

## Chapter 2

# Entrepreneurship Capital and Regional Development: A Perspective Based on Intellectual Capital

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**Abstract** The literature describes entrepreneurial process as a multidimensional and complex phenomenon. Most conceptual frameworks advocate that the entrepreneurship is a function of the opportunity and the individual entrepreneur, his or her characteristics and actions. A knowledge-based perspective suggests that entrepreneurship can be thought of as a function of knowledge and attitude. Such perspective proposes that there is one single dominant factor upon which the opportunity, the individual, and the whole entrepreneurial process are based. This factor is knowledge as a property of individuals or organizations which are intelligent agents in their own right, and which are challenged to have a critical attitude in order to execute the entrepreneurial process. Recent works on this research area suggest that there is a positive link between entrepreneurship, regional economic performance, and the creation of new firms and businesses. Regions are now facing rapidly evolving pressures from global economy. Regions prosperity no longer lies in traditional assets such as cheap land and labor. Instead, regions' success is shaped by new categories of assets, like skills, innovative firms, lifestyle amenities, cultural assets,

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and intellectual capital. Although, in the last years, many studies have investigated the knowledge factors grounding local development there are still gaps in the research that need to be filled for the definition of the theory pillars of an intellectual capital dimension of regional development dynamics. This chapter contributes to the literature on the role entrepreneurship plays in regional development, providing a holistic view of the knowledge-based entrepreneurial activity.

**Keywords** Entrepreneurship capital • Human capital • Intellectual capital • Regional development

## 2.1 Introduction

It is generally accepted in the literature that entrepreneurship is primarily a “regional event” (Feldman 2001). However, the study of entrepreneurship and new firm formation has also demonstrated that not all places are alike in their potential to generate new entrepreneurs. In the context of knowledge economy (KE), the entrepreneurial vitality of a region depends to a large extent on the capabilities to activate, develop, sustain, and manage knowledge dynamics and processes. The knowledge-based capital is a source of regional innovation capacity which supports that regions differ in: (1) the way they capture and retain talents (Florida 1995); (2) the extent of social network (Schiuma et al. 2008); and (3) the scale and quality of public infrastructures (Polenske 2004).

The knowledge-based economy has put the focus on the regional dimension of economic growth. It has also shifted development perspectives from output to input factors as production became more knowledge-based, calling for a better understanding of how firms, universities, and government institutions deploy their core resources and competencies and interact to accrue economic growth (Rodriguez and Viedma 2006). In this special context, entrepreneurship facilitates knowledge spill-overs through the implication of start-ups and growth of new enterprises where their ideas are commercialized.

In the age of knowledge the key source of economic vitality and growth are intangible assets. They play a prominent role in enhancing competitiveness. Resources like intellectual capital (IC) are perceived as crucial factors especially for regional growth. It is widely accepted that territorial systems depend increasingly on their ability to master and develop knowledge resources. This issue has been largely investigated in the last decade (Edvinsson 2002; Tallman et al. 2004; Smedlund and Poyhonen 2005; Carrillo 2006; Martins and Viedma 2006; Lerro and Schiuma 2009). Recent literature on creative economy and knowledge-based urban development emphasizes the role of regions and cities in becoming basic “building blocks” for economic growth (Yigitcanlar 2009). Although the relevance of knowledge as source of innovation and competitiveness at regional and local level is recognized, most studies have focused attention on isolated knowledge components, rather than on a holistic view of the knowledge-based capital building a region’s

innovation capacity (Bounfour and Edvinsson 2005). This work aims to develop a framework that links entrepreneurship capital and regional development, where the intellectual capital perspective provides a holistic approach of the knowledge-based entrepreneurial activity.

This chapter is organized as follows. Section 2.2 discusses the different approaches to understanding entrepreneurship and presents the notion of entrepreneurship capital as a regional factor of production that attracts individuals. Section 2.3 develops a knowledge-based perspective on entrepreneurship. Then, providing a knowledge-based interpretation of entrepreneurial activity, links between entrepreneurship capital and regional development are pointed out, adopting a perspective based on intellectual capital.

