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Abstract: Given the substantial interest around the study of entrepreneurship, understanding the intricate network of factors that explain the decisions about human capital is of critical importance. Decisions concerning knowledge, skills and abilities are multidimensional since there are many modes, categories, and components of human capital acquisition. Human capital may come from a set of choices or a set of processes. The choices and processes are disaggregated into four categories: 1) what human capital entrepreneurs choose to acquire 2) where they want to acquire such human capital 3) how they want to acquire the human capital 4) when they want to acquire human capital. Furthermore, it is also important to understand the drivers/motivations of entrepreneurs regarding human capital acquisition. This paper is an in-depth organisation and review of the existing literature. We present a roadmap connecting the points that remain dispersed and fragmented. In addition, suggestions for future research are provided.

Keywords: entrepreneurship, human capital; learning; choices; investment; knowledge.

JEL codes: J24, L26.

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1 Introduction

1.1 Background

For over a decade, the human capital entrepreneurship literature (HCEL) has benefited from multi-disciplinary and multi-theoretical approaches. However, the contribution of economic theory to HCEL is much scarcer (Marvel et al., 2016; Dimov, 2017). In a critical review of HCEL, Marvel et al. (2016) shows that articles using economic theory account for no more than 5.6%, and that there are considerable gaps in research on how entrepreneurs acquire human capital for entrepreneurship and what motivates them to acquire specific types of human capital (Marvel et al., 2016; Dimov, 2017; Arshed et al., 2021). These research gaps deserve to be addressed for two main reasons. First, understanding how entrepreneurs acquire human capital for entrepreneurship provides useful insights on how entrepreneurs recognise opportunities in new circumstances, or how they cope/adapt to liabilities of newness (Alvarez and Barney, 2007; Marvel, 2013). This is especially important because knowledge, skills, and abilities (KSAs) may be critical in one period but irrelevant in another one. The Covid-19 pandemic is a perfect example of how circumstances can change dramatically, relegating some KSAs to the side-line (World Bank, 2020). Second, motivation pushes entrepreneurs to take entrepreneurial actions (including acquiring more human capital) and these actions may greatly affect firm growth (Locke, 2000; Marvel et al., 2016; Vaz, 2021).

The challenge with studying how entrepreneurs acquires human capital – human capital acquisition for entrepreneurship (HCaqE) – is that there are different perspectives about this topic. A first view understands HCaqE to be synonymous with human capital investment (HCI). In this perspective it is assumed that some entrepreneurial KSAs are innate to the 'choice' of HCI that entrepreneurs make, which is not always the case. This is because some KSAs may not be a direct outcome of a specific HCI, as a variety of factors (e.g., personal traits) also contribute to the development of these outcomes. For this reason, several empirical studies advocates using outcomes of HCI as direct measures of entrepreneurial KSAs instead of HCI variables themselves (e.g., Moog, 2002; Unger et al., 2011; Marvel et al., 2016). A different way of perceiving HCaqE is

viewing it as a 'continuous process' of entrepreneurial learning as opposed to the static view of HCI (e.g., Minniti and Bygrave, 2001; Politis, 2005; Wang and Chugh, 2014).

With these two approaches in mind, the HCaqE literature suggests that human capital acquisition can be represented as either a set of 'choices or a set of 'processes', but not both. Studies on this topic therefore usually follow one of these two lines of reasoning. Also, the trend found in scientific research toward the specialisation of knowledge aggravates this conceptualisation because each study usually fails to show that there are several dimensions overlapping in each context. For example, in addition to choosing HCIs, entrepreneurs also have to make choices on the content of their learning, as well as on how much effort they want to put into learning a specific content. Therefore, it seems clear that the literature on HCaqE has a very limited vision. In order to understand how entrepreneurs, acquire human capital and what motivates them to acquire specific portfolios of KSAs, it is therefore vital to re-think the concept by moving toward a more holistic and multidimensional perspective.

1.2 Objectives

The main goal of this study is to review the empirical and theoretical literature that identifies the different concepts (and consequently components) of HCaqE. Based on this review, we propose a new multidimensional framework that brings together the 'choices' entrepreneurs have to make and the 'processes' they have to go through in order to reach a given level of KSAs. This framework is based on four questions that summarise the scope of decision required at the individual level. Entrepreneurs must choose:

- what human capital they want to acquire
- where they want to acquire that human capital
- how they acquire the human capital
- when they want to acquire human capital.

Another goal of this research is to understand why entrepreneurs want to acquire human capital. More specifically, we focus on entrepreneurial motivation (EM) as a critical driver for HCaqE. While some authors argue that the relationship between entrepreneurial motivation and firm growth is significant, others find that this relationship is less critical than other factors of firm growth. Considering these findings, we provide a survey of the literature regarding the link between EM and its relationship with HCaqE.

This study extends the literature on the determinant factors of firm growth by elaborating on the idiosyncratic factors of entrepreneurs (Vaz, 2021). This is important because not all of the variables identified in the empirical literature of firm growth are direct factors, but instead have underlying variables that also influence growth. Therefore, the re-conceptualisation of HCaqE and its drivers may lead us to expand the set of variables considered when studying this topic.

1.3 Methodology

A survey of the empirical and theoretical literature on human capital acquisition and its drivers was used to build this paper. In August 2021, a search was conducted in the Scopus database using the terms 'human capital acquisition', 'knowledge acquisition and

entrepreneurship', 'knowledge and skill acquisition', 'entrepreneurial learning', and 'entrepreneurial motivation'. The search parameters were set to find these terms in the Title, Abstract, and/or Keywords of documents in the Scopus database. A list of 1,448 publications including journal articles, books, theses, and conference papers was obtained from the first search. The breakdown of the overall results is the following:

- 'human capital acquisition' was found in 105 publications
- 'knowledge acquisition and entrepreneurship' in 93 publications
- 'knowledge and skill acquisition' in 223 publications
- 'entrepreneurial learning' in 615 publications
- 'entrepreneurial motivation' in 412 publications.

