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## Business Strategy and Governance of Intellectual Assets in Small & Medium Enterprises

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### Abstract

The effective governance of intellectual assets in small and medium enterprises (SME) is a key factor in maintaining international competitiveness, but most SME are far from integrating this element into their business strategy. Following a review of relevant literature in which we cover definitions and existing frameworks for measuring and managing intellectual assets, we consider the maturity model as an alternative approach. The paper builds a conceptual model that can be used as a basis for characterizing SME governance strategies and behavioural patterns, identifying five types showing increasing commitment and proactivity as companies take a more strategic view of their intellectual assets, invest more in governance, create appropriate structures, systems and routines and adopt an expanding range of tools as they move from no action, through isolated responses to external stimuli to the adoption of an integrative governance approach. The model has both practical uses for managers and constitutes a solid foundation for further research.

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### 1. Introduction

Surviving over the longer term in today's knowledge economy is a challenge that requires firms to create, accumulate and apply their intellectual assets, converting them into competitive advantages that can be exploited and sustained in their chosen marketplace (Hall, 1997; Huggins and Weir, 2012). Although managing intellectual assets in general and intellectual property in particular can represent a

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challenge to all companies, SME are known to face additional barriers (Radauer et al 2007). Given the importance of the SME sector in many economies and its potential as an engine of economic dynamism, source of innovation, technological progress and employment (De Jong and Marsili 2006), a better understanding of the barriers to successful intellectual asset management and how to help SME overcome them is of interest to policy makers and other stakeholders involved in fostering competitiveness. Our interest lies in understanding the strategies – explicit or otherwise – that SME employ to manage, protect and exploit their intellectual assets in order to enhance their competitiveness or market position and to contribute to more robust and defensible business models. Identifying the behaviour of SME in this respect is an important starting point, but given the complexity of the issue as well as its strategic nature, we also need insights into the rationale underpinning the decisions and actions of companies. This paper seeks to build a conceptual model that can be used as the basis for characterising their strategies and understanding what drives them.

## **2. Literature Review: Conceptualising the Domain of Intellectual Asset Governance (IAG)**

### *2.1. Towards a definition of intellectual assets*

The concept “intangible assets” is just one among a number of sometimes overlapping terms that are used to discuss the area of intangibles that exist within a company. At times it has been defined in terms of what it is not (i.e. everything owned by the company which is not tangible) or by what it represents (the difference between market value and book value of a company). Most definitions of the concept – often labelled intellectual capital) - appear to concentrate on the fact that it is about the knowledge or intellectual materials within a company which are considered to be a means to an end, namely the pursuit of profit and wealth. In other words, it is a future oriented concept that is focused on the earnings potential of a company (Hall, 1992; Stewart, 1997; Edvinsson and Malone, 1997; Edvinsson and Stenfelt, 1999).

The early conceptualisations of intellectual capital that sprouted towards the end of the 1990s essentially identified three core components: Human capital, Customer Capital (also known as external capital or relational capital), and Structural capital (Saint-Onge 1996; Bontis, 1999; Allee, 2000). Harrison & Sullivan, echoing Roos et al (Roos et al 1997) define Intellectual Capital (IC) as “knowledge that can be converted to value” in broad terms and go on to distinguish between human capital, which is tacit knowledge stored in the heads of people, and “intellectual assets” (IA), which are made up of codified elements of knowledge, while intellectual property (IP) is the sub-set of the intellectual assets of a company which can be legally protected (Harrison & Sullivan 2011). A similar approach is espoused in a study of Knowledge Intensive Businesses which differentiates between the total stock of knowledge (intellectual capital) and the institutionalised knowledge (intellectual assets) of a firm (Huggins and Weir 2012). We follow this approach for our conceptualisation of intellectual assets, as we are interested in the codified or institutionalised knowledge specifically.

