**Growth expectations through innovative entrepreneurship: the role of subjective valuations and length of entrepreneurial experience.**

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## Abstract

## Purpose – This study proposes a model suggesting that innovation may act as a motivating force that increases entrepreneurs’ growth expectations, where entrepreneurs’ growth expectations are shaped by their subjective values and that entrepreneurial experience moderates this relationship

**Design/methodology/approach** – The paper conducts statistical analysis on a sample of 11,579 entrepreneurs from 24 countries that have participated in the IIIP survey of innovation in 2011 under the Global Entrepreneurship Monitor (GEM) project.

**Findings** – Results suggest that entrepreneurs involved in innovative entrepreneurship are more likely to have higher growth expectations, with subjective values playing a direct and indirect role in entrepreneurs’ expectations of firm growth. Additionally, results indicate that duration of entrepreneurial experience moderates the relationship between strategic orientation and confidence in innovation. This finding suggests there is feedback between beliefs about the benefits of innovation and being an innovative entrepreneur, resulting in an over-estimation, at least in comparative terms, regarding firm growth rates. This relationship is stronger for novice entrepreneurs since experienced entrepreneurs tend to be more cautious about their expectations of growing.

**Originality/value** – This study deepens to our understanding of the complex processes through which organizational-level decisions ultimately influence individual-level factors. The present findings contribute to progress in this task by suggesting that strategies whose objective is the cultivation of innovation feed entrepreneurs’ subjective values of innovation as well as expectations of growth. Although the duration of entrepreneurial experience moderates the relationship between acting as an innovative entrepreneur and subjective values of innovation, the results suggest that entrepreneurs’ expectations are primarily driven by their internal perceptions of reality.

**Keywords** Entrepreneurial orientation, Entrepreneurs, Motivation, Small firm/new venture strategy, Decision making, Growth

**Paper type** Research paper

## Introduction

A rich body of research has examined the determinants of firm growth (e.g., Davidsson, 1991; Steffens et al., 2009; Wiklund et al., 2003), identifying three prerequisites that must be fulfilled for a firm to grow: (1) opportunities available for the firm, (2) the ability to recognize and capture these opportunities successfully, and (3) firm decision makers’ need for expansion (Davidsson, 1991); where while objective measure of the above determinants influence actual growth, the motivation for growing is more related with subjectivity (i.e. the way these three determinants are perceived). According to Autio and Acs (2010), among these factors, the third one, which refers to the willingness to grow, has received less attention. Several theoretical and empirical studies have pointed out that there are many factors influencing both firms and entrepreneurs in their intention and willingness to grow (e.g., Cliff, 1998; Davidsson, 1991; Gundry and Welsch, 2001). For example, it has been suggested that some entrepreneurs have an innate desire to grow, whereas other entrepreneurs rationally evaluate the best choice among strategic orientations (Van Gelderen, 2012). In this regards, Rosenbusch et al. (2011) pointed out that entrepreneurs are likely to conclude that innovation benefits firm development irrespective of the circumstances. Considering that prior research has suggested that entrepreneurs do not necessarily follow normative[[1]](#footnote-2)/rational models in their thinking, their knowledge structures, assessments, judgements, and decisions may be different from managers (e.g., Busenitz and Barney, 1997; Gaglio, 2004; Mitchell et al., 2007; Townsend et al., 2015). Indeed, even when personality variables and motivations have been included into the analysis (e.g., Verheul and Van Mil, 2011; De Clerq and Arenius, 2006), there is still little evidence about how heuristics, such as mental simulations that lead to subjective values, may foster over-optimistic growth expectations. Considering the contributions the cognitive perspective has provided to the field (cf. Baron, 2004; Shepherd, 2015), it has been suggested that studying the impact mental simulations may have on several dimensions of the firm is fertile territory for further research.

The purpose of this study is to fill a gap in the literature, motivated by prior calls (cf. Mitchell et al., 2007; Shepherd, 2015) to attend to the effect of strategic orientation and experience on self-reflection in order to construct expectations. Specifically, this study focuses on the role subjective values play in regard to entrepreneurs’ growth expectations. Therefore, this study attempts to contribute to the current discussion on entrepreneurial cognitions by proposing a model constructed using a heuristic-based approach that investigates how entrepreneurs increase their growth expectations based on their subjective values and beliefs about the best alternative or mechanism to reach their goals. This study extends previous works (e.g., Cliff et al., 2006; Dutta and Thornhill, 2008) by focusing on the cognitive coherence among strategic orientation, subjective values, and growth expectations. In terms of the entrepreneurship process, this study centers on the stage before any real outcomes unfold as it is individuals’ entrepreneurial intentions that lead to behaviors. However, this study aggregates new evidence in the attempt to more fully understand the connection between innovative entrepreneurship and performance outcomes. Furthermore, this study explains entrepreneurs’ over-optimism in the innovation-performance relationship (Rosenbusch et al., 2011; Storey, 2011).

This research is based on the paradigm that human functioning is a result of the interplay between personal, behavioral, and environmental influences (Bandura, 1986); consequently, pre-conceived ideas and beliefs—denoted by experiences and mental simulations—are determinants of behaviors (Krueger, 2003). It is important to mention that while entrepreneurs’ intentions—and thus their decision making—may be profoundly influenced by their surrounding context (Dutta and Thornhill, 2008), the following analysis will focus on self-created images: mental simulations and expectations. Drawing upon this cognitive perspective and grounded by a heuristic-based approach, I propose that the duration of entrepreneurial experience moderates the relationship between developing an innovative strategy and subjective values of innovation, whereas, through the development of innovative entrepreneurship, entrepreneurs’ confidence in innovation directly and indirectly determines how ambitious they are regarding their expectations for growth.

These ideas are going to be tested using the 2011 population survey of the Global Entrepreneurship Monitor (GEM) project, which currently is the only available dataset that yields comparable information on different types of innovative activity among entrepreneurs across countries. By using a sample of 11,579 entrepreneurs from 24 countries, results suggest that innovative entrepreneurs are more likely to present higher subjective values of innovation than imitative entrepreneurs, although this relationship depends on the duration of entrepreneurial experience. Further, innovative entrepreneurship and subjective values of innovation are positively related to higher growth aspirations, where the confidence in innovation explains also the mechanism that underlies the relationship between the strategic orientation and growth ambitions.

It is important to note that similar to studies like Koellinger (2008), this research distinguishes between innovative and imitative entrepreneurship (at the market level rather than on a global scale), considering innovation as a subjective concept that depends on the perspective of the observer. Concretely, for the purpose of this study, individuals act as imitative entrepreneurs when they start new ventures that essentially replicate prevailing practices, and innovative entrepreneurs when they found firms that exhibit novelty and difference, either at product-market level, technological processes and novel organizational designs (Cliff et al., 2006). The duration of entrepreneurial experience is considered an indicator that includes all the pre-conceived beliefs and knowledge that an individual acquires while involved in entrepreneurial activity (Davidsson and Honig, 2003; Felin and Zenger, 2009; McMullen and Shepherd, 2006; Westhead, et al., 2005). Furthermore, this study assumes that subjective values emerge from mental simulations, which are a form of heuristic to estimate probability and causality (Gaglio, 2004; Mitchell et al., 2007). Finally, in accordance with Autio and Acs (2010), growth expectations are considered an entrepreneur’s intentions and expected goals of the growth trajectory she or he would like the venture to follow.

