

Ownership Management in Presence of Fuelling Business Growth by Investing Knowledge and Experience

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Abstract — This study examines the role of knowledge in the venture growth process, ranging from the research and innovation stage to the established firm. First, it addresses the typologies of knowledge and expertise and the means of knowledge based value adding in diverse stages of the new business growth. The complexity of contributing business growth, both with structured intellectual assets, such as the patents, and especially with unstructured knowledge and expertise as assets, has been the source of the research questions of this study; it is understood that a proper guidance model is required to enhance the growth process. Thus, the elements for managing and governing the interests of the stakeholders derived from the venture-to-capital theory have been adopted in this paper as a starting point for creating a more robust view of managing knowledge and expertise in the venture growth process.

Finally, the aim of this study is to conceptualise the ownership management of emerging business from the research stage to viable business start-up firm, and to go even beyond this by evaluating the feasibility of the model considering SMEs' growth strategies. The search for a new model actually involves exploring change management that is outlined by risk taking and rewarding mechanism, social issues, and the investment of both capital and immaterial intellectual properties where the key resources are the founder team, the other key persons, and investors.

Further, this model is characterized by four determinants, and it denotes the dynamism of the entire model.

Keywords — venture capital, venture-to-capital, knowledge investing, knowledge management, innovation management, entrepreneurship

I. INTRODUCTION

Governments the world over are today increasingly being forced to improve their public-funded and public-private-funded research commercialization measures while the interest of private investors and corporations has lessened in regard to ventures still in their early stage, i.e. capitalizing prospective pre-seed business embryos or seed-phase business ventures.

This phenomenon is well known and documented, e.g. in publications by the Finnish Ministry of Trade and Industry [23]. It is not unusual for lucrative innovations embedded in technology research projects, as well as knowledge-

based entrepreneurial activity involving prospective business opportunities, to fail to meet up with the capital market.

Not surprisingly, SMEs also lack the stimulating power of the innovativeness renewal process and injection of knowledge and business expertise that could speed up their new growth and offer a remedy for the threat of shrivelling of their businesses. Approximately 48% of Finnish SMEs (in total, 225 582 firms less than 50 employees) [10] manifest either strong or some interest in growth. Some 6-9% of them are powerfully growth-orientated companies actively seeking opportunities for growth [ibid]. Moreover, one of the cornerstones of the sustainable growth of big corporations is their ability to exploit innovations.

A. Research setting and questions

The objective of this study is to examine the demand for knowledge and business expertise in the area ranging from research to the established firm, and secondly to search for sound ownership management able to capture the unique features of the governance structures reaching far beyond the present standards.

Although defining the concept of knowledge is complex, it is a key element of this study, and therefore requires thorough theoretical consideration. In business economics, knowledge can be valued according to its relevance to business objectives, in which case the value of knowledge is specified by its contribution to the venture as it strives to enter its intended market and to increase its capital value. Therefore, the study extends beyond this by examining structural and non-structural knowledge as an asset that can be invested in, probably together with capital.

Following the theoretical discussion, analyses of three sample spots are produced in terms of the multiple case study research strategy. The first two sample sets are taken from the Measurepolis Network. The third sample set belongs to the category of SMEs and is based on the author's experience in participatory consultant work and co-entrepreneur activity with SMEs in the fields of electronics, process control, ICT, and specialised metal construction. Therefore the study concentrates on knowledge intensive businesses whose technology orientation is high.

The building of the Measurepolis Network is in progress and the planning process is being carried out by the research project; it was launched in April 2006 and is due to last until August 2007. It involves seven universities carrying out research in the area of measurement technology. The present status of Measurepolis is equal to that of the National Centre of Expertise for Measurement Technology held by the Centre of Technology in Kajaani, which is closely linked with “*Idänkaari*”, the Eastern Arc, a co-operation body between measurement-technology research institutes located in Eastern and Northern Finland, which is also co-ordinated by Kajaani. These institutes are as follows: the Universities of Oulu, Joensuu, Turku, Kuopio, Jyväskylä, and Lappeenranta, as well as the State Technical Research Center of Finland (VTT).

In brief, this paper endeavours to determine whether there is room for knowledge investing as separate from investing money, or in a such a way that the role of pecuniary investment is subordinated to knowledge investing.

Even more so, the assessment of the concept of knowledge venturing is discussed as the paper introduces a framework for ownership management that represents at least a promising attempt at capturing the complexity of the ownership of investable knowledge in its various forms. Thus, the focus here is in the arena of consulting, business co-operation, and co-entrepreneurship that implies the opportunity side as well the risk element involved in typical investment activity. Moreover, the concept of knowledge investing is here linked to the venture capital context.

The research questions are as follows:

- What kind of business expertise do early-stage business embryos need to become prospective ventures?
- How does the process of the knowledge and business expertise interaction between parties function?
- What are the contributors and retarding forces of the teaming process of a technologically-orientated researcher team reinforced with business expert(s)?
- Are there some guidelines for the ownership management framework that can be applied in each of the three areas of observation?
- Does knowledge investing comply with the concept of venturing?
- Is it possible to define a knowledge investor, or even further to define a knowledge venture actor? Or it is correct just to speak of co-entrepreneurship, business consulting or board working?

B. Research method

The empirical part of the study was carried out following the principles of multiple case study research logic [35], which implies using multiple data sources, not only multiple cases. Accordingly, observations, interviews,

narratives, and literature were collected, thereby fulfilling the triangulation requirement of case study research study logic.

