative stakeholders. This legitimacy is derived from their ability to affect the company and its normative stakeholders and the company has a special obligation to attend the stakeholders well-being which when violated affects the company’s well-being. In this research we build on the idea of derivative legitimacy. Finally, companies take stakeholders into consideration when their claim are urgent. Urgency is defined as the degree to which a stakeholder claims call for immediate attention (Mitchell *et al.*, 1997). Urgency exist if two conditions are met: time sensitivity and criticality. Time sensitivity is the degree to which delay in attending to the claim or relationship is unacceptable to the



stakeholder. Criticality is the importance of the claim or the relationship to the stakeholder. Urgency often deals with the prevention of losses, the pursuit of goals, or selection pressures.

These three characteristics of stakeholder attributes are influencing the relationship and the way of interaction of a company with its stakeholders. A number of studies provided evidence of the importance of attention on these characteristics to deliver good performances. Yet, empirical evidence of the impact of the characteristics on knowledge management is still scarce. Moreover, the specific impact of these characteristics on knowledge acquisition strategies has not been explored yet.

## **Results**

The section results starts with introducing about what is found related to the “how, when and why” questions as formulated in research. Thereafter, this section passes through with presenting the results around a number of key themes which are formal and informal knowledge acquisition strategies, knowledge acquisition strategies and stakeholder characteristics, and other activities related to knowledge acquisition process.

### **How, when and why knowledge is acquired**

Innovative activity does not take place in a world in a business environment in which companies are isolated from each other and from other organizations. In this perspective, we found that companies interact and acquire knowledge from multiple stakeholders, divided into multiple stakeholder categories (appendix III). Out of the five cases, all the spin off companies in this research acquired knowledge from their origin university, five companies acquired knowledge from knowledge institutions, four companies acquired knowledge from business support companies, customers and from companies in the same industry, three companies acquired knowledge from suppliers, two companies acquired knowledge from strategic business partners and NGOs, one company hired consultant to acquire knowledge, one company acquired knowledge from legislators and one company from their investors. These results are confirming the existing literature which

stated knowledge is acquired from their suppliers, customers, knowledge institutions and companies in the same industry as well as other companies, or by forming partnerships by with public, semi-public, and private institutions when developing new products or improving product processes (Svetina *et al.*, 2008). We found that the knowledge is acquired from these stakeholders by using both formal knowledge acquisition strategies as well as informal knowledge acquisition strategies. Knowledge is formally acquired through collaborative research, contract research, joint venture with a larger company, advices, formal meetings, alliances and cooperation agreements. Contracts are often used to regulate the knowledge transfer. Knowledge is acquired in a more informal way through informal meetings, achieving ad hoc advices, network externalities, sharing knowledge on conferences and acquiring knowledge through publications. Knowledge derived from formal collaborations is associated with the use of ideas and developments resulting from access to human capital, innovative capabilities, physical capital (resources) and financial capital whereas the knowledge derived informally is associated with the internal capabilities of companies to access and absorb the information produced by their stakeholder immediately. The nature of the formal and informal activities to acquire knowledge found in this research already received widespread research attention. Our results confirm the actual use of the activities to acquire knowledge for small innovative high-tech companies.

Knowledge from outside the company boundaries is acquired in every company growth stage by all the five companies, but we found some influences of the growth stage on the knowledge acquisition process. Knowledge in the first growth stage is mainly acquired from origin universities, knowledge institutions and business support companies. Within these results, we found a small difference between university spin offs and non-university origin companies. Spin off companies are often the results of longer research projects at the origin university. The nature of the university research creates an emphasis on core technology rather than the business model. This causes really strong ties with their origin university from which they acquire almost all their needed knowledge. Moreover, these spin off companies acquire knowledge from knowledge institutions and business

support companies. The non-university origin companies are formed out their past experiences and the founders came together with a business idea. They need business management knowledge and go along with business support companies like incubators to set up the business. From the second growth stage onwards, both spin off as well as non-university origin companies start acquiring knowledge from customers, suppliers, strategic business partners, companies in the same industry, NGOs and consultants and still acquire knowledge from the origin university, knowledge institutions and business support companies. However, we found evidence that over time, spin off companies acquire less knowledge from the origin university and become more dependent on the knowledge from other stakeholders.

Related to the activities to acquire external over the different growth stages, we found that companies make a conscious choice to acquire knowledge from companies in the same industry by using or formal knowledge acquisition strategies or informal knowledge acquisition strategies, but that the both strategies are not used in combination within the first two company growth stages. In later company growth stages, we see to use both formal and informal knowledge acquisition strategies emerging from the same stakeholder with this category. Empirical evidence supporting this result is not really strong but can be synthesized in the following points. On the one hand, in the first two growth stages, we found that one of the companies started a joint venture in order to acquire critical intellectual property, technology and resources which were otherwise hard to obtain. Within this formal collaboration the both organizations jointly undertook a transaction for mutual profit. On the other hand, in the first two growth stages, we found a company acquiring knowledge from companies in the same industry by sharing experiences on conferences or during informal meetings facilitated by the location of the companies in geographical proximity. Furthermore, in later growth stages, we found both knowledge acquisition strategies used by a company to acquire knowledge from a companies in the same industry.

The reason why companies acquire knowledge is simply because they don't have all the needed knowledge within their own company. The companies really rely on knowledge acquired

from outside their company boundaries. At the question “how important is knowledge and knowledge acquisition within your company?” all the companies answer with “essential” and “of great importance”. Knowledge is essential and of great importance for small high tech companies, since the companies are based on ground breaking findings of research or new product development. But this is part of the knowledge needed. All the companies also need really specific pieces of existing knowledge, which they acquire from multiple stakeholders. Importance is to become the owner of the knowledge the acquired knowledge and make the knowledge part of their own intellectual property. To protect the knowledge thereafter, university spin offs make use of patents whereas non-university origin companies use confidential statements.