This study aims to make three contributions to the entrepreneurship literature. First, it offer insights about why innovative entrepreneurs are more optimistic than imitative entrepreneurs in regards to their growth expectations. Second, this paper differentiate how subjective values directly and indirectly determine entrepreneurs' expectations. Third, the paper articulates that the confidence about the benefits of innovation depends on the duration of the entrepreneurial experience. Overall, the paper seeks to inspire a conversation about the role of mental simulations and heuristics emphasizing the influence of innovative-driven strategies in constructing entrepreneurs’ growth expectations.

## Theoretical background and hypothesis

A heuristic-based approach argues that individuals are subject to cognitive biases due to the utilization of simplified decisions rules (Busenitz and Barney, 1997; Mitchell et al., 2007). Having a heuristic-based logic enables individuals to make sense of uncertain and complex situations. It has been suggested that entrepreneurs, in particular, are regularly involved in these kinds of situations, where heuristics not only may affect the process of opportunity recognition but also impact strategic decision making under uncertainty (Busenitz and Barney, 1997; Hodgkinson et al., 1999). In this sense, heuristics, as a cognitive tool of intuition, helps entrepreneurs to deal with unorthodox interpretations. Although, by using heuristics, individuals take greater risks than they think they are taking because, given the nature of heuristics, there are unperceived risks involved in the decision-making process since relevant information is ignored (e.g., proper data or sufficient analysis).

Evidence suggests that the use of heuristics is associated with innovativeness (Manimala, 1992; Gregoire et al., 2011), since entrepreneurs tend to develop innovative ideas that are not always very linear nor factually based (Gaglio, 2004). When entrepreneurs pursue innovative ideas intrinsically they are guessing about the future, by challenging the existing products, services, and processes and reinterpreting some untested changes as a new best allocation of resources (Gaglio, 2004). Considering that the use of heuristics as a guide can be effective and efficient on scenarios characterized with high level of uncertainty (Busenitz and Barney, 1997), such as innovative-driven strategies; the focus will be on any variance from purely imitative entrepreneurship. In other words, even when it is recognized that there are several forms of innovative entrepreneurship, the comparison is going to be between imitative entrepreneurs and innovative entrepreneurs regardless the degree of innovativeness.

Expectations are one of the most important components in decision models, so they have been included in several theories of human behavior, including economic theory, decision theory (March, 1994; Townsend et al., 2010), and expectancy theory (Vroom, 1964), among others. When decision-making processes rely on heuristics, optimistic expectations are very likely to result, and although heuristics are more effective when an individual lacks experience (Hodgkinson et al., 1999)—turning experience into a “compass” that constantly corrects their comprehension of reality for sense-making purposes (Brännback and Carsrud, 2009; Cope & Watts, 2000)—heuristics lead to decisions that are characterized by three features (Mitchell et al., 2007): they are at least partially subjective, they are influenced by personal beliefs that are guided by specific methods for solving problems for which no formula exists, and they are based on informal processes and experiences (Busenitz and Barney, 1997; Busenitz and Lau, 1996; Simon and Houghton, 2002; Cope & Watts, 2000). Consequently, subjective values are a form of heuristics built from mental simulations, which are cognitive mechanisms people use when making decisions based on personal criteria (Kirkley, 2016). As such, subjective values of innovation are constructed by personal appraisals as a consumer of innovation, and they occur at both the individual and firm levels.

## *Innovative entrepreneurship and growth expectations*

Several theories consider that current behavior is a function of individual expectations. If so, individuals necessarily must believe that exerting certain effort can reach some level of performance, which itself must result in the achievement of a particular goal. In this sense, there is a relationship between effort, performance, and expected achievements. This relationship of pre-conceived beliefs has been observed in a meta-analysis by Rosenbusch et al. (2011), who remarked that entrepreneurs tend to have several arguments about the importance of innovation, such as the belief that innovation benefits new businesses irrespective of the circumstances, so entrepreneurs tend to believe that innovation is always the better approach (Rosenbusch et al., 2011). In this sense, they are more likely than non-entrepreneurs to perceive that success comes after innovation.

The argument that innovation affects business success has been explicitly recognized in several works (e.g., Bausch and Rosenbusch, 2005; Heunks, 1998; Rauch and Frese, 2007); however, it is important to note that success can manifest in several ways, with firm growth being one of these ways (Dutta and Thornhill, 2008). Previous research on the relationship between innovation and growth at the firm level has identified several mechanisms through which entrepreneurial innovativeness exerts such effects, such as by enabling firms to gain more loyal customers (e.g., Lieberman and Montgomery, 1988) or evade price competition (e.g., Porter, 1980) or by imposing entry barriers to avoid potential threats (e.g., Greene and Brown, 1997).

One way to analyze the relationship between innovation and growth expectations is to simply assume that entrepreneurs believe that unless they do not do something innovative, they are unlikely to achieve high rates of expansion in their business since there will be intense levels of competition. Alternatively, it is possible to argue that there is a relationship between risks and rewards (Krueger and Brazeal, 1994; Miller and Friesen, 1982) such that individuals rationally accept a risky option only if the expected rewards of that option justify the risk assumed. For instance, Baron (2004) analyzed why some individuals decide to become entrepreneurs and one of the reasons the author suggested was that people who choose to become entrepreneurs tend to frame many situations in terms of losses. Grounded in prospect theory, which is centered on the concept of *subjective value* (i.e., gains or losses) in terms of a reference point, the author suggested that entrepreneurs focus on the possibilities for economic gains they will forfeit if they ignore or overlook an opportunity and continue to work for an existing organization (pp. 224-225). The same logic can be used to explain the relationship between innovation and firm growth. Even though innovative entrepreneurship could be considered riskier than imitative entrepreneurship, entrepreneurs who expect greater outcomes from having an innovative orientation rather than an imitative orientation are more likely to pursue innovative entrepreneurship.