### *2.2. Measuring or Managing Intellectual Assets*

A number of measurement frameworks have been developed by some of the key early authors in order to measure intellectual capital. The Skandia IC Navigator is one of the earliest tools and although created for a specific company, it was a pioneering development which has inspired the creation of other

approaches and tools. In the Skandia model, intellectual capital is one of the two elements that contributes to market value (the other being financial capital) and is further divided into several elements before being converted into an index that enables the company to report on its historic performance (Edvinsson & Malone, 1997). The Intangible Asset Monitor (IAM) is an alternative approach that focuses on the value of intangible assets (as opposed to equity) and has a similar underlying structure, though the classification of the individual elements differs somewhat. As with the Skandia model, it reports on past performance related to these measures (Sveiby, 1997). A third model, the IC-Index divides intellectual capital into four broad categories in which individual elements are assessed using an index, the result of which is aggregated at a higher level providing an overall score of the most recent period for a company (Roos et al, 1997). Although not quite from the same family, the Balanced Scorecard is often mentioned in the context of these other frameworks, as it has a similar aim and incorporates both financial and non-financial components (Kaplan and Norton 1996).

All four have in common the emphasis on assessing non-financial elements in order to evaluate the company's performance during the previous reporting period. These four approaches, together with 10 further frameworks, are analysed by Karagiannis and Nemetz before developing their own approach. The existing frameworks are classified into two broad clusters: the summary, monetary approach, with a primary focus on value extraction and the analytical, non-monetary approach that includes both value creation and extraction, with all four falling into the latter cluster (Karagiannis and Nemetz, 2009). Whilst of intrinsic interest and value for reporting purposes and although they provide insight into the nature of Intellectual Capital as it is manifest within a company, they are more of a monitoring framework than a management tool. They provide us with information about how each of these elements is measured but not about how it is managed. They are generally oriented to the past and not the future.

The combination of the heterogeneity of the SME population and the widely differing strategies they may employ in managing their intellectual assets, together with the nature of the frameworks mentioned above leads us to conclude that the most fruitful approach to achieving a step change in our understanding of the phenomenon is through the development of a maturity model grounded in the existing literature and the subsequent exploration of this model in the field.

### *2.3. Maturity Models as an alternative approach*

Since the adoption and assimilation of IA management is a dynamic concept which evolves over time, with the profile of a single company changing from one point in time to another, we propose the development of a maturity model for IA management with the objective of characterising the different archetypes in terms of management sophistication. Originating in the field of quality management (Crosby 1979), maturity models have been developed for a wide range of business areas since the early days (Jokela et al 2006). New models and applications continue to appear, with recent examples including maturity models for organisational future orientation (Rohrbeck 2010) and the management of digital marketing channels (Chaffey 2010). Maturity models can be "staged" or "continuous" (Saco 2008) or combine both elements (Jokela et al 2006). The idea of developing typology based on the sophistication with which IP is managed within a company is present within the literature, although not all of them are fully fledged maturity models.

A study of 24 Swiss companies from a range of sectors and regions established three mutually exclusive types, according to the predominant focus of their patenting behaviour. They also identified

two categories of non-users of the formal IP protection system, based on the degree of proactivity of their approach (Friesike et al 2009). This typology however cannot be considered a maturity model. Kitchen et al (Kitchen et al 1998) identify a continuum of behaviours, ranging from “do nothing” through “informal protection practices” and “non-registrable legal rights” to “registrable intellectual property rights”.

To understand the use of patents in Dutch SME in the biopharmaceutical sector, Kern and van Reekum developed a maturity model that focuses on the strategic planning attitude of the company towards patent management practices, based on Ackoff’s planning types (Kern and van Reekum 2012). Although the initial results of the research are not generalizable and the scope of the model is principally focused on patents as well as being restricted to an industry (biopharma) in which one expects patents to play an important role, it is an interesting approach.

Based on their research on “best practice companies”, Harrison & Sullivan develop a typology focusing on what drives a company’s IP management. Their scope is broader than the framework proposed by Kern and van Reekum, though they continue to emphasise formal protection. Harrison & Sullivan go one step further than Kern and van Reekum, as their typology culminates in a “visionary” approach to managing IP which is forward looking, anticipating step-changes in technology and actively seeking business opportunities in these scenarios (Harrison & Sullivan 2011).

