Measuring Capitals:
A Measuring Tool For Entrepreneurs

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Abstract

This paper contributes to the field of entrepreneurship through the development of a measuring tool for entrepreneurs. This measuring tool is based on the 4S Model of Groen (2005) and enables entrepreneurs to gain a better understanding of their specific situation in terms of four capitals. These capitals are cultural-, economic-, social- and strategic capital. Concepts related to these capitals are reviewed and operationalized, which leads up to a rubric style method with key indicators for each of the four capitals. As a result of this a measuring tool is presented which can be used during the entrepreneurial process of opportunity recognition, preparation and exploitation, generating more insight with regard to performance of the entrepreneur on these capitals.

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1. INTRODUCTION

One of the main challenges in entrepreneurship is dealing with the question how ventures can become viable enterprises that create value, are able to grow and can continue to exist. The path from an initial idea towards a fully developed venture is a process with many factors that influence the outcome. As Groen (2005) mentions in his publication about knowledge intensive entrepreneurship, only fifty percent of new ventures make it passed the first five years of existence. Current publications address a wide range of perspectives on what could be done with regard to developing a better understanding of performance and the avoidance of failure. The question remains however how and why so many ventures fail to become successful, longer lasting companies. A central assumption in the research of Groen (2005) is that in order to survive, firms need a certain minimal amount of each of the different capitals. Groen (2005) developed a model in order to create a better understanding of the different entrepreneurial processes and actions that occur in these processes. Through the use the social system theory of Parsons (1964) Groen established four mechanisms that occur within a social system. It is important to note that the term social system implies a business venture in the context of this paper. When translated to an entrepreneurial context, these mechanisms lead to four dimensions; scope, scale, skill & value and social network. Actions within these dimensions result in certain processes, a capital within those processes and methods of interference for a social system. By developing these dimensions through the different capitals, entrepreneurs build their venture and increase their performance both on short- and long-term. In literature, capital often relates to financial means. However in this paper a distinction between four capitals based on the research of Groen (2005) is made. The four capitals that are being applied are cultural-, economic-, social and strategic capital. Although in practice these capitals are present within the business venture, it should be noted that the capitals related to the entrepreneur are the object of interest in the context of this paper. This is mainly done for measuring purposes. Understanding the entrepreneurial process and attempting to aim for this so called minimal level is a strenuous task. This is due to the fact that there are no threshold values or fixed numbers present that can be aimed. In order to make more use of the knowledge gained from the 4S Model, a different approach towards measuring the four capitals could be the outcome. Creating a measuring method for entrepreneurs that enables them to develop a better understanding of their specific situation in terms of the four capitals could increase the knowledge about the position and performance of their venture. Therefore, the goal of this research is to create a method that can be used to measure and score the four capitals. This leads to the following research question:

How can entrepreneurs measure and score their four capitals?

Through the use of existing publications in the field of entrepreneurship, an initial understanding about the entrepreneurial process and 4S model will be developed. Due to the abstract nature of the 4S Model it is important to define clearly what is meant with each capital for this paper. These definitions can be found in the operationalization section. It is vital to note that in order to analyze the different components of the entrepreneurial process and 4S model a mono-dimensional approach will be adopted. What this means is that despite of the intertwined nature of the capitals and the nonlinear, dynamic phases of the entrepreneurial process, for this paper each concept will be addressed separately. The measuring method will address all of the components, after which relative differences can be compared, resulting in a practical and understandable tool.

2. THEORETICAL FRAMEWORK

In order to gain a better understanding of the different concepts and theories that are being used throughout this research, it is important to construct an in-depth theoretical framework. First an initial understanding of the concept entrepreneurship and the role that opportunities play will be developed, after which the entrepreneurial process will be explained The entrepreneurial process is an important component of the entrepreneurship-in-networks model, which will be explained in subsection 2.2.4. In section 2.2, the 4S Model by Groen (2005) will be addressed. This model is based on the social system theory of Parsons (1964), and in order to understand the underlying theory of the 4S model it is meaningful to give a clear explanation. Finally the role of networking and the 4S dimensions; Scope, Scale, Skill & Value and Social Network will be individually addressed and explained. These dimensions form the fundamental elements of the 4S Model. The theoretical framework will be concluded by explaining and showing how the 4S Model influences the entrepreneurial process, through the Entrepreneurship-In-Networks Model.

2.1.1 Understanding Entrepreneurship

As Shane and Venkataraman (2000) explain in their publication about the promise of entrepreneurship as a field of research "entrepreneurship has become a broad label under which a hodgepodge of research is housed". Van der Veen and Wakkee (2002) acknowledged this statement by describing that; entrepreneurship is an academic field with a considerable amount of different perspectives, definitions and ideas, making it complicated. Therefore, understanding the concept of entrepreneurship is a crucial step in the context of this paper.

By developing a conceptual framework for the field of entrepreneurship, Van der Veen and Wakkee (2002) gained a more precise understanding of, as well as the ability to better explain, the different phenomena occurring in this conceptual area of knowledge. This framework next to the following discussion in the AMR Dialogue (2001) formed the basis for the research of Van der Veen and Wakkee (2002) on understanding the concept of entrepreneurship. Through the use of an extensive amount of publications related to entrepreneurship, Van der Veen and Wakkee came to the conclusion that one of the most important overlapping notions is that entrepreneurship should be considered as a process, rather than an event. Therefore, Van der Veen and Wakkee proposed a framework that shows different phases of the entrepreneurial process. A leading factor in this process is the development of opportunities.