Within the entrepreneurship literature, studies have found that entrepreneurs tend to believe that things will work out. Specifically, evidence suggests that entrepreneurs tend to have an inflated illusion of control in situations and can control results that are beyond their range of action (i.e., are exogenous by nature), and they sometimes tend to believe that exceptions confirm the norm. As such, using only a small sample of information, entrepreneurs often consider themselves ready and able to draw conclusions (e.g., Simon et al., 2000). In this sense, strong evidence has been presented to conclude that entrepreneurs tend to be over-optimistic (e.g., Baron, 1998; Cassar, 2010; Cooper et al., 1988; Storey, 2011). Lacking input from the environment (i.e., diagnostic cues), entrepreneurs tend to rely on associations about others’ cues, which are normally positive outcomes (Simon and Houghton, 2003), and they often underestimate risks and difficulties in their businesses and overestimate the likelihood of success (Baron, 1998, 2004; Cassar, 2010; Cooper *et al*., 1988; Ucbasaran et al., 2010). As a result, pursuing an innovative strategy should reflect a high desire to succeed. This leads us to propose the following:

*H1: Entrepreneurs engaged in innovative entrepreneurship are more likely to have higher growth expectations.*

## *Subjective values and growth expectations*

Individuals use knowledge structures to make assessments and judgements affecting the decision-making process (De Clerq and Arenius, 2006). In this regard, the cognitive entrepreneurship literature has shown that entrepreneurs tend to make decisions based more on heuristic-based logic than on causal information processing (Baron, 1998; Busenitz and Barney, 1997; Simon et al., 2000). Heuristics are defined as simplifying strategies that individuals use to manage information and make sense of complex and ambiguous situations, such as counterfactual thinking and mental simulations (Gaglio, 2004; Mitchell et al., 2007). Indeed, one of the most common ways individuals make sense of events is through the use of mental simulations.

The imaginary construction of a series of events based on a successive sequence of actions enables individuals to anticipate future scenarios and imagine strategies and tactics that would lead to the achievements of certain goals, such as firm growth (Gaglio, 2004). In this sense, mental simulations lead to subjective values, which themselves stem from experiences, judgements, and beliefs that individuals hold about people, objects, or events (Cliff et al., 2006). Evidence suggests that entrepreneurs are prone to using their own judgements to evaluate situations (McVea, 2009), so their criteria depend on parameters like their own personal experiences, emotions, and subjective values (Westhead et al., 2005).

While there are studies about subjective values that have observed how perceptions of what is considered appropriate can differ greatly among managers and companies (e.g., Miller, 1996), entrepreneurs are characterized by their (over-)confidence, which is necessary to motivate individuals to go further with their decisions, such as start a business or define a certain innovative strategy (e.g., Koellinger et al., 2007; Markman et al., 2002). Along these lines, Hmieleski and Baron (2008) suggested that entrepreneurs, who are generally confident in their abilities, knowledge, and experience, tend to lead their firms toward challenging growth rates. This implies that entrepreneurs may tend to perceive themselves as being competent to implement more risky strategies (i.e., innovative orientation), enabling them to perform—and so their firms—at certain levels of performance, so they feed on their beliefs. Empirical research has confirmed this relationship between confidence and performance (e.g., Baum and Locke, 2004; Forbes, 2005).

Further, since in the absence of cues, individuals tend to observe instances with positive outcomes (Busenitz and Barney, 1997; Simon and Houghton, 2003), entrepreneurs are likely to make associations that make them over-confident. Considering that growth expectations combine what the entrepreneur wants with what is possible given the capabilities of the entrepreneur and available resources, with a similar number of available resources, over-confident entrepreneurs will perceive themselves more capable and consequently may present more growth expectations. It is important to consider, though, that Hayward et al. (2006) remarked that people’s confidence can manifest under different and independent processes, such as confidence in knowledge, predictions, and personal abilities. Therefore, being confident in innovation can denote optimism about future outputs. Since confident entrepreneurs tend to have higher hopes for success (Rauch and Frese, 2007), confidence and expectations should be related (Hayward et al., 2010). Based on these arguments, I posit the following hypothesis:

*H2: Entrepreneurs who have higher subjective values in innovation will be more likely to have higher growth expectations.*

## *Innovative entrepreneurship and subjective values*

Neuroscience studies provide evidence that the subjective value of potential rewards is explicitly represented in the human brain (e.g., Kable and Glimber, 2007), so decision-making processes may be actively influenced by subjective values. Further, choices reflecting subjective desirability are central to nearly all economic theories of decision making, indeed as Kable and Glimber (2007) noted, most of those theories are based on a mix of objective values and subjective desirabilities inferred from a person’s observed behavior (e.g. Frantz et al., 2016; Hakansson, 1971; Hodgson, 1998). Consequently, when entrepreneurs pursue an innovative orientation intuitively, but still rationally, they must consider that innovation is a better choice than imitation. It is important to consider that under scenarios of uncertainty, such as the introduction of pioneer products, logical reasoning replaces lack of evidence (Felin & Zenger, 2009). Thus, entrepreneurs pursuing innovative entrepreneurship may be more likely to have confidence in innovation than imitative entrepreneurs.

Moreover, it has been argued that over-optimism can be affected by susceptibility to cognitive biases based on what entrepreneurs believe about themselves (Forbes, 2005; Adomako et al., 2016). In this sense, over-optimism and over-confidence are related. According to Busenitz and Barney (1997), entrepreneurs are often susceptible to the use of certain decisions-making biases and heuristics that tend to slant their judgements in a positive direction. Similarly, Simon and Houghton (2003) suggested that over-confidence is more likely to occur when individuals make predictions regarding less repetitive decisions, such as product introductions that are pioneering. In this regard, Hayward et al. (2006) remarked that people’s confidence can manifest under different and independent processes, such as their confidence in knowledge, predictions, and personal abilities. High levels of optimism thus appear to enhance entrepreneurs’ reliance on heuristic thinking (Hmieleski and Baron, 2008). Hence, current subjective values of innovation are nurtured by prior decisions, such as the prior image of innovation that led entrepreneurs to act as innovators in the first place.

Considering that over-confidence has strategic implications, such as increasing an individuals’ probability of making risky products (Simon and Houghton, 2003), and that when entrepreneurs process new information and form expectations, they put a great deal of weight on prior beliefs (Parker, 2006), entrepreneurs’ reasoning behind pursuing innovative entrepreneurship may trigger their current image of innovation. Since entrepreneurs are not cognitively homogeneous (Forbes, 2005), engaging in innovative entrepreneurship should lead to certain mental simulations that increase their confidence in innovation. On the basis of this reasoning, the following is proposed:

*H3: Entrepreneurs engaged in innovative entrepreneurship have a greater propensity to have confidence in innovation.*

It is important to note that the above hypothesis does not discuss how initial subjective values of innovation determine a certain strategy. Considering that subjective values are a continuous feature that is modified constantly, the focus is only of the (over-)confidence that entrepreneurs have in their prior decisions. Although I recognize that entrepreneurs’ prior image of innovation may determine whether they pursue imitative or innovative strategies, this hypothesis does not discuss this potential bidirectional relationship. Instead, I argue that entrepreneurs involved in innovative entrepreneurship are more likely to nurture their subjective values based on their previous decisions (i.e., having developed innovative entrepreneurship).

