

# How SMEs use Industrial Property Rights (IP) within SME value chains.

*Preliminary proposal for a 3 (max 4) year research project leading to a PhD. In preparation for the WION workshops on Advanced Purchasing Research and to be worked out in more detail as a PhD research proposal before MAY 2013.*

**Keywords:** micro-economics; boundary of a firm; product innovation technology innovation; new product development (NPD); technology transfer; intellectual property rights (IPR); industrial property rights (IP); patents; demand and supply chain; value chain; supplier-buyer relations; new business development (NBD); B2B marketing; strategy; management; purchasing; procurement; small&medium-sized enterprises (SMEs).  
**Stakeholders:** SME management and practitioners; IP (patent) holders; business researchers; IP (patent) or business consultants.

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## Contents

1.	Introduction of the research subject .....	2
2.	Why is this a relevant research area .....	4
3.	Defining and delimiting the research area .....	6
4.	Results from initial desk research .....	9
5.	Discussing highlights from desk research .....	10
6.	On the research methodology and the availability of data .....	10
7.	Preliminary research questions .....	11
8.	A possible time line & actions .....	12

## Summary

This document is a draft research proposal meant for enrolling in a PhD program. SMEs use innovations protected with Intellectual Property (patents) with varying success, innovations are important to SMEs but the failure-rate is high.

My current research objective is to find out: ***How innovating SMEs can best use Industrial Property Rights (patents) within value chains with their (SME) suppliers and their (SME) customers, what are best practices and improvement areas, what is a suitable theoretical framework, how can enterprises, business researchers & practitioners benefit from applying this framework.***

This document describes the relevance of my research, gives a brief overview of the research area, poses a number of possible research questions, and a possible time line. Before May 2013 I want to finalize this research proposal and find opportunities for funding aligned with a suitable PhD-program. I hope to enrol in a PhD program before October 2013.

Preferably my PhD research will be conducted at a research centre in New Zealand (or Australia) in cooperation with a European university. The dataset may be obtained from 'independent' SMEs or/and from SMEs using IP from universities or IP from high-tech large enterprises. The context is facilities management.

## 1. Introduction to the research subject

The Resource Based View (RBV) of the firm posits that companies compete with their resources, which are valuable, rare, in-imitable and non-substitutable (VRIN). For good company performance, it is essential how these companies manage (deploy) said resources<sup>1</sup>. Such resources include resources obtained from third parties like suppliers or customers. In many economies Small and Medium-sized Enterprises (SMEs) are engines to growth. Compared to Large Enterprises (LEs), SMEs however seem less successful in *acquiring* product innovations<sup>2</sup> from third parties (suppliers), and are less successful in *commercializing* product innovations to third parties (B2B customers or competitors)<sup>3</sup>. Industrial Property Rights (IP) are generally seen as a supporting means to protect innovations and hence to increase their profitability. Patenting is seen as a relatively cheap strategic or tactical instrument to generate a competitive advantage i.e. to increase the firm's performance<sup>4</sup>. However, somehow SMEs seem to be less successful in applying this instrument than Large Enterprises (LEs). One reason for a lower success rate could be that patenting activities within SMEs are not coordinated within an effective supply chain i.e. an effective value chain<sup>5</sup>. Other research suggests that SMEs do actively and successfully manage patents<sup>6</sup> but also can experience managerial or financial constraints when doing so (*add source*).

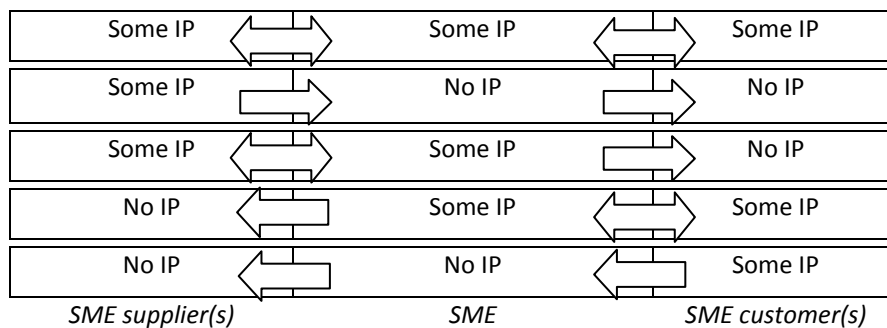


Figure 1: Simplified value chains: Several types of dominant interactions with IP-protected innovations

Depending on the position of the dominant IP holders within an SME value chain, the dominant interactions between companies will be different. Figure 1 shows this in more detail in which the arrows indicate reciprocal or unilateral IP transfers. Moreover, IP operates towards third-parties and IP in its nature entails uncertainties and risks involved<sup>7</sup>. Each type of value chain will hence require different IP management (see §3 for definitions) for the innovation out of this value chain.