2.1.2 Opportunities

According to Shane and Venkataraman (2000) and Van der Veen and Wakkee (2002) an essential factor in entrepreneurship is the role of opportunities. In order to understand the entrepreneurial process it is important to start with a clear definition of the concept of opportunity. According to van der Veen and Wakkee, even though opportunities are mentioned and used frequently, a limited amount is written on defining opportunities in different contexts. Based on publications from authors such as Casson (1982) and Kirzner (1997), Van der Veen and Wakkee were able to gain better understanding on what defines an opportunity in an entrepreneurial context. In order not to get too involved with the different definitions and situations related to opportunities in general, the following definition by Van der Veen and Wakkee will be used. An opportunity should be labeled as the entrepreneurial opportunity in this context and it is defined as: "a desirable future state that requires: (a) introduction of new goods, services, raw materials and organizing methods; (b) having an impact on the market;

and, (c) offering profit potential; (d) through the creation of new ventures or radical improvement of existing ventures" (P117). In short the conclusion can be drawn that an opportunity generates the possibility for a potential entrepreneur to interact with the market, eventually resulting in the creation of some sort of value.

2.1.3 The Entrepreneurial Process

Van der Veen and Wakkee (2002) define the entrepreneurial process as the discovery, evaluation and exploitation of opportunities, which leads to value creation. In other words, the three phases of the entrepreneurial process are the opportunity recognition phase, the opportunity preparation phase and the opportunity exploitation phase (Groen, 2005). The dominant factor in this process is the entrepreneur, who is both the initiator as well as the processor. In the handbook of research in entrepreneurship Education (Brand, Wakkee, & van der Veen, 2007) a clear description is given about each of the phases based on the initial work of Van der Veen and Wakkee (2002).

During the opportunity recognition phase, the initial idea is gradually transferred into a business opportunity. The entrepreneur considers what resources, interventions and connections are needed in order to match his idea to the perceived market needs. After this phase, the opportunity preparation takes place in which the business opportunity is further developed. The entrepreneur translates it into a business concept which can ultimately lead to a marketable product or service. Important factors during this phase consist of (Brand et al., 2007) growing a resource base, the foundation of an organization, further development of social interactions through a network, developing the product or service and translation to a business plan. After this phase, exploitation of the opportunity takes place. The entrepreneur is able to interact with the market; it enables him/her to create value by producing/offering goods and services. This value creation can happen either through financial means or by acquiring intangible value such as new knowledge. During the opportunity exploitation phase the entrepreneur can keep improving his venture and the marketable product or service through innovation.

2.2 The 4S Model

Groen (2005) distinguished a gap in the literature in terms of a coherent framework for research purposes on the entrepreneurial process. Therefore he developed a model to explain differences in entrepreneurial process, by analysing entrepreneurship from different dimensions in a networking perspective. This model, based on the dimensions Scope, Scale, Skill & Value and Social Network, is called the 4S model. According to Groen, the 4S Model offers possibilities to understand the dynamic entrepreneurial processes. In order to understand the processes that occur in a social system, as well as understanding the role of networks it is important to first explain the social system theory by Parsons (1964). Next to this explanation the four dimensions will be addressed, as well as the entrepreneurship-in-networks model.

2.2.1 Social System Theory and Networking

The social system theory according to Parsons (1964) shows that "a social system consists in a plurality of individual actors interacting with each other in a situation, which has at least a physical or environmental aspect, actors who are motivated in terms of a tendency to the "optimization of gratification" and whose relation to their situations, including each other, is defined and mediated in terms of culturally structured and shared symbols". (Parsons, 1964, p.5-6.) Groen (2005) was able to derive four mechanisms that take place in within a social system from this definition. These mechanisms consist of the interaction between actors, the striving for goal attainment, the optimization of processes and maintaining patterns of culturally structured and shared symbols. When placed in an entrepreneurial context it provides a way to understand processes that take place within the establishment and development of a business venture.

Next to the social system theory, a key aspect of the approach by Groen (2005) is the networking function for entrepreneurs. Firms work together in networks, beyond their individual scope. Utilizing a network properly is rather beneficial in an entrepreneurial context where learning and adaptation are important aspects. Often entrepreneurs operate as actors in the network through different projects (Groen, 2005). Practical constructions which happen due to networking are for example, joint ventures, subcontracting or licensing agreements (Dickson and Weaver (1997); Weaver, Nagpaul, During, Groen, and Dickson (1998)). This shows various ways of how firms can benefit from each other and shows that the network of an entrepreneur can vary between many different resource providers. Gaining access to, as well as generating resources is an important factor in networking. These resources can be either tangibles, such as money, intangibles such as knowledge or both. It depends on the provider and the type of connection/relation. Knowledge institutes for instance can be important altering organizations due to the constant flow of knowledge that these institutions can provide. Thus, by establishing links with other entities, organisations can acquire various resources which can lead to significant added value.