## *Mediating effects of subjective values*

As noted above, there are both empirical and theoretical arguments to suggest that innovative entrepreneurship contributes to growth expectations. Despite these arguments, there is another viewpoint suggesting that an individual’s attitudes toward growth may be only partly attributable to an innovative orientation (Denrell, 2003; Ajzen, 1991; Carsrud et al., 2009). Psychological studies have observed that while individuals may have similar experiences or observations, those experiences and observations themselves do not necessarily induce the same beliefs or action patterns in different people. In this sense, observations and experiences offer only some understanding about entrepreneurs’ behavior (March et al., 1991). According to Felin and Zenger (2009), one way to conceptualize experiences and observations is to think about these as fragmented lessons or data that inform—but do not determine—eventual entrepreneurial beliefs. In this sense, it is possible to argue that subjective values of innovation may or may not enhance expected positive outcomes related to innovative entrepreneurship; innovation only matters when an entrepreneur believes that a strategy itself has attractive potential to affect firm performance.

Individuals’ actions are mostly determined by their intentions, which are driven by beliefs. As such beliefs have proven to be one of the most important predictors of behavior (Ajzen, 1991; Bandura, 1986; Krueger, 2003). However, perceptions about a positive relationship between innovation and performance underlie an individual’s mental image of future venture outcomes, where the level of reliance with the ongoing strategy ultimately should determines entrepreneurs’ expectations. Evidence has suggested that expectations are more related to cognitions than to actions, so growth motivations are the outcome of expected growth and individual values of achieving growth (Verheul and Van Mil, 2011). As noted above, entrepreneurs suffer from optimistic biases about their chances of success (e.g., Baron, 1998; Cassar, 2010; Simon et al., 2000) and perceive existing risks as being smaller than they are (e.g., Baron, 2004), so entrepreneurs should have a higher tendency to over-trust innovation. Nevertheless, an increase in growth expectations should only occur if innovative entrepreneurs trust in the potential benefits that innovation has.

Cassar (2010) suggested that “over-optimism tends to be exacerbated when tasks are perceived to be controllable and therefore is likely to be heightened if expectations are based upon planned activity” (p. 824). Several studies have shown that innovation demands substantial resource consumption and may also lead to increased uncertainty and risks. In addition, evidence shows that the highest rates of business failure are observed among innovative firms, which makes innovation an alternative strategic orientation with several positive and negative tradeoffs. In this sense, entrepreneurs’ level of skepticism must enable them to make better judgements about the feasibility of the chosen strategy and the likelihood of developing it successfully. Innovative entrepreneurs need customers (i.e., individuals or businesses) who are willing to buy new products and services and to try products and services that utilize new technology. Namely, they need customers who are receptive to such innovations and tend to believe they will improve their lives (Levie, 2010). Accordingly, if entrepreneurs tend to exclusively believe that these conditions are covered, the more confident they will be in innovation, leading to higher subjective values of innovation. In other words, to the extent that innovative entrepreneurship can make entrepreneurs better attuned to the strategic orientation at hand, their subjective values of innovation can both increase and decrease, with each option having different consequences for their growth expectations. Therefore, the following hypothesis is put forth:

*H4: Subjective values of innovation mediate the relationship between innovative entrepreneurship and growth expectations.*

## *Moderating role of entrepreneurial experience*

As mentioned previously, experience provides information for judgements as a form of fragmented lessons, or data (Felin and Zenger, 2009; Storey, 2011), so entrepreneurs’ criterion for the interpretation of reality—to a greater or lesser extent—is modified while they acquire experience. Implicitly, it is assumed that values of innovation are constructed based on complex parameters, where both theoretical and tacit knowledge play a key role in the elaboration of mental simulations (e.g., Cliff et al., 2006; Dimov, 2010; Shane, 2000). Considering that perceptions of reality are dynamic and interpretations are subject to revision and replacement (Brannback and Carsrud, 2009), it is possible to explain issues like why the likelihood of innovation decreases with firm age despite available resources (Huergo and Jaumandreu, 2004). Bager and Schøtt (2004) suggested that differences in expectations among entrepreneurs may be due to a survival bias, with novice entrepreneurs usually having a less realistic image of the future than established entrepreneurs; hence, the duration of entrepreneurial experience should influence the relationship between strategic orientation (i.e., imitative or innovative entrepreneurship) and subjective values of innovation.

Considering this line of thinking, established organizations are more likely to already have developed routines, so their activities are institutionalized. However, novice entrepreneurs without pre-developed practices must rely on their own interpretations of reality and their perceptions to make decisions (Gartner et al., 1992). In this sense, entrepreneurs are likely to be more susceptible to cognitive biases in the earliest years of a venture’s existence, but this susceptibility is likely to diminish when the entrepreneurs acquire experience (Forbes, 2005; Westhead et al., 2005, 2009). Consequently, the relationship between innovative entrepreneurship and subjective values of innovation depends on entrepreneurial experience. Formally, I offer the following:

*H5: Entrepreneurial experience moderates the relationship between innovative entrepreneurship and subjective values of innovation such that this relationship is weaker for entrepreneurs with more entrepreneurial experience.*

In sum, this study proposes a moderated mediation model of the role of subjective values of innovation on strategic orientation and growth expectations. The model suggests that subjective values of innovation mediate the relationship between innovative entrepreneurship and growth expectations. I expect that there will be a positive effect on subjective values of innovation for innovative entrepreneurs and that this relationship is in turn moderated by the duration of entrepreneurial experience. I also expect a positive relationship between innovative entrepreneurship and growth expectation. Further, it is argued that subjective values of innovation may promote growth expectations. The overall theoretical model is outlined in Figure 1.

-- Figure 1 about here –

## Method

The model is tested by using the individual-level data for 24 countries that participated in an Adult Population Survey (APS) that was carried out as part of the GEM during 2011. These countries are South Africa, Hungary, Romania, United Kingdom, Sweden, Poland, Peru, Mexico, Argentina, Chile, Malaysia, Thailand, Korea, China, Pakistan, Iran, Algeria, Croatia, Slovenia, Bosnia and Herzegovina, Slovakia, Venezuela, Uruguay, Trinidad and Tobago, Jamaica, Bangladesh, and Taiwan.

The GEM project was conceived in 1997 by the London Business School and Babson College through researchers Michael Hay and Bill Bygrave. The first study was conducted in 1999, and ever since, more than 80 countries have been participating in the GEM consortium. The main focus of GEM is to provide harmonized data across countries on the levels and types of entrepreneurial activity (Bosma et al., 2012). Different from others initiatives, the GEM measures individual involvement in venture creation instead of firm-level data. In this sense, the GEM captures individuals formally registered and also those who are involved informally. Accordingly, individuals who are entrepreneurially active include those adults active in the process of setting up a business they will (partly) own and/or those who currently own and manage an operational business (Reynolds et al., 2005, p. 209).

The GEM’s methodology establishes two instruments to measure key elements of national entrepreneurial activity. One of them is the Adult Population Survey (APS), which provides the main and more distinct variables, such as the TEA index (which is the total early-stage entrepreneurial activity), among others. The survey’s procedure requires that at least 2,000 individuals between 18 and 64 years old should be surveyed by each participant country. APS provides information about attitudes toward entrepreneurship, entrepreneurial activity, and entrepreneurial expectations.