Finally, from our interviews we found that out of the five companies, four companies mentioned financial capital as a variable that influences the knowledge acquisition process. They stated that the activities they use to acquire knowledge are influenced by the amount of financial capital available. The example mentioned in three cases is that students are an attractive source to acquire knowledge from knowledge institutions when almost no invest capital is available, where contract research is a more attractive activity when more investment capital is available. The decision is in first instance based on the amount of investment capital available, and thereafter influenced by the expected return on investment in terms of time and money. Within the existent literature, this aspect received relatively little attention. What is known is that the time and money invested within into knowledge acquisition processes in general is connected with measures of venture performance, but the connection is small. Therefore, this research adds to the existing literature that the amount of investment capital available influences the knowledge acquisition process of small innovative high tech companies.

### **Formal and informal knowledge acquisition strategies**

Formal and informal knowledge acquisition strategies provide the basis for knowledge acquisition of a single company. These both strategies can be used by a company and it has been proven that both strategies can be used to acquire knowledge efficient en effective. An study by

Owen-Smith and Powell (2004), related to companies in the biotechnology industry, argues that the use of both formal and informal strategies are important for innovation and that the use of the formal strategy offers access to acquiring knowledge informally. In another study related to companies in the biotechnology industry, (Powell *et al.*, 1996)) argues that the use of formal relationships to acquire knowledge emerge out of informal arrangements. This indicates that formal and informal knowledge acquisition strategies act as complements and that the use of both strategies together ensures efficient and effective knowledge acquisition. With the first key finding in our study we find evidence for this for small innovative companies in the high tech sector. In the cases observed, we found the use of both formal and informal knowledge acquisition strategies emerging for multiple stakeholders (appendix IV). The companies use formal and informal knowledge acquisition strategies in order to measure up with their quest for knowledge. Formal acquisition strategies are deployed to acquire a specific piece of complementary knowledge. Furthermore, formal collaborations are entered to react active towards the markets in which they are embedded in and try to influence the evolution of those markets. The informal knowledge acquisition strategies are often used in a very interactive way: opinions, experiences and feedback are searched for quite specific problems or ideas that arouse within the company. The use of both knowledge acquisition strategies complete the knowledge acquisition process. However, we found that the type of stakeholder involved has some relationship with the degree of formality. The degree of formality is lower in the relations the with the main stakeholders from which knowledge is acquired. The main stakeholders are the stakeholders mentioned most through the sampled companies as a stakeholder where knowledge is acquired from. These stakeholders are the origin universities, knowledge institutions, customers, company's in the same industry, business support companies and suppliers. The degree of formality is higher in the relations with the additional stakeholders where knowledge is acquired from. This difference is possibly based on the difference in the intensity of the relationships. The relationship with the main stakeholders is more intensive as the relationship with the additional stakeholders. Overall, the degree of formality to acquire knowledge is high, because

formal knowledge acquisition strategies are used to acquire knowledge from all the stakeholders.

Where in the existing literature, many studies suggest that the activities to acquire knowledge by small companies are not really sophisticated and formalized, we will add that both strategies play an important role, but that a great amount of knowledge is acquired with a high degree of formality by the small innovative high-tech companies. Based on the evidence of the data, the following testable propositions are defined:

**P1** *The deployment of both formal and informal knowledge acquisition strategies play an important role to acquire knowledge for small innovative companies in the high tech sector to acquire knowledge.*

**P2** *Small innovative high-tech companies acquire knowledge with a high degree of formality.*

**P3** *The degree of formality is lower when knowledge is acquired from the small-innovative-high-tech-company's main stakeholders.*

However, companies use formal and informal knowledge acquisition strategies in order to facilitate the acquisition of knowledge into the company, formal knowledge acquisitions strategies emerge in every relationship with the different stakeholders, whereas informal knowledge acquisition strategies emerge only in the relationship with the main stakeholders. In this study we see the formal knowledge acquisition strategies arise because the process of knowledge acquisition can be seen starting from the recognition for a need of a specific piece of knowledge. The innovative knowledge intensive companies look purposefully for a specific piece of knowledge from a specific stakeholder, because they need to acquire knowledge which is particularly valuable for their specific context. When the companies found a specific stakeholder to acquire the knowledge from, they often start a formal collaboration because in the end it is important to make the acquired knowledge part of their own intellectual property.

If we focus on only the spin off companies within this research, we find an exception on the above mentioned. The spin off companies are a result of the commercialisation of academic knowledge and therefore these companies acquire almost all their knowledge from the origin university especially in the first company growth stage. The origin university has to offer the

complementary knowledge needed by the company and it is often not possible to acquire the needed knowledge from another stakeholder. Also not from other knowledge institutions. However, in this growth stage, knowledge is acquired from knowledge institutions but only by using informal knowledge acquisition activities as ad hoc advices and through publication related to their business. Formal collaborations are simply not established, because no one else as the origin university can deliver the specific needed knowledge. This implies that companies really rely on their origin university in the first growth stage. This goes further as what is known already within the existing literature. Other researchers already recognized that there is a knowledge overlap between the origin university and the spin off companies and the way in which the origin university supports the spin-off of activities (Sapienza *et al.*, 2004), but they argue the main focus is on exploiting knowledge generated at the origin university (Clarysse *et al.*, 2011). It is expected they the spin off companies build on the knowledge from the origin university, but that they start formal collaborations with others to acquire new knowledge to further develop the product or technology. Since the small innovative high tech companies rely on new knowledge, a formal collaboration with a knowledge institute different as the origin university is noticeable. But we find these collaboration emerging in the second company growth stage when the product or technology is developed and is implemented in the marketplace. Therefore we rise the following testable proposition:

**P4** *Spin off companies acquire knowledge from universities in the first growth stage by only using informal strategies. From the existence stage spin off companies acquire knowledge from universities by using both formal and informal strategies.*

### **Knowledge acquisition strategies and stakeholder characteristics**

The second key finding of this study is that some of the stakeholder characteristics have an impact on the knowledge acquisition strategies. In particular, we found evidence that when a stakeholder delivers the complementary unique knowledge, the stakeholder characteristics power and legitimacy emerge and both formal and informal knowledge acquisition strategies are deployed.