Since the Harrison and Sullivan framework is based on leading companies rather than on small and medium enterprises, although it is a good starting point it cannot be directly adopted for use with SME. This point is noted by Sathirakul following his study of Japanese SME and IP management, in which he seeks to test the framework against the realities of Japanese SME, coming to the conclusion that Harrison & Sullivan’s triangle must be inverted, with the final phase of this new inverted triangle overlapping with the first stage of Harrison & Sullivan’s typology (Sathirakul 2006).

Chesbrough explicitly links IP management with the business model of the enterprise and the way in which the company manages innovation. At the lowest level of sophistication or maturity, companies with an undifferentiated business model tend not carry out any innovation and therefore have no IP management activities. The final archetype is much more visionary, with the company able to be innovative with respect to its business model and IP is firmly embedded in all areas of the business (Chesbrough 2006).

### **3. Towards the Creation of a maturity model (MM) for Intellectual Asset Governance (IAG)**

Having reviewed the approaches taken by different authors, we conclude that the Kern and van Reekum categories form a good basis, but the typology is insufficiently broad-based for our purposes. Whilst we accept the argument that the typology of Harrison & Sullivan needs to be adapted to make it more tailored to SME, the alternative typology developed by Sathirakul appears to be based on a new company operating in an uncontested market space (Kim and Mauborque 2005), which is certainly not the situation most SME would find themselves in. The typology of Chesbrough is interesting, in particularly the link with the prevailing business model of the company, and the inclusion of open innovation, but does not go on to develop the element related to the management of intellectual assets in sufficient depth for our needs. Our objective is to build on these ideas in order to develop a typology that is more inclusive, focused on intellectual assets in broader terms. The goal is to ensure that it is relevant

to a range of SME which are already established, encompassing different levels of technology and which may or may not be paying attention to the IP issue.

### *3.1. SME Behavioral Patterns: A proposed typology for Intellectual Asset Governance*

Considering the objectives of our research and bearing in mind the findings of the literature review, this leads us to propose the following archetypes:

- a) **Dormant:** An enterprise with this profile is not taking any deliberate action with respect to its intellectual assets. As a company it will not have identified what intellectual assets it may possess, either because the issue has no perceived relevance to the company or because the company managers have explicitly taken the viewpoint that it is of no consequence. This broadly corresponds to the “inactive” archetype that was identified by Kern & van Reekum (Kern and van Reekum 2012).
- b) **Ad-hoc:** An enterprise with this profile is characterised by an essentially reactive stance (Kern and van Reekum 2012). As a result the company may be engaging in certain behaviours related to valuing, protecting, defending or exploiting their intellectual assets, but they are essentially actions taken in response to specific external stimuli – threats or opportunities – limited and tactical in nature, normally with a short term perspective, looking for relatively quick payback for any expenses incurred. There may be several initiatives going on in parallel without coordination or strategic focus.
- c) **Dynamic:** The main difference between this profile and the previous two is the deliberate nature of the management of intellectual assets. It is the first level at which actions are guided by a certain inherent logic and where the organisation (or at least its leadership) has made a commitment to managing the issue, even if that logic is largely driven by tactical considerations. That said, associated expenses are considered a cost rather than an investment and the resources dedicated to the management of intellectual assets are likely to be relatively scarce. The strategic horizon of the company vis-à-vis the management of its intellectual assets is still short term. There is a certain level of sensitivity to outside forces and to keeping up to date with what is going on, though the company may be some distance from “best practice”.
- d) **Ambitious:** A company that exhibits the behaviours associated with this archetype At this point the company has a pro-active strategy for dealing with the management of intellectual assets and is carrying out most if not all of the primary and supporting activities with a degree of competence. The IP strategy is coordinated with the general strategy of the business. There is probably a department or at least a specific individual in charge of IP issues, depending on the size of the company and the centrality of intellectual assets to their business model. In terms of our existing typologies, it is closest to the “proactive” archetype of Kern and van Reekum and the “integrated” archetype of Harrison & Sullivan.
- e) **Pioneering:** This is the most sophisticated archetype, where one would not only expect the company to be fully in control of all primary and supporting activities of the value chain, and have them closely integrated with both the overall business strategy and business model as well as seamlessly embedded within the enterprise as a whole. Possibly the company transcends the need to have a separate IP department. A strong IP culture permeates the company. Intellectual assets