Specifically, an initial APS database of more than 162,724 interviews with adult individuals from 18 to 64 years old was used (Reynolds et al., 2005). After the sample was restricted to only entrepreneur participants of the IIIP survey of innovation confidence developed by the Institute for Innovation and Information Productivity (see Levie, 2010), the total number of observations in this study sample is 11,579[[2]](#footnote-3). The GEM database is considered suitable since it is focused on the measure of differences in entrepreneurial attitudes, activity, and expectations of individuals from different economies across the globe, thereby enabling representativeness.

The main reason of using only this year is because of the specific topic selected in 2011, which is confidence on innovation. Almost every year the GEM project selects one key dimension in the entrepreneurial spectrum to comprehensively analyses as a special topic, and therefore useful proxies for this study were available. Unfortunately, not every participant country add this topic into the questionnaire and the questions added where not included in the subsequent years, hence the selection of this year only was based on the argument that it was the most suitable for the purpose of this study.

## *Measures*

Growth expectations.

Firm growth ambitions were empirically examined in terms of employment. Similar to previous studies (e.g., Autio, 2007; Autio and Acs, 2010; Hessels et al., 2008; Verheul and Van Mil, 2011), this measure is based on the number of jobs an individual expects to have in the next five years. In concordance with Autio and Acs’ (2010) procedure, a natural logarithm of expected jobs was used after removing and resetting extreme cases.

Innovative entrepreneurship.

Following Koellinger (2008), the profile of innovativeness was measured using three questions relating to innovation. These questions ask about (1) the novelty of the technology ventures attempt to use, (2) the novelty of the product or service for potential customers, and the expected degree of competition in the market. Each question has three answers options. Since the concern of this study was primarily with the distinction between entrepreneurs with pure imitative strategies and those who carry out any type of innovation, consistent with Koellinger (2008), I used the strictest possible definition that the data allow. Hence, imitative entrepreneurship (0) was categorized as entrepreneurs who answer that they do not use new technologies nor procedures for their products or services, that none of their customers consider their product or service new or unfamiliar, and that they have many business competitors. Any other combination of these variables was categorized as innovative entrepreneurship (1).

Subjective values of innovation.

This construct was measured using two instruments developed by Levie (2010). The first construct is the innovation confidence index, which is measured using three dimensions: willingness to buy new products or services, willingness to try products or services that involve new technology, and the belief that new products or services will improve one’s life. Each question was measured using a five-point Likert scale, where 1 indicates strong disagreement with the statement and 5 indicates strong agreement. The second construct is the organizational innovation index, which includes three items: (1) “In the next six months, the organization that you work for is likely to buy products or services that are new to the organization,” (2) “In the next six months, you are likely to try products or services that use new technologies in your daily work for the first time,” and (3) “In the next six months, new products and services will improve your working life.” Similar to the first instrument, respondents rated their level of agreement with each item using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistencies of these groups of questions were measured using Cronbach’s alpha. The analysis revealed the reliability of the scale (Alpha = .9), so a variable-reduction procedure using principal component analysis was conducted.

Duration of entrepreneurial experience.

This is a categorical variable that reflects the following categories: (1) nascent entrepreneurs, who are individuals actively involved in setting up their own business; (2) young business owners, who are owners and managers of a business that has existed for 42 months or less; and (3) established business owners, who are owners and managers of a business that has existed for more than 42 months. Similar to Hessels et al. (2011), in cases in which an individual belongs to more than one category, the highest applicable level was assigned.

Control variables.

In addition to country dummies, a total of seven control variables were included. At the individual level, entrepreneurs’ age, gender, and educational level were controlled because entrepreneurs’ characteristics may be associated with the entrepreneurial decisions they make. Educational level was measured with seven categories: (0) pre-primary, (1) primary, (2) lower secondary, (3) upper secondary, (4) post-secondary, (5) first stage of tertiary education, and (6) second stage of tertiary education. At the firm level, previous research has shown that firm size, export intensity, growth expectations, and industry play an important role in influencing innovation and other aspects of strategic decisions. Firm size was measured by the natural logarithm of the current number of employees within the venture. Export intensity was measured by the percentage of customers overseas with five categories: (1) 76–100%, (2) 26–75%, (3) 11–25%, (4) 1–10%, and (5) none. Industry was measured by grouping the specific International Standard Industrial Classification (ISIC) codes of each firm in the main sectors into one of four categories: (1) extractive, (2) transforming, (3) business service, or (4) consumer oriented.

## *Statistical procedure*

This analysis consists in two exercises (Fields, 2003; Baron and Kenny, 1986). The first set of models (Table 2), estimate the factors that determine subjective values of innovation using moderated hierarchical regression. Specifically, after controlling others variables that may provide alternative explanations for how subjective values of innovation emerge, the focus is on a specific strategy differencing between innovative and imitative entrepreneurship and the ways the duration of entrepreneurial experience impacts this relationship as a moderator.

In a second exercise, the effects on growth expectations are examined through hierarchical regressions. Basically, this set of models sought to identify the mechanism that underlies growth expectations by observing the direct effect of strategy (imitative versus innovative) and the indirect effect of subjective values of innovation in order to clarify the nature of the relationship between innovative entrepreneurship and growth expectations. These results are presented in Table 3.

In both tables, the first model represents the baseline control model for alternative explanations. As a whole, these models accounted for 28% of the variation in subjective values of innovation (Table 2) and 59% of the variation in growth expectations (Table 3).

## Empirical Results

## *Descriptive statistics*

Table 1 shows the sample means and standard deviations of the variables (country dummy variables excluded) for each group of entrepreneurs. Of the whole sample, 39.4% involves imitative entrepreneurship, whereas the other 60.6% represents entrepreneurial activity that involves at least one innovative element, such as introducing a new product or process or entering a market with limited expected competition. Approximately 63% of the participants are male and 37% are females, and the average age is 42 years.

In addition, Table 1 summarizes the correlations for all variables, where the highest correlation between any pair of independent variables was 0.265, suggesting a first line of evidence for the discriminant validity of specific construct within the overall model. From here, it is possible to observe that subjective values of innovation are positively related to innovative entrepreneurship and growth expectations and that innovative entrepreneurship is positively associated with growth expectations. The variance inflation factor was estimated for all variables in the full models, and the findings indicate that multicollinearity is not a concern since no score was greater than 1.386.

-- Table 1 about here --

## *Hypothesis tests*

In Table 3, variations in growth expectations are examined. Specifically, Model 2 reveals that the coefficients show a significant positive effect of innovative entrepreneurship on growth expectations, which is in line with Hypothesis 1. Therefore, this suggests that innovative entrepreneurs tend to have higher growth expectations than imitative entrepreneurs (Hypothesis 1).

In regard to Hypothesis 2, which predicted that subjective values of innovation are positively related to growth expectation, the coefficient in Models 4 of Table 3 is significant. Hence, this result supports Hypothesis 2: entrepreneurs who trust in innovation have higher growth expectations.