Following this search we applied a hierarchical screening procedure to decide which studies to include in the review. In the first step we adjusted the search parameters by filtering according to 'subject area'. We excluded publications with subject areas from life sciences, engineering, computer science, arts, and psychology. With this procedure we retained 902 publications. The results of the first step are as follows:

- 'human capital acquisition' generated 82 publications
- 'knowledge acquisition and entrepreneurship' generated 41 publications
- 'knowledge and skill acquisition' generated 50 publications
- 'entrepreneurial learning' generated 449 publications
- 'entrepreneurial motivation' generated 280 publications.

In the second step we excluded all studies that were not directly related to the subject area of economics, econometrics, and finance, by filtering further by subject area. This step led to a shorter list, with 363 publications. The results of the second step are as follows:

- 'human capital acquisition' generated 70 publications
- 'knowledge acquisition and entrepreneurship' generated 18 publications
- 'knowledge and skill acquisition' generated 4 publications
- 'entrepreneurial learning' generated 139 publications
- 'entrepreneurial motivation' generated 132 publications.

As a final step we identified publications that directly discussed concepts of human capital acquisition and entrepreneurial motivation. We accomplished this by reviewing the abstract of each publication generated from the second step and excluding publications for which human capital acquisition and entrepreneurial motivation seemed not to be the main topic. We arrived at a final list of 120 publications.

2 Human capital acquisition for entrepreneurship as a holistic multi-dimensional construct

Figure 1 illustrates a holistic multidimensional view of HCaqE, including the modes, categories, and components of human capital acquisition. The literature on HCaqE shows that human capital may come from:

- a set of choices that entrepreneurs make
- a set of processes they go through.

These choices and processes are disaggregated into four major categories:

- what human capital entrepreneurs choose to acquire
- where they want to acquire that human capital
- how they want to acquire the human capital
- when they want to acquire human capital.

Based on this categorisation, HCaqE can be perceived as having five core components and one peripheral component:

- type of HCaqE
- human capital investments
- sources of HCaqE
- entrepreneurial learning
- time of learning
- expected outcomes of HCaqE (as the peripheral component) (Figure 1).

This framework will be explored in detail.

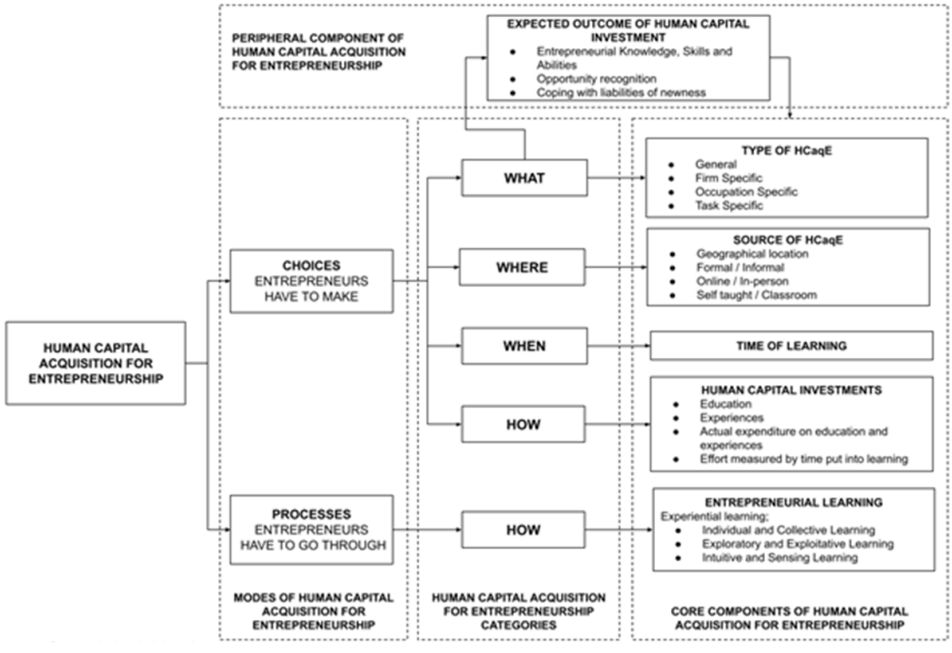
2.1 Core components of human capital acquisition for entrepreneurship

2.1.1 Types of human capital acquisition for entrepreneurship

Several studies suggest that human capital acquisition can be categorised into different types based on the relevance of the human capital directly related to an industry, firm, or task. The two major types of human capital acquisition commonly described in literature are:

- General human capital: this includes KSAs that are equally valued across firms, industries, or occupations (Gibbons and Waldman, 1999; Ost, 2014; Kinsler and Pavan, 2015).
- Specific human capital: this refers to KSAs that are relevant to a firm, industry, or task (Gibbons and Waldman, 2004). Specific human capital can be further subcategorised into firm-specific (Lazear, 2009), occupation-specific (Neal, 1995; Sullivan, 2010), and task-specific (i.e., process specific and/or content specific) (Gibbons and Waldman, 2004).

Figure 1 A holistic and multidimensional view of human capitol acquisition for entrepreneurship



Source: Authors' elaboration

The expected return determines the type of human capital that the entrepreneur chooses. For example, if entrepreneurs perceive that a specific human capital will generate a given level of return, this will dictate the amount of investments they will make to acquire that human capital. Many studies that compare the effects of the two types of human capital show that specific human capital leads to higher productivity or entrepreneurial success than general human capital (Gibbons and Waldman, 1999; Gibbons and Waldman, 2006; Unger et al., 2011). This is because human capital can only lead to entrepreneurial success if it is successfully transferred or applied to a specific task that needs to be done. The successful application of human capital is easier if the human capital is related to a firm, industry, process, or task (Unger et al., 2011). Some studies show that entrepreneurs with specific human capital (in particular, task-specific human capital) had better knowledge of their customers, products, and services, implying that they were more likely to succeed in their businesses (Gimeno et al., 1997).