are created, used, shared, protected, reconfigured and exploited in a continuously evolving manner, anticipating market trends and staying ahead of the pack. One would expect to find a strong level of cooperation with others. Generally this appears to go beyond the “proactive” archetype of Kern & van Reekum and has much in common with the “visionary” archetype of Harrison & Sullivan and the management of IP as a strategic asset advanced by Chesbrough (Chesbrough 2006).

### 3.2. *Developing the Framework of Management Activities*

In order to identify the key management activities that will form part of our Maturity Model and convert it from a stage model to a continuous one, we draw on the literature to analyse what is known about the activities related to intellectual asset management in which SME engage, classifying these activities into direct (items a-e) and support activities (f-j).

- a) **Identification/valuation of intellectual assets:** Harrison & Sullivan refer to this initial step as “opportunity identification” where a company identifies the intellectual assets linked to their business strategy, screens them and decides which need to be protected and how. Although this is a task that neither figures widely in the SME literature nor appears in either the WIPO IP management framework (WIPO 2010) or Burrone’s IP management cycle (Burrone 2005), companies who do not carry out an initial IP “audit” or stock-take are at a disadvantage. Despite its importance businesses are often unsure about what IP they actually possess, and are unable to value their IP and exploit it (Ch’ang and Yastreboff 2003).
- b) **Formal Protection of Intellectual Property Rights (Acquisition):** There are a number of references to SME behaviour related to formal Intellectual property protection in the literature. Although some exceptions were noted (Iversen 2003, Jensen & Webster 2004), generally SME were found to use formal IPR instruments much less than their larger counterparts (Radauer and Streicher 2007; SBA 2003, Kitchen et al 1998). They have also been found to be less effective users of the system (Iversen 2003). The more selective use of formal protection methods (Kitchen et al 1998) extends to utility models and industrial designs, although the latter two forms of protection are sometimes considered more appropriate to the circumstances of SME, since they require lower degrees of novelty and can accommodate the kind of incremental innovation that SMEs may be more likely to develop (OECD 2004). Furthermore, despite the growing internationalisation trends among small and medium enterprises, SME tend to patent abroad less often than larger companies and in fewer countries (SBA 2003).
- c) **Informal Protection Measures:** Although the degree of legal defence mechanisms that underpin these methods varies significantly, the literature generally agrees that SME tend to rely more on informal protection (Radauer and Streicher 2007; SBA 2003, Kitchen et al 1998). Tactics adopted include maintaining trade secrets (OECD 2004, Arundel 2000, OECD 2010b), restricting access to databases and use of documentation (OECD 2010b) exploiting lead time advantages (OECD 2004, Kitchen et al 1998, Moore 1996, Arundel 2000), moving as quickly as possible down the learning curve in order to stay ahead of the competition (OECD 2004), continually developing new products and processes (Kitchen et al 1998, OECD 2010b), relying on technical complexity (OECD 2004), as well as maintaining relationships that are based on trust and using trademarks to



differentiate one's offer, among others (OECD 2004). Similarities have been found comparing the UK and USA (Arundel 2000) and a range of industries – computer software, design, electronics and mechanical engineering (Kitchen et al 1998). An interesting and recent source of informal protection based on survey data (OECD 2010b) concludes that formal and informal means are used to complement one another. Internally, positive approaches that are aimed at supporting staff are considered more effective than the use of contracts and agreements to restrict their access to information and / or room for manoeuvre (Päällysaho and Kuusisto 2008).