## 2.2 Entrepreneurship and Entrepreneurial Capital

The term entrepreneurship has several levels of meaning, which makes it hard to reach a consensus about an appropriate definition. Nowadays, the entrepreneurship area comprehends a broad range of theories and approaches and has been studied in different ways and with several purposes. Academics from various fields of social sciences—notably economics, psychology, and sociology—have given contributions to this area (Casson 2010). There are, at least three approaches to understanding entrepreneurship: (1) the economic approach, which studies the functions of entrepreneurs in economy; (2) the psychological approach, which examines personal characteristics specific to entrepreneurs, and; (3) the social-behavioral approach, which stresses the influence of the social environment as well as personal attributes. Entrepreneurship is then multidisciplinary (Raposo et al. 2008), sometimes a fuzzy concept.

According to the OECD (1998), there are three ways how entrepreneurship can be measured. First, entrepreneurship involves a dynamic process in which new firms are starting up, existing firms are growing, and unsuccessful ones are restructuring or closing down. This approach is anchored on the notion of creative destruction (Schumpeter 1911/1934) and has been operationalized by start-up rates and survival rates. Second, entrepreneurship refers to new firms formation or small businesses. This is mostly measured by the self-employment or business ownership rate. Finally, entrepreneurship tends to be identified as innovation, which is mostly captured by R&D measures.

An interesting point in the literature is related to the *supply side* and the *demand side* of entrepreneurship. On the supply side, related to the “pool” of potential entrepreneurs, important perceptions include willingness, individual attributes, motivational factors, and perceived ability to become an entrepreneur. Education levels and the availability of entrepreneurship training programs are possible determinants of perceived skills. On the demand side, or “space for” entrepreneurship, there need to be opportunities for entrepreneurship, but equally entrepreneurs need to perceive opportunities to start a business (Kirzner 1973; Shane and Eckhardt 2003). The

quantity and quality of perceived opportunities may be enhanced by regional and national conditions such as economic growth, population growth, culture, and national entrepreneurship policy. Thus, entrepreneurship is a result of endogenous and exogenous aspects.

Audretsch and Keilbach (2004) introduced the concept of entrepreneurship capital stressing those aspects of a region that are conducive to the creation of new business. The authors refer to entrepreneurship capital as a regional or spatial factor of production that attracts individuals willing to incur the risk of starting up a new business, and then expand their definition to include other factors that result from the interactions of these individuals (or entrepreneurs) at different levels of aggregation. Such other factors include informal networks at the group or team level, formal networks at the organizational level, and, finally, the regional milieu, which comprises, among other things, the business culture, supporting institutions, and institutional obstacles (Audretsch and Monsen 2008). The milieu, described as a system of regional institutions, rules, and practices that lead to innovation, is essentially a context for development. Several studies have been developed and empirically tested which demonstrate that: (1) entrepreneurship capital contributes to economic growth, over and above traditional forms of capital (e.g., physical, labor); (2) R&D intensive entrepreneurship capital has a greater long-term impact on long-term regional productivity; (3) high technology entrepreneurship capital impacts labor productivity growth (Audretsch and Keilbach 2004).

### ***2.2.1 Entrepreneurship Initiatives in the Context of Knowledge Economy***

Globalization is causing profound change in the economic structure of nations, regions, cities, industries, and firms. New technological advances have diminished transportation, telecommunications, and computational costs, increasing the ease of global flows of information.

In the context of KE wealth creation depends on the generation and exploitation of knowledge involving not only science and technology but also knowledge of practice required to create economic value. We are assisting to a shift from a managed economy to entrepreneurial economy both in OECD countries and developing countries. The impact of the knowledge-based era is pervasive and the shift to knowledge-based economic activity is said to be the driving force underlying the emergence of the entrepreneurial economy (Andersson et al. 2010).

Entrepreneurship has gained additional attention in the current economic crisis, as it is widely viewed as a key aspect of economic dynamism (Leitão et al. 2011). As globalization reshapes the international economic landscape and technological change creates greater uncertainty in countries' productive structures, entrepreneurship is believed to offer ways to help to meet new economic, social, and environmental challenges. As a response, national governments and international organizations such the Organization for Economic Co-operation and Development