Empirical evidence of this finding is derived from the following points. We found that all the companies that have university origin, makes the origin university having the complementary resources. The complementary resources the origin university delivers to the companies is complementary knowledge (human capital), but the origin also facilitates other resources like work office and laboratories (physical capital). This makes the origin university powerful related to the spinoff company and makes the spinoff company acquiring knowledge from the origin university. In two out of the three cases we found that the origin university makes legitimate claims on the spinoff companies, because the origin university provides the environment where the companies build their own facilities and therefore the origin university has some represent stakes toward the companies. In all the three cases the origin university was not a stakeholder that can be considered in absolute terms as legitimate but other stakeholders perceived this stakeholder as legitimate. In this case the spinoff companies borrowed the legitimacy of the origin university which influences the other company stakeholders. We found this result for spinoff companies within the creation and existence company growth stage. From the existence stage we found that other stakeholders became more important like companies in the same industry, knowledge institutions, customers and suppliers. From this moment these stakeholders became important suppliers of knowledge and resources. Here we found that the stakeholders who deliver the complementary knowledge, are powerful related to the spin off companies. Knowledge from these stakeholders is acquire by using both formal knowledge acquisition strategies as well as informal knowledge acquisition strategies. We found that the stakeholders who deliver resources to the spin off companies in these growth stages are powerful in relation to the spinoffs when they deliver a unique resource, but that the companies are powerful in relation to the stakeholder when a more common resource is delivered. Furthermore, we found that from these stakeholder customer bring in legitimate claims, since they have a legitimate stake in the quality of the product, in the information made available on their use and possible negative impacts originated. Besides, we also found that knowledge institute bring in legitimacy claims in the case of an intensive collaboration. The same is through for companies in the same



industry. In the case of non-university origin companies we also found that the companies who deliver the complementary knowledge are powerful. The stakeholders who deliver the complementary knowledge are the customers, knowledge institutions, business support companies and suppliers. The stakeholders that bring in resources to the companies are knowledge institutions (research facilities) and suppliers (raw materials). However, the companies are not dependent on these stakeholders for these resources, therefore we find that the companies are powerful over the stakeholders. We found legitimacy emerging in relation with the customers, knowledge institutions, suppliers and NGOs. Customers are legitimate stakeholders within two out of two cases, because they have a legitimate stake in the quality of the product, in the information made available on their use and possible negative impacts originated. Knowledge institutions, suppliers and NGOs bring in legitimate claims, all in one out of the two cases. These stakeholders can be considered in absolute terms as legitimate since they are highly regarded as legitimate by the other stakeholders of the company. Here we don't find differences over the different growth stages. In the existing literature there was not much written about the stakeholder characteristics in relation to knowledge acquisition strategies. Therefore we will bring a contribute to the existing literature by identifying that power and legitimacy have an impact on the knowledge acquisition strategies. Therefore, we propose that:

**P5** *The stakeholder characteristics power and legitimacy have sometimes an impact on the knowledge acquisition strategies.*

From our interviews, we found that of the five cases, four companies acquired knowledge intensively from the origin university and knowledge institutions. These four companies indicated that they didn't face problems to attract grants from legislators, so the government and government related instances. Two of the companies mentioned: *"We stay tuned for attracting subsidies since it is money that is attracted easily"* and *"The grants we attract come from all over the place. There is always a scientific grant jar available"*. The company that is not collaborating with knowledge institutions faced problems by attracting subsidies from legislators. This company mentioned: *"We*

*don't collaborate with knowledge institutions because it is often in conflict with the mentality of the company and this causes problem with attracting subsidies. Because we don't collaborate with knowledge institutions, we face problems with attracting subsidies from the government instances".*

From this we conclude that origin universities and knowledge institutions bring in legitimate claims, since these stakeholders affect the company's reputation as viewed by the company's other stakeholders. However, we still don't exactly know why university affiliate have a higher change to attract subsidies. Possible is that university affiliate attract subsidies easier because of the signal (subsidy provider considers the companies as better companies), because they are better companies or because they are trained or advised by the origin university or knowledge institutions. In the interviews we found mixed results for the last mentioned, but not a clear result for the other two options. In the existing literature we find that policy makers and funding authorities follow a strategy "of picking the winner" (Cantner *et al.*, 2011). With that strategy it is argued that subsidies are given to companies, with innovative business ideas, especially academic spin offs. Furthermore, we asked an expert about this specific issue and he mentioned that a collaboration with an origin university or with knowledge institutions is not a requirement to receive a subsidy, but that may concluded the credibility and thus the changes of success to attract an subsidy increases in case a company collaborates with a origin university or knowledge institute. On the basis of this evidence, we formulate the following testable proposition:

**P6** *Knowledge institutions and the origin universities bring in legitimate claims that affect the other stakeholders of the company.*

Related to this proposition, an interesting avenue for following work is testing whether origin university and knowledge institutions give a signal of quality to the company's other stakeholders which causes that the subsidy providers view the company as a better company or whether the company actually is a better company and attract therefore subsidies easily.