- d) **IPR Enforcement:** Enforcement is about ensuring that the intangible assets, and more particularly the intellectual property rights of a company are appropriately defended, and taking corrective action when necessary. Recourse to full legal action in order to address infringement was found to be rare for smaller companies (Kitchen et al 1998). Although SME appear to suffer greater levels of infringement of their IPR, they are less likely to be in a position to do anything about it (Koen 1992, quoted in OECD 2004).
- e) **Exploiting IPR:** Having confirmed company ownership of IP and determined whether it is potentially valuable, the company may consider using the intellectual assets to obtain finance, negotiating licensing agreements or developing business models around franchising. The use of existing intellectual property assets in order to improve one's attractiveness to or negotiating power with potential partners, whether for research or commercial purposes, is another potential means of exploiting IP. One study pointed to a low incidence of use of IP for securing funding (Enterprise Integration Research Centre 2007).
- f) **Environmental Scanning:** Environmental Scanning has been found to be significantly related to firm performance (Karami 2008). Scanning activities range from monitoring for infringements of the company's own intellectual property to looking for potential partners or suppliers. Patent landscaping and tracking what competitors are up to forms part of this activity. There are limited references in the literature to environmental scanning (Timonen 2006, Arundel and Steinmueller 1998, Burrone 2005), and those found tend to focus on a specific aspect. SME are less inclined to make use of the information that is available in patent databases for research purposes, though they do so more actively as the company increases in size (Arundel and Steinmueller 1998). Reasons for this include lack of information about the methods and tools available for the analysis of patent information as well as lack of internal resources capable of carrying out such an analysis, whilst the services offered by the patent offices in this regard are considered inadequate (Timonen2006).
- g) **Create an IP friendly culture:** Irrespective of the processes and systems to manage intellectual assets effectively, it is important to ensure that all members of the company buy into the idea (Sathirakul 2006, Harrison & Sullivan 2011). This involves awareness raising in-company, the provision of information and training to staff at all levels consistent with what the company is trying to achieve and possibly the development of an appropriate incentive system to encourage and reward the kind of behaviours sought (Kern & van Reekum 2012).
- h) **Manage portfolio of intellectual property rights:** The portfolio of intellectual assets and intellectual property rights should be dynamic and evolving, incorporating the rights relating to new innovations and making decisions about whether to cease protecting older assets. Decisions about specific patents, should be considered within the existing clusters of patents that a company

already possesses (Kern & van Reekum 2012). Trademarks should be considered within the overall image and corporate identity of the company. When an SME internationalises, the portfolio becomes more complex as decisions acquire a geographic dimension and must be taken within a context of differing legislative frameworks (Sathirakul 2006).

- i) **Collaboration:** The increasing pervasiveness of open innovation systems (Chesbrough 2003) has significant implications for the way in which IP may be effectively managed. Statistics from the European Union show that slightly fewer than 4 in 10 patents registered with the European Patent Office (EPO) are single inventions, though the vast majority of co-patenting activity is carried out by entities from the same member state. There is a very limited amount of co-patenting across member states and co-patenting activities involving non-member states is negligible (Eurostat 2012). Given the limited resources of SME, forming partnerships and participating in open innovation networks is likely to be an important element for enhancing competitiveness, as is using external expertise in general. Notwithstanding, many companies, especially SME, may be less likely to turn to outside expertise due to the perceived cost involved and the frequent lack of awareness of any support initiatives for SME that might exist, thus exacerbating the lack of know-how or capability to manage intellectual property effectively. If, in addition, a company's peers are in a similar position, and their existing networks have little or no knowledge of the issues relating to IP management, the lack of appropriate networks is an important barrier to changing the status quo (Radauer and Streicher 2007, Burrone 2005).
- j) **Infrastructure:** The Company must create the necessary internal infrastructure, processes and information flows to enable the effective management of its intellectual assets. In other words, the company needs to embed this aspect within the business, so it becomes an integral part of the work of all concerned. There should be explicit guidelines available on how to deal with intellectual assets and the patent function should be incorporated within the organisational structure, with clear indications as to its roles and functions and the human resources required, both in-house and in terms of outsourcing (Sathirakul 2006).