(OECD) and the European Commission (EC) have increased their focus on entrepreneurship programs and initiatives. The World Economic Forum (WEF) and the EC, for example, are currently involved in advising governments and universities with a view to improving the strategies, structures, and practices aimed at implementing and developing entrepreneurship education (World Economic Forum 2009; European Commission 2012). Several initiatives also take place to promote the assessment of the national level of entrepreneurial activity. The global entrepreneurship monitor (GEM) <http://www.gemconsortium.org/> is a research program that attempts to provide comparable measures of entrepreneurial activity at the national level. The entrepreneurship indicators program (EIP) launched by OECD in 2006 aims to build internationally comparable statistics on entrepreneurship and its determinants. In 2007, Eurostat joined forces with the OECD to create a joint OECD-Eurostat EIP in order to establish standard definitions and concepts as a basis for the collection of empirical data. The panel study of entrepreneurial dynamics (PSED) <http://www.psed.isr.umich.edu/psed/home> is a program designed to analyze how people start their businesses. More recently, The European Entrepreneurial Region (EER) initiative <http://cor.europa.eu/en/takepart/eer/Pages/eer.aspx> helps to identify and reward annually up to three, the regions with the most convincing and forward-thinking policy strategy granting an entrepreneurial label: “entrepreneurial region of the year.” The aim of the initiative is to create dynamic, green, and entrepreneurial regions throughout Europe. At the same time entrepreneurship education is booming worldwide (Neck and Greene 2011). The OECD, for example, is currently involved in advising governments and universities with a view to improving the strategies, structures, and practices aimed at implementing and developing entrepreneurship education.

Beyond knowledge as the source of entrepreneurial opportunities, a matching of opportunities and resources to create value through new activity must take place. From the readings on the subject, we cannot determine today the exact nature of the next wave of entrepreneurship; however, it is known that it will require more creative, innovative, and entrepreneurial attitudes, skills, and behaviors.

### 2.3 A Knowledge-Based Perspective on Entrepreneurship

The study of the entrepreneur’s role is well represented in the literature (Feldman 2001; Cuervo 2005; Audretsch and Monsen 2008). The literature describes entrepreneurial process as a multidimensional and complex phenomenon. As suggested by Audretsch (2003), the absence of a generally accepted definition of entrepreneurship reflects the multidimensionality of the concept, which involves uncertainty-bearing, innovation, opportunity-seeking, and enterprising individuals.

Many contributions to the field follows in literature, each elaborating on different entrepreneurial functions within the economy. History of economic thought on entrepreneurship is mainly anchored on two schools: (1) the German tradition based

on Thünen (1826/1960) and Schumpeter (1911/1934), and (2) the Austrian school rooted in von Mises (1949) and Kirzner (1973). More recently is emerging in the literature a knowledge-based perception on the entrepreneurial phenomenon that centers the discussion around on how knowledge, together with individual ability, defines opportunity.

Schumpeter made significant contributions to the theory of entrepreneurship, stressing innovation and leadership as the main characteristics of entrepreneurship. The Schumpeterian entrepreneur causes waves of creative destruction by introducing “new combinations,” which make current technologies and products obsolete. These “new combinations” include: (1) the creation of a new good or a new quality; (2) the creation of a new method of production; (3) the opening of a new market; (4) the capture of a new source of supply; and (5) the creation of a new organization or industry (Schumpeter 1934).

The Austrian tradition of entrepreneurship focuses on profit opportunities and the importance of competition. The key concept in Kirzner’s notion of entrepreneurship is that entrepreneurs are behind the competitive behavior that drives the market process responding to opportunities rather than creating them.

Most conceptual frameworks focus on the individual entrepreneur and his or her characteristics and actions. Some authors (Venkataraman 1997; Shane and Venkataraman 2001), advocating an opportunity-based framework, argue that entrepreneurship is a function of the individual and the opportunity. They consider the individual and opportunity to be the essential elements of the entrepreneurial equation:

$$\text{Entrepreneurship} = f(\text{individual, opportunity})$$

According to the authors, the key aspects of entrepreneurship are: (1) the sources of opportunities; (2) the process of discovery, evaluation, and exploitation of opportunities to introduce new goods and services, ways of organizing, markets, processes, and raw materials through organizing efforts that previously had not exist; (3) the set of individuals who discover, evaluate, and exploit them. An important point leading this discussion is the ontological assumption about whether opportunity is an endogenous or exogenous phenomenon. The Austrian school of economics (e.g., Kirzner 1997) considers opportunity as exogenous. Although the discovery process depends on the individual and the opportunity, the domain of entrepreneurship is quite narrow because opportunity is a specific possibility, situation, venture, or chance, which is not created by the entrepreneur. Kirzner (1997, p. 72) notes that “an entrepreneurial attitude is one which is always ready to be surprised, always ready to take the steps needed to profit by such motives.” In the same line, Alvarez and Barney (2007) point out that the key to entrepreneurial success is a disposition to alertness for new opportunities and the ability to quickly act upon revealed opportunities.