II. IN THE SEARCH FOR INVESTABLE KNOWLEDGE ASSETS IN VENTURING

Considering the theoretic approach selection, the technology management discipline could be one promising theory for the purposes of this study as it concentrates on the early stages of developing business. However, it does not fully explain the characteristics of the risk in capital investment and the reasoning in intellectual capital sourcing. Therefore, a more robust theory, the venture capital theory, was selected, and from within that theory the venture-to-capital framework [1, 28, 30], which discusses the venture growth process from a prospective to an investable venture. However, venture-to-capital literature leaves room for thorough understanding of what is involved before the birth of a venture.

The ideal business formation process ranging from the stage of basic research to a new business operation is depicted in Fig. 1 next page [12]. Not only creating a new technology business firm, as is pointed out below in the picture, the model involves different ramification options for the business embryo to implement technology transfer or patent trading in the portfolio of an existing company (these ramifications are not shown in the figure).

The model is derived by extending the Venture-to-Capital process [28] with models available in technology and innovation management literature [32]. Similarly, the need of diverse knowledge and business expertise qualities are required depending on the phase in question.

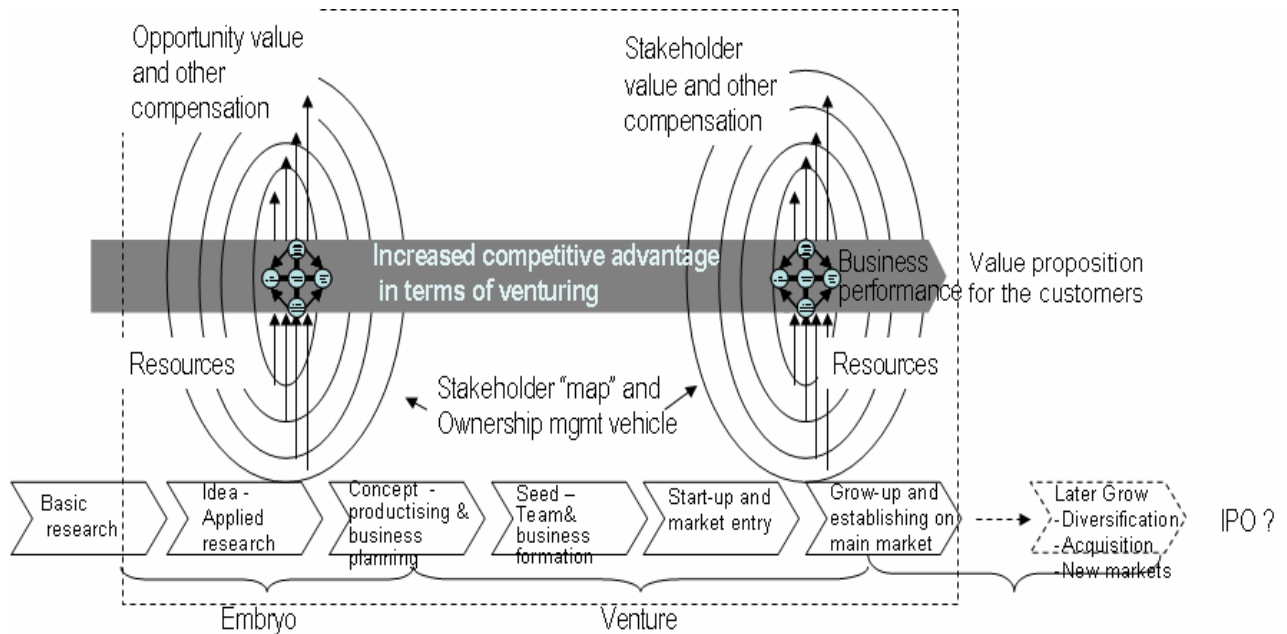


Fig 1. Research to capital framework

A. Venture growth

The concept of venture growth is relatively young. Among the basic theoretical approaches paving the way to understanding the challenges of emerging new business is the resource dependency theory [24]. An enterprise's successful growth is dependent on the availability of resources from its environment. The resource-based view depicts companies as collections of resources and capabilities. Capabilities reflect the ability to combine resources in a meaningful way to promote the company's performance. The actual driving force of for the growth of the firm is especially the managerial capability that realizes the business opportunities and link the resources for creating new growth [ibid].

The driving force needed for growing the venture is articulated in terms of entrepreneurial activity or capital. The capability to utilise scarce resources, project management skills, and a strong will to win barriers are among the traits of the entrepreneurial capital [7]. Therefore, the significance of a committed good leader for a business project is more important than the high quality of the innovation. "A grade A man with grade B idea is better than a grade B man with a grade A idea" was the famous rule of the first leader of American Research and Development Corporation, G.F. Doriot expressed the very same principle [30, p.141].

In the corporation context, the nature of entrepreneurship is also recognized to be a renewing force, although it is complex to maintain and meets resistance from existing businesses and their business area owners [1]. Especially managerial forces committed to serving key customers bringing major revenues into the company are representatives of enterprise stagnation [5]. Therefore an

intrapreneur or an intrapreneur-team creating a new business action very seldom gets support from their colleagues or superiors because their operation may threat the position of the others. The present situation regarding big companies is getting better, although voices of secret and unofficial projects are still heard indicating the existence of stagnation.

Although lack of the first mover, a committed business project leader or champion, can be successfully resolved, there are still two gaps to be crossed. The recent research on the venture capital theory highlights the nature of the funding gap that comprises both capital and knowledge funding. The need for human capital is synonymous with the lack of the diverse skills and competences, which are interpreted more generally as managerial skills and business knowledge or intelligence.

The second, the equity gap, is an obvious and problematic for new ventures seeking small-sized initial investment to be met by a lack of interest on part of capital investors [28, 30]. The equity gap can also be seen as the distance between the venture and the capital market (in terms of both knowledge and money). Reaching the capital market requires a professionally organized ownership management.