<sup>1</sup> See also Sok (2011) citing: Barney (1991), Crook e.a. (2008), Newbert (2007) and Teece e.a. (1997)

<sup>2</sup> This proposal currently follows the innovation definition of Afuels (1996). See also the Massey (2007) OECD report.

<sup>3</sup> Needs a better source, but see e.g. page 5 of the OECD report "SMEs, Entrepreneurship and Innovation" (2010)

<sup>4</sup> Jell, F. (2012) Patent Filing Strategies and Patent Management

<sup>5</sup> See e.g. Low e.a. (2007) on the Interrelationship between innovation and marketing strategies of SMEs.

<sup>6</sup> Rassenfosse (2010).

<sup>7</sup> See e.g. Somaya (2012) "Patent Strategy and Management – an Integrative Review and Research Agenda"

Research further suggests<sup>8</sup> that value chains including SMEs work imperfect as SMEs are not able to properly balance between trust, openness and rewards. At the same time there is relevant research on innovation and what SMEs can do to enhance their innovation success (*add source*). It is not always clear how SMEs can effectively use IP with suppliers and B2B customers, put differently what IP strategies SMEs should use. Should SMEs be open-minded and stimulate open innovations (Chesbrough, 2003) or should they be careful in when to cooperate (Verreyne 2010, Schiele, 2011, Knutsen 2011) or even prefer fully closed innovation. How should the SME balance risk and uncertainties and stay in control with regards to stronger partners within the value chain. (*And internally: not be overtaken by the IP lawyers*). How should the SME balance between giving IP (know-how) away (e.g. to B2B customers or in tender processes) or establishing exclusive IP rights, or share such exclusive rights with licensing, or keeping their know-how (as trade secrets) to themselves. These and other questions need answers and to which this PhD project hopes to contribute. SMEs use innovations protected with patents with varying success, innovations are important to SMEs but the failure-rate is high.

The overall (and preliminary) objective of this PhD research therefore is to get a better insight in ***How innovating SMEs can best use Industrial Property Rights (IP) within value chains with their (SME) suppliers and their (SME) customers, what are best practices and improvement areas, what is a suitable theoretical framework, how can enterprises, business researchers & practitioners benefit from applying this framework.***

This is still a broad and interdisciplinary research area. The focus in this proposal currently is on manufacturing SMEs and their partners which are mainly also SMEs. Using IP<sup>9</sup> is deciding on how to *acquire* or establish IP (patent) rights and deciding on how to *commercialize* said rights. The study could compare the situation in several countries<sup>10</sup> or in several industries. This area needs further delimitations. The final research scope and hence the final research objective will be determined by investigating gaps in literature, and the need or the uncertainty as displayed by e.g. a IP holding SMEs, other IP holding organisation (like universities or LEs), by IP consultancy firms, and by IP scholars specialised in this field.

SMEs	<i>Better innovations due to better IP strategies</i>
Academia	<i>Better understanding on how IP strategies work within this setting</i>
IP consultancy	<i>Better understanding of IP strategies and possible interventions for IP strategies</i>
IP owners	<i>(These may be SMEs but could also be other IP supplying parties). Better ROI due to implementing and managing better IP strategies.</i>

Figure 2: Overall results of the PhD project for main stakeholders

<sup>8</sup> See Badenhurst-Weiss e.a. (2004) A Small Business Perspective on Supply chain Management, IPSERA

<sup>9</sup> This text uses the phrases “IP management”, “IP strategy”, and “using IP” still indiscriminately along each other.

<sup>10</sup> Rassenfosse (ibid) e.g. finds differences in the US situation compared to the EU situation.

The research objective will also be defined by my personal interest and possibilities to join a research program. The contribution from this PhD project for the *main stakeholders* is shown in Figure 2. Aspects of relevance are discussed in the next paragraph; the main concepts are explained in paragraph 4; paragraph 6 mentions briefly mentions research methods and issues on availability of data; paragraph 7 mentions a number of possible research questions; paragraph 8 gives a possible timeline.