In contrast to this, other scholars view the concept of opportunity as depending on the endogenous factors (e.g., Rindova and Fombrun 2001; Gartner and Carter 2003). They believe that opportunities are a product of individual entrepreneurial

actions, or, perhaps more important, a product of collective action. The basic assumption is that entrepreneurs can shape their market and institutional environments, that they can create opportune changes in them, and in so doing, can construct their own context.

More recently, Ihrig et al. (2006) developed a knowledge-based perspective on entrepreneurship, suggesting that entrepreneurship can be thought of as a function of knowledge and attitude. Knowledge drives the process of discover and, in this sense, it is the enabling force of the entrepreneurial process. However, there are people who have the knowledge to start a new venture but never do so. Basically, the critical attitude is what the potential entrepreneur needs in order to finally start a new venture. The concept of critical attitude should not only consist of the “perceived desirability and the perceived feasibility” but also of the “emotional, intellectual, and physical energy to see a venture through to fruition” (Erikson 2002, p. 282). Then, the mathematical formula changes to this one:

$$\text{Entrepreneurship} = f(\text{knowledge, attitude})$$

A perspective of entrepreneurship based on knowledge proposes that there is one single dominant factor upon which the opportunity, the individual, and the whole entrepreneurial process are based. This factor is knowledge as a property of individuals or organizations which are intelligent agents in their own right (Quinn 1992), and which are challenged to have a critical attitude in order to execute the entrepreneurial process. In the same vein, Forsman (2008) relates entrepreneurial success with three words: intention, ability, and opportunity. Prior knowledge feeds positive opportunity recognition. The entrepreneur’s values, beliefs, and goals have an effect on which opportunities will be selected to be important for consideration.

Although there is no common definition to characterize the entrepreneur some agreements on the personal characteristics seem to exist (Beverland and Lockshin 2001; Raposo et al. 2008; Fayolle 2013). Most of the literature associates the following types of characteristics to entrepreneurs: individual attributes; risk taking; need for achievement; locus of control, self-confidence and optimism; profit motivation; creativity; and other motivational factors and personal values.

Entrepreneurship necessarily involves individuals and their response to economic opportunities (Shane and Eckhardt 2003). Not only is the source of opportunities important, but the nature of the individual recognizing and commercializing these opportunities. Knowledge influences the nature of entrepreneurship because it has an impact on opportunity recognition and exploitation. Opportunity recognition and exploitation refer to the ability to identify good ideas and transform them into businesses that generate income and add value. Both processes therefore depend on the abilities of individuals to acquire and process knowledge—their learning abilities. Entrepreneurial activity is then a function of the extent to which individuals recognize opportunity and possess the capacity, motivation, and skills to exploit it, reflected in start-up efforts and job formation.

## 2.4 Entrepreneurship Capital and Regional Development: A Perspective Based on Intellectual Capital

During the past decade, regional and national IC has been attracting an increasing amount of attention, not only from academics and managers, but also from national policy makers. A World Bank (1999) report points out that the adoption of policies to increase a nation's intellectual wealth can improve people's lives, besides giving them higher incomes. Bounfour and Edvinsson (2005) advert that only those countries with knowledge-intensive industries will be the winners in terms of future wealth creation.

Koenig (1997) argues that IC is usually considered to have two components: (1) the knowledge itself, and (2) the structure to maintain and distribute that knowledge appropriately. Although there is no widely accepted definition, at least three elements are common in almost all definitions: (1) intangibility; (2) knowledge that creates value; and (3) effect of collective practice. A well-known definition is the one proposed by Edvinsson and Malone (1997, p. 3): "intellectual capital is the knowledge applied to work to create value." In this sense, IC represents knowledge that creates value. Some attempts to operationalize the concept have emerged in the literature, classifying IC into the categories of human capital (HC), structural capital (SC), and relational capital (RC). Both at the micro and macro level several taxonomies have been described (Lin and Edvinsson 2011; Bontis 2004). The IC of a nation includes the hidden values of individuals, enterprises institutions, communities, and regions that are the current and potential sources for wealth creation. These hidden values are the roots for nourishment and the cultivation of future well-being.