2.2.2 The Four Dimensions

In order to understand the dynamic processes that take place in the entrepreneurial process, Groen (2005) translated the previously mentioned mechanisms that occur in a social system to four different dimensions, which are described as Scope, Scale, Skill & Value and Social Network (each conveniently starting with the letter S). These four mechanisms all play an important role in the entrepreneurial process and form the main component of the 4S model. Actions within these dimensions result in certain processes, a capital within those processes and methods of interference for a social system. By developing these dimensions through the different capitals, entrepreneurs build their venture and increase their performance both on short- and long-term. Groen, Wakkee, and De Weerd-Nederhof (2008) state that the development of these capitals and the venture leads to increased strategic flexibility or operational effectiveness. Another reason why the development of these capitals is important is for the reason that according to Groen et al. (2005, 2007, 2008) a firm needs a minimal amount of each of the different capitals in order to be a viable business in the long term. By addressing each dimension individually, further insights can be gained on the model.

2.2.2.1 Scope

According to Groen et al. (2002, 2005, 2008) Scope is related to the realisation of goals through strategic intent. Fawcett, Smith, and Bixby Cooper (1997) describe two different functions of this strategic intent. One is the identification of core objectives, aiding as a way of determining current and future direction. The other function enables the planning of functional competitive priorities in the different components of a company. The determination and personal skill of the entrepreneur play a prominent role in this process. Based on Parsons (1964), Groen et al. (2002) mentions that the ability to affect other individuals and resources in order to achieve these goals have a prominent role and lead to the creation of strategic capital.

2.2.2.2 Scale

The dimension Scale is connected to the economic function. This relates to both optimization of existing functions as well as striving for efficiency (Groen, 2002, 2005). The financial resources of the venture, as well as the interaction with other ventures through the exchange goods and services are fundamental components of this dimension. Basically this dimension all comes down to one important resource, which is money. Scale can be translated to economic capital.

2.2.2.3 Skill and Value

Skill and value relate to the cultural components of an organization. Culture is the main component of the identity of an organization According to Groen the preservation of knowledge and experience (labelled as pattern maintenance by Groen (2005)) as well the organizational culture in terms of for example; norms , rule sets, routines and habits are components of this dimension (Barney, 1986). Groen et al. (2002) explains that skill and knowledge held by the entrepreneur can be shared with other entities and through learning new knowledge and expertise can be acquired. Changes in the market and technology influence these patterns; this dynamic situation requires adaptation and change. Successful behavioral patterns result in cultural capital according to Groen et al. (2008).

2.2.2.4 Social Network

The final dimension relates to Social network. Social interaction gives the entrepreneur the option to communicate, collaborate, and connect to other entities such as ventures or knowledge institutes. According to Groen et al. (2002) a venture can only exist by interaction with others. An important conclusion in the work of Groen et al. (2008) is that network connections lead to access to capitals of other individuals. Therefore it is important for entrepreneurs to build up their network as much as possible. Venture capitalists, universities, funds all can aid in this profit by exposing their own network, enabling the entrepreneur to benefit. Aspects of social integration are for instance the intensity of the relation, the amount of roles embodied in one connection and the length (reach) of the connection (Groen et al., 2008). The network leads to social capital.

2.2.3 The Entrepreneurship-in-networks Model

With the introduction of the entrepreneurship-in-networks model, Kirwan, van der Sijde, and Groen (2007) provided a graphical representation of the effect of the capitals derived from the 4S Model on the entrepreneurial process. In short, this model depicts the accumulation of the four capitals throughout the different phases of the entrepreneurial process.

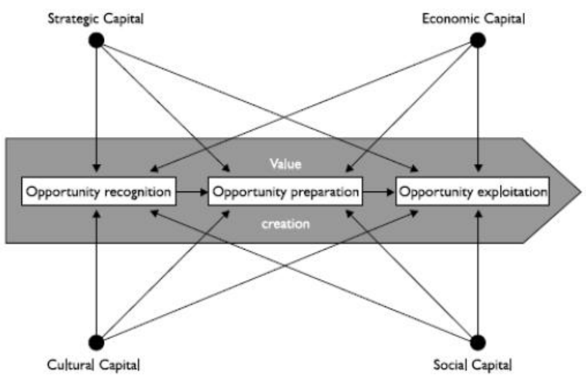

Figure 1. Entrepreneurship-in-networks model. (Kirwan et al., 2007)

As seen in figure 1, each of the capitals influences the different phases of the entrepreneurial process. The white blocks show the different phases, the gray arrow the process of value creation and the four cornerstones show the influence of the capitals. As Groen (2005) explained, an important hypothesis is that it is crucial for an entrepreneur to develop each of the four capitals to a certain minimal level in order to be viable. Next to this hypothesis it is important to note that the capitals can be considered as input, as well as output of activities in the entrepreneurial process (Groen et al., 2008). This figure forms the starting point of the research performed in this paper. By determining the position of the venture on the different capitals an entrepreneur can determine his/her performance in the entrepreneurial process. This leads to a better understanding of what areas could and should be improved in order to increase the performance or viability of the venture.