2.1.2 Human capital investments

From a theoretical point of view, KSAs are the result of investments in human capital, such as education, training, and work experience (for seminal contributions on this topic, see Schultz, 1961; Becker, 1964; Blundell et al., 1999). For this reason, most researchers have relied on HCIs as a proxy of human capital acquisition (Reuber and Fischer, 1994). However, HCI is an indirect indicator of human capital and may not always lead to the acquisition of a specific knowledge, skill, or ability. For example, two individuals with the same experience and education can have different entrepreneurial outcomes based on the KSAs they have acquired (Quiñones et al., 1995). This is because there are a variety

of other factors such as the environment (e.g., learning environment or available resources) that also influence whether HCIs will lead to the effective acquisition of KSAs (Reuber and Fischer, 1994; Quiñones et al., 1995; Paulsen, 2001; Coleman and DeLeire, 2003). Moreover, there are several individual characteristics that may affect how experience and education are transformed into relevant KSAs (Keith and Frese, 2005). These variables may include individuals' cognitive capabilities, their understanding of ideas and situations (i.e., reflective orientation), and/or personal motivations. Hence, experience or education should not be expected to be the same as KSAs acquired (Sonnentag, 1998).

Entrepreneurs choose the type of investment they want to make to acquire human capital. They choose the type of education, training, or work experience they believe will give them the KSAs they want. Similarly, they choose the level of investment they want to make to acquire human capital. The level of investment goes beyond the idea of financial cost, and also includes the opportunity cost or amount of effort (often measured by time) required to obtain knowledge, skill, and ability.

2.1.3 Sources of human capital acquisition for entrepreneurship

KSAs are 'containers of entrepreneurial information' that can be found in a variety of places (Cooper et al., 1995; Varis and Littunen, 2010). Entrepreneurs thus have to search for the location(s) of these and determine which of these sources are best suited for their needs. The concept of sources of human capital has been widely used in macroeconomics, with several studies describing it as HCIs (Garavan et al., 2001; Oketch, 2006; O'Mahony, 2012). A criticism of this perspective is that it does not differentiate among the factors, namely the environment in which these containers of entrepreneurial information exist. Hence it downplays the role of the location or context in which KSAs can be explored.

It is important to take a different approach to understanding sources of HCaqE because in addition to deciding on HCIs, entrepreneurs are also making decisions on their environment and format of learning. By viewing KSAs as containers of entrepreneurial information it becomes clear that they can be encountered in a variety of environments and formats. These are described as follows:

- *Offline and online environments* (Roper, 2007; Littenberg-Tobias and Reich, 2020). Offline environments are the physical or geographical locations where a training or experience occurs or is domiciled (e.g., continent, country, city, neighborhood, building, classroom, etc.). Online environments, on the other hand, refers to digital/virtual environments where training or experiences occur or are domiciled (e.g., internet, educational software, teleworking, etc.).
- *Formal and informal environments* (Folkestad, 2006; Salas-Velasco, 2007). Formal environments are those in which entrepreneurial information is distributed in a structured manner, while informal environments are unplanned and allow for a flexible distribution of information.
- *Self-learning and collective environments* (Dabbagh and Kitsantas, 2012). Self-learning environments allow for individuals to transform education or experiences without external support, while collective learning environments create

circumstances under which individuals learn in groups or with the inputs of other individuals.

These sources of HCaqE are not mutually exclusive. Entrepreneurs can choose a combination of these sources to acquire the KSAs they need. For example, an entrepreneur may choose an environment that is online, formal, and resorts to self-learning, while another may choose an environment that is offline, informal, and benefits from collective learning. The variations of the source of HCaqE appear to be limitless.

2.1.4 Time of learning

Although human capital acquisition is often viewed in the literature as a static process (i.e., void of the impact of time), there are several studies that show otherwise and that adopt an intertemporal framework (e.g., Swanson and Kopecky, 1999; Cervellati and Sunde, 2005; Wang and Zatzick, 2019). Swanson and Kopecky (1999) and Cervellati and Sunde (2005) show that the level of human capital acquisition achieved is determined by time or the duration of the lifespan of the individual. These studies show that if individuals have more time available, they tend to invest more in learning. Moreover, according to Chaudhuri and Sethi (2008, p.580), "the treatment that individuals anticipate in the labour market does influence their perceived benefits of acquiring human capital". This could imply that individuals may determine if and probably when they would acquire human capital based on their perceived view and assessment of the labour market.

The labour mobility literature also adds to the research on this question. According to Dolton and Kidd (1998), individuals scan job opportunities, and based on this scan determine if they would invest in acquiring human capital for a given period in order to obtain benefits of a career change (which could also imply a change toward entrepreneurship).

Using a different angle of analysis, Wang and Zatzick (2019) argue that innovation is influenced by the decisions of firms regarding the moment/time they choose to acquire more and new human capital. They find that "organisations benefit from hiring evenly over time, as it ensures a continuous inflow of new knowledge and perspectives and enhances collaboration between new and incumbent employees" (Wang and Zatzick, 2019, p.30). The idea of "learning by hiring" is implicit in this argument (Nahapiet and Ghoshal, 1998).