## ***2. Why is this a relevant research area***

In many countries SMEs are considered engines for economic growth and SMEs generally need innovations to realize such growth<sup>11</sup>. SMEs increasingly contribute to successful innovations<sup>12</sup> but innovation processes have a high failure rate<sup>13</sup> and at the same time the life-cycles of new products and services is still declining<sup>14</sup>. IP and hence patents (also see the previous paragraph) play an important role in innovation. Worldwide annually approx. over 400.000 patent applications are being filed to protect technology innovations or to otherwise work against competitors<sup>15</sup>. The Dutch Central Bureau for Statistics (CBS) indicates that between 1995-2005 Dutch R&D-activities shifted from LEs to SMEs, and that said Dutch SMEs source and purchase a large part (58%) of these R&D-activities abroad. Other studies show similar trends (*add source*). Innovation is a broader business concept than R&D. (See next paragraph on definitions). Rosenbusch (2011) states that although generally innovation increases firm performance, the relationship between innovation and performance is not always straight forward and positive. The success of innovation is largely determined by people and organizational aspects (75%), and much less by investments in R&D or in technology (25%)<sup>16</sup>. Also, research indicates (*add source*) that an innovative *attitude* could be more rewarding than a high innovation *output*. Research (e.g. by Walhof e.a. at Hanze University) indicates that while SMEs have a high spend ratio of 60%, their purchasing maturity compared to LEs is lower. That is to say, SMEs at least seem to use less purchasing methodologies and strategies<sup>17</sup>. Over the last decades LEs benefited

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<sup>11</sup> See e.g. Massey (2007) OECD Working Party on SMEs and Entrepreneurship. Compare the Chesbrough (2006) quote: "Most innovations fail. And organizations that do not innovate die".

<sup>12</sup> Bianchi (2010) as cited by Spithoven (2012)

<sup>13</sup> Page (without year) as cited in Wulfsen mentions a success rate of 10%; S. Cierpicki, M. Wright and B. Sharp (2000) mention a success rate of 60%. (Possibly depending on the definition of "success").

<sup>14</sup> Cooper (2005) of consultancy firm A.D. Little. (Newer source needed.)

<sup>15</sup> In Europe, 250.000 filings in 2011. <http://www.epo.org/about-us/office/annual-report/2011/highlights.html>

<sup>16</sup> Dutch Innovation Centre (Nederlands Centrum voor Innovatie), 2011.

<sup>17</sup> Not sure, but could be Pressey e.a. (2009) mentioning this in "Purchasing practices in SMEs: an examination of strategic purchasing adoption, supplier evaluation and supplier capabilities".

from academic business research<sup>18, 19</sup> and adopted sophisticated business methods to a far greater extent than SMEs did. Following this reasoning, SMEs who purchase and commercialize innovations and/or acquire and commercialize IP rights could be equally less-managed. At the same time, research shows that successful patenting also occurs more often in LEs than in SMEs<sup>20</sup>. On the other hand theory suggests that SMEs can use IP rights to overcome their disadvantages in resources and size, and research furthermore suggest that SMEs use their patent portfolios more effectively and efficiently. Recent research from Spithoven and Vanhaverbeke<sup>21</sup> (2012) indicates that innovations protected by IP is more important to SMEs than LEs which would support the line of thought that this helps SMEs to compensate their smaller size.

The European Patent Office (see also OECD report, DEC 2010) as also explained by Jell (2012), report an 'explosion' in the numbers of patent application and (granted) patents. It is obvious that not all these patent applications will be a commercial success in future, nor that all granted patents will be able to ultimately successfully protect inventions. Furthermore, the success of innovations and hence of their patents depends on the success of the supply and demand chain (value chain) when an end-customer is willing to buy the innovated (patented) product. Where value chains fail, patenting is also not effective nor efficient<sup>22</sup>.

The fact remains that profitability within SMEs is *generally* lower than in LEs, that SMEs operate in very differing industries and circumstances and that the *variance* in types of SMEs is huge. The combination of research on SMEs, purchasing, B2B/BD, and IP (patenting) in a value chain has not led to ground-breaking theories. Generalizing on IP strategies in SMEs is an audacious task and any research in this area needs to be very specific.

Moreover (*and now we are getting to my personal motives*): this research area covers five subjects that have had my professional and personal interests for a number of years. After graduating I obtained professional experience in patents and licensing and as such still am interested in how companies acquire, establish or commercialize IP-protected innovations. Additionally I have an industry and academic background in management, in purchasing and in B2B/BD. My experience however so-far excludes practitioner's experience within SMEs; the same mainly holds for B2B/BD and purchasing within SMEs. I find it intriguing to see that methodologies that are successful in LEs do not find apparent successful use within SMEs. It is too easy to say: management in SMEs works informally and inefficient –hence we introduce new LE best-practices. SMEs exist under different paradigms, have less resources (including monetary

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<sup>18</sup> See e.g. Verreyne (2004) on Strategy-making processes and Firm Performance in SMEs

<sup>19</sup> See also Ellegaard (2007) on purchasing strategies in small firms; Hong (2012) on Supply Chains and SMEs

<sup>20</sup> Iversen (2010) in his PhD (Uni of Tasmania) claims that small firms have a lower % of granted patents.