Regional IC (RIC) is viewed as a capacity of a region to create wealth and intangible assets. Some authors have examined the knowledge-based capacity of a region examining the human capital, the structural capital and the social capital (Lerro and Schiuma 2009). For the purpose of this study we examine those three types of capital as the drivers of the knowledge-based entrepreneurial activity in a region.

### 2.4.1 *Human Capital*

Human capital refers to the know-how that characterizes the different actors operating within a region. It comprises both people and the region's capacity to make use of the human capital i.e., the opportunity for people to be creative and productive. Human capital includes those factors that are built upon or are reflective of know-how, both tacit and explicit, which individuals and more generally regional stakeholders possess and exercise. In some cases, the know-how may reside in the individuals; in other cases, the know-how may be collectively owned by region's stakeholders.



A wide range of empirical studies have documented the role of human capital in regional growth. Using a sample of United Kingdom between 1980 and 1998, Van Stel and Storey (2004) link the impact of employment growth and the creation of new business to specific public policies that supported entrepreneurship and found that the qualification of entrepreneurial or non-entrepreneurial region depends on the stock and the quality of the human capital of the region.

Education and experience have been identified as important measures of human capital. Education measures potential talent or skill, but occupation provides a potentially more robust measure of utilized skill—that is how human talent or capability is absorbed by and used by the economy. Education provides an underlying level of capability, but such capability has to be converted into productive work. Thus occupation is the mechanism through which education is converted into skill and labor productivity. At regional level, human capital also refers to quantity and quality of research (Feldman and Desrochers 2003), entrepreneurial skills, and inflow of external talents.

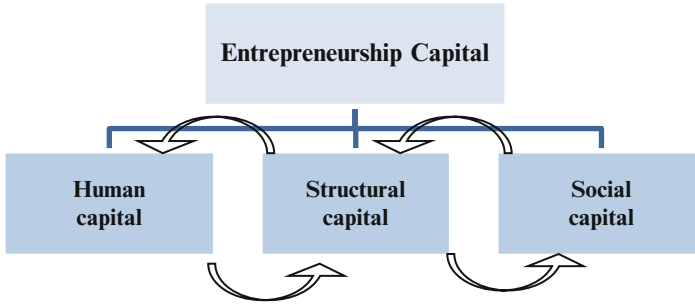
### ***2.4.2 Structural Capital***

Structural capital relates to infrastructures linked to regional culture, history, attitudes, norms, values, behaviors, image, and other cultural dimensions characterizing the regional systems (Cooke and Wills 1999; Iyer et al. 2005; Thurik 2009). According to Passow et al. (2005), reputation has also been considered a valuable, structural intangible asset that allows a region to achieve value targets.

### ***2.4.3 Social Capital***

Social capital has received an increased attention in the literature and has been studied at multiple levels, including the individual (Gratton and Ghoshal 2003), organizational (Nahapiet and Ghoshal 1998), and regional or national (Iyer et al. 2005). At the individual, social capital has been defined as the resources embedded in one's relationships with others. Social capital is about *who* one knows, and *how well* one knows (Gratton and Ghoshal 2003). At the organizational level, social capital refers to the value to an organization in terms of the relationships formed by its members for the purpose of engaging in collective action (Nahapiet and Ghoshal 1998). On a macro level, social capital has been analyzed in terms of its impact on the well-being of regions and nations.

Social capital comprises the knowledge assets mainly the result of the dynamic interdependencies linking regional actors related to the stakeholders' social dynamics taking place within a local system and include many components, such as, among others, values, culture, routines, behaviors, networking, identity, atmosphere, and so on.



**Fig. 2.1** Entrepreneurship capital: a knowledge-based perspective

While the knowledge-based development approach has the organization of the innovative production and the related support structure as the prime focus, the entrepreneurship approach pays attention to retaining and attracting talents for innovative production. A knowledge-based perspective on entrepreneurship capital refers to the overall intangibles—human, structural, and social—that a region can express, practically and potentially (Fig. 2.1).

These intangibles within a region operate as bundles of resources. Wealth is then created through complex dynamic exchanges between tangibles (money, goods, buildings, infrastructures) and intangibles (cognition processes, intelligence, culture, values, and emotions) where individuals, groups, or organizations engage in a value network by converting what they know, both individually and collectively, into tangible and intangible value.