2.1.5 Entrepreneurial learning

One of the major perspectives within entrepreneurial learning research suggests that learning is experiential (Rae, 2000; Minniti and Bygrave, 2001; Sarasvathy, 2001; Corbett et al., 2007; Dimov, 2007). In more specific terms, this experiential learning is described in a variety of concepts including learning-by-doing (Balasubramanian 2011), learning from success and failure (Minniti and Bygrave, 2001), learning from past business and life experiences (Sardana and Scott-Kemmis, 2010), and learning vicariously through the experiences of others (Lévesque et al., 2009). Despite the theoretical depth of entrepreneurial learning research, a common flaw of these theories is that it is presumed that entrepreneurial knowledge is innate to the experience, which might not always be the case. Another criticism of the majority of the research on entrepreneurial learning is the assumption that experience automatically leads to the

acquisition of entrepreneurial knowledge. Reuber and Fischer (1994) suggest that a distinction between the entrepreneurial knowledge acquired and the entrepreneurs' experience is needed to properly understand entrepreneurial learning. Taking a step forward, Politis (2005) proposes a well-known conceptual framework about this topic based on the following reasoning:

> "in addition to investigating the direct link between entrepreneurs' career experiences and the development of entrepreneurial knowledge, we also need a better understanding of how the entrepreneurs' predominant mode of transforming an experience into knowledge influences the specific type of knowledge developed, and, additionally, also the factors that influence the entrepreneurs' predominant mode of transforming an experience into knowledge" (Politis, 2005, p. 401)

These arguments present a cycle of entrepreneurial learning in which something has to be done to convert experiences to knowledge (Rae and Carswell, 2001; Politis, 2005).

2.1.5.1 Modes of entrepreneurial learning

The modes of entrepreneurial learning refer to the process of transforming experience into knowledge. The literature suggests that there are three distinct pathway pairs:

2.1.5.1.1 Individual and collective learning

Wang and Chugh (2014, p.34) define individual learning as "the process in which individuals acquire data, information, skill or knowledge", while Capello (1999, p.354) defines collective learning as a "social process of cumulative knowledge, based on a set of shared rules and procedures which allow individuals to coordinate their actions in search for problem solutions". What differentiates these two types of learning is that collective learning is cumulative, interactive, and public in nature (Hayes and Allinson, 1998; Capello, 1999; Fenwick, 2008). This characteristic enables the transmission of temporal and spatial knowledge (Andreu and Sieber, 1999; Capello, 1999).

2.1.5.1.2 Exploratory and exploitative learning

Politis (2005) describes exploratory learning as "learning from experiences by exploring new possibilities including issues such as variation, experimentation, discovery, and innovation" (Politis, 2005, p. 408), and exploitative learning as being related to learning from experience by exploiting previous certainties, convictions, or validations (Politis, 2005). Exploratory learning is also known as variance-seeking learning or experimental learning and often develops new knowledge that influences entrepreneurs to make certain decisions (e.g., decisions to pivot their business model) (Zhao et al., 2011; Bingham and Davis, 2012). On the other hand, exploitative learning is also known as acquisitive learning and often comes from gathering and incorporating existing knowledge (Brady and Davies, 2004; Zhao et al., 2011; Bingham and Davis, 2012).

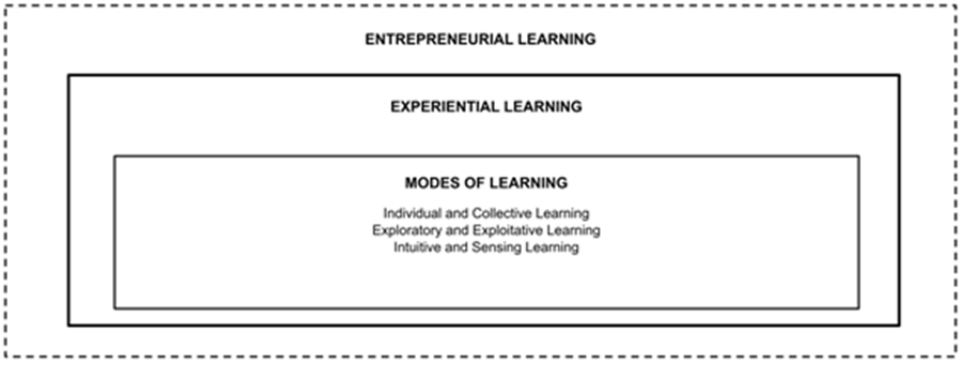
Some studies have sought to link these two types of learning with entrepreneurial outcomes. McGrath (2001), for example, suggests that exploratory learning increases performance variance, which implies large variations between success and failures, while exploitative learning improves mean performance, which may imply suboptimal stable equilibrium. March (1991, p.71) suggests that exploration involves "search, variation, risk taking, experimentation, play, flexibility, and discovery," while exploitation involves

"refinement, choice, production, efficiency, selection, implementation, and execution". Politis (2005) argues that although these learning processes have implications on entrepreneurs' behaviors or strategic decisions, one process is not better than the other. In the same vein, March (1991) and Sirén et al. (2012) suggest that there are benefits emerging from a balanced mix of exploratory and exploitative learning, as choosing one process exclusively over the other has negative implications. For example, an entrepreneur who is totally focused on exploration may have many new ideas that are underdeveloped due in part to the inability to develop expertise relevant for each idea, while a total focus on exploitation may lead to being trapped in a stable equilibrium that is suboptimal (Kim and Atuahene-Gima, 2010).

2.1.5.1.3 Intuitive and sensing learning

Felder and Silverman (1988) describe sensing learning as learning by the knowledge of facts, which involves an entrepreneur's observation (i.e., through the five senses) of his/her environment, while intuitive learning refers to learning by "knowing relationships of facts" (Wang and Chugh, 2014). This entrepreneurial learning mode originates from theories in the field of psychology (Jung, 1971), and finds relevance in education research (Wang and Chugh, 2014). Due to the presumed objectivity of sensory learners, it is argued that they are more prone to discover opportunities based on observable information from the environment (Baldwin and Sabry, 2003; West et al., 2007). On the other hand, intuitive learners tend to be abstract thinkers, and are thus able to create opportunities based on their ability to connect the dots between observable data points (Cook et al., 2009).