-- Table 2 about here --

Hypothesis 3 predicted a positive relationship between innovative entrepreneurship and subjective values of innovation. The coefficient for innovative entrepreneurship in Model 2 of Table 2 is positive and significant. This suggests that innovative entrepreneurs are more likely to have higher values of innovation. Therefore, this result provides support for Hypothesis 3.

In respect to the mediating role of subjective values of innovation (Hypothesis 4), similar to Dimov (2010) and Baron and Tang (2011), I adopted the procedure suggested by Baron and Kenny (1986), which states that mediation occurs under certain conditions: (1) the independent variable must significantly affect the dependent variable when the mediator is not included in the equation, (2) the mediated variable is a significant predictor of the mediator, (3) the mediator is a significant predictor of the dependent variable, and (4) the effect of the mediated variable on the dependent variable diminishes in the presence of the mediator. When the independent variable is no longer significant, that indicates full mediation; however, when the independent variable is reduced but is still significant, that suggests partial mediation. Table 3 shows that the coefficient decreased from 0.124 (p < 0.001 in Model 2) to 0.104 (p < 0.001 in Model 4). Thus, subjective values of innovation partially mediate the positive relationship between innovative entrepreneurship and growth expectations. In order to test the significance of the mediation effects, I conducted a more rigorous Sobel large-sample test to estimate the statistical significance of the indirect effects. Using an interactive calculation tool for a mediation test (Preacher and Leonardelli, 2001), I found that the mediating effect is significant (Sobel test = 4.719, p < 0.001). This result supports Hypothesis 4.

-- Table 3 about here –

Hypothesis 5 proposes a moderating effect of the duration of entrepreneurial experience on the relationship between innovative entrepreneurship and subjective values of innovation. Model 4 of Table 2 indicates that, as predicted, the interaction between innovative entrepreneurship and the duration of entrepreneurial experience is negative and significant, suggesting that the link between innovative entrepreneurship and subjective values of innovation is indeed weaker in the presence of more entrepreneurial experience. The evidence presented is consistent with the reasoning behind Hypothesis 5, thus providing support for the hypothesis.

## Discussion

## *Key findings and implications*

The results suggest that innovative entrepreneurs present more confidence in innovation than imitative entrepreneurs, although acquiring entrepreneurial experience makes this relationship weaker. As Figure 2 shows, on average, mature entrepreneurs—both innovative and imitative—tend to have less confidence in innovation than novices. Similarly, on average, a novice innovative entrepreneur will have more confidence in innovation than a novice imitative entrepreneur, and the same occurs if mature entrepreneurs are compared. However, on average, a novice imitative entrepreneur will have more confidence in innovation than a mature innovative entrepreneur. It is important to remark that Figure 2 does not show how entrepreneurs change their subjective values of innovation across the whole entrepreneurial process; rather, the figure shows the relationship of subjective values of innovation for different groups of entrepreneurs at different stages in the entrepreneurial process.

Further, the results indicate that while innovative entrepreneurs tend to present higher growth expectations per se, subjective values of innovation play an important role in governing the relationship between developing innovative entrepreneurship and growth expectations. Having confidence in innovation has a direct effect on growth expectations and also an indirect effect through the development of innovative entrepreneurship. Certainly, it is important to mention that pre-conceived ideas about innovation are also part of values of innovation before any strategic decision is made. However, former opinion about innovation was not measured, and in this sense, details about these pre-conceived ideas are beyond the scope of this research. Although I attempted to overcome with this limitation with the duration of entrepreneurial experience, no specific information regarding these ideas is covered in this study.

-- Figure 2 about here --

Consistent with prior research, this study suggests that entrepreneurs—particularly novices—tend to be over-optimistic about their own beliefs (e.g., Cassar, 2010). This over-optimism in young entrepreneurs is also observed in their under-estimation of the risks they face. Early-stage entrepreneurs showed more confidence in innovation, being comparatively more willing to buy, try, and believe that entrepreneurial innovativeness is the best way to reach their goals (i.e., growth expectations). Even though this study does not analyze firm outcomes, Hayward et al. (2010) suggest that over-confidence is one of the most damaging errors of judgements affecting over-entry into new markets and commitment to risky new projects and assets (Camerer and Lovallo, 1999; Simon and Houghton, 2003). Hence, projections based on the results of this study may reinforce prior studies that suggest that fostering a high emphasis on innovative behaviors may indeed be harmful for firm growth (e.g., Stenholm, 2011).

Implicitly, the model presented in this study suggests that individuals have causal rationality, which is nurtured by heuristic-based logic. Previous studies have observed that entrepreneurs collect, process, and evaluate information in a more intuitive manner than managers (e.g., Lindlom et al., 2008). That is, entrepreneurs tend to use cognitive shortcuts instead of logical-rational information processing, which is sometimes beneficial in producing superior results but also can lead to errors (e.g., erroneous values and decisions). From a heuristic-based perspective, the entrepreneurship literature has noted that “entrepreneurs may often make significant leaps in their thinking leading to innovative ideas that are not always very linear and factually based” (Mitchell et al., 2007, p. 7). Considering that innovation may not be necessarily beneficial to subject matter experts (Rosenbush et al., 2011; Stenholm, 2011) and that entrepreneurial decision-making processes are often pursued using perceived tradeoffs between upsides and downsides—where apparently positive information is processed differently from negative information—a context that aggressively encourages innovative entrepreneurship could cause entrepreneurs to become overly optimistic about innovation and employment. Overall, the present results serve to emphasize an important point: growth expectations are nurtured by an innovation orientation, which itself is fed by personal beliefs about innovation. These beliefs may lead entrepreneurs to conclude (erroneously or not) that they must pursue innovative strategies and that by doing so, they are very likely to have positive outcomes.

Further, it is important to note that the nature of innovation is local (e.g., Koellinger, 2008) and that strategic orientation shapes how the environment is perceived (e.g., Lumpkin and Dess, 1996). Hence, individuals’ mental image of innovation and the fact that an innovation does not necessarily mean creating something drastically new (i.e., it can also include little novelties in a small communities [Oslo manual, 2005]) suggest that radical positive changes may also emerge from subjective notions of innovative opportunities. However, it may be possible that most innovation is developed through entrepreneurial bricolage (Baker and Nelson, 2005), thus depending on a series of external factors and processes, which may (or may not) generate in real growth (Davidsson, 1991; Steffens et al., 2009; Wiklund et al., 2003). Undoubtedly, the story is not complete, and there is still fertile space for further research.

*Policy implications*

Even when, in broad terms, fostering innovation and entrepreneurship may be considered bad policy (Shane, 2009), local aspects will determine the nature of most entrepreneurial activities developed by entrepreneurs. Even though certain societies have several public services (e.g., unemployment insurances) that increase the opportunity cost of starting up a new business, the combination of over-confidence, over-optimism, and necessity-based entrepreneurship seems to be particularly harmful since it is very likely that a significant percentage of the entrepreneurial activity may be undertaken by biased individuals who made unfortunate choices leading to erroneous conclusions.