3. METHOD

With regard to the process and validity of this research, it is important to give a clear description of the different steps that have been taken. Determining a systematic approach that is repeatable, valid and precise is an essential factor for this. Since the main goal of this paper is to provide a tool for entrepreneurs that can be used to measure the four capitals, clear and proper operationalization of these four capitals is imperative. Critical assessment of relevant literature formed the starting point of the operationalization process. This relevant literature was found through the use of keywords, derived from different explanations of the four capitals in articles such as (Groen, 2005) and Groen et al. (2008). Examples of these keywords are; "strategic intent", "pattern maintenance", "financing start-ups" and "entrepreneurs network". Through the use of Google Scholar, related articles to the different keywords were found and reviewed. From these articles, a set of indicative functions for each of the capitals were chosen and refined. This led to the creation of so called key indicators for each of the capitals. Since the capitals have an influence throughout different phases of the entrepreneurial process, a decision has to be made on what indicators provide the best fit to a specific phase of the entrepreneurial process. This is needed due to the fact that the composition of capitals is not necessarily consistent by default throughout the three phases of the entrepreneurial process.

After clarifying what the key indicators are and how they can be measured throughout the three phases, a fitting measuring method has to be chosen. Since the measuring tool has to provide a way for entrepreneurs to measure themselves, this measuring tool should be practical, understandable and provide a way that leads to critical thinking on what the entrepreneur could improve on. A good example of such a method can be found in Kahn, Barczak, and Moss (2006). This article explains a best practices framework based on a rubric method for NPD efforts.

A rubric method is often used as a grading tool in the educational world (Stevens & Levi, 2005). It shows different levels of performance and provides a developmental view. Since the entrepreneurial process is inseparable from this developmental view, the rubric method can provide a very suitable measuring method. A rubric will be developed for each capital. This ensures both a more in-depth view on the capitals, as well as it suits a form of comparison. What is meant with comparison is that an entrepreneur can check his position on all four capitals and then see what capital is relatively weak or strong when compared to the others. This method provides a way for entrepreneurs to determine their current position in terms of the four capitals at a fixed point in time. This process of self-assessment is repeatable and enables a better understanding of what the entrepreneur should work towards to in terms of the capitals. For instance if the first measurement leads to believe that the entrepreneur is lacking social capital, he or she can work towards improving this capitals this social capital, therefore increasing their performance.

4. OPERATIONALIZATION

In the theoretical framework a general explanation is given about the four dimensions; scope, scale, skill and social network, each with their accompanying capital. These concepts are approached from a rather abstract perspective. In order to understand what the four capitals mean in the context of this paper, a more practical approach has to be taken. In this section the capitals will be further operationalized. This will be through the use of key indicators, which stem from a set of reviewed publications. The different concepts (indicators) for each of the capitals will be thoroughly elaborated.

4.1 Cultural Capital

The first capital that will be addressed is the cultural capital. Groen (2005) describes it as the pattern maintenance function of an organization. This is a rather abstract term which does not really state what concepts relate to culture and identity. After reviewing different literature about culture, three main concepts appear that should provide an adequate representation of culture in the context of this paper. These concepts are related to knowledge, routines and learning capability or absorptive capacity.

The first concept that will be addressed is organizational *knowledge*. For this the capability-based view of Dosi, Faillo, and Marengo (2008) will be adopted. Organizational knowledge refers to the knowledge and know-how in terms of creating, developing and/or manufacturing products and services. It fills the gap between the opportunity and exploitation side. According to Bollinger and Smith (2001), knowledge is an invaluable resource for an organization. The definition of knowledge that is described in the paper of Bollinger and Smith on knowledge management offers a good starting point for this. In this paper it is mentioned that according to Grayson and O'Dell (1998) "knowledge is defined as what people know about customers, products, processes, mistakes and successes" (Bollinger and Smith, 2001, p.9). The concept can be split up into two different components; tacit and explicit knowledge. As Bollinger and Smith mention, explicit knowledge assumes that it is written down, processed and stored in a database. Tacit knowledge resides more in the minds of people within the venture, in this case the entrepreneur and is not explicitly stated. In order to utilize these components to their full extent, an organization should embrace a form of knowledge management which enables sharing, reproduction and evaluation of knowledge. Liebowitz and Suen (2000) provided a review of metrics in order to enable the sharing of this intellectual capital (knowledge). Elaborating on the different metrics developed in intellectual capital, knowledge management and mapping styles would be outside of the scope of this paper.

The next indicator is *routines*. Routines can refer to capabilities of ventures which is in essence is the ability or skill to perform a certain repeatable task that leads to generation of output. Routines can however also be rather vague, due to the fact that they "just" exist. Or as Dosi et al. (2008) mention; what people within an organization would call "the way things are done around here". Therefore routines can occur both with and without a purpose. The routines that are purposeful are the indicator for this research, mainly due to the fact that it should be somewhat measurable. Becker (2005) explained this measurability and links the different views on routines into one main concept; behavioral regularities. The main implication that is taken from this research is the notion that identifying routines is a very difficult task. Therefore in order to use this indicator, routines will be operationalized as repeatable behavioral actions. This can relate both to knowing how certain tasks are executed in terms of for example production standards, as well as rules and routines that exist in interaction between actors in the venture.