As is already illustrated in Fig. 1, the phases are almost the same as those proposed in the venture-to-capital theory; namely, Idea, Concept, Seed, Start-up, Growth, and Maturity [30]. However, here the nomination of Idea is replaced with the terminology found in the technology management literature.

B. Knowledge and expertise in venture growth process

The venture growth process implies a strategic view since managing growth undeniably involves strategic thinking. However, in order to promote other frontiers of

the venture, which are more operative by nature than strategic planning, there is a need for an input of the diverse knowledge qualities. In practice, the venture requires people having not only with different knowledge qualities, but people possessing a particular mindset or logic of thinking [2].

The outlining process of the business concept at the early stage of the venture growth process comprises three main dimensions: organization, product system, and market segmentation [22]. In fact, articulating the business concept manifests the presence of strategic thinking that is the fourth required mindset, and comprises the pivotal questions of strategy planning: What is the market? What are the products for it? What are the resources available in order to gain the intended market with the chosen products?

The incubation and venture capital firm models reveal some other elements, e.g. need for core group competence, drive and commitment of the team, customer relations, and networking [15, 28]. However these additional requirements do not change the basic setting stated by Normann. Customer relations require management skills, although knowing one's customers and understanding their expectations represent both knowledge as well as having a marketing-minded approach. Accordingly, the networking capability is more a matter of a skill than of a mindset. Therefore, the concept of mindset remains the same however much it may be augmented by capabilities and skills.

The growth process model of General Electric – The Execute for Growth – introduces six elements: Customers (i.e. relationship management), Innovation (i.e. the innovation management), Great Technology (i.e. superior products), Commercial Excellence (i.e. sales and marketing), Globalization (i.e. capability to create opportunities and entry to markets everywhere), Growth of Leaders (developing new core group members) [11]. So far, there are no new pieces for the puzzle of characterizing the mindsets and capabilities involved in the growth process. However, when a more detailed understanding of the research and innovation-to-capital process is needed, examining the business platforms and growth process models of big corporations implies a sound foundation for the mapping those requirements.

An emerging business venture, on the other hand, is mainly dominated by skills, experience, and business knowledge, and the role of capital investment money can be even secondary to the role of human resource. Human, not financial, capital must be the starting point and on-going foundation of a successful strategy [3].

Depending on the growth phase, diverse qualities of knowledge and experiences are required. The number of people that can be involved in an emerging business is limited, and thus human capital, i.e. the business experience, the skills, and the knowledge qualities of the core team members, must be in place. Due to the growth process reasons, getting new human capital necessitates

replacing the current workforce with a new workforce; which, though painful, is imperative. The demand for fresh thinking and new knowledge and expertise is pervasive vertically throughout the all firm's layers from top to down. Accordingly, changes in the dominance of the firm's leadership may occur repeatedly. Based on observations made of start-ups in Silicon Valley, Komisar [16] described 'three CEOs' reflecting the different challenges facing the leader of a young venture. The first CEO puts together the team and manages early growth, the next one paves the way to the main market, and finally the third CEO brings strategic wisdom actualising the later growth. In other words, first, as the technology team is being built up, business managerial skills are added to it, next it is complemented by sales and marketing excellence, and finally it is strengthened by strategic wisdom.

Briefly put, as intellectual property is always human-related, the human-related aspects become even more important in the launching phase than they are in an established company. Management and entrepreneurship, in addition to their other characteristics, involve the human aspect since they are based on individual persons' experience and the business knowledge they have accumulated during their career.

Innovations are mainly rooted in their origin, which is of two kinds: 1) Marketing-and-customer-relations rooted, and 2) Research-and-design-orientated rooted innovations [34]. In their breakthrough book on tacit knowledge, Nonaka et al. introduce two case stories, one concerning a bread machine R&D project and the second one concerning sales and marketing people's power in the 3M Company [21]. Both cases underline the principle of two wells of innovations.

Categorizing innovation in terms of its flaming point, other typologies have also been suggested, e.g. innovation that can be related to various drivers such as changes in legislation, cost efficiency based process improvement, hard technology inventions, etc. Moreover, on examining the birth of innovations in diverse industries, Keith Pavitt (1984) found three dominant innovation management styles that are related to a particular type of industry to some degree. The research results claimed categorization by the domination of the following factors: (1) Supplier relationship, (2) Production development intensiveness, and (3) Research and development. Accordingly, an innovation leads to minor product improvements, improvements in the production process, and organization learning, and specialization, and research-grounded innovation can reveal significant new business opportunities.

C. From knowledge assets to competitive advantages

The growth of economic wealth in pace with the growth of the firm is dictated by several contributing factors. Identifying knowledge as an asset is complex and almost incapable of being captured as a separate object. The concept of knowledge found in post-war scientific literature

up to the beginning of the 1990s is discussed in terms of know-how, e.g. Polanyi (organizational learning), and P. Senge (business intelligence), just to name two authors. The literature on strategy, in turn, looks at knowledge as an organic part embedded in competitive advantage, e.g. Porter [25].

The first attempts at defining the typology of intellectual asset categories were conducted by Sveiby and Edvinsson concerning the Skandia Corporation's intangible goodwill value that explains the difference between book value and market value. In their model, on the lowest level, the fifth level, is to be found innovation capital belonging to organizational, then structural, and further in intellectual capital, which is the second of the two denominators together with financial capital, defining the intangible asset value of the Skandia Corporation [31]. Further development of the model adds elements not present in the Skandia model, e.g. relational, social, and technological capital.