Figure 2 A view of the entrepreneurial learning process



Source: Authors' elaboration

2.2 Peripheral component of human capital acquisition for entrepreneurship

The process of acquiring KSAs requires a clear distinction between HCIs, outcomes of HCIs, and expected outcomes of HCIs (Reuber and Fischer, 1994; Unger et al., 2011). Outcomes of HCIs are considered direct indicators of human capital. Several studies have shown that outcomes of HCIs have a greater impact on entrepreneurial success than HCI indicators (Crook et al., 2011; Martin et al., 2013).

Since HCI is not a direct predictor of a specific outcome, individuals can know the outcome of an investment only after they have made the investment. As a result, individuals have to make assumptions and form expectations in order to make choices. For instance, an individual can decide to invest in a training program with the hope of achieving a specific outcome (e.g., knowledge for starting a business, business management skills, etc.), but cannot be certain that he/she will attain this desired outcome until the training is over. They will therefore choose to invest based on the expectation that they will receive the outcomes of their investments. Because there are no guarantees that individuals will receive these outcomes, they have at best a variety of mechanisms that validate their expectations and that can be used to support their decisions. These validation mechanisms could include track record of education program, feedback from the market, prior experience, etc.

In conclusion, individuals often choose investments based on expected outcomes (Jacobs, 2007; Wiswall and Zafar, 2021). These outcomes can include future labour income, additional job features, marriage prospects, family wellbeing, knowledge on fundraising, and business management skills, among others. Because expected outcomes of HCIs are not actual outcomes of HCIs, there are possible/probable gaps between expected outcomes (ex-ante) and actual outcomes (ex post) of HCIs.

According to our holistic multidimensional framework for HCaqE we have positioned expected outcomes of HCIs as a peripheral component Figure 1. This is because even though individuals make a choice on what outcome they want to have, their expectations of these outcomes influence or informs other decisions about the type of human capital, source of human capital, time of learning, HCIs, and entrepreneurial learning (Figure 1). Hence, the expected outcome of HCIs could be seen as the first decision that entrepreneurs have to make, which then influences other choices and processes relevant for acquiring human capital for entrepreneurship.

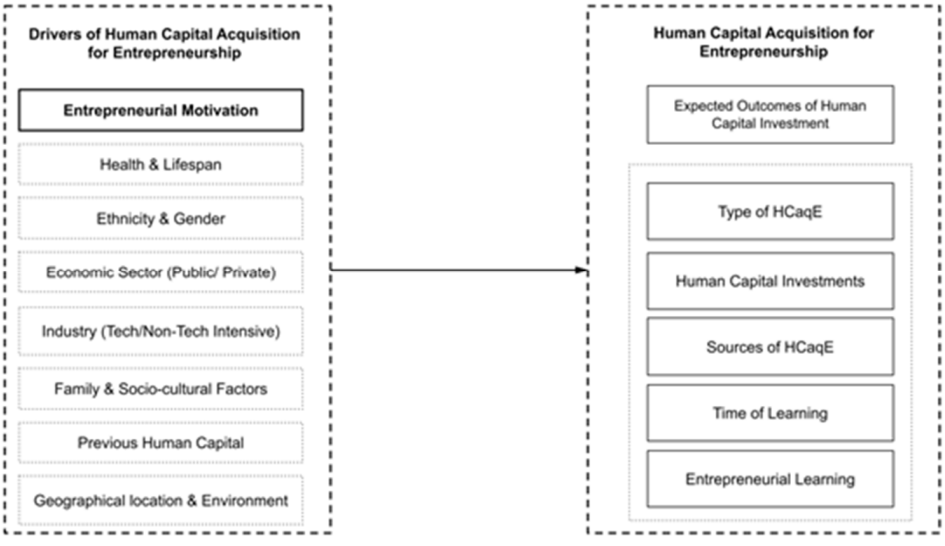
3 Drivers of human capital acquisition for entrepreneurship

There are multiple determinant factors of entrepreneurs' decisions to acquire human capital (Figure 3). The list of key drivers includes ethnicity and gender (Chaudhuri and Sethi, 2008), previous human capital (Corbett et al., 2007; Marvel et al., 2016), health and lifespan (Swanson and Kopecky, 1999; Cohen-Cole, 2006), economic sector (De Fraja, 2008), industry (Zábojník and Bernhardt, 2001), geographical location and environment (Cohen-Cole, 2006), family and socio-cultural factors (Jayawarna et al., 2014), and entrepreneurial motivation (Arocena and Villanueva, 2003). However, substantial research gaps remain regarding the link between entrepreneurial motivation and HCaqE (Marvel et al., 2016). Therefore, the main goal of this section is to provide a better understanding of EM and its relationship with HCaqE.