<sup>21</sup> Spithoven e.a. (2012) Open innovation practices in SMEs and LEs.

<sup>22</sup> Following the theories on value chains of Porter (1980), see e.g. Ploos van Amstel (1995).

resources), have a limited set of management skills and competences<sup>23</sup> and LE-methodologies will not always work. However, simple logic argues that SMEs form a large part of the economy. SMEs exist, survive and flourish. Somehow 'un-mature' SMEs business methods are (at least to a certain extent) successful. See e.g. the European Commission database<sup>24</sup> on SME best practices<sup>25</sup>. Nevertheless the general failure rate of SMEs is high and the related profitability low. Successful innovations are needed. In short: my research could cover new ground.

### **3. Defining and delimiting the research area**

This research proposal is related to a recent research proposal of the purchasing professorships at Windesheim University and at Hanze University (both in The Netherlands) to *investigate ways to generally increase the purchasing performance of SMEs*<sup>26</sup>. My research covers a specific aspect thereof: how to increase purchasing performance of SMEs acquiring IP-protected innovations. [This interrelationship will be defined later in more detail]. This paragraph continues to describe theoretical concepts as discussed in the previous paragraphs.

**1)** The business function of a **value chain** includes *demand and supply chain management (DSCM)*. The concept of a value chain in my definition assumes that parties (i.e. SMEs cooperating with one or more customers and cooperating with one or more suppliers) share risks and information and that upstream<sup>27</sup> value (goods or services or intangibles) is transferred (purchased and sold) downstream via invoices<sup>28</sup>. Of course in business reality these companies will act in a network configuration<sup>29</sup> (Dyer), hence I could use the phrase *value network*<sup>30</sup> where companies would be called 'nodes'. For the sake of simplicity I will maintain the phrase *value chain*. This concept of value chain could probably also include non-monetary relationships with partners like customers, competitors, or academia or research institutes as laid down in joint-ventures agreements, R&D agreements, cooperation or IP agreements<sup>31</sup>. Here is a grey area which needs further defining.

**2)** The definition in this research proposal of **Small and Medium-sized enterprises** (SMEs) to a great extent follows the definition of the European Commission<sup>32</sup> but needs further defining as to what specific industry and segment. Notions of what exactly an SME is (*synonyms: small firm,*

<sup>23</sup> See e.g. Viljamaa, 2011 "Exploring small manufacturing firms' process of acquiring external expertise".

<sup>24</sup> <http://ec.europa.eu/enterprise/policies/sme/best-practices/database/SBA/index.cfm?fuseaction=practice.list>

<sup>25</sup> This EC database probably does not cover practices on SMEs patents and innovations.

<sup>26</sup> See: Walhof, Hagelaar e.a (May – Nov2012) multi-year research proposal for Nevi Research Foundation: "Total Purchasing Improvement within SMEs"

<sup>27</sup> Upstream: towards suppliers; downstream: towards customers.

<sup>28</sup> Compare e.g. Telgen (2000?) on his definition of purchasing: *it needs an invoice*. See also Ploos van Amstel.

<sup>29</sup> Dyer (2002) Competitive Advantage - Winning through Extended Enterprise Supplier Networks. (The Toyota case).

<sup>30</sup> Currently I am unsure whether value networks more refer to people networks instead of B2B networks. On more definitions for purchasing etc, see also the ISM-website or Kaufmann's (2002) explanation in the Journal of Supply Chain Management (JSCM).

<sup>31</sup> For further reading, see e.g. Meijer (2006) on Use of patents from academia by LEs and SMEs.

<sup>32</sup> [http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index\\_en.htm](http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm) (2005)

*small company, small business, small enterprise, micro firm, etc*) varies per country. The OECD (2010) mentions e.g. that small firms are generally those with fewer than 50 employees, while micro-enterprises have at most 10, or in some cases 5, workers. Younger SMEs will act different from older SMEs, as will smaller SMEs act differently from larger SMEs. The key variables have yet to be determined.

<i>Company category</i>	<i>Employees</i>	<i>Turnover</i>	<i>or</i>	<i>Balance sheet total</i>
<i>Medium-sized</i>	< 250	≤ € 50 m		≤ € 43 m
<i>Small</i>	< 50	≤ € 10 m		≤ € 10 m
<i>Micro</i>	< 10	≤ € 2 m		≤ € 2 m

Figure 3: Criteria defining an SME (source: European Commission, 2005)

My research will probably focus on the lower range of the medium-sized companies with 50 – 150 employees and a turnover between 10 – 30 million Euros. Only a part of these SMEs will have formal purchasing and sales departments, but this is not a prerequisite for this research.