## **Other activities related to knowledge acquisition process**

From the interviews, we found that all the five companies participate within consortia and research projects. The main reason why the companies participate in consortia and research projects is because they are willing to act and share their vision in the mutually beneficial cooperation's. In the existing literature it is argued that consortia and research projects are a critical activity to upgrade technology capabilities and a great possibility to acquire business related knowledge from different stakeholder for small and medium sized enterprises (Lin *et al.*, 2009). However, in all our cases we found that the companies participate in consortia as a supplier of knowledge and that they don't acquire direct useful knowledge for their own business. Indirect, these companies indicate that participating within a research consortium ensures interaction with different people and organizations which become part of their business network, from which they may acquire knowledge and complementary resource in the future. Furthermore, we found that companies participate in research projects also as supplier of knowledge and to generate income. Having said this, we propose that:

**P7** *Small innovative high tech companies participate in consortia and research projects as suppliers knowledge.*

## **Discussion**

### **Managerial implications**

Our propositions have managerial implications. First, our research suggest that both formal and informal knowledge acquisition strategies both play an important role in the knowledge acquisition process of innovate small high tech companies. The knowledge acquisition strategies can be chosen and controlled by the company's manager and therefore can be altered by them to improve the efficiency and effectively of their knowledge acquisition activities. Second, this research defines the stakeholder characteristics that can be expected to influence the knowledge acquisition of a company. The findings suggest that power and legitimacy have an impact on the knowledge

acquisition of innovative small high tech companies. By knowing this, a company manager can take into account the impact a certain stakeholder could have on the company's knowledge acquisition and respond to that to manage the knowledge acquisition process as best as possible. Overall, our research is useful for start-up companies that are looking for a way of organizing and strategizing their knowledge acquisition from other people and organizations. How companies that just started acquire their knowledge is often unstable and this research indicates some important factors they should take into account. The research especially focused on innovative small companies in the high tech sector. However, it is expected that the results are useful for small innovative companies in more than only the high tech sector since the results related to the formal and informal knowledge acquisition strategies are in accordance with others studies in this field in the biotechnology industry. Given the explanatory nature of the grounded theory approach we used, we recognize that the propositions in this research should be tested in further research to provide strong evidence.

### **Limitations**

The findings have a number of limitations. First, during the analyses we changed our research focus from intentional and unintentional knowledge acquisition strategies to formal and informal knowledge acquisition strategies. A change was allowed, because the study was conducted according to the grounded theory approach. However, the questions asked in the interview were therefore not specific on formal and informal knowledge acquisition strategies which made the analysis difficult. Second, the results are drawn on the basis of only five cases. Five cases is not necessarily too few, but during the analysis we experienced difficulties especially related to the company growth stages. It was not expected beforehand that the company growth stages would have an influence on the companies knowledge acquisition strategies. This aspect emerged from the interviews. The small sample and the fact that the companies were not selected on the growth stages, increased the complexity of the analysis to obtain great internal evidence for the results. Nevertheless, we were able to compare and find similarities. Third, all the sampled companies were located in or around Wageningen. This was made clear in the results since the Wageningen University was a common

stakeholder mentioned by the companies as a stakeholder to acquire knowledge from. However, this did not influence the overall results. Finally, further research is needed to replicate the results in this research and extend them to provide a more comprehensive view of the construct.

## **Conclusion**

By building upon the key principles of knowledge acquisition strategies and stakeholder theory, this study sought to contribute to the literature by exploring how small knowledge intensive high tech companies who deliver a green product, acquire knowledge from outside their company's boundaries and which impact the stakeholder characteristics have on these strategies.

The results from this study can be synthesized in the following two points. First, we found that both formal and informal knowledge acquisition strategies emerge and that both strategies performance an important role for small high tech companies. This result in consistent with the literature on formal and informal knowledge acquisition strategies for companies in the biotechnology, but new for the companies in the sector. Second, the stakeholder characteristics power and legitimacy have an impact on the knowledge acquisition strategies and these interactions take therefore a central role within the corporate strategy related to knowledge acquisition. This is in line with the stakeholder theory which argues that company managers should take stakeholders in consideration when they are powerful and when their claims are considered as legitimate. The stakeholder theory further stated that urgency plays an role, but we did not found urgency emerging as an impact factor on external knowledge acquisition strategies for small high tech companies.

This research contributes to the existing literature, because there was no research done to the use of the two knowledge acquisition strategies related to the companies we approached. More important is that the impact of the stakeholder characteristics on the external knowledge acquisition strategies is a new element in the literature. Because the grounded theory approach followed to collect and analyse the data, the research is exploratory in nature and provides evidence that is only sufficient to proceed and test the formalized propositions in future research. Based on the evidence

presented in this paper, future researches on external knowledge acquisition strategies and the impact of multiple stakeholders can test the suggested propositions.