The research done by Sveiby et al. and the subsequent research completing their work leaves two major question open. The first is that of how human capital assets are born and developed and the second is that of what knowledge they are built up of and whether some qualities of knowledge are more valuable than others. The aspect of knowledge embedded in the technology management value chain involves three stages at the beginning: (1) Basic research, (2) Applied research, and (3) Product development. Similar stages are available in knowledge transformation process: (1) Knowledge and expertise as an asset, (2) Meaningful knowledge, which is applicable to the business firm in question and articulated sometimes as know-how, (3) Intelligence in resolving customer needs [19]. However, pointing out transformation as a process from the typologies of human capital asset into the customer value, which is the goal and mission of knowledge and expertise in business, is beyond the scope of this study.

The question of matching available knowledge in the most suitable way to meet the criteria of value adding of the venture is of pivotal importance. Further, this study suggests that, under certain conditions where the risks, incentives, human capital offerings and trustworthiness are in place in an adjusted way, the transformation process is embedded, and thus no separate management effort is needed.

The capability to resolve customer problems, the mission of knowledge asset, arises from competitive advantages that form the foundation of a firm. Available knowledge is then brought together by the technologically-orientated founder team and co-founders with more recent knowledge qualities, and other personified knowledge and expertise at the later stages, which contributes to creating competitive advantage and thereby through that the value of the venture. Finally, the secret of value adding is not only in the high grade knowledge and people, but in the way it is

structured. The process of structuring knowledge and protecting it leads to the concept of fully-structured knowledge, e.g. patents and semi-structured knowledge and experience tied with it that can be expressed as core competence [26]. Similarly, the relationship between the research team's research work, their innovation, and the patent can be expressed in terms of the structuring process where the researcher team's knowledge is transformed into a patent, a fully-structured form of knowledge.

D. Valuating the knowledge

Once a co-founder or other value-adding actors are connected with the growth process, their knowledge venturing capabilities and personal experiences and knowledge form the best recommendation for creating a relationship between the parties.

The subject of discussion here is unstructured knowledge assets. Are there differences in the value of diverse types of knowledge? The answer is: "Yes and no." Depending on the context where we apply a particular piece of knowledge, it can be said that a certain type of knowledge is more valuable than another. Further, we have to consider the timely basis view and the circumstances that the type of the knowledge in question is involved in. A good piece of advice can quickly resolve a problem and contribute to decision-making in a business context. Wisdom related to strategic planning does not imply immediate results in the business actions, but it can significantly impact on the firm's future success in the long term.

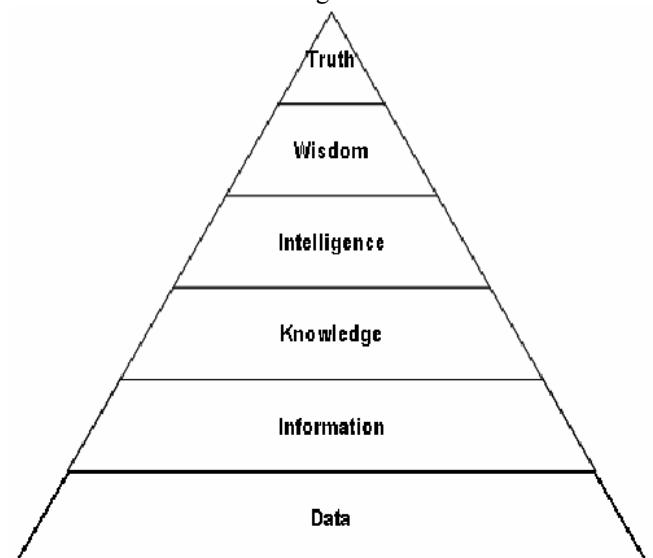


Figure 2. The knowledge typologies by Thierauf

The knowledge typology as defined by Thierauf suggests the following hierarchical order from top down (and it is illustrated in the following figure). The categories are as follows: Truth, Wisdom, Business Intelligence, Knowledge, Information, and Data. Truth is something universal by nature. Therefore, truth is difficult to harness for business purposes. "Wisdom is the ability to judge soundly over time, intelligence is a keen insight into

understanding important relationships, knowledge is obtained from experts and it is based on actual experience.” Business intelligence is knowledge of the business logic and market needs of a particular industry. However, the insight view from the past reaching into the future that captures the changes on the level of macro economy is relatively narrow [32].

Data represent the least cultivated form of the typologies of knowledge. Data are strings or sets of characters. Information is based on symbols, icons or a sound that has relevance with the actions of a human being, unlike data [18]. Data forms information when processed and understood. To make full use of information necessitates transforming it into knowledge. Unlike data and information, knowledge can be utilized and turned into action [31]. The interpretation here is that it is knowledge that offers the platform for action and meaningful operations of business.

The typology as shown here necessitates introducing skill and expertise. Skill is the result of education and training [31]. Many of the operations and hands-on activities of our daily life are based on skills. When combined with knowledge, skill becomes refined into a level of expertise. The requirement for learning skills and creating expertise is that one has the ability to adopt new ideas.