Narrowing the scope further<sup>33</sup>: research will probably focus on manufacturing companies as they form an upstream source on which other downstream (manufacturing *and* service) companies will continue to build on. Furthermore, this is one of the fields where patenting is possible and done on a large scale. The Dutch Institute for SMEs<sup>34</sup> (Dutch abbreviation EIM) quotes EUROSTAT with approx. 2.3 million European manufacturing SMEs, of which probably<sup>35</sup> only 10% are medium-sized.

A segmentation of said SMEs in my research must not necessarily follow (traditional variables like) company size, geographic region, or industry. The owners' (or the skilled management team<sup>36</sup>) preferences and paradigms (cf Schools of Strategy Mintzberg, 1979) will play a dominant role. Segmentation can hence be constituted differently e.g. with variables like influence of owner; dominant business culture (*whatever that may be*); past success rate; competition (cf Porter, 1980) or customer strategy (cf Treacy & Wiersma, 1997); position in value chain or context; ownership and financing; age of company, etc. This study could comprise one or several of these segments. On the *availability of data*, see the remarks on page 11.

**3) Managing IP.** So far, managing IP within SMEs is not a domain that SME-purchasers or SME-account managers are often found active in. Management within SMEs will probably often not recognize these activities as commercial activities<sup>37</sup>, but use connotations like “managing

<sup>33</sup> This also has to with my background in mechanical engineering

<sup>34</sup> Audretsch e.a. (2009) “First Section of the Annual report on EU SMEs”.

<sup>35</sup> Own breakdown-estimate from a larger SME population.

<sup>36</sup> See also H. Simon (2000, 2009) longitudinal study 'Hidden Champions', on successful German manufacturing SMEs.

<sup>37</sup> This would be one reason to re-phrase “Purchasing and Supply Management” into “Partnering and Supply Management” (On 15th of April 2012: only 7 hits via Google)

partnerships” or “managing strategic activities” and allow cooperation from engineering or legal experts. This is in line with 2x2 matrix of Olsen and Ellram<sup>38</sup>. In their Figure 4 below I divided the probably dominant actors (*added in light grey boxes*) over four diagonal areas. The left-hand side in the Figure shows purchasers and account managers as the dominant actors; the right-hand side shows SME-management and external experts as dominant actors. This is also in line with Hartman’s observation<sup>39</sup> over the supportive role of purchasing instead of a directly value-adding role, and also with research on the role of B2B marketing in innovations. (*Needs source!*).

**4) The phrase Intellectual Property Rights** (IPR) includes Commercial Property Rights and **Industrial Property** (IP) Rights. Patents are seen as a strong component of the latter category. Other forms of Industrial Property include copyright (on e.g. software, manuals) and know how / trade secrets (especially in the US IP system). General requirements to patents traditionally include that they must be *novel* (i.e. new to the world) and *inventive* (i.e. substantially different

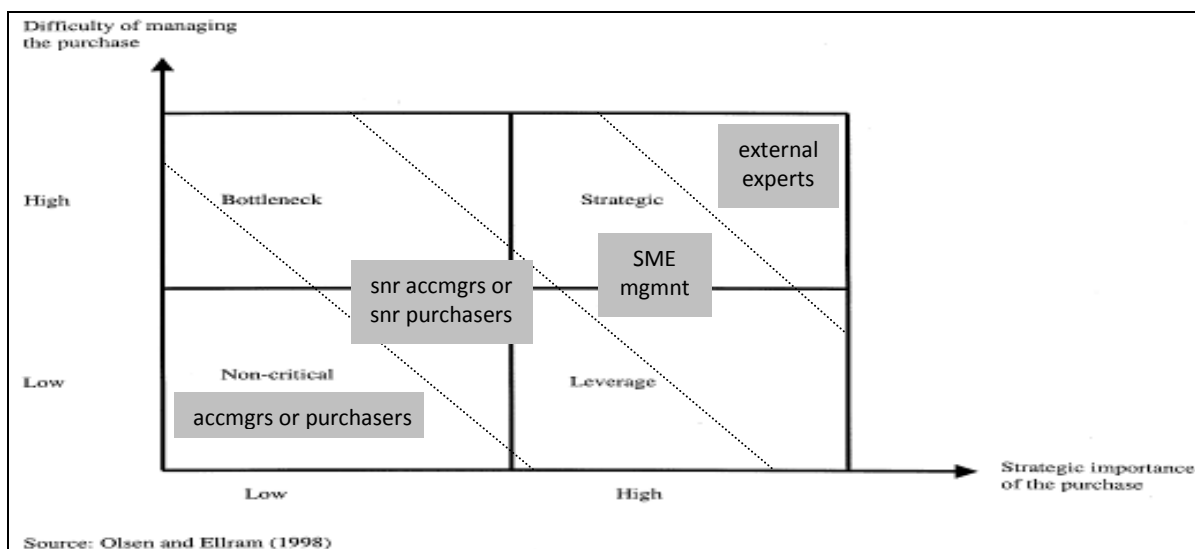


Figure 4: Importance and complexity determines the ‘playing ground’ for SME professionals and SME management