The final indicator based on the literature of Cohen and Levinthal (1990) and Zahra and George (2002) is *absorptive capacity*; learning capacity. Cohen and Levinthal explained that absorptive capacity is the ability of a firm to recognize, utilize and apply newly gathered external knowledge in order to generate value. In order to limit the absorptive capacity to cultural capital, the traditional view of absorptive capacity will be used for this paper. It is important to note that the definition applied by Zahra and George (2002) also focusses on competitive advantage and strategic processes, therefore creating a mixed up view between capitals which would disrupt the application of the 4S Model in this research. (This will be further addressed in the limitations section). Recognizing and applying existing knowledge is an important capability. An often mentioned metaphor for this is avoiding of reinventing the wheel. Acknowledging the purpose of external knowledge however is only one thing, to what extent the newly acquired knowledge can actually be used and applied is another.

4.2 Economic Capital

Being able to attract funds and resources in an early stage is an essential factor for entrepreneurs. As Kotha and George (2012) explain, resources heavily influence the viability and growth chances of a venture. How these resources are acquired, through what channels, what resources are needed and how these resources are exploited all relate to this. The composition of resources is heavily dependent on the type and size of the company. The main similarity can be pinned down to one item; money. How this money is required is both dependent on choices of the entrepreneur, as well as what potential offerings appear on his path.

As Manigart and Struyf (1997) mention in their research on high-tech startups there are various ways to acquire finances. These consist of but are not limited to venture capitalists, personal savings, loans from friends or family, bank loans and so called business angels. According to Cassar (2004) decisions on what capital to use has great implications on further performance of the venture. Cassar emphasizes the fact that size of the venture heavily influences the proportion of short and long-term debt and kind of financing. According to Cassar (2004) ventures with relatively few tangible assets, often turn to nonbank financing. A conclusion that can be drawn is that it is likely that a venture early in the entrepreneurial process will turn to nonbank financing.

According to Denis (2004) business angels are individuals who invest their own funds into a set of companies at a very early stage. Their role is not as prominent as for example venture capitalist, they provide support through capital based on incentives such as goodwill. Denis found that venture capitalists provide not only funds but can provide various other resources through their network. This is two sided, because venture capitalists often require a (large) share in the venture and often demands decision rights. In short, venture capitalists offer more than just capital. Personal savings and loans from friends or family pretty much speak for themselves and need no further explanation. At later stages of the entrepreneurial process when there actually is a product or service to offer to the market, funds can be acquired through sales.

4.3 Social Capital

The social capital directly relates to the networking function of a venture. As mentioned previously, networks play an important role in the development and existence of a venture. In the context of this paper it is feasible to look directly at publications related to entrepreneurial networking. Hoang and Antoncic (2003) explain three important factors of networks.

The first factor is network content. Entrepreneurs rely on networks for multiple reasons and throughout multiple phases of the entrepreneurial process. These reasons relate directly to the other capitals explained in this section. For instance access to business information, advice and knowledge can be direct outputs of networks. Hoang and Antoncic emphasize that these factors can be very beneficial to entrepreneurs. Another important result mentioned is the network itself. Having an extensive network can increase the reputation and legitimacy of the venture, creating a potential snowball effect for network activities through new links.

Hoang and Antoncic further explain that the governance factor of networks relates to the amount of trust between businesses in the network. Results of this trust are for instance perceived reliability and the willingness to exchange information. This enables increased and better transactions between ventures.

The last factor is network structure. There are various approaches towards this ambiguous term. The main approach adopted in this research is the concept of centrality (Witt, 2004). Centrality in essence is the position in a network which enables a high degree of direct contact to other actors, can reach other entities within the network with as few as possible intermediaries or is present in between the interaction of other actors. Witt (2004) emphasizes that resources gathered through the use of networks may offer advantages when compared to resources acquired through the market. The reason for this is that ventures the network are likely to adopt a more social embedded approach, rather than exploiting the entrepreneur through profit maximizing behaviour (Granovetter, 1985).

As described by Hoang and Antoncic, Larson and Starr (1993) provided a three stage model which elaborates differences in network activities in what they call the venture creation process. The first phase focuses on the existing network of the entrepreneur through for example friends or already established business contacts. Identification of potential future network relations may also happen during this phase. Basically this comes down to orientation and use of current acquaintances. During the second phase contacts are transferred to a more formal situation. This can be translated to providing a foundation by developing links, building reputation and gaining trust. In the final stage a more complex interaction pattern through transactions, information sharing and resources takes place. These definitions provide a valid basis for operationalization.

4.4 Strategic Capital

Wickham (2006) explains that a business strategy in the entrepreneurial context relates to three components; the products and services, the market scope and the competitive approach. A good strategy gives the entrepreneur insights on (future) business decisions and goals, how resources should be distributed, gives a general idea about the market the entrepreneur is going to operate in and how customers and competitors (inter)act in that market. This is not only related to long-term goals but relates to short-time goals as well. The process of strategy creation is iterative and dynamic. It should evolve overtime in order to make sure that it is still in line with the current situation that the venture is in. When looking at the entrepreneurial process, it becomes obvious that an entrepreneur that only just recognized a perceived opportunity probably has no fully stated idea yet of the competition, what resources should be attracted in order to establish growth or what competitors are present.