Training is an important issue at all company levels. A survey carried out by the Hungarian Patent office (Hungarian Patent Office n.d.) more than a third of respondents indicated that they had no concrete knowledge of managing intellectual property. Although the company may in principle wish to take action, the lack of the know-how (sometimes manifest as the lack of specialist personnel) impedes the company from turning information into concrete actions. A persistent lack of knowledge among SME in developed countries continues to be noted also by the international organisations (OECD 2010a).

Financial resources to cover both the initial "investment" and recurrent costs related to the implementation of the IPR management plans of a company will be necessary. Cost is a factor that is often cited as a barrier (Radauer and Streicher 2007), but there appears to be some evidence that simply reducing the fees for patent registration, for example, would not necessarily result in an increase in registration (OECD 2004). This is perhaps unsurprising, considering that registration fees are but the tip of the iceberg as far as costs are concerned. One US study (SBA 2003) notes that SMEs limited resources also inhibit their ability to commercialise their patented inventions in order to reap the benefits. A Spanish survey (Hidalgo 2009) confirms that large firms tend to enjoy the greatest economic return on their patents.



The literature review of intellectual asset governance in SME indicates that only some activities are researched in any depth. The emphasis seems to be on the acquisition of intellectual property rights (protection) and within that context, more biased towards formal protection, although in recent years there have been some studies that consider the informal mechanisms that exist. There is also limited literature on intellectual asset governance as an integrated concept. This lack of attention displayed in the literature may reflect the comparative immaturity of intellectual asset management in small and medium enterprises despite the relatively high profile that intangible assets and intellectual capital have enjoyed in recent years. We conclude that although there may be examples of companies that embody best practice in terms of their governance of intellectual assets, a strategic approach to the management of intellectual assets is not generally widespread within the SME community and the literature provides little insight into the process of assimilation of intellectual asset management practices in small and medium enterprises.

### *3.3. IA Governance: Key Drivers of Success*

Before using the Maturity Model to explore the phenomenon of intellectual asset management in SME, it is important to consider the potential influence of independent factors in explaining differences in behaviour. Drawing our inspiration from Blili and Raymond (2000) and based on our analysis of the literature, we identify the following elements which appear to influence the decisions and behaviours of companies related to the adoption and assimilation of intellectual asset management practices.

- a) **Activity sector:** The sector in which a company operates influences its intellectual property management practices (Radauer et al 2007, Burrone 2005, Lallement 2010), with the type of intellectual property it will need to protect and the instruments it will use differing to an extent (Jensen & Webster 2004). Higher instances of formal protection (patents, designs, Trademarks, copyright) among SME are found in sectors such as biotechnology, pharmaceutical, high technology and certain manufacturing industries (Radauer et al 2007, Enterprise Integration Research Centre 2007). To explain different patterns of protection, Burrone (Burrone 2005) distinguishes between “discrete product industries” such as the pharmaceutical and chemical industries where patenting is more appropriate and other sectors in which innovation tends to consist of incremental adaptations and innovations, rendering utility models, industrial design and trademarks the more likely choices, complemented by the range of informal methods available.
- b) **Perception of leaders:** How the SME leaders perceive the nature and importance of their intellectual assets has an important impact (Sathirakul 2006). It is reasonable to assume that their awareness of the issue and the extent to which intellectual assets are considered of strategic importance to the company influence their attitude and commitment and as a result, the behaviour of the company. Many companies appear not to understand either the importance or potential of the issue (Radauer and Streicher 2007, Said Business School 2006). Failing to perceive the relevance of protecting and managing intellectual property is an important barrier for SME in Europe (INNOVA 2011), though it is clearly not a new problem since a failure to understand the relevance of IP (principally patents and trademarks) to business strategy and competitiveness was already noted by an earlier OECD report (OECD 2004). Negative perceptions (INNOVA 2011) about the IP system – suffused with bureaucracy, time-consuming and esoteric in nature – are other reasons why companies do not make use of the formal avenues for protection. A tendency towards secrecy - the fact that patent filing requires the disclosure of important information - may

lead companies to fall back on informal methods and keeping ahead of the sector (Radauer and Streicher 2007).