from the current technological state-of-the-art). This would imply that patents more often protect disruptive<sup>40</sup> innovations rather than incremental innovations. (See also below). This could also depend on the technology or industry (i.e. chemicals; electronics; IT; engineering). Furthermore, seeing the explosion in the number of patents over the last decades, patents also protect incremental innovations. IP practitioners then differentiate between *base patents* (starting off a disruptive innovation) and later patents building on said base patents<sup>41</sup>. Patent rights are granted to the owner / inventor in return for disclosing the invention to the public; patentees generally use these exclusive rights towards third parties using the patented invention. This research

<sup>38</sup> Adapted from Olsen and Ellram, 1998. See also Fishers 2x2 matrix on commercial and technological complexities.

<sup>39</sup> Hartmann e.a. (2012) Top and Bottom Line relevance of Purchasing & Supply Management

<sup>40</sup> Literature uses a variety of phrases, disruptive here meaning having an inventive step.

<sup>41</sup> I am as yet uncertain whether literature follows the same line and whether there is a good definition of base patents; this may somewhat differ per industry and per patent system as inventiveness differs accordingly.



proposal uses the terms IP, Industrial Property and patents along each other; the focus in the final proposal is yet to be determined.

5) The term **innovation** must be understood as an upstream or downstream innovation an SME wants to get access to or to commercialize within his value chain. The OECD (2010) report uses the Oslo classification which I follow. The innovation consists of two parts: a (product) *development* (sometimes called *invention*), and a (product) *commercialization*. Miller (1997) defines an innovation as bringing *a new product successfully to the market*. These may be sustaining (incremental) or disruptive (radical) innovations. (Christensen, 1997). The SME transforms a product idea (better: product concept<sup>42</sup>) according to its business model to create (add) value to its customers downstream. This implies that innovations must have relevance or visibility downstream. The input i.e. the inbound innovation can be either *process-focused* or *product-focused*. The consequent output i.e. outbound innovation is a product innovation acting either as *product-related* (as Bill of Material (BOM), also as semi-final product, or component) or as *non-product related* (NPR, as a machine, tool, spare-part or machine-component) to be sold downstream. This needs further defining, e.g. to also differentiate from mere process or product improvements. In this context an *invention* is seen as the initial (creative<sup>43</sup>) part of an innovation: developing something new. Innovation can be described as new to the company versus new to the world (OECD 2010); can be defined (relatively) as high-tech, mid-tech, low-tech (*add source*). This can be an open or a closed innovation (see Chesbrough 2003, Pullen 2007). The planning side of innovating includes business concepts as New Product Development (NPD, see also Wheelwright e.a, 1992; Cooper, 2001) and New Business Development (NBD, Stevens and Burley? 2004). This research proposal *excludes* 'normal' supply chain improvement such as *process* innovation or *distribution innovation* that is innovations on how products or services are presented (distributed) downstream to customers<sup>44</sup>. Concluding: The term innovation hence implies a combination of tangible and intangible (production) assets wider than mere R&D results or IPs. This research will focus on IP aspects with innovations. These innovations are at least technology-related.

#### **4. Results from initial desk research**

Initial and partial desk research<sup>45</sup> revealed some relevant literature on the current state of research which enables to further define the research area. Figure 5 indicates main results. This desk research does not yet fully include the role of the B2B/BD function, and does not include a completed desk research on managing IPs. Depending on the desired research objectives,

<sup>42</sup> See e.g. The Spanish scholar Trias de Bes (in his TED-EX Esade presentation on Innovation, 20 June 2011)

<sup>43</sup> Cuttler (2000). In patenting an invention only relates to the subject as *protected* in the patent. See also Jell (2012)

<sup>44</sup> This follows i.a. the EIM definition De Jong (2005, p 21) "De bron van vernieuwing [...] in het MKB".