The difference between structured and unstructured knowledge can be illustrated using a patent as an example. Following intellectual asset categories, patents are structured knowledge assets, but they are very heavily dependent on unstructured knowledge. First, a researcher team or a single researcher produces scientific evidence of an innovation which is then confirmed by a team based on *a priori* knowledge and search focusing on the state-of-the-art situation. Then, after lab-scale testing, a proof of the concept is achieved and at the same time preparations for the patenting process are launched. Next, a patent agency produces a novelty study and explores the potential rival patents. Further on, before launching the actual patenting process, the innovation is considered in terms of market opportunities in order to confirm the magnitude of the commercialization potential, whether it is big or small. At this point, if the business potential is big enough and the innovation is worth patenting, the work necessitating the input of a highly skilled expert begins. And last of all, this illustration considers the results picked at the level of an applied research project. Thus, the sequence would be even longer if the starting point had been selected at an earlier stage of the process of basic research. In brief, creating structural knowledge assets necessitates a process involving different tasks, and thus each task requires diverse knowledge qualities, e.g. knowledge (scientific research), skills (lab-scale tests), expertise (creating patent), information (state-of-art search), intelligence, information (survey of actual market need), and perhaps a little bit of wisdom on part of the party deciding to finance the

patenting process. The situation is the same regarding any other structured knowledge involved in venture growth, e.g. a business plan.

E. Creating competitive advantage by intervening with knowledge

The foundation of the firm’s success is based on competitive advantage. For established firms, sustaining competitive advantage is crucial. The anatomy of competitive advantage of a particular firm depends on the firm’s lifecycle, size, industry, business concept, strategy, size of the market, and the prevailing competition [25]. The competitive advantages of a growing firm form a complex set of interacting factors comprising implicitly expressed elements that play a focal role in the success of the enterprise [6]. Therefore, examining the concept of competence creating the link between competitive advantage and knowledge is needed. The company’s competitiveness derives from its core competences and core products. Core competence is the collective learning in the organization, especially the capacity to coordinate diverse production skills and integrate streams of technologies. [27].

The concept of core competence as defined by Hamel and Prahalad highlights five key competence management tasks: identifying existing CC, an abbreviation of core competence, establishing a CC acquisition agenda, building CC, deploying CC, and protecting CC. For example, the first one of identifying involves examining potential access to a wide variety of markets, making a contribution to the customer benefits of the product, and these are difficult for competitors to imitate. The building CC can be fulfilled in terms of reorganizing to learn from alliances [26].

OS, outsourcing (abbr.), strategies indicate the dividing line between core and non-core competences [19]. Not only services belong to infrastructure, such as IT office systems, but also business processes running on top of IT systems are commonplace objects of service providing [20].

Although the co-operation model originates from IT-OS literature, we accept the relationship model to be applied within business venture growth where the technologically-orientated founder team co-operates with knowledge investors.

The concept of value-adding knowledge and expertise claims to utilise the best resources available on the markets. However, it is not readily apparent that the market driven approach works in the early stages of the growth process [23]. Two practical consequences result from this: (1) the intervening process between the knowledge investor and the team representing a venture or a firm, depending on the stage, may be a loose one due to the lack of proper incentives, and (2) the early-stage venture fails to meet with the actors of best knowledge and business expertise.

On looking at the other side of the coin, teams developing new business assisted by an incubation platform can be characterised by two dimensions; namely,

willingness and maturity to accept outside assistance. Similarly, four archetypes are to be found based on the combinations. The intervention type regarding teams not willing to co-operate falls outside the scope of this study. Accordingly, one requirement for knowledge investing is strong bonding between the parties [29].

Considering a VC firm and their portfolio companies, the engagement is powerful in principle [30]. A glance at VCFs reveals at least three potential pitfalls causing the engagement to fail: (1) The contribution of the VCF available for the investee company does not make a match; (2) VCFs tend to be more involved in firms, which are relatively mature with their technology and with high growth rates [5]; and (3) the positioning of a VCF in the VC operators' value chain has pivotal influence on match making [5, 8].

III. CONCEPTUALIZING THE GOVERNANCE MODEL OF KNOWLEDGE-BASED VENTURING

The conceptualization of ownership management in the knowledge-intensive venturing process implies a brief look at the object of ownership, i.e. the property. The pecuniary objects have two major appearances considering venture capitalist intentions: (1) it satisfies our needs of arranging daily material consumption and (2) need of the esteem from others and self-actualisation. To becoming "rich" is obviously the prime motivator but soon the need of being 'somebody' among venture capitalist community comes through after the economical situation in private life is guaranteed. Here is also a point of risk taking that is embedded in the model next.

The Maslow's original presentation of the hierarchical nature of the needs comprised five stages which were later introduced by three new stages: Physiological, Safety, Belonging, Esteem, Need to know and understand, Aesthetic beauty, Self-actualisation and Transcendence [37,38]. Although the hierarchy introduces to understand the human motivation and it is relevant in Venture Capital-context, it doesn't reveal the nature of the risk-taking propensity and other factors as present in the model.

Apparently the motivation to undertake an entrepreneur or a knowledge investor co-entrepreneur is dictated by the private life situation. E.g. child-minding in combination with the entrepreneurs needs to self-actualisation establish the conditions for the firm strategy such as the investments and the growth in many of the businesses. Resource exchange between the household and the business are usual [39].

Entrepreneurial motivation and value selection by an individual person is thus dictated not only by business opportunity side but also in terms of the commitments in private life and personal needs. In terms of operationalising and building the model, motivation and decision making is placed in the middle of the ownership management model in fig 3.

A. Starting point for creating a proper model

The ownership management of innovations, structured property, implies applying immaterial protection methods, such as patenting or less powerful methods, e.g. copyright or trademark. However, innovation property denotes only one part of the competitive advantage of an emerging new business or firm.