Collis and Rukstad (2008) provided a clear way that enables ventures to map their current strategy. Through the use of a so called strategy statement, the objective, scope and advantage of the venture are elaborated. What this basically shows are the direction and goals of a venture, the boundaries in terms of what the company will offer and what market it will operate and what it can offer when compared to other ventures with comparable products or services. According to Collis and Rukstad the objective of a company should be "specific, measurable and time-bound". In other words, the objective provides a perspective over a set period of time that shows the ventures main goal. This is the first key indicator for strategy. The phases related to this would be to what extent an entrepreneur is able to provide a clear statement about the main *objective*.

The next key indicator is the *scope*. It should be noted that this scope is defined different from the dimension scope in the 4S model. According to Collis and Rukstad the scope gives the entrepreneur an idea on what should be, and moreover should not be focused on. Therefore the scope provides a frame of action, that can permit the entrepreneur from drifting away too far from the main goal, ensuring focus and providing direction in terms on what customers to serve and what area(s) to operate in.

The indicator *advantage* shows that an entrepreneur should make clear to himself what competitive advantage the venture has over competitors. According to Collis and Rukstad this is the most important section of strategy. It is composed of two components; the value proposition which explains why potential customers should interact with the venture (what does the venture offer to potential customers) and the exclusive combination of actions that enables to deliver this value proposition.

Next to the strategy statement, another important component of the strategy of a venture according to Casadesus-Masanell and Enric Ricart (2009) is the business model. Having a clear understanding on what business model fits the goals of the venture is an important strategic decision. Based on the different definitions depicted in the Long Range Planning call for papers on Business Models, Casadesus-Masanell and Enric Ricart (2009) defined the business model as "the logic of the firm, the way it operates and how it creates value for its stakeholders". As Casadesus-Masanell and Enric Ricart (2009) mention that a business model is based on decisions consisting of policies, assets and governance and the consequences that appear as a result of these choices. An often used and cited publication about the development of business models is the business model generation book on the business model canvas (Osterwalder & Pigneur, 2010). It emphasizes the conceptualization of a business model through the use of nine blocks which depict the different components of a business strategy. The building blocks consist of; customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships and cost structure. This leads to a *business plan* and forms the final indicator for strategic capital. It assesses if the entrepreneur has thought about the different aspects of strategy or if he can only produce a generic idea. The business model should reflect a suitable representation of the chosen strategy.

5. THE MEASURING TOOL

The concepts and indicators described above lead up to the development of the measuring tool. As Brush and Vanderwerf (1992) mention there are many different techniques to measure performance of new ventures. Often these are output related measures such as growth in sales or profitability. The tool presented below is not aimed at measuring performance in such a way. It is aimed at evaluating the current situation based on the set of key indicators, determined through the operationalization of the four capitals.

The method or tool used for this measuring, scoring and evaluating process is the rubric method. Moskal (2000) explains that rubrics are descriptive scoring schemes that enable evaluation and analysis of certain processes. The rubric method can be used when a judgement of quality is required. The main benefit of this method for this research is that it allows entrepreneurs to evaluate themselves from multiple perspectives, which leads to an increased understanding of their position with regard to the four capitals. It also shows what capital is relatively weak at the point of measurement and can provide a point of departure for future improvement.

The composition of the rubric is established through the following means. On the top section of the rubric, the phases related to the three phases of the entrepreneurial process are described as phase 1, phase 2 and phase 3. These phases represent the opportunity recognition, the opportunity preparation and the opportunity exploitation phase. Within these phases, a set of statements is constructed based on the indicators explained in the operationalization section. The statements are formulated through the understanding gained from the various key indicators and described literature. In other words these statements are formulated through critical thinking and interpretation of existing concepts. Checking and circling what statements apply the most to the current situation from the perspective of the entrepreneur, leads up to an overview. After reviewing the amount of circles within a certain dimension and throughout the different phases, the entrepreneur can draw conclusions about two factors. One factor is to what extent his current situation fits a certain phase of the entrepreneurial process. The other factor is to create awareness of the different concepts within the capitals and increasing understanding about the current position of a certain capital related to the other three.