In line with Hyytinen et al. (2015), who observed that innovativeness is negatively correlated with firms’ survival probability, the results of this study suggests that fostering innovation should not be considered as a form of insurance against failure. Instead, within the nature of innovation an increasing amount of uncertainty and expectations are added, in comparison with following an imitative strategy. Under this scenario, therefore, more cautious must be applied and so overly-optimistic entrepreneurs should be trained.

*Implications for practice and education*

The results of this study can guide practitioners in a number of ways. For example, since it seems that entrepreneurs are likely to conceive things differently, which is not necessarily bad, it may be beneficial for them to receive guidance from others in order to diminish cognitive biases that may lead to harmful situations for their businesses. An overuse of heuristics does not seem to be the best method in the long term. Different from bricolage strategies, which refer to the use of resources at hand (Baker & Nelson, 2005), heuristics refers to the mental phenomena present when an individual makes judgment-based decisions using simplifying strategies. As this study shows, entrepreneurs may be driven by their own thoughts, illusions and ideas; consequently, having discussions with others may reduce their likelihood of having certain problems caused by their heuristics, such as representativeness (i.e., the insensitivity bias to sample size prior probabilities or predictability), availability (i.e., biases due to retrievability, imaginability, or illusory correlation), or adjustment/anchoring (i.e., biases due to insufficient adjustment, evalue, or subjective probability distribution) (Bryant, 2007).

Shane (2009) noted that entrepreneurs are not normally good at finding the best industry to start up new businesses; instead, they tend to focus on the easiest industry. In addition, novice entrepreneurs’ perceptions of opportunities are characterized by newness and uniqueness (Mitchell & Shepherd, 2010). Thus, it may be possible that conducting ideas constructed on wrong elements may nurture the over-optimism, especially in the initial stages of the entrepreneurial process. Hence, instead of focusing solely on whether or not to start a new business based on the novelty it may represent, entrepreneurs should also consider the potential lack of profitability the business may also represent. After all, since entrepreneurship is a process centered on intentionality (Bird, 1988), over-optimism may lead individuals to enter into entrepreneurship based on false beliefs of feasibility and desirability (Krueger, 2003).

## Conclusions

The entrepreneurship literature has remarked on the importance of studying entrepreneurial thinking, particularly those cognitions that relate to entrepreneurial decision making. As such, this research focused on perceptual processes. The findings are of interest because they provide a wider vision of how entrepreneurs’ cognitive structures influence firm-level decisions and managerial expectations. This research responds to previous calls regarding the importance of focusing on how entrepreneurs configure their cognitive processes in response to strategic managerial decisions, instead of analyzing mental maps that may generate certain behaviors, in order to obtain a more interactive comprehension of the entrepreneurial ecosystem (e.g., Mitchell et al., 2007; Shepherd, 2015). Thus, this research reveals some antecedents of how entrepreneurial expectations are built by developing a model of moderated mediation that involves cognitions and strategic decisions.

This study also provides a theoretical contribution that, based on a heuristic approach, sheds more light on how an innovative orientation and entrepreneurial expectations are aligned. Specifically, this study assumes a sequence in which individuals define the best means to accomplish a certain outcome (i.e., innovative orientation for firm growth), and depending on the probability that this outcome is likely to occur (i.e., confidence in innovation), this desired outcome is intensified (i.e., growth expectations). In addition to developing a model explaining the interaction of entrepreneurial experience with strategic orientation and subjective values of innovation in respect to the growth expectations, this study empirically tested and validated the model.

By assuming that entrepreneurs’ expectations go through a dynamic and highly iterative process, which includes interpretations of current business activities and experiences, this study is aligned with Mitchell et al. (2007), who noted that “people engaged in entrepreneurial activities appear not to perform an elaborate, deliberative, thorough evaluation of the best way in which to describe a problem, or decision, nor do they conduct meticulous cost-benefit analyses on all possible alternatives before choosing the option that produces the highest return on investment” (p. 6). This study aims to clarify how micro individual-level variables, like subjective values and entrepreneurs’ experience, ultimately influence growth expectations. Considering that growth expectations are related to macro firm-level measures of performance, such as growth in employment (Davidsson, 1991), understanding these mechanisms is a crucial task for the field in order to more deeply comprehend the entrepreneurial process.

As for the limitations and suggestions for future research, it is important to consider the nature of the variables used in this study. For instance, innovative orientation and confidence in innovation are used to try to analyze whether there is consistency among entrepreneurs and whether these variables influence entrepreneurial expectations. Overall, the model presented in this study is constructed mostly considering the subjective perceptions of individuals and the virtuous/vicious circle that emerges from decisions based on their assessments and judgements. Therefore, this study is focused on how growth expectations are affected by an innovative orientation and how personal subjective values nurture this relationship. It is important to note that no distinction was made between different types of innovation; instead, distinction among entrepreneurial innovativeness was measured using subjective judgements. In this sense, this study considers innovation based on what the individual perceives as innovation, which may lead to an over-representation of this group, and so other definition of innovation more strict may derived in different results. Future studies that address this issue, differentiating between types of innovations (e.g., at the process, product, marketing, organizational level), will provide more detailed information on how subjective values enhance certain innovations more than others.

Further, the empirical analysis did not include interventions of teams or social groups within firms (i.e., employees), nor did it consider how other actors (e.g., consultants) or other social interactions (e.g., with stakeholders) affect the relationship between the entrepreneur’s strategic orientation, growth expectations, and subjective values of innovation. In this regard, Shepherd and Krueger (2002) proposed that a team’s entrepreneurial intentions depend on the team’s collective efficacy toward entrepreneurial behaviors, collective experiences, and perceived desirability. Additionally, West (2007) observed that moderated levels of differentiation and integration play a key role in positively affecting performance and also have a positive association with the interaction between differentiation and integration of strategic constructs within the top management team. Consequently, it is possible that entrepreneurs’ over-confidence in innovation is reduced in this context and that growth expectations may become more realistic. If so, it will be important to document the importance of supporting groups surrounding entrepreneurs that help guide them strategically. Hence, it would be interesting to examine the conditions under which entrepreneurs change their expectations and subjective values.

Additionally, panel data analysis is likely to provide a more detailed perspective, especially to emphasize the role of entrepreneurial experience across the whole process. Even though analyzing the performance of a strategy is beyond the scope of this research, there is a lack of evidence across time that enables the exploration of how some orientations, values, and expectations materialize in certain contexts. In other words, the end of the story is not discussed in this study (e.g., actual firm performance). This study centers on a cognitive spectrum, so it would be interesting for future research to analyze if (and to what extent) entrepreneurs twist their beliefs in specific contextual circumstances (e.g., industry concentration, external financial crises, etc.) and what type of (and under what circumstances) entrepreneurs tend to be more susceptible to manipulations/interventions in their thoughts? To what extent does entrepreneurial education shape pre-conceived thoughts that lead entrepreneurs to over-value innovation?

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Figure 1: Conceptual model of moderated mediation.