As was earlier stated, the competitive advantage is a mix of diverse intangible and tangible assets, and therefore of people, this being of pivotal importance. For the further stages of venture growth, the Anglo-American corporate governance principles are widely applied in Europe [17]. These practices comprise a rich tradition of partnership agreements and financial instruments for managing venture growth and influencing indirectly on the behaviour, intention and motivation of the firm's key persons. Thus, the present venture-capital governance models place a fair amount of emphasis on sanctions and pecuniary rewarding mechanisms [ibid.]. Consequently, this study claims that the contract-based governance mechanism is satisfactory for application only when the pecuniary objects of owning dominate. Hence, the point that ownership mechanism needs to cover both structured and unstructured intellectual assets accumulated from the very beginning of the birth of the innovation is crucial. Moreover, this need is manifested more rigorously in the early stages of the venture growth rather than in the firm's start-up stage.

The remedy for ownership management offered by venture-to-capital suggests four dimensions to be taken into consideration: (1) Entrepreneurship, (2) Ownership, (3) Financing, and (4) Management [28]. There is no denying that entrepreneurship encompasses the intangible side of knowledge asset venturing, and that management covers the required four mindsets, and that ownership addresses managing the value-added either with pecuniary assets or knowledge-based assets. However, ownership management is explained in terms of the principal-agent theory, which is a powerful tool when considering structural property and stakeholder thinking accepting the existence of non-formidable relations bonding the interests of the stakeholder with the investee object [28].

B. Managing knowledge value adding

Judging the concept of knowledge venturing, knowledge as an independent 'fund', means knowledge investing as a venture capital process. If we take a look at the VCFs' three main value-adding approaches, we find: (1) Financial aspect and brokering dominating, not knowledge nor business expertise that much, but the investor offers his valuable network and chooses a passive investor role; (2) A VCF or a business angel concentrates on a particular industry and both business intelligence and money play important roles, and investors take active roles in investee companies; (3) Investing knowledge and business experience dominates and 'passive' money is acquired from multiple sources, not necessitating significant intervention

from VCFs. [30, 8].

The third alternative suggests a notion of the power play setting embedded into the growth process. Founder-team-driven firms may have a fear of losing their power when accepting risk money from venture capitalists. For example, a survey of Danish VCFs is inline with this view [5].

Actually, the thinking here introduces an evolutionary view for entry to the VC industry (3rd alternative) and the growth path of venture capital firms (2nd -> 3rd alternative). The concept of venture capital spiral [30] proposes the view of small VCFs tending to increase their size and funds and in turn increase the complexity of the governance of investee companies. Similarly, the distance between the gatekeepers of equity and prospective investee objects increases and thereby offers room for new players to entry on VC-industry.

Incubators may act as a competitor for private knowledge investors as their services are mainly knowledge-based. Incubators co-operate with business projects aiming to move on start-ups. The incubator service model ranges from (1) passive environmental intervention (such as providing facilities and indirect contribution offerings) through (2) service and contact brokering to more intensive forms of co-production such as (3) counselling [29]. However, as a rule, incubation models do not imply the presence of incentives for incubator managers to work perhaps more eagerly regarding a particular business case, and therefore incubators, as such, fall outside of the scope of this study.

C. Towards a growth model driven by ownership management

In actual fact, the framework shown earlier in Fig. 1 considers two major approaches fully in line with the venture-to-capital-process. The first is a vertical one and it determines stakeholder categories positioning on diverse levels with respect to the firm's core, which is the value of the firm. The farther away the circle's perimeter is from the horizontal line, with the arrow illustrating the increasing value of the venture, the looser the relationship of the stakeholder in question is considering contributing to the enterprise's growth process and the creation of competitive advantages, and ultimately to the enterprise's growth and to increase in its value. The second dimension is a horizontal one, a timely basic view drilling down to characterize the dynamism of the enterprise's growth, which is discussed in the theory part later on.

The shape and boundaries of the venture in the early stages are vague, and consequently the object of ownership is fuzzy. Due to this, venture-to-capital as such does not provide a sound foundation for ownership management.

The problem of managing and value-adding unstructured and structured property of a particular venture calls for an examination of the methods of sustaining competitive advantage, which are mainly made up of innovation capital assets and core competences, e.g. market intelligence,

customer relationship management expertise, product development, and technological expertise considering young companies. The firm's core competence is increased through learning from partners in the value chain and contacts in the business network [26]. Therefore, building an ownership management framework for knowledge-based venturing necessitates applying a theoretical foundation that considers the cross-border situation of transferring knowledge asset. Moreover, risk and rewarding views are focal building blocks. Finally, encouraging new talents directing towards the role of the entrepreneur, and subsequently connecting with the required new co-founders and financial investors, calls for a clear vision of the shape and the boundaries of the system formed by the venture, its core team, and value-adding actors.

D. Promising patterns

The transaction cost economics theory contributed by Oscar Williamson suggests four key nominators for explaining the governance of non-contract-based business relations: (1) Asset specificity, i.e. the specific characteristics of human capital and technology assets of the object of transaction where the value of the object is higher if the alignment with the customer's expectations is high; (2) Self-seeking interest or opportunism that is often favoured by knowledge asymmetry between the parties; (3) Bounded rationality; and (4) Risk-taking propensity outlined in terms of safeguards and incentives [35].

Recent network and sourcing theories suggest a fifth element, namely that of the trust and accumulated social equity proportional with the reputation and trustworthiness of the contracting body in question [14].

Especially research looking into contemporary Information Technology Outsourcing, IT-OS business has produced significant contributions to transaction cost and relationship theories. Outsourcing cases involve transactions connected not only to tangible technology assets, but also to intangible knowledge assets.

The setting involved in an OS case is actually a business venture. A vendor is not able beforehand to cover all risks, compensation logic comprises optional gain opportunities (i.e. profit sharing of the gained cost reduction), cost-benefit schemes follow the logic of the investment, and trust and commitment play significant roles in the bonding process. Only one outstanding element differentiates technology-based OS from venture capital setting; namely, growth potential, which is limited in the case of OS. Growth potential is then embedded in cost savings opportunity by business process re-engineering and as well by the vendor's ability to produce the service cheaper than the customer itself is able to do, which is based on the providers' economies-of-scale advantage.