## References

- Abreu M, Grinevich V, Hughes A, Kitson M. 2009. Knowledge exchange between academics and the business, public and third sectors. *CBR and UK Innovation Research Centre*.
- Alvesson M. 2000. Social Identity And The Problem of Loyalty In Knowledge-Intensive Companies. *Journal of Management Studies* **37**(8): 1101-1124.
- Baptista R, Mendonça J. 2010. Proximity to knowledge sources and the location of knowledge-based start-ups. *The Annals of Regional Science* **45**(1): 5-29.
- Barney J. 1991. Firm resources and sustained competitive advantage. *Journal of management* **17**(1): 99-120.
- Bierly PE, Damanpour F, Santoro MD. 2009. The application of external knowledge: organizational conditions for exploration and exploitation. *Journal of Management Studies* **46**(3): 481-509.
- BrainFlow. 2012. Best Practice Cluster Management Cluster Policy Overview and Regional Reports, Brain Flow.
- Cantner U, Kösters S. 2011. Picking the winner? Empirical evidence on the targeting of R&D subsidies to start-ups. *Small Business Economics*: 1-16.
- Cassiman B, Veugelers R. 2006. In search of complementarity in innovation strategy: Internal R&D and external knowledge acquisition. *Management Science*: 68-82.
- Chandler GN, Lyon DW. 2009. Involvement in Knowledge-Acquisition Activities by Venture Team Members and Venture Performance. *Entrepreneurship Theory and Practice* **33**(3): 571-592.
- Chapple K, Markusen A, Schrock G, Yamamoto D, Yu P. 2004. Gauging metropolitan "high-tech" and "I-tech" activity. *Economic Development Quarterly* **18**(1): 10-29.
- Chesbrough HW. 2003. *Open innovation: The new imperative for creating and profiting from technology*. Harvard Business Press.
- Clarysse B, Wright M, Van de Velde E. 2011. Entrepreneurial Origin, Technological Knowledge, and the Growth of Spin-Off Companies. *Journal of Management Studies* **48**(6): 1420-1442.
- Cohen WM, Nelson RR, Walsh JP. 2002. Links and impacts: the influence of public research on industrial R&D. *Management Science* **48**(1): 1-23.
- Collins JD, Hitt MA. 2006. Leveraging tacit knowledge in alliances: The importance of using relational capabilities to build and leverage relational capital. *Journal of Engineering and Technology Management* **23**(3): 147-167.
- Corbin JM, Strauss A. 1990. Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology* **13**(1): 3-21.
- Corbin JM, Strauss AL. 2008. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications, Inc.

- D'Este P, Patel P. 2007. University–industry linkages in the UK: What are the factors underlying the variety of interactions with industry? *Research Policy* **36**(9): 1295-1313.
- Deeds DL, Decarolis DM. 1999. The impact of stocks and flows of organizational knowledge on firm performance: An empirical investigation of the biotechnology industry. *Strategic management journal*.
- Donaldson T, Preston LE. 1995. The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of management review*: 65-91.
- Dyer JH, Hatch NW. 2006. Relation-specific capabilities and barriers to knowledge transfers: creating advantage through network relationships. *Strategic management journal* **27**(8): 701-719.
- Eisenhardt KM. 1989. Building theories from case study research. *Academy of management review*: 532-550.
- FOM. 2012. Top sectors. <http://www.fom.nl/live/english/research/topsectors/topsectors.pag> (3 December 2012).
- Freeman RE. 2010. *Strategic management: A stakeholder approach*. Cambridge Univ Pr.
- Freitas IMB, Clausen TH, Fontana R, Verspagen B. 2011. Formal and informal external linkages and firms' innovative strategies. A cross-country comparison. *Journal of evolutionary economics* **21**(1): 91-119.
- Glaser BG, Strauss AL. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Aldine de Gruyter.
- Grant RM. 1996. Toward a knowledge-based theory of the firm. *Strategic management journal* **17**: 109-122.
- Hagedoorn J. 2002. Inter-firm R&D partnerships: an overview of major trends and patterns since 1960. *Research Policy* **31**(4): 477-492.
- Henderson R, Cockburn I. 1994. Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic management journal* **15**(S1): 63-84.
- Hoe SL, McShane S. 2010. Structural and informal knowledge acquisition and dissemination in organizational learning: An exploratory analysis. *Learning Organization, The* **17**(4): 364-386.
- Hult GTM, Mena JA, Ferrell O, Ferrell L. 2011. Stakeholder marketing: a definition and conceptual framework. *AMS Review*: 1-22.
- Inkpen AC. 2000. Learning through joint ventures: a framework of knowledge acquisition. *Journal of Management Studies* **37**(7): 1019-1044.
- Johnson G, Scholes K, Whittington R. 2008. *Exploring corporate strategy: text & cases*. Prentice Hall.
- Jolly D, Ramani SV. 1996. Technology creation in the biotechnology sectors: the French connection. *International Journal of Technology Management* **12**(7-8): 7-8.



- Li JJ, Poppo L, Zhou KZ. 2010. Relational mechanisms, formal contracts, and local knowledge acquisition by international subsidiaries. *Strategic management journal* **31**(4): 349-370.
- Lin JL, Fang SC, Fang SR, Tsai FS. 2009. Network embeddedness and technology transfer performance in R&D consortia in Taiwan. *Technovation* **29**(11): 763-774.
- López-Sáez P, Navas-López JE, Martín-de-Castro G, Cruz-González J. 2010. External knowledge acquisition processes in knowledge-intensive clusters. *Journal of Knowledge Management* **14**(5): 690-707.
- McEvily B, Marcus A. 2005. Embedded ties and the acquisition of competitive capabilities. *Strategic management journal* **26**(11): 1033-1055.
- Meier M. 2011. Knowledge management in strategic alliances: A review of empirical evidence. *International Journal of Management Reviews* **13**(1): 1-23.
- Mitchell RK, Agle BR, Wood DJ. 1997. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of management review*: 853-886.
- Nonaka I, Takeuchi H. 1995. *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University Press, USA.
- Nonaka I, Toyama R, Nagata A. 2000. A firm as a knowledge-creating entity: a new perspective on the theory of the firm. *Industrial and corporate change* **9**(1): 1-20.
- Owen-Smith J, Powell WW. 2004. Knowledge networks as channels and conduits: The effects of spillovers in the Boston biotechnology community. *Organization science* **15**(1): 5-21.
- Perkmann M, Walsh K. 2007. University–industry relationships and open innovation: Towards a research agenda. *International Journal of Management Reviews* **9**(4): 259-280.
- Phillips R. 2003. Stakeholder legitimacy. *Business Ethics Quarterly*: 25-41.
- Powell WW, Koput KW, Smith-Doerr L. 1996. Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Administrative Science Quarterly*: 116-145.
- Roy MJ, Thérin F. 2008. Knowledge acquisition and environmental commitment in SMEs. *Corporate Social Responsibility and Environmental Management* **15**(5): 249-259.
- Sapienza HJ, Parhankangas A, Autio E. 2004. Knowledge relatedness and post-spin-off growth. *Journal of Business Venturing* **19**(6): 809-829.
- StatisticsNetherlands. 2011. ICT, knowledge and the economy.
- Svetina AC, Prodan I. 2008. How internal and external sources of knowledge contribute to firms' innovation performance. *Managing Global Transitions* **6**(3): 277-299.
- Swart J, Kinnie N. 2003. Sharing knowledge in knowledge-intensive firms. *Human Resource Management Journal* **13**(2): 60-75.
- Tappeiner G, Hauser C, Walde J. 2008. Regional knowledge spillovers: Fact or artifact? *Research Policy* **37**(5): 861-874.