Figure 2: Mean values of subjective values on innovation for each type of entrepreneurial strategy through different entrepreneurial stages



Table 1: Descriptive statistics and correlations (country dummies are excluded)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | **Variables** | **Mean** | **S.D.** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| 1 | Growth | 1.118 | 1.240 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Gender | 1.370 | 0.483 | -0.079\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |
| 3 | Age | 40.547 | 12.361 | -0.073\*\* | 0.0169 | 1 |  |  |  |  |  |  |  |  |  |  |
| 4 | Educational level | 3.071 | 1.382 | 0.192\*\* | 0.017 | -0.094\*\* | 1 |  |  |  |  |  |  |  |  |  |
| 5 | Firm Size | 1.132 | 1.106 | 0.708\*\* | -0.093\*\* | -0.041\*\* | 0.153\*\* | 1 |  |  |  |  |  |  |  |  |
| 6 | Export intensity | 4.369 | 1.088 | -0.197\*\* | 0.033\*\* | -0.0136 | -0.164\*\* | -0.183\*\* | 1 |  |  |  |  |  |  |  |
| 7 | Industry (1) | 0.085 | 0.278 | -0.032\*\* | -0.017 | 0.088\*\* | -0.141\*\* | -0.044\*\* | 0.043\*\* | 1 |  |  |  |  |  |  |
| 8 | Industry (2) | 0.255 | 0.435 | 0.078\*\* | -0.143\*\* | 0.008 | -0.076\*\* | 0.090\*\* | -0.032\*\* | -0.178\*\* | 1 |  |  |  |  |  |
| 9 | Industry (3) | 0.127 | 0.333 | 0.046\*\* | -0.053\*\* | 0.020\* | 0.217\*\* | 0.026\* | -0.097\*\* | -0.116\*\* | -0.223\*\* | 1 |  |  |  |  |
| 10 | Industry (4) | 0.534 | 0.498 | -0.081\*\* | 0.170\*\* | -0.069\*\* | 0.0001 | -0.071\*\* | 0.070\*\* | -0.326\*\* | -0.625\*\* | -0.409\*\* | 1 |  |  |  |
| 11 | Duration of experience | 2.023 | 0.863 | -0.019\* | -0.044\*\* | 0.265\*\* | -0.067\*\* | -0.001 | 0.034\*\* | 0.092\*\* | 0.059\*\* | -0.010 | -0.096\*\* | 1 |  |  |
| 12 | Innovative entrep. | 0.606 | 0.489 | 0.147\*\* | 0.066\*\* | -0.042\*\* | 0.093\*\* | 0.092\*\* | -0.104\*\* | -0.059\*\* | 0.004 | 0.013 | 0.021\* | -0.098\*\* | 1 |  |
| 13 | Subjective value of innov. | 0.000 | 1.000 | 0.168\*\* | -0.008 | -0.131\*\* | 0.026\* | 0.117\*\* | -0.002 | -0.073\*\* | -0.020 | -0.015 | 0.069\*\* | -0.136\*\* | 0.127\*\* | 1 |

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001

Table 2: Hierarchical regression analysis. Dependent variable: subjective values of innovation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Country dummies | yes |  | yes |  | yes |  | yes |  |
| Gender | -0.080 | \*\* | -0.09 | \*\*\* | -0.089 | \*\*\* | -0.091 |  |
| Age | -0.000 | \*\* | -0.007 | \*\*\* | -0.008 | \*\*\* | -0.007 | \*\*\* |
| Educational level | 0.040 | \*\*\* | 0.041 | \*\*\* | 0.041 | \*\*\* | 0.04 | \*\*\* |
| Firm size | 0.129 | \*\*\* | 0.119 | \*\*\* | 0.118 | \*\*\* | 0.119 | \*\*\* |
| Export intensity | -0.016 |  | -0.009 |  | -0.009 |  | -0.008 |  |
| Industry (1) | -0.192 | \*\*\* | -0.152 | \*\*\* | -0.153 | \*\*\* | -0.148 | \*\*\* |
| Industry (2) | 0.047 |  | -0.04 |  | -0.042 |  | -0.041 |  |
| Industry (3) | 0.002 |  | 0.009 |  | 0.009 |  | 0.011 |  |
| Innovative entrepreneurship |  |  | 0.137 | \*\*\* | 0.139 | \*\*\* | 0.461 | \*\*\* |
| Duration of entrepreneurial experience |  |  |  |  | 0.029 |  | 0.101 | \*\*\* |
| Innov. \* Duration |  |  |  |  |  |  | -0.125 | \*\*\* |
| R2 | 0.266 |  | 0.277 |  | 0.278 |  | 0.280 |  |
| Adjusted R2 | 0.262 |  | 0.271 |  | 0.272 |  | 0.274 |  |
| Change in R2 |  |  | 0.011 |  | 0.001 |  | 0.020 |  |

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001

Table 3: Hierarchical regression analysis. Dependent variable: growth expectation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Country dummies | yes |  | yes |  | yes |  | yes |  |
| Gender | -0.056 | \*\* | -0.057 | \*\* | -0.069 | \*\*\* | -0.049 | \*\*\* |
| Age | -0.007 | \*\*\* | -0.006 | \*\*\* | -0.005 | \*\*\* | -0.004 | \*\*\* |
| Educational level | 0.051 | \*\*\* | 0.050 | \*\*\* | 0.031 | \*\*\* | 0.033 | \*\*\* |
| Firm size | 0.884 | \*\*\* | 0.882 | \*\*\* | 0.797 | \*\*\* | 0.791 | \*\*\* |
| Export intensity | -0.067 | \*\*\* | -0.063 | \*\*\* | -0.054 | \*\*\* | -0.056 | \*\*\* |
| Industry (1) | -0.010 |  | 0.024 |  | 0.005 |  | -0.030 |  |
| Industry (2) | 0.038 |  | 0.026 |  | 0.051 | \*\*\* | 0.078 | \*\*\* |
| Industry (3) | -0.026 |  | 0.065 | \* | 0.032 |  | 0.041 |  |
| Innovative entrepreneurship |   |  | 0.124 | \*\*\* | 0.113 | \*\*\* | 0.108 | \*\*\* |
| Duration of entrep. experience |   |  |   |  | -0.067 | \*\*\* | -0.071 | \*\*\* |
| Subjective value of innov. |   |  |   |  |   |  | 0.068 | \*\*\* |
| R2 | 0.580 |  | 0.584 |  | 0.586 |  | 0.590 |  |
| Adjusted R2 | 0.578 |  | 0.582 |  | 0.583 |  | 0.587 |  |
| Change in R2 |  |  | 0.004 |  | 0.002 |  | 0.004 |  |

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001

1. A normative logic of decision-making refers that rationality is imperative. According to Mitchell et al (2007) and Randolf-Seng et al (2015), one approach what challenge the idea of following normative models is Kirzner’s notion of Entrepreneurial Alertness. [↑](#footnote-ref-2)
2. For entrepreneurs involved in more than one business, the selection criterion is based on time. Consequently, information for an entrepreneur’s oldest venture is analyzed. [↑](#footnote-ref-3)