The results of research on the formation of OS alliances between a service provider and a customer company reveal need for managing first of the contract-based issues that are services, for communication and information sharing and

mutually accepted compensation logic and secondly the embedded issues, a kind of hidden agenda, social and personal bonding, usage of time as investment, shared and adapted vision between parties and cultural adaptation. The alliance is either reinforced or retarded by behavioural issues such as commitment, co-operation expectations, trust, satisfaction, conflicts, power setting, and dependency [14]. In the background of success stories there is, without exception, a strong team [13]. Many of the behavioural issues mentioned here comply with the scope of high-performance teams [13]. Both in OS and venture-growth settings one needs to have cross-over team building until the uniformity of the team causes the border lines to fade away.

Finally, the most important topic that makes sense to elaborate within the IT-OS models is that of the pivotal role of knowledge and expertise in achieving success.

E. Four wheel vehicle with a steering wheel

The proposed determinants for the ownership management framework are shown below in Fig. 3. The model sums up the theory discussed in this paper and presents the logic model of knowledge investing in the venture and firm growth process beginning from the investment decision through to the stage of connecting to the process and team building and up to a coherent stage where all team members are aiming at a common goal – the growth of the business.²



Figure 3. Ownership management framework

The left- and right-most circles stand for risk and rewarding that are obvious components in the building of the model. It should be noted that both of the elements

² The model is built up of a more detailed set of evaluation criteria not presented in this paper

impact directly on the decision-making process (the middle element) and they involve two sides with opposite impacting influences. For example, a low-rewarding scheme may appear as a retarding force. In turn, low risk can act almost like a rewarding factor.

The topmost element – knowledge value adding capabilities – is in line with the transaction action theory’s concept of asset specificity. However, it is understood here using the terminology applied in the venture-to-capital theory. The main function of this particular element is to define one’s business value and alignment considering the success of the venture. Secondly, it is a helpful tool in self-assessment (if necessary).

The upper diagonal arrows illustrate the logic of how a seasoned business advisor meets the potential risk of a venture failure, thereby making it less threatening. It is probable that he/she has access to new opportunities unlike a young and less experienced talent. In turn, a more experienced knowledge investor, a gold-finger, has a high standard of trust in his/her capabilities in accelerating growth, and this in turn increases his/her chances of future success.

The element at the bottom characterizes fears and suspicions that may be partly unconscious. Due to limited understanding, bounded rationality, a knowledge investor may hesitate in his/her willingness to join in on a business operation. An opportunistic atmosphere may even terminate the process. However, the presence of strong sanctions may mitigate the threat of self-seeking interest; in addition, powerful safeguards may also contribute to personal evaluation processes involved in knowledge investment’s rationales and produce a positive end result.

Finally, the circle in the centre replicates the idea of one’s self-assessment for assuming the entrepreneurial role. The selection points out the availability of other investment objects. A significant aspect of this is that the assessment is dictated by personal entrepreneurial characteristics and previous entrepreneurial experience. A lot of research focusing on the characteristics of an entrepreneur is ongoing.

IV. CARRYING OUT THE DATA COLLECTION

Data collection following the three sample areas is presented below.

The observation of the knowledge investor activity and the implications for the ownership management framework are carried embedded with another research project where the author is participating as a researcher and a management consultant following the participant observation ruling. The project is funded by the Finnish government focusing on examining the commercialization paths for the universities-driven applied physics research on the area of the measurement technology, i.e. the Measurepolis Network. Regarding the present study’s purposes, it offers rich observation data covering two of the

total of three sample areas: namely, (1) the commercialization innovations at the idea and concept stage dominated by applied research and prototyping activities, and (2) 3-5 year sold new technology start-up firms attained the maturity of investable firms either with a seed or an actual first round investment. Ten cases were selected from the first and four from sample areas, with one of them representing an in-depth-case.

The third sample set is composed of SMEs tending to absorb innovations and seeking growth. One in-depth case was studied and observation were made within the Measurepolis Network. The observation data are complemented with narratives, interviews and discussions within three consultant networks: namely, (1) Finnish Management Consultant Association, (2) Turn Around Management Consultant Association, and (3) Finnish Co-entrepreneur Association with the author being a member of all these three.

V. DISCUSSION AND CONCLUSIONS

A. Knowledge investing or venturing

The nature of a knowledge investor convergences on the concept of knowledge venturing when the following requirements are met: (1) Knowledge, experience and wisdom of the knowledge investor is considered by the parties as a distinctive value for increasing the wealth and the rate of success of the venture; (2) Knowledge investor bears a real risk either in a form of losing time (the opportunity cost view) or putting down his own money. The pecuniary investment in a secondary mode of investing may be needed for indicating the knowledge investor's commitment and further contributing to the increase in trust among the parties; (3) Knowledge investor has opportunities to engage in more than one venture. This requirement articulates a salaried employment with high rewarding schemes, e.g. CEO-contract, apart from knowledge venturing; (4) There is an exit for knowledge investor to move on towards new challenges; (5) The rewarding side includes, at minimum, a progressive rewarding mechanism tied to the success of the business project; (6) A true portfolio approach prevails (this is related partly to point 3). An experienced businessman, a highly skilled strategist provided with business wisdom, is able to work in many firms in terms of board memberships. However, the rewarding mechanism doesn't include a high upside scheme if any. Thus, the compensation logic is mostly build-up on fee basis. So, this doesn't meet our requirements of knowledge venturing where the participatory role must be stronger and accordingly stronger rewarding scheme is needed.