Tödtling F, Lehner P, Kaufmann A. 2009. Do different types of innovation rely on specific kinds of knowledge interactions? *Technovation* **29**(1): 59-71.

Verma D, Sinha KK. 2002. Toward a theory of project interdependencies in high tech R&D environments. *Journal of Operations Management* **20**(5): 451-468.

Von Hippel E. 1988. The sources of innovation. *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship*.

Westgren R, Zering K. 1999. Case study research methods for firm and market research. *Agribusiness* **14**(5): 415-423.

Zack MH, Singh S. 2010. A knowledge-based view of outsourcing. *International Journal of Strategic Change Management* **2**(1): 32-53.

Zhong W, Yuan W, Li SX, Huang Z. 2011. The performance evaluation of regional R&D investments in China: An application of DEA based on the first official China economic census data. *Omega* **39**(4): 447-455.

## Appendix I: Interview protocol expert interviews

The expert questionnaires have been created to get a better view of the knowledge acquisition process of companies in general. In the questionnaires the experts are asked questions related to their field of expertise and their specific experiences and perspectives. The goal is to elicit responses from the experts based on their unique professional experiences which should present a greater understanding of the complexities of the company's external knowledge acquisition process. Questions are asked to understand better what the most important reasons are for external knowledge acquisition and how stakeholders play a role in knowledge acquisition.

### Questionnaire

#### Introduction:

- Short introduction of myself
- Explain the goal of the research
- Explain intended group of companies that will be selected in the research. Within the interview questions below specified as *the specific companies*
- Explain research method
- The interview will be recorded for note taking

I would like to discuss with you about your company's knowledge acquisition. In particular, I would like to focus on how it in general works and I would like to know your point of view from your field of expertise and from your experiences.

**Note: the questions are asked in an informal way and not all the questions are asked as displayed within this protocol. This protocol is used to keep in mind what I really want to know. But the goal is to let them talk and come up with interesting categories.**

#### Questions:

##### *A. Introduction questions:*

The first questions are about the background of the expert and the expert's current position. The questions are personalized per expert after doing some (background) secondary search. Questions are asked about the experts expertise related to the topic of the research, so that the topic is already introduced and the questions are close related to the next questions.

##### *B. Own organisation (if appropriate)*

How can your organisation help companies with their knowledge acquisition from outside the company's boundaries?

Which activities are organized by your own organisation to stimulate knowledge exchange between different parties?

### *C. External knowledge acquisition*

In your opinion, to what extent are the specific companies searching for external knowledge?

How important is the acquisition of knowledge from outside the company's boundaries for the specific companies?

How do you think that the specific companies acquire their needed knowledge from outside the company's boundaries?

Which activities are organized to acquire knowledge? Other routes to acquire knowledge?

Which aspects play a role within the knowledge acquisition process?

Do you expect or did you experience that companies face problems to acquire knowledge from outside their company's boundaries? Which problems do companies face?

Do you expect differences in the activities to acquire knowledge between companies in different stages of the company life cycle?

### *D. Motives for external knowledge acquisition*

What are in general the most important reason for the specific companies to acquire knowledge from outside their company's boundaries?

Can you describe the most important reasons for the specific companies to acquire knowledge from outside the company's boundaries from your professional and/or personal experiences?

### *E. Stakeholders involved*

From which people and/or organisations are the specific companies often acquiring knowledge?

Which people and/or organisations are important for the specific companies to acquire knowledge from?

Can you describe from your professional and/ or personal experiences which people and/or organisations play an important role for the specific companies to acquire knowledge from?

Do you expect or did you experience that companies acquire knowledge from different stakeholders in the different stages of a company's life cycle?

### *F. Kind of knowledge acquired*

What kind of knowledge is often acquired from outside the company's boundaries?

Do you expect that different kinds of knowledge are acquired purposefully from specific stakeholders within the different stages of a company's life cycle?

### *G. Company location*

Does company location influence the knowledge acquisition from outside the company boundaries?

Do company's prefer to acquire knowledge from people and/or organisations in their geographical proximity?

#### *H. Final questions*

What critical view would you take of the knowledge acquisition process from outside the company's boundaries for the specific companies?

Do you have suggestions to improve this research?

Do you have suggestions which companies to approach for the company interviews?

Is there anything else you would like to add that has not been covered by the questions I have already posed?

#### **Clarification of the questions**

##### Introduction

The goal of the research will be explained. This to give the expert a better view of the questions that will be asked. The intended companies involved in the research will be explained. For the formality it is mentioned that the interview will be recorded for note taking.

##### Questions A

Questions related to the background and the current position of the interviewee are asked to start the interview and to elicit some basic information that can be included later in the questions.

##### Questions B

These questions are asked to simply know what the experts organisations are doing related to knowledge transfers within a single company and learn from this.

##### Questions C

These questions are asked to get an expert view on how the specific companies acquire knowledge from outside the company's boundaries.