Capital	Indicator	Phase 1	Phase 2	Phase 3
Cultural	Knowledge	No use of external knowledge	Limited use of external knowledge	Knowledge mapping systems present
		Relying on own view and idea	Limited mix of tacit and explicit knowledge	Processes, routines and rules documented
		Knowledge management systems not present	Development of knowledge management systems	Active search for existing knowledge in the industry
				Well aware of chances related to gathering knowledge
		Idea needs to be developed further		
	Routines	No routines	Some routines, need to be further developed	Rules and procedures are clearly stated
		Tacit knowledge resided in entrepreneur		Production standards implemented
				Behavioral norms made clear
				Aware of skills needed in order to perform tasks
	Absorptive capacity	No expressed learning capability	Acknowledge external knowledge, unable to transform	Learn from different sources
				Patents are used
				Acquired knowledge transferred to output
Economic	Type of funds	Personal savings	Limited Business Angel capital	Venture Capital
		Loans from friends or family	Small investors	Bank Loans
		Limited access to funds		Corporate investments
				Shareholder capital
				Cash through sales
Social	Network content	Friends and family	Limited contact with other companies	Extensive contact with other companies
		Previous business contacts	Active search for previous acquaintances	
	Governance	No business reputation	Building a reputation	Renown partner
			Developing links	Reputation in the industry
	Network structure	No direct business contacts	Limited direct contacts	Extensive amount of direct contacts
		No access to other networks	Some access to other networks	Full access to other networks (i.e. venture capitalist/university)
		No informal information sharing	Some informal information sharing	Information shared through partners fully accessible
				Clearly stated strategic direction for the company
Strategic	Objective	Limited personal goal	personal goal transferred to business goals	Strategy of company made clear
		No business goal expressed	active thinking about strategy	Specific goal and target
	Scope	Only perceived market needs	market research in progress	Clear idea of market to serve
	Advantage	Unaware of competitive advantages	Some awareness, unable to express competitive advantage	Clear inimitable competitive advantages
	Business model	Unaware of business model	Developing business model	Business plan developed and expressed
			Acknowledging use of business plan	Business model fit to strategy

Table 1. The measuring tool

6. CONCLUSIONS

Developing an adequate measuring method for entrepreneurs based on the knowledge gained from the 4S Model has proven to be a strenuous task. The ambiguous nature of the field of entrepreneurship made it rather difficult to determine and develop valid indicators for the capitals. To answer the main research question "how can entrepreneurs measure and score their capitals?" an extensive review of different publications and theories was performed. This review led to key concepts and indicators for each of the capitals which could be translated into statements. The result of this is the measuring tool described in the section above. By using this method entrepreneurs can gain a better understanding of their current situation regarding the four capitals and what can be improved. This should lead to increased performance. This paper provided an operationalized set of concepts related to the four dimensions of the 4S model and offers an increased understanding of its effect on the entrepreneurial process. Entrepreneurs that implement and utilize this measuring method early in the entrepreneurial process can gain an increased understanding about the advantages that having an adequate network can offer. Instead of focusing too much on a certain aspect, for instance acquiring funds only, this method shows the entrepreneur what other capitals need to be developed in such a way that it prevents problems in a later phase. The scope of this method can be considered as somewhat limited. The final conclusion that can be drawn is that in order to be able to cover all of the aspects of the four capitals, their processes and relation to other capitals, further extensive research both in literature and in the field should be done. The challenge for this is the different factors that play a role in different industries. For instance the composition of capitals for a startup in the high-tech industry is rather different than the capitals for a construction shop in the local neighborhood.

7. DISCUSSION AND LIMITATIONS

Throughout the course of this research it became clear that measuring the four capitals is not as straightforward as it might seem. Due to the fact that the 4S model used in this research provides a perspective on entrepreneurship from a rather abstract level, it is clear that certain limitations are present in this paper. One of the main limitations is the fact that the four capitals are reviewed independent from each other. In practice the processes within the four dimensions are heavily intertwined. In practice however, for instance increasing economic capital can provide a strategic advantage due to scale advantages. Or having an extensive network can improve early access to funds. Describing and understanding all of these interdependent processes would be too extensive for the purpose of this research. The main decision not to incorporate these factors is for measuring purposes. The measuring method is developed in order to increase understanding on the four capitals for entrepreneurs. Therefore providing a mono-dimensional view is more practical. Another limitation that is present is the composition of the capitals. Due to the limited timeframe and complexity of the materials, one can only incorporate so many concepts. The key indicators for example are picked through the use of certain keywords that appeared after reviewing related publications. Interpretations of these capitals can vary heavily, depending on what approach the researcher takes. Therefore a certain bias for the indicators can be present. Another limitation is that the measuring tool is based on theoretical concepts rather than empirical results. Therefore in order to increase validity and practical use, extensive testing in an empirical setting should be performed. A recommendation for future research would be to investigate only one of the four dimensions. This allows a more in-depth explanation of the composition of a certain capital, rather than the more general view that this paper provides. The main implication of this research is to provide food for thought and make entrepreneurs more aware of their current position in terms of the four capitals and how improvement could take place. Another recommendation would be to integrate the measuring tool with other existing tools related to performance.

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9. REFERENCES

AMR DIALOGUE. (2001). *Academy of Management Review*(26), 8-20.

Barney, J. B. (1986). Organizational culture: can it be a source of sustained competitive advantage? *Academy of Management Review, 11*(3), 656-665.

Becker, M. C. (2005). A framework for applying organizational routines in empirical research: linking antecedents, characteristics and performance outcomes of recurrent interaction patterns. *Industrial and Corporate Change, 14*(5), 817-846.

Bollinger, A. S., & Smith, R. D. (2001). Managing organizational knowledge as a strategic asset. *Journal of knowledge management, 5*(1), 8-18.

Brand, M., Wakkee, I., & van der Veen, M. (2007). Teaching entrepreneurship to non-business students: Insights from two Dutch universities. *Handbook of Research in Entrepreneurship Education, 2*, 52-83.