- c) **Research & Development and innovation activities** of a company will influence its behaviour. Goldrian's typology divides companies into three archetypes. The first works with existing technology, rarely inventing, needing only to ensure it is not infringing the IPR of others by carrying out patent clearances and applying for licences where necessary, in addition to using some Trademarks and industrial designs. The second is involved in active product development, regularly innovating and accumulating significant know-how, with a steady stream of patent applications as well as Trademarks and industrial designs. This archetype will tend to undertake regular studies of the patent literature and possibly apply for third-party licences or engage in cross-licensing. The third archetype is R&D oriented with an even larger pipeline of new inventions and patent applications, sharing many of the characteristics of the previous archetype, but in addition most likely in a position to grant licences on a more regular basis (Goldrian 1993). Chesbrough links behaviour to innovation distinguishing among different approaches to innovation, ranging from the absence of innovation process, through ad-hoc, planned and externally supported processes, with the more sophisticated type connecting innovation processes to the business model and going beyond (Chesbrough 2006). A recent study of German and French companies also found that behaviour varied according to the company's propensity to innovate (Lallement 2010).
- d) **Knowledge/Technology Context:** Here we are concerned with the degree to which technology or know-how is central to the business model. The more central, the more likely that IP is an important component of the company strategy. The stage of technology life cycle – ranging from emerging technology, through entering the market and exploiting the returns from the technology during the market growth and maturity stages, to the final stage in which the company withdraws from the technology – also influences the way in which IP is managed (Chesbrough 2006).
- e) **Strategic Context:** Irrespective of their actual behaviour, especially smaller companies have been shown not manage their intellectual property on the basis of any kind of plan (Päälyssaho and Kuusisto 2008). We would expect the presence of a strategic vision on the part of the company leaders is also more likely to be associated with more effective management of intellectual property. Companies with a higher level of strategic orientation are more likely to perceive a need to adopt IPR management practices, especially if the strategic orientation for the company is international in character. Ensuring coherence between the patent strategy on the one hand and the business model and strategy on the other is important (Deepak et al 2011).
- f) **Market orientation:** We would also expect to find market leadership to be associated with a more explicit and proactive management of intellectual property. We would also expect companies with a strong marketing orientation to be better at using IP for marketing and selling purposes (disseminating information about patent status or about the presence of proprietary know-how). We would expect companies for whom branding was an important element of their strategy to be concerned about the protection of Trademarks. Lalleman in the study of French and German companies identified differences in behaviour depending on degree of international competitiveness (Lalleman 2010). We would expect internationalised companies to consider the potential for recycling intellectual assets across different geographical zones.

#### 4. Discussion and conclusions

The maturity model as an approach seems to fit well with the objective of characterising the behaviour of SME with regard to the governance of their intellectual assets. The five archetypes developed based on the literature show increasing commitment and proactivity as companies take a more strategic view of their intellectual assets, invest more in their governance, create appropriate structures, systems and routines and adopt an expanding range of tools as they move from no action, through isolated responses to external stimuli to the adoption of an integrative governance approach. The maturity model provides us with a snapshot of their overall level of maturity, but it also enables us to drill down to the specific behaviours in order to identify areas that are lagging behind the overall behavioural pattern of the company. Applying the diagnostic framework at different points over time permits the evolution of the company to be captured. To further enhance the usefulness of the model, the next stage will be to use organisational learning as the catalyst that moves a company from one stage of the maturity model to the next over time.

In addition to serving as a diagnostic framework for a company, it is useful as a benchmarking tool. The incorporation of the drivers into our framework provides a context for the activities of the company and allows the influences of these elements to be taken into account, thereby permitting an insight into the rationale behind the behaviours of a company at a given time. This will be of significant interest to policy makers who are looking for ways to foster the effective governance of intellectual assets in SME as a way of contributing to improving their competitiveness. Furthermore the maturity model serves as a strong framework for empirical research, permitting the in-depth analysis of the way in which companies deal with intellectual asset governance.

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