##### Question D

These questions are asked to get to know more about the company's motives to acquire knowledge from outside the company's boundaries.

##### Questions E

By asking these questions more insight is obtained from which people and/ organisations the specific companies acquire knowledge. From which stakeholders is knowledge acquired and which are the most important stakeholders for the specific companies to acquire knowledge from.

##### Questions F

These questions should give insight in the kind of knowledge that is acquired from the specific

company's stakeholders and if there are differences in the kind of knowledge that is acquired in the different stages of a company's life cycle.

#### Questions G

The questions related to company location should give the experts point of view if location matters and influences and/ or stimulates the knowledge acquisition process of the specific companies.

#### Questions H

The final questions are asked to get the expert view of the research and the expert's suggestions for improvement of the research.

## **Appendix II: Interview protocol company interviews**

The questionnaire should give insight in the process of knowledge acquisition of a specific company from multiple stakeholders. The goal is to understand which activities are used by a single company to acquire knowledge and from which stakeholders the knowledge is acquired. Questions have been asked about a company's knowledge acquisition activities, the kind of knowledge that is acquired, the stakeholders of which a company acquires its knowledge from and about the accessibility of the knowledge sources.

### **Questionnaire**

#### Introduction:

- Short introduction of myself
- Explain the goal of the research
- The interview will be recorded for note taking

I would like to discuss with you about your company's knowledge acquisition. In particular, I would like to focus on how you acquire knowledge from outside the company boundaries and which people and organizations are involved in the knowledge acquisition process.

#### Questions:

1. How did the company originate?
  - How did it get started?
  - How did the company develop over time and what is the current stage of the company?
  - The company is located in Wageningen. Is this a conscious choice?
  
2. How important is it to acquire knowledge from outside your company's boundaries?  
(Essential for survival, essential to reach the companies objectives, essential to expand, essential for the innovation process)
  - For which purposes does your organization acquire external knowledge?
  - What are the main drivers to acquire external knowledge?
  
3. How do you acquire knowledge from outside your company's boundaries?
  - Which selection criteria do you use when you select a source to acquire the desired knowledge?
  - Do you make use of contacts in your network?
  - Do you make use of scientific literature? What about patents?
  - Do you partner with other people or organizations?

4. With which people and/or organizations do you partner to acquire external knowledge from outside your company's boundaries?
  - What about... universities, other companies, NGOs, investors, government, research institutes, branch organisations?
  - In your opinion how could these people or organizations contribute to your external knowledge acquisition process?
  
5. What kind of knowledge do you acquire from the different people and/ or organizations? (know-how, technical knowledge, financial knowledge, managerial knowledge, 'sensitive' knowledge..)
  - Are there clear differences in the knowledge exchange with different people and/or organizations?
  - Do you approach a specific person or organization for a specific kind of knowledge?
  
6. How do you organize such a knowledge exchange with other people or organizations?
  - Which organizational activities do you use to acquire the external knowledge? (contract research, strategic alliances, network arrangements)
  - Do you make appointments and what kind of appointments do you make? (appointments related to financial issues, resources, communication, expectations)
  
7. Which people or organizations are located in or around Wageningen?

If (almost) all;

- How did this originate?
- Is it a conscious choice to acquire knowledge from people or organizations in or around Wageningen?
- In your opinion, is it a benefit that these people and organizations are located in or around Wageningen?

If only some people or organization are located in or around Wageningen:

- In your opinion is there a difference in the contact between people and organizations in or around Wageningen and people and organizations anywhere else in the Netherlands, Europe and worldwide?
- Do you see it as an advantage or disadvantage if a partner is located close to your location?
- Do you see it as an advantage or disadvantage if a partner is not located in close proximity?

8. How do you get in touch with the other people and organizations where you acquire external knowledge from?



(email, phone calls, meetings, workshops, conferences)

- Are there differences in the way you get in touch with people and organizations located in your environment and people and organizations located elsewhere?
  - Do you have more personal meetings with people and organizations in or around Wageningen than with people and organizations anywhere else?
  - What about conferences/workshops: Do you plan to meet certain persons or do you meet and talk with random persons if you go to an conference or workshop?
  - Do you regularly get in touch with people and organizations who can provide you useful knowledge in a space that is not planned?
9. Can you think about and explain a situation in which you unexpectedly get inspired by people or organizations who came up with useful knowledge for your business?
- Which people or organizations where involved in this situation?
  - What kind of knowledge did you acquire?
  - Does this occur more often? Also in other settings?
10. Do you sometimes have lunch, dinner or spent your spare time with people and/or organizations who can provide you useful information?
- Are these (informal) meetings organized or do they also arise spontaneously?
  - Do you acquire useful information during these meetings?
  - From which people and/or organizations?
11. Can you often easily find the right source to acquire the desired knowledge?
- If so, how did you reach this ideal state? Did you look to the best practices? Did you experimenting?
  - If not, what problems do you face?
12. Who is responsible for external knowledge acquisition within your company? How is it diffused to all the different people (or “official or unofficial departments”) within your company?
- If more employees are responsible, are there differences between these employees?
  - Are there guidelines for the process of knowledge acquisition within the company?
13. In your opinion what are most important sources for your companies’ external knowledge acquisition?  
(which stakeholders, documented sources of information etc.)
14. What do you think are the main factors that led the process of knowledge acquisition become effective?

(good agreements, good communication)

- Does not planned knowledge acquisition play an important role in acquiring knowledge effectively?

Note: if no answer can be given to the open question, I can ask the respondent to think about a recent case in which knowledge was acquired from outside the company boundaries.

## **Clarification of questions**

### Introduction

The goal of the research will be explained shortly. This to give the respondent a better view of the questions that are asked. For the formality it is mentioned that the interview will be recorded for note taking.