Brush, C. G., & Vanderwerf, P. A. (1992). A comparison of methods and sources for obtaining estimates of new venture performance. *Journal of business venturing, 7*(2), 157-170.

Casadesus-Masanell, R., & Enric Ricart, J. (2009). From Strategy to Business Models and to Tactics. Harvard Business School: Working Paper 10-036.

Cassar, G. (2004). The financing of business start-ups. *Journal of business venturing, 19*(2), 261-283.

Casson, M. (1982). *The entrepreneur: An economic theory*: Rowman & Littlefield.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative science quarterly*, 128-152.

Collis, D. J., & Rukstad, M. G. (2008). Can you say what your strategy is? *harvard business review, 86*(4), 82-90.

Denis, D. J. (2004). Entrepreneurial finance: an overview of the issues and evidence. *Journal of corporate finance, 10*(2), 301-326.

Dickson, P. H., & Weaver, K. M. (1997). Environmental determinants and individual-level moderators of alliance use. *Academy of Management Journal, 40*(2), 404-425.

Dosi, G., Faillo, M., & Marengo, L. (2008). Organizational capabilities, patterns of knowledge accumulation and governance structures in business firms: an introduction. *Organization Studies, 29*(8-9), 1165-1185.

Fawcett, S. E., Smith, S. R., & Bixby Cooper, M. (1997). Strategic intent, measurement capability, and operational success: making the connection. *International Journal of Physical Distribution & Logistics Management, 27*(7), 410-421.

Granovetter, M. (1985). Economic action and social structure: the problem of embeddedness. *American journal of sociology*, 481-510.

Grayson, C. J., & O'Dell, C. S. (1998). Mining your hidden resources. *Across the Board, 35*, 23-29.

Groen, A. J. (2005). Knowledge intensive entrepreneurship in networks: towards a multi-level/multi dimensional approach. *Journal of Enterprising Culture, 13*(01), 69-88.

Groen, A. J., Wakkee, I. A., & De Weerd-Nederhof, P. C. (2008). Managing Tensions in a High-tech Start-up An Innovation Journey in Social System Perspective. *International small business journal, 26*(1), 57-81.

Groen, A. J., Weerd–Nederhof, D., Petra, C., Kerssens–van Drongelen, I. C., Badoux, R. A., & Olthuis, G. P. (2002). Creating and justifying research and development value: scope, scale, skill and social networking of R&D. *Creativity and Innovation Management, 11*(1), 2-16.

Hoang, H., & Antoncic, B. (2003). Network-based research in entrepreneurship: A critical review. *Journal of business venturing, 18*(2), 165-187.

Kahn, K. B., Barczak, G., & Moss, R. (2006). Perspective: establishing an NPD best practices framework. *Journal of Product Innovation Management, 23*(2), 106-116.

Kirwan, P., van der Sijde, P., & Groen, A. J. (2007). 12. Early-stage networking: how entrepreneurs use their social capital to establish and develop high-technology start-ups. *Entrepreneurship, Cooperation and the Firm: The Emergence and Survival of High-technology Ventures in Europe*, 391.

Kirzner, I. M. (1997). Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of economic Literature*, 60-85.

Kotha, R., & George, G. (2012). Friends, family, or fools: Entrepreneur experience and its implications for equity distribution and resource mobilization. *Journal of business venturing, 27*(5), 525-543.

Larson, A., & Starr, J. A. (1993). A network model of organization formation. *Entrepreneurship theory and practice, 17*, 5-5.

Liebowitz, J., & Suen, C. Y. (2000). Developing knowledge management metrics for measuring intellectual capital. *Journal of intellectual capital, 1*(1), 54-67.

Manigart, S., & Struyf, C. (1997). Financing high technology startups in Belgium: An explorative study. *Small Business Economics, 9*(2), 125-135.

Moskal, B. M. (2000). Scoring Rubrics: How? : ERIC Clearinghouse on Assessment and Evaluation, University of Maryland.

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*: John Wiley & Sons.

Parsons, T. (1964). Evolutionary Universals in Society. *American Sociological Review, 29*(3), 339-357. doi: Doi 10.2307/2091479

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review, 25*(1), 217-226. doi: Doi 10.2307/259271

Stevens, D. D., & Levi, A. J. (2005). Introduction to rubrics. *Sterling, VA: Stylus*.

Van der Veen, M., & Wakkee, I. (2002). Understanding the entrepreneurial process. *ARPENT: Annual Review of Progress in Entrepreneurship, 2*, 114.

Weaver, K., Nagpaul, V., During, W., Groen, A., & Dickson, P. (1998). *Entrepreneurial Orientation as a Predictor of Perceived Environmental Uncertainty and of Alliance Involvement: the Case of Small to Medium Sized Manufacturing Enterprises in the Netherlands.* Paper presented at the Conference paper-High Technology Small Firms, 5th June, Enschede, the Netherlands.

Wickham, P. A. (2006). *Strategic entrepreneurship*: Pearson Education.

Witt, P. (2004). Entrepreneurs' networks and the success of start-ups. *Entrepreneurship & Regional Development, 16*(5), 391-412.

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review, 27*(2), 185-203.