<sup>45</sup> Mainly Conducted from April 2012 via Google Scholar and Hanze University databases (Emerald / Elsevier etc).

coding	Description of subject	# of articles	cited authors	remarks
0	On SMEs, purchasing and Innovation	12		
1A	On purchasing and innovation	10		
2A	On innovation and SMEs	5		
3A	On purchasing and SMEs	15		
1B	Related to either innovation OR purchasing	2		
2B	Related to either innovation OR SMEs	0		
3B	Related to either purchasing OR SMEs	7		
4A	<i>Purchasing</i>	8		
5A	Innovation	5		
6A	<i>SMEs</i>	5		
zz	<i>Articles on IP (not indexed)</i>	30		
Total		99		

Figure 5: Results from initial desk research

additional (iterative) desk research will find more relevant literature and will create new insights needed for finalizing the research objectives. After finalizing the research objectives the number of potentially relevant articles will have been reduced.

## 5. Discussing highlights from desk research

[This chapter will be added in a later stage].

## 6. On the research methodology and the availability of data

The exact strategy on getting access to data will influence my overall PhD objectives and vice versa. (See also next paragraph).

The project will start with quantitative and then grow into qualitative research, the latter partly being conducted as action-based research in case studies<sup>46</sup>. For the first phase of my research I can possibly use datasets from the OECD, the European Commission or specialised sets from SME Centres like in Auckland and Brisbane, or from the EIM in The Netherlands. Additionally I will need to obtain rich qualitative data from SMEs. A second step could therefore be sending out surveys followed by semi-structured interviews. As SMEs probably are *not* likely to discuss their patenting (innovation) strategies with third parties and e.g. probably are not aware of a strategy typology they would fit in<sup>47</sup>, as a third step I will need to come in a trustworthy position in order to observe and participate. This will be conducted in a controlled number of case studies<sup>48</sup>. I could get access to SMEs via IP consultants and large IP owners with contractual agreements with SMEs

<sup>46</sup> See e.g. Dul J. and Hak T. "Case study methodology in business research" (2008) or work from De Leeuw (2006).

<sup>47</sup> See Verreynne (2004) following Mintzberg concluded that the rational strategy (LE) approach may not work in SMEs, and proposed a typology with simplistic, adaptive, intrapreneurial and participative modes of strategy making.

<sup>48</sup> Perhaps I could use the Consortial Benchmarking Method (Fahmi e.a. 2002; Schiele e.a. 2012) as a form of academic-practitioner collaborative explorative research.

(universities or research institutes like the Dutch TNO). Also, tapping from experience from IP departments or purchasing departments from LEs (like Philips) could be helpful. This I will have to work out, and try in detail.

## **7. Preliminary research questions**

It is clear that in this stage defining any research question seems like a bold adventure. Nevertheless it gives the reader *some guidance and food for thought*. Therefore I here pose a number of possible questions and will reduce these later-on. I realize that these questions are currently overlapping, and not SMART. They miss some solid ground and direction but will iteratively be fine-tuned via preliminary interviews and additional desk results. This should then lead to final research objectives.

1. *How do SMEs conduct licensing-in or licensing-out activities, or right-out transfer (purchase or sale) of patents.*
2. *How do SMEs react in case of wilful or unwittingly infringement or loss of IP.*
3. *How do SMEs conduct establishing patent rights with a view to downstream developments.*
4. *Does one see differences e.g. related to primary products (Bill of Material) or secondary production innovation (Non-Product Related). What other variables are apparent.*
5. *Why do SMEs acquire or establish relatively few patent rights, whereas literature suggests that this is a relatively safe and cheap strategy?*
6. *How do SMEs balance between trust, openness and trade secrets (i.e. no contracts) versus patenting and contractual agreements? Put differently: when do SMEs use open innovation with(out) patenting, and when do SMEs use closed (internal) innovation with(out) patenting.*
7. *How do SMEs cope with risks and rewards with their partner SMEs wrt patenting.*
8. *What roles do IP consultants take towards SMEs related to the above questions?*
9. *What roles do SME staff responsible for purchasing and/or B2B/BD play related to questions 1 – 7. What roles do SME owners (including financial owners) and managers play related to question 1 – 7.*
10. *What e.g. is the relationship between management style and dominant strategy school (Mintzberg, 1987; Verreynne 2004 or others) wrt IP (patent) strategies within SMEs.*
11. *What decision rules does SME management / owners need to be able to define better IP (patent) strategies. Put differently what are key indicators and success factors for SME management.*
12. *What is the importance of patents in the IP / Technology transfer to or between SMEs?*

13. *What competencies & means do SMEs need to successfully purchase IP-protected technology; put differently how does an IP holder (licensor) assess the absorption capacity of its potential SME licensee.*

## 8. A possible time line & actions

To better define a possible research question and obtain necessary guidance and input for the remaining part of 2012 I propose the activities as laid down in Figure 6.