B. Ownership management framework – early stages

1) Technologically orientated researchers and academics

Considering the data collection within the first sample

spot area, the universities' research projects aimed at creating business, the foremost qualities of knowledge needed are technological and business intelligence and experience. The required capabilities are mainly the researcher's ability to derive industrial-scale pilots and therefore proof for the prototype. Also, there is the need for the capability to recognise business opportunities for the innovation. Knowledge and understanding of the markets was raised up in discussions with university representatives.

The ownership intentions of the researcher's were mainly targeted at writing publications and becoming a scientist of renown within the science community. Only a few researchers, as well academics, announced their willingness to participate as having a key role in the business operation; these people were mainly younger persons. Other participatory role, such as technology advisor owning shares was announced by elderly scientists and academics. Surprisingly, the opportunity to make money in terms of new business, and therefore engaging in the entrepreneur role, is not much valued by the academics. The interpretation here is that the ownership intentions among the young academics and researchers are still in the search mode. Industrial, entrepreneurial or researcher careers may appear as equally interesting options. However, senior researchers already have their reputations established and the so called "lock-in" phenomena has occurred, and the shift towards the role of an entrepreneurial knowledge investor (e.g. a CTO, Chief Technology Officer) needs significant rewarding and high safeguards.

Rather than undertaking an entrepreneur, on the contrary, trading of or licensing patents was a more interesting option for the university people. This is perhaps the optimum balance between avoiding entrepreneurial actions and gaining economical success. Going further from this point necessitates a higher involvement in creating business.

The midway position suggests the role of a technology advisor and a participatory role in applied research projects with the firm in question. This approach manifests low rewards, low risk, and high safeguards. This can be related to need of increase knowledge and understanding as discussed earlier regarding the Maslow's need hierarchy. For researcher the midway position offers a proper contact with firms and an opportunity to learning business.

2) Business experts

Business opportunities for knowledge investors in the early stages are very few. Either a top-class invention with a brilliant technology team behind it or a lot of work is needed by business expertise or both. Business opportunity assessment is mainly operated by incubators and science parks in Finland. Unfortunately, this leads to a relay model and ownership management becomes even more vague. The suggested remedy to overcoming this problem is to

arrange uninterrupted management relationships via a business expert, a champion, and the first mover, thereby leading the commercialization project as a business project up to the point of trading the innovation or creating the team aimed at running its own business firm.

For the champion, first mover, the rewarding scheme is mostly low or at most moderate. A committed team of techies and a vision of a technology roadmap that promise not just a fly by with a single innovation, but a product portfolio and R&D resources, represents a robust foundation for the firm. It is by these means that the risk is lowered and the business opportunity becomes apparent, and joining the business project becomes attractive for the business expert.

To cater for the business expert's living necessities financing in one way or another. If safeguards become high, e.g. one is salaried government money, then the attractiveness of rewarding becomes less efficient and the setting resembles more incubation than knowledge investing. However, if no safeguards, i.e. no monthly paid fee, are applied, then really experienced managers tend to walk on by. The model suggested here is to establish a co-operation model between the true venture capital firms offering seed money and corporate venturing bodies, as well knowledge investors that are served by forces capable of making top-notch technology and business feasibility evaluation formally and thus risks are mitigated.

C. Ownership management framework – Start-up and establishment stages

For the sake of compressing the text, both sampling areas are discussed here. The dynamism of the dominance and power setting involved in the growth process is expressed in terms of dilatation. After reaching the business proof level, the early stage embryo led by techno-founders, and possibly by a business-orientated knowledge investor, is searching for equity investment. In a case of the first round funding, the negotiations with VCFs suggest a major change on ownership of the firm. Loosing contact with the enterprise's steering wheel is a tough question for the founder team. The outline of the ownership-driven management model focuses on the area of managing ownership and key human resources and competences required for fuelling growth at the individual level and also of looking at the stakeholder level.

The early stage venture heading towards first round equity injection postulates an intermediating stage, i.e. seed funding. It impacts positively if no major ownership transitions happens, but the financial foundation of the venture is strengthened enough to increase preparedness for the first round's 'hard' funding by private equity investors and further alleviates the ownership transition and avoids threat of 'slavery money.'

The growth from the seed stage onto the further stages involving other investors, means seed funding agency exiting and recruiting the first actual marketing-minded

CEO may shift the ownership setting towards a triangle 'drama' where founder(s) are hit on the cheek as the CEO and the new investors shake hands. It is at this stage that a knowledge investor either of technology or business expertise may be forced to leave the company.

The role of seed funding with fair financing conditions is thus crucial for continuity and smooth transition. However, the experiences of private seed funding operations points to poor rates of the return, ranging from 0% to 5%. Thus, the role of the government is focal in this area to support prospective ventures so they can head smoothly towards the capital market.

D. SMEs

The knowledge investing opportunities considering growth seeking SMEs is more complex than the setting considering two other sample areas. SMEs tend to capture the business experience in a holistic way. In practise, the capturing can be a recruitment of a new CEO or sales expert attended with a new technology expert that are asked for creating new business or it can be a acquisition or both.

However, an individual knowledge investor, as a partner role, it may be possible to work within 1-3 companies in parallel more intensively rather than participating through board working. However, this claims for a very sophisticated portfolio management and role selection. Actually, this setting leads for a part-time entrepreneur mode. If the financial side plays important role, then the practical solutions are much the same as the role of the manager of a VCF. If the financial side is in a minor role thus a consultant or technology transfer firm or a mix of both is a more relevant model.

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