The notion that entrepreneurship may constitute an important driver of economic growth is supported by a growing body of empirical evidence indicating a positive relationship between different measures of entrepreneurship and regional economic performance. Klapper (2006) found out a strong relationship between greater entrepreneurship and such factors as higher GDP per capita and greater financial development. Audretsch et al. (2006), with a sample of German region, estimated a production function and they found a positive relationship between entrepreneurship, capital venture, and regional economic growth. Mrabet et al. (2013) state that entrepreneurship capital measured in terms of start-up rate positively affects and boosts the economic performance.

The global knowledge economy highlights the role of regions as the appropriate “strategy sites of intervention” (Lagendijk 2000, p. 184) of every nation’s economic growth, prosperity, and competitiveness. In this approach, regions appear as focal points for learning and knowledge creation in the new age of global, knowledge-intensive competition. The increasing role of the region and its potential for economic development are anchored in “untraded interdependencies” (Scott and Storper 2003) that take the form of conventions and informal rules and habits that coordinate economic actors under conditions of uncertainty, and thus foster and shape entrepreneurial, productive, and innovative activities.

Systematic innovation and competence-building are seen as key drivers of regions' development and competitiveness. Systematic innovation, supported by interactive learning and collective entrepreneurship, expands the regional knowledge base (Lundvall and Johnson 1994). From a regional development perspective, the driving forces behind economic growth are those able to enhance reciprocal understanding and mutual trust and enable tacit knowledge transmission (e.g., set of habits, routines, norms, and laws under which its people shape their beliefs, values, behaviors, and attitudes) among the agents of the regional economy (Martins and Viedma 2006).

During the innovation process—from the birth of a new idea through to the launch of a new product on the market—entrepreneurship capital (human, structural, and social) interacts with the other types of capital (physical, market, financial), putting each type to its highest and best use. The most effective (successful) entrepreneurs are those who can use their personal drive and energy to activate the entire network of capital.

The connectivity between entrepreneurship capital and regional development calls for a conceptual framework that recognizes the importance of human capital, structural capital, and social capital for regional economic growth. A perspective based on IC can help to frame the knowledge-based entrepreneurship approach, emphasizing the human, structural, and social capital as the main knowledge-based categories building the knowledge-based capital of a region, as depicted in Fig. 2.2.

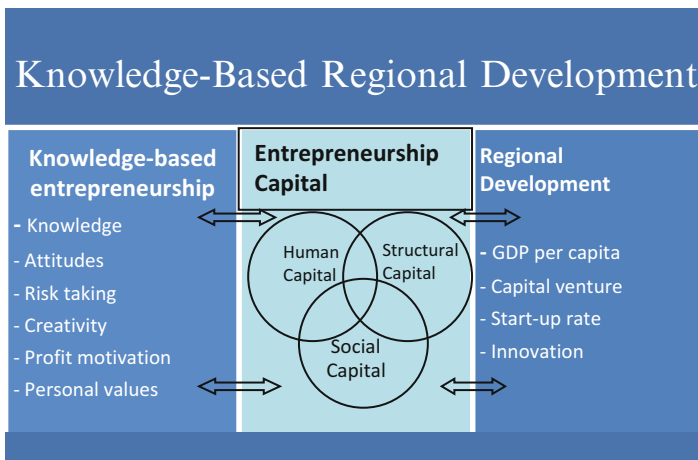


Fig. 2.2 A framework for knowledge-based regional development

## 2.5 Conclusions

In a globalized and strongly competitive world only regions with the ability to attract and keep intellectual capital can win.

Today the position regions are more than before determined by their competencies and skills to learn and develop themselves in a continuous process to cultivate some specific, differentiated and locally rooted knowledge, and to foster linkages with other knowledge pools in the world. Consequently, local initiatives and an enterprising disposition are becoming more and more important in regional competitiveness.

Entrepreneurship is a discipline with a knowledge-based theory. A person can learn and acquire the competencies of becoming an entrepreneur and start a venture and make it grow. However, in the context of KE, the entrepreneurial vitality of a region depends to a large extent on its capabilities to activate, develop, sustain, and manage knowledge dynamics and processes.

A perspective based on IC helps us to identify intangibles that drive the entrepreneurship capital within a region, where the key to wealth creation lies with the effectiveness of knowledge transfers and conversions. Human capital, structural capital, and social capital are the key drivers of the knowledge-based entrepreneurial activity in a region.

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