Motivation is defined as the "set of energetic forces that originate within as well as beyond individuals to initiate behaviour and determine its form, direction, intensity, and duration" [Murnieks et al. (2020), p.115]. Another definition, advanced by Stephan et al. (2015), describes motivation as "the entrepreneur's willingness to expend effort to achieve certain goals that are important to him/her" [Stephan et al. (2015), p.41]. Following these definitions, motivation influences how people behave and how much of a particular behaviour they exhibit. Motivation has been studied as a core theme in the domains of psychological science and organisational behaviour for many years (Shane

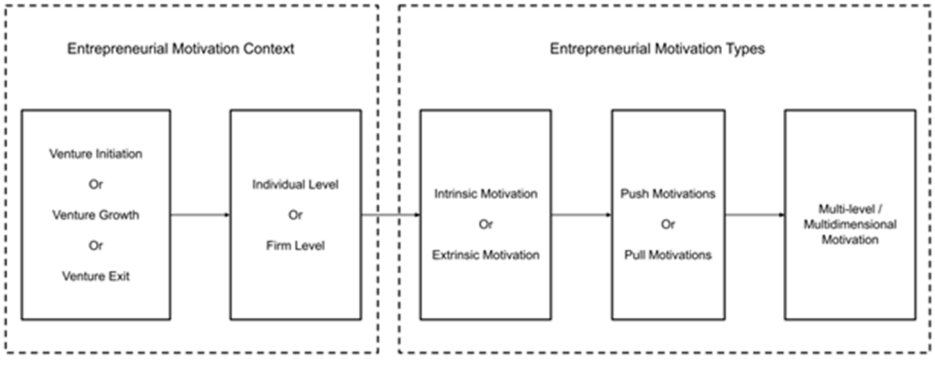
et al., 2003; Murnieks et al., 2020). However, during this period several subdomains have emerged discussing motivation theories in specific contexts. One of the most important contexts in this regard is entrepreneurship, linking motivation to behaviours of starting, growing, and exiting a venture (Robichaud et al., 2001; Shane et al., 2003; Murnieks et al., 2020). From this literature, it is clear that the concept of EM is dynamic and can be fully understood only by using a multidimensional and contextual lens. Figure 4 illustrates the main categories or perspectives used by the main scientific contributions in this field of study. As seen below, it is interesting that although these perspectives of motivation differ, they often have similarities, some of which characterise them as subsets of the other.

Figure 3 Drivers of human capital acquisition for entrepreneurship



Source: Authors' elaboration

Figure 4 Entrepreneurial motivation as a holistic and multidimensional process



Source: Authors' elaboration

3.1 Entrepreneurial motivation types

3.1.1 Internal and external motivations

Internal and external motivations are the broadest perspective in the entrepreneurial motivation literature. In fact, other entrepreneurial motivation perspectives can, in some sense, be seen as extensions or subsets of this perspective. External motivations refer to forces that stem from the environment or the circumstances of the entrepreneur or the firm. Economic incentives and social equity are examples of external motivations (Renko, 2013). Among all external motivations, financial/economic incentives have received great attention, especially in the economic, management, and finance literature (Shane et al., 2003; Renko et al., 2012; Dobryagina, 2020). Internal motivations, on the other hand, refer to forces that originate from the entrepreneur, such as his/her emotions, which could consist of his/her passions or fears (Morgan and Sisak, 2016), identity (Farmer et al., 2011), and value system (Weber et al., 2008). Internal motivations are a core topic in the field of psychology, while external motivations have deeper roots in economics, management, and related areas of study. Nevertheless, the consideration of internal and external motivations as separate areas of study can be misleading, given that entrepreneurial motivation research suggests that both motives influence entrepreneurial behaviour (Powell and Baker, 2014).

3.1.2 Push and pull motivations

Push and pull motivations (also known as necessity and opportunity motivations) can be viewed as a sub-perspective of the internal and external motivation perspective because it is often based on the entrepreneur's environment and circumstances. Push motivations are considered as 'necessity' motivations, which refer to negative motivations that influence a person to start, grow, and exit a venture (Turnbull and Uysal, 1995; Baloglu and Uysal, 1996; Dawson and Henley, 2012). On the other hand, pull motivations are considered 'opportunity' motivations, referring to positive motivations that influence a person to become an entrepreneur (Turnbull and Uysal, 1995; Dawson and Henley, 2012; Győri et al., 2019).

The push versus pull concept of motivation is not only the earliest but also the predominant conceptualisation of entrepreneurial motivation (Dawson and Henley, 2012; Stephan et al., 2015, Murnieks et al., 2020). In their review of the literature on entrepreneurial motivation, Stephan et al. (2015) report that 65% of all studies focus on the push versus pull dichotomy of motivation. A major reason for this observation is the relative ease of accessing large population-representative surveys (e.g., global entrepreneurship monitor (GEM) Survey) that include push and pull motivation questions (Bosma, 2013; Hechavarria and Ingram, 2014). However, relying on these types of surveys has limitations regarding the capture of complexities of entrepreneurial motivation due to constraint in the surveys' responses.

3.1.3 Multilevel/multidimensional motivations

With the aim of overcoming the limitations of the push versus pull motivation conceptualisation, several studies provide an alternative (and more detailed) perspective, using multidimensional or multilevel approaches that combine micro-perspectives. This approach is more adequate to capture entrepreneurial motivations (Robichaud et al.,

2001; Shane et al., 2003; Stephan et al., 2015; Murnieks et al., 2020), and usually relies on factor analysis techniques (Morales-Gualdrón et al., 2009).

Let us briefly explore the most common dimensions included in the multidimensional approach.

- *Need for achievement and learning*. This dimension refers to an individual's desire to attain significant accomplishments, high standards, or to overcome some challenges (Shane et al., 2003; Edelman et al., 2010; Jayawarna et al., 2011; Stephan et al., 2015). This dimension shares some similarities with the need to follow role models.
- *Need for independence and autonomy*. This dimension refers to an individual's desire to be in control of their work, time, and decisions. It also refers to the desire for flexibility in managing their work life balance (Shane et al., 2003; Edelman et al., 2010; Giacomin et al., 2011; Friedman et al., 2012).
- *Need for income security and financial success*. This dimension is often assumed to be the primary motivation for entrepreneurship, namely in the area of Economics. It captures the desire to benefit from the financial incentives obtained from participating in entrepreneurship (Shane, 2003; Edelman et al., 2010; Giacomin et al., 2011; Friedman et al., 2012).
- *Need for recognition and status*. This dimension refers to an individual's desire to receive acknowledgement, respect, and/or validation within social constructs such as friends, family, and community (Shane et al., 2003; Morales-Gualdrón et al., 2009; Edelman et al., 2010; Giacomin et al., 2011; Friedman et al., 2012).
- *Need for social and community improvement*. This dimension refers to the desire to solve socio-economic and environmental challenges within the entrepreneur's community (Levie and Hart, 2011; Jayawarna et al., 2011; Estrin et al., 2013).
- *Growth motivations or need for company/firm growth*. This dimension refers to the entrepreneur's desire to increase the size of his/her business in terms of number of employees and sales (Robichaud et al., 2001; Morales-Gualdrón et al., 2009; Stephan et al., 2015).