1	<i>Discuss content and methodology with the purchasing professor Gert Walhof and facility management professor Dr Mark Mobach</i>	<i>(June 2012)</i>
2	<i>Participate in Salzburg PhD workshops on Advanced Purchasing Research</i>	<i>(July 2012)</i>
3	<i>Redefine a better research proposal</i>	<i>(Summer 2012)</i>
4	<i>Align time line with possibilities within Hanze university, others</i>	<i>(Sep 2012)</i>
5	<i>Finalize a better research proposal</i>	<i>(Oct 2012)</i>
6	<i>Find sponsors and supervisors</i>	<i>(Nov 2012)</i>
7	<i>Discuss amended proposal in AU / NZ; and at PhD workshop WION</i>	<i>(Nov – Dec 2012)</i>
8	<i>Discuss proposal with IP experts and (external) stakeholders</i>	<i>(after Jan 2013)</i>
9	<i>Discuss proposal within Hanze university for approval</i>	<i>(after Jan 2013)</i>
10	<i>Enrol in a suitable PhD program (yr 1)</i>	<i>(after April 2013)</i>
11	<i>Start provisional PhD program (yr 1)</i>	<i>(October 2013)</i>
12	<i>Finalize Research Proposal and get this approved for yr 2, yr 3</i>	<i>(October 2014)</i>

Figure 6: Preparation phase: time-line and actions in 2012, 2013 and 2014

Currently the years of the PhD project after JUNE 2013 are somewhat blurred. Much will depend on how my research project can be embedded within a larger research program, on the availability of data, on the physical location of the supervisors, and the exact nature of the program.

This PhD program preferably covers some of the following areas:

1. *DSCM, value chains, networking, B2B/BD and purchasing*
2. *Innovation management; NPD; NBD; technology transfer & management*
3. *Strategies on Intellectual or Industrial Property Rights esp. (?) on patenting*
4. *Strategies in SMEs, Managing SMEs.*

Currently I see a six-phased approach in a three (four?) year (mostly) full-time program. Each phase will be concluded with internal products (I) and external products (E). The internal products will e.g. consist of coursework papers, progress reports or participation in workshops. The external products will e.g. consist of presentations on international conferences or publications in refereed journals. Generally: I need to find out what the role of the supervisor and the program is in this research and how I can get matters aligned.

	<b>A 6-phased-approach of activities</b>	<b>Internal (I) and external (E) products</b>	<b>Type of research</b>	<b>When</b>
0	<i>Prepare PhD research proposal (see Fig 5)</i>	<i>I: Review and define research agenda. I: Discuss in PhD workshops, etc.</i>	<i>(several)</i>	2013
1	Get an overview: Define and discuss (review) current research; get a deeper insight in the subject areas. <i>(See also PhD-program)</i>	E: Review and define final research agenda in article. I: Discuss in PhD workshops.	Extensive desk research and interview experts.	2014
2	Investigate current industry practices in one or more segments ( $K \gg 1$ ).	E: Discuss results of quantitative research in paper. I: Discuss in PhD workshops.	Quantitative research. (N = 150?)	2014
3	Get deeper insights in best practices in a selected number of segments ( $K > 1$ ).	E: Discuss results of qualitative research in paper. E: Discuss results on conferences.	Qualitative research. (N = 30?)	2015
4	Design and validate theoretical framework or model; modify ( $K = 1$ ).	E: Discuss model or framework 1.0 in article. E: Discuss results on conferences.	Modelling; qualitative research. (N = 10?)	2015
5	Validate modified framework or model in more segments ( $K > 1$ ).	E: Discuss modified model or framework 2.0 in paper. E: Discuss results on conferences. I: start doctoral thesis.	Modelling; qualitative research. (N = 20?)	2015 2016
6	Conclude research.	E: Write concluding article. E: Discuss results on conferences. I: Conclude doctoral thesis.		2016

Figure 7: A possible timeline for the PhD project [This needs be finalized]

**SOME CONCLUDING REMARKS:**

1. I only want to begin this exciting journey if I can also sufficiently consider the well-being of my wife and children.
2. My original proposal focussed on innovations through SME value chains. The document was re-written (from version 0.1) in October 2012 beside my activities as a husband & father, and my activities as a senior lecturer and researcher at Hanze University.
3. Life is an exciting journey in itself and my ambition is to conduct this research at a university in New Zealand or Australia. This will give me a complete new experience in teaching and research. And at the same time my family and I will enjoy the lifestyle Down Under.
4. In November 2012 (version 0.2 of) this proposal was discussed at 5 universities in AUS and NZ and was then adapted with some additional desk research. It still needs more focus & quality.

**Suggestions welcome!**

Regards Anne Staal