### Question 1

This question is asked to acquire more information about the company's business and about the development of the company's business over time until the current phase in which the company is operating.

### Question 2

This question is asked to get a better view of how important knowledge is for the company and what the main drivers are to acquire knowledge. In the literature it is a well-accepted consensus that knowledge is fundamental for the competitiveness and long term growth and the most important strategic resource (Tappeiner *et al.*, 2008).

### Question 3

This is a very open question with the purpose to let the respondent talk about everything what comes to mind. By asking this question the respondent will give more information about the activities that are deployed to acquire knowledge from outside the company boundaries.

### Question 4

This question asks for the stakeholders involved in the knowledge acquisition process. The question should give insight from which stakeholders a company acquires its knowledge.

### Question 5

This question is asked to get a better view of the kind of knowledge that is acquired from each stakeholder. Interesting is if different kind of pieces knowledge are acquired from specific stakeholders.

### Question 6

This question asks directly to the activities that are used to acquire knowledge and which appointments are made to organize the transfer of knowledge between the company and the people

and/or organisations where the knowledge comes from. This question is asked to seek out if the formal strategies are used to acquire knowledge from outside the company boundaries.

#### Question 7

This question is asked to get insight in the stakeholders that are located in close proximity. According to Baptista *et al.* (2010) knowledge flows more easier in spatial proximity as over greater distances and therefore knowledge spillovers will more likely occur.

#### Question 8

The respondent will mention some activities to come into contact with the stakeholders where the knowledge is acquired from. This question should give more insight in the use of the formal and informal knowledge acquisition strategies.

#### Question 9

This question is asked to get to know more about the use of informal strategies to acquire knowledge. It is an open question and the respondent can come up with everything that comes to mind.

#### Question 10

This is a more specific question to get to know more about the use of especially the informal activities to acquire knowledge. Besides the question gives more insights about the knowledge acquisition activities used by a company and can therefore also provide more insights related to the use of the use of formal activities to acquire knowledge.

#### Question 11

According to the experts interviewed in this research, the small companies in the sample may face problems within the knowledge acquisition process. This may possibly influences the strategies they use to acquire knowledge. This question should make this clear.

#### Question 12

This question is asked to get a better view if the activities to acquire knowledge performed by different people within the company have an influence on the deployment of formal and informal strategies.

#### Question 13

This question is asked to get a better view which sources and stakeholders are most important for a company to acquire knowledge from. This question may summarize and validate the most important answers given by the respondent.

#### Question 14

This question should give insight in the most important factors that play a role within a company's knowledge acquisition process. It is an open question that may give surprising insights that can influence the use of the knowledge acquisition strategies.

### **Appendix III: stakeholder categories**

**Business support companies:** Those who support the successful development of entrepreneurial companies developed and orchestrated by incubator management.

**Companies in the same industry:** Companies in the same industry as collaboration companies, colleague companies and competitors.

**Consultants:** Experienced individuals who are trained to analyse and advise the company.

**Customers:** Company's potential and actual customers.

**Investors:** Those who commit money or capital in order to make operations possible.

**Knowledge institutions:** All universities, research institutions and knowledge institutions exclusive the university from which the company is originated.

**Legislators:** Government, government agencies, trade unions, legal representatives, safety executives, quality assurance auditors who may produce guidelines for operation that will affect the development and/or operation of the business.

**NGOs:** Legally constituted organization created by persons that operates independently form any form of government.

**Origin University:** University from which the company is originated

**Strategic business partners:** Those who deliver complementary knowledge/resources to the company related to technology and/or product.

**Suppliers:** Suppliers of raw materials and equipment to make the development and use of the technology and/ or the production of the products possible.

## Appendix IV: Stakeholders and knowledge acquisition strategies

Stakeholders from which knowledge is acquired	Number of companies that acquire knowledge from this stakeholder ( <i>n</i> )	Knowledge acquired by companies using formal strategies:	Number of companies that acquire knowledge using formal strategies out of <i>n</i> companies	Knowledge acquired by companies using informal strategies:	Number of companies that acquire knowledge using informal strategies out of <i>n</i> companies
<b>Origin university</b>	<b>3 (out of 3)</b>	<b>Yes</b>	<b>3</b>	<b>Yes</b>	<b>3</b>
<b>Universities</b>	<b>5 (out of 5)</b>	<b>Yes</b>	<b>4</b>	<b>Yes</b>	<b>4</b>
<b>Customers</b>	<b>5 (out of 5)</b>	<b>Yes</b>	<b>5</b>	<b>Yes</b>	<b>2</b>
<b>Companies in the same industry</b>	<b>4 (out of 5)</b>	<b>Yes</b>	<b>2</b>	<b>Yes</b>	<b>3</b>
<b>Business support</b>	<b>4 (out of 5)</b>	<b>Yes</b>	<b>4</b>	<b>Yes</b>	<b>2</b>
<b>Suppliers</b>	<b>3 (out of 5)</b>	<b>Yes</b>	<b>2</b>	<b>Yes</b>	<b>3</b>
<b>NGOs</b>	<b>2 (out of 5)</b>	<b>Yes</b>	<b>2</b>	<b>No</b>	<b>0</b>
<b>Strategic business partners</b>	<b>2 (out of 5)</b>	<b>Yes</b>	<b>2</b>	<b>No</b>	<b>0</b>
<b>Consultants</b>	<b>1 (out of 5)</b>	<b>Yes</b>	<b>1</b>	<b>No</b>	<b>0</b>
<b>Investors</b>	<b>1 (out of 5)</b>	<b>Yes</b>	<b>1</b>	<b>No</b>	<b>0</b>
<b>Legislators</b>	<b>1 (out of 5)</b>	<b>Yes</b>	<b>1</b>	<b>No</b>	<b>0</b>