3.2 Entrepreneurial motivation contexts

The perspectives explored in Section 3.1 (i.e., internal and external; push and pull; multidimensional motivations) provide a great deal of insight about entrepreneurial motivation. However, in a recent systematic literature review on this topic, Murnieks et al. (2020) argue that entrepreneurial motivation should not be studied in generic terms but instead in the context of three entrepreneurial phases:

- venture initiation
- venture growth
- venture exit.

Although most literature focuses on the first of these stages (venture initiation), there are clear differences of entrepreneurial motivation in each entrepreneurial phase Table 1. As

suggested by several authors, these differences are accentuated by differences in their antecedents, mediators, moderators, and outcomes (Morales-Gualdrón et al., 2009; Mahto and McDowell, 2018; Murnieks et al., 2020).

Beyond the study of entrepreneurial motivation within the context of entrepreneurial phases, entrepreneurial motivation has been studied using different lenses. In this case, two areas of interest seem to emerge:

- the individual
- firm/team (Vijaya and Kamalanabhan, 1998; Stephan et al., 2015; Chedli and Kchaich, 2016; Murnieks et al., 2020).

Studies of entrepreneurial motivation at the individual level seek to understand the individual motivations and the strategic decisions and behaviours (Malebana, 2014; Stephan et al., 2015; Farhangmehr et al., 2016). On the other hand, studies at the firm/team level focus on the motivations of firms as a whole and not as an aggregation of individual motivations and behaviours (Chedli and Kchaich, 2016).

Table 1 Differences in antecedents, mediators, moderators, and outcomes of entrepreneurial motivation in each entrepreneurial phase

	Antecedents	*Mediators*	*Moderators*	*Outcomes*
Venture initiation	• ethnicity • personal circumstances • fear of failure • self-efficacy • goal commitment • entrepreneurial passion	• self-efficacy • affective commitment • bricolage	• prior startup experience • aspiration level • economic turbulence • income loss • gender • access to resources • aspiration level	• start venture • discovery behaviour • opportunity recognition • exploitation behavior • opportunity evaluation
Venture growth	• self-efficacy • entrepreneurial passion • tenacity • identity centrality • legacy	• positive effect • goal clarity • goal commitment • goal challenge • grit • locomotion • assessment	• self-control • risk taking climate • cognitive style • personality • regulatory focus • age • entrepreneurial experience	• venture growth • firm performance • team performance • persistence • venture funding potential
Venture exit	• task conflict • goal conflict		• goals • firm performance	• sell venture • shut down venture • stewardship exit • persistence with failing firm

Source: Murnieks et al. (2020, p.130)

Entrepreneurial motivation at the individual level has been the major focus of most entrepreneurial motivation literature for a variety of reasons, including the fact that it is easier to gain access to individual data than to firm data. In many cases researchers argue that individual motivations can be taken as representative of firm/team level motivations. Nevertheless, since individuals are not homogeneous there might be some level of

inaccuracy emerging from this assumption, especially if individual entrepreneurial motivations are grouped together to represent a single unit such as a team or firm (Stephan et al., 2015; Murnieks et al., 2020).

3.3 Linking entrepreneurial motivations

Studying each entrepreneurial motivation perspective or dimension independently can be misleading since current research suggests that motivations interact with one another to influence entrepreneurial behaviour (Powell and Baker, 2014). For instance, several studies explore the links/interactions between growth motivations and other motivations. Levie and Autio (2013) show that need for financial success or wealth-seeking motivations are linked to growth motivations, while need for independence motivations are not linked. This observation was contrary to the findings of a report by the Centre for High-Impact Entrepreneurship (2011), which suggest that there is a positive relationship between the need for independence motivations and growth ambitions in high-income countries. Moreover, Reynolds and Curtin (2008) show that there is a negative relationship between growth ambitions and necessity or push motivations, while observing positive relationships between growth motivations and opportunity or pull motivations.

Kuhn and Galloway (2015) suggest that internal and external motivations drive venture initiation, but also have joint implications on venture performance. They show that business performance was higher when internal and external motives were combined than when business performance stems from internal motives alone (Kuhn and Galloway, 2015). On the other hand, Cruz and Justo (2017) and Westhead and Wright (1998) find that the combination of internal (e.g., passion), economic (e.g., need for financial success), and fear of failure motives can lead entrepreneurs to participate in portfolio entrepreneurship, in which they own multiple businesses at the same time.

Despite the diverse conclusions regarding the interactions between motivations, these linkages are nonetheless vital in impacting entrepreneurial behaviour. These studies therefore show that each motivation may be dependent on other motivations and that these dependencies should be considered to paint a less fragmented picture between entrepreneurial motivation and behaviour.

4 Linking entrepreneurial motivation and human capital acquisition for entrepreneurship

The most prevalent link between entrepreneurial motivation and HCaqE in the field of Economics is the link between need for income security and financial success (or financial motivations) and acquiring education and/or new experiences (Robichaud, 2001; Shane et al., 2003; Edelman et al., 2010; Giacomin et al., 2011; Friedman et al., 2012; Murnieks et al., 2020). Several empirical studies suggest that economic agents acquire KSAs based on the expected financial return of acquiring those KSAs (Robichaud, 2001; Shane et al., 2003; Murnieks et al., 2020). In particular, financial motives seem to have strong implications on the type of HCaqE (i.e., general, firm specific, occupational specific, and task specific) that agents choose to acquire (Dolton and Kidd, 1998; Gibbons and Waldman, 1999; Robichaud, 2001; Shane et al., 2003; Gibbons and Waldman, 2006; Edelman et al., 2010; Unger et al., 2011; Giacomin et al.,

2011; Friedman et al., 2012; Murnieks et al., 2020). Similarly, financial motivations determine not only what an individual learns but also the timing of learning (Swanson and Kopecky, 1999; Wang and Zatzick, 2019). Economic agents receive signals from the labour market (e.g., income levels associated with different occupational pathways), which influence when to acquire KSAs. Moreover, motivations help agents to rank or determine which KSAs are the most important to them. Having information on which KSAs are expected to give them the highest economic reward provides agents the incentives to choose what KSAs they opt to acquire.

Politis (2005) suggests that entrepreneurs' career orientation (or direction), which is a function of their motivations, affects entrepreneurial learning, or in other words, the mode of transforming their experience to knowledge. One justification for this reasoning is that entrepreneurs are not homogenous. They have different characteristics and career motivations (Rosa, 1998; Westhead and Wright, 1998), which may influence them to seek out different entrepreneurial experiences and learning processes (Ronstadt, 1988; Minniti and Bygrave, 2001). Further justification for this argument is advanced by Block and Sandner (2009), who classify entrepreneurial motivation based on career history recorded in the German Socio-Economic Panel Study (GSOEP). Entrepreneurs who left paid jobs on their own initiative are classified as being opportunity entrepreneurs (i.e., having pull motivations), whereas entrepreneurs who were dismissed are classified as necessity entrepreneurs (i.e., having push motivations).

Following these arguments, Brousseau et al. (1996) developed a model that identified four career orientations with different underlying motivations. The key implication of this model is that we can predict that entrepreneurs or individuals who differ in terms of career orientation also differ in work and career related motivations (Brousseau et al., 1996). Let us discuss each of these career orientations:

4.1 Linear career

This pathway is characterised by infrequent but progressively upward hierarchical movements (e.g., managerial hierarchy) in a career field (Buzzanell and Goldzwig, 1991; Larsson et al., 2001; Baruch, 2004). Entrepreneurs with this career orientation are motivated by opportunities to accomplish important things, implying that personal wealth is not their main driver. They are usually driven by the need for achievement and satisfaction. Politis (2005) suggests that entrepreneurs with this career orientation skew toward exploitative learning processes.

4.2 Expert career

This career orientation is characterised by an entrepreneur's lifelong commitment to further develop and refine their knowledge within a specific area (Politis, 2005). They are presumed to have underlying motivations of need for achievement and/or need for recognition and are more likely to exploit pre-existing knowledge (Molander, 1993).

4.3 Spiral career

This career orientation is characterised by periodic and significant changes across disciplines that are strongly related. This implies that they are influenced by knowledge from previous roles to develop new knowledge in new roles (Larsson et al., 2001).

Entrepreneurs with this career orientation are motivated by creativity and personal development and are inclined toward exploratory processes.

4.4 Transitory career

This career orientation is characterised by frequent changes between unrelated fields, roles, and organisations. Brousseau et al. (1996) suggest that individuals with this type of career orientation are motivated by the need for independence. This type of entrepreneur is more likely to use exploratory mechanisms to acquire entrepreneurial knowledge (MacMillan, 1986; Westhead and Wright, 1998; McGrath, 1999).

5 Conclusions

The survey on the HCaqE literature developed in this study provides a deeper understanding of the process that transforms experiences and education into entrepreneurial KSAs. This literature helps us to re-think current conceptualisations of human capital acquisition, leading to a new definition of HCaqE.

We can define HCaqE as the choices and processes that entrepreneurs must make and go through (at a certain period and circumstance) that lead to the assimilation of entrepreneurial KSAs relevant to that period or circumstance. This definition represents a holistic view of HCaqE, which takes into consideration the different components that make up human capital acquisition. It shows that HCaqE depends on the choices that entrepreneurs make to acquire certain KSAs. It also highlights that it is a process and that in some way entrepreneurs must go through all the 'steps' to acquire certain KSAs. Moreover, this emphasises that HCaqE is contextual and temporal and should be viewed as such because since KSAs often change due to circumstances, the choices entrepreneurs must make are expected to change too. This is particularly important in the different entrepreneurial phases. For example, studies have shown that KSAs needed in the venture initiation phase might not be the ones needed at the venture growth or exit phase. Therefore, entrepreneurs have to make new choices on what KSAs they need in each phase. They also would likely go through different processes to acquire the KSAs they need in order to perform optimally at a particular entrepreneurial phase.

This study creates new opportunities for empirical research as it emphasises variables (such as time of learning) that have been ignored due to their implicit nature. The re-conceptualisation of the HCaqE also presents the bigger picture of how human capital impacts firm growth or venture performance (Figure 5).

Human capital acquisition plays an important role both in the human resource management and venture capital industry. Investors have traditionally attached a high importance to the experiences of entrepreneurs in their evaluation of firm potential (Stuart and Abetti, 1990). This trend is similar in the hiring processes of companies, in which great importance is placed on the educational and work experience backgrounds of employment candidates. In fact, management skills and experience are the most frequently used selection criteria of venture capitalists (Zacharakis and Meyer, 2000). Moreover, researchers have argued that human capital may play an even larger role in the future because of the constant growth of knowledge-intensive activities in most work environments (Yeo and Lee, 2020; Olopade et al., 2020; Kurantin and Osei-Hwedie, 2021).

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