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4 INFLUENCE OF BUSINESS INCUBATORS PERFORMANCE ON
5 ENTREPRENEURIAL INTENTIONS AND ITS ANTECEDENTS DURING
6 THE PRE-INCUBATION STAGE
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3 **INFLUENCE OF BUSINESS INCUBATORS PERFORMANCE ON ENTREPRENEURIAL INTENTIONS**
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5 **AND ITS ANTECEDENTS DURING THE PRE-INCUBATION STAGE**
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9 **ABSTRACT**

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11 The pre-incubation phase is critical in the forming of entrepreneur's intention and however it is almost missing in
12 literature. Using the entrepreneurship models based on the beliefs-attitude-intention relationship, a sample of 167
13 pre-incubated entrepreneurs within the well-known System of Business Incubators of the Monterrey Institute of
14 Technology and Higher Education was surveyed and its statistical analysis developed with Structural Equation
15 Modelling methodology.
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18 Our findings confirm that (1) entrepreneur's perception concerning the incubator's performance directly and
19 positively affects the desirability, self-efficacy and the facilitating conditions, (2) the perceived desirability and
20 feasibility in entrepreneurship, as well as the first ones, self-efficacy and facilitating conditions, positively influence
21 the entrepreneurial intentions. Furthermore, contrary to the traditional mind-set that supports risk is a barrier, results
22 suggest that (3) the risk perceived by pre-incubated entrepreneurs positively influences entrepreneurial intentions
23 and the desirability that is attributed to that behaviour.
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26 Finally, these results also provide insights for organizational leaders and policymakers into managing business
27 incubators and organising their formative programs. The effectiveness of incubators is clear but it is also important
28 to communicate it properly so that incubated individuals can perceive it.
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40 ***Keywords***

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43 Entrepreneurial intentions; business incubator; desirability; feasibility; risk perceived; self-efficacy; facilitating
44 conditions.
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49 **JEL: L26**
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1. Introduction

Among the public and private policies that support entrepreneurship, it is worth noting the development business incubators have experienced over the last three decades. Just in the United States, the growth from 12 in 1980 to more than 1,400 in 2006, it is a clear indicator (Knopp, 2007). According to Hackett and Dilts (2004a), the phenomenon comes in response to the fact that many governments, local communities and private investors believe it is a good idea to support 'weak' but 'promising' companies by incubating them until they have developed self-sustaining business structures. Therefore, 'business incubators' are thought to be organizations that constitute or create a supportive environment that is conducive to the 'hatching' and development of new firms (Bergek and Norrman 2008). Business incubators provide support throughout the entire business creation process, from the pre-incubation stage before the company is created (Dickson, 2004), through the post-incubation phase, which is focused on the consolidation of the company (Hackett and Dilts 2004a; Aerts, K., Matthyssens, P., Vandembemt, K., 2007; Bergek and Norrman 2008).

Voisey et al (2013) argue that the pre-incubation supports nascent entrepreneurs while incubation supports new business because pre-incubators could be defined as "... risk reduced environment where entrepreneurial ideas can be tested for market viability before progressing into the business incubator" (Dickson, 2004). The concept was developed to promote enterprise and spin-out ventures from universities but compare to business incubation remains an under-research topic.

Despite the clear interest awoken by these business incubators during the 1980s (Phan *et al.* 2005), scientific investigation in this area has been limited up until the last decade (Voisey *et al.* 2006), especially peer-reviewed studies that empirically evaluate the impact of business incubation on new venture performance (Amezcuca, 2010). In that sense, Ascigil and Magner (2009) show the need to delve deeper in the research into the variables of the incubation process that best explain and diagnose their results. Along those same lines, Schwartz (2011) demonstrates the scarcity of the studies pertain to the effects of the support offered to incubators in the entrepreneurial process and business growth phase.

Incubators offer different types of services that affect the beliefs and attitudes of individuals towards entrepreneurship (Krueger 2001; Peterman and Kennedy 2003; Krueger 2009; Stephens and Onofrei 2012). However, the support services provided by incubators have a different impact depending on the stage of the entrepreneurial process (Hackett and Dilts 2004a; Todorovic and Suntornpithug 2008). In that sense, the majority of

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3 the studies that focus on the impact of incubation services are centered on the incubation and post-incubation stages
4 (Voisey *et al.* 2006; Abduh *et al.* 2007; Bergek and Norrman 2008; Delmar and Wiklund 2008; Schwartz 2011).
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7 However, despite the fact that there are many incubators that offer pre-incubation services (Aerts *et al.* 2007; Bergek
8
9 and Norrman 2008), the evidence that is available about their impact on the entrepreneurial process is very limited
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11 (Voisey *et al.* 2013). Therefore, there is a gap in the literature, which is especially relevant since the pre-incubating
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13 services are meant to offer would-be entrepreneurs the skills to evaluate their own capabilities and ideas (Grimaldi
14
15 and Grandi 2005), meaning this stage is critical in the formation of perceptions regarding entrepreneurship and the
16
17 intentions to create a business (Peterman and Kennedy 2003; Krueger 2009; Stephens and Onofrei 2012).

18
19 The empirical results about incubator's performance are quite contradictory. Despite Amezcua's study
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21 (2010) raises doubts about the assumed effectiveness of different business models and implementation, others as
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23 Barbero *et al.* (2012, 2014) find that there are differences depending on their typology, Schwartz and Göthner (2009)
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25 and Kilcrease (2011) say the impact of the incubators is determined by the quality of the services their users are
26
27 provided with, and Rubin *et al.* (2015) suggest that some of their services increase incubatees' financial knowledge
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29 and their likelihood of raising capital, what improve their outcomes. Likewise, the performance of the entrepreneur
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31 not only depends on the type of service the incubator offers them but also on how the service is provided in each
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33 phase of the entrepreneurial process (Bergek and Norrman 2008). Hannon and Chaplin (2001) find that a user's
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35 perception on the availability and quality of the services influences their evaluation of the incubator's impact on
36
37 their entrepreneurial project. Therefore, an important aspect to consider in the measurement of a business
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39 incubator's impact is the perception of the entrepreneur in regards to the services the incubator provides.

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41 In this context, this paper examines the influence that the entrepreneurs' perceptions about the performance
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43 of the incubator and the services provided during the pre-incubation phase have on their intentions to actually create
44
45 their own business and on other determining variables of entrepreneurial intentions. Specifically, by using the
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47 entrepreneurship models based on the beliefs-attitude-intention relationship as a reference (Shapiro and Sokol 1982;
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49 Krueger and Brazael 1994; Krueger 2009), the effect of the perceived performance in the incubator on desirability
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51 and on two feasibility antecedents related to entrepreneurship, self-efficacy (internal factor) and facilitating
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53 conditions (external factors), are analyzed. Additionally, the influence the perceived performance of the incubator
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55 has on the risk perceived about entrepreneurship is examined.

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Consequently, the main contribution of this research is to deepen the knowledge about the effect incubators' performance during the pre-incubation phase has on the process of business creation and, in particular, about its influence on entrepreneurial intentions and their antecedents. On a theoretical and conceptual level, the consideration of the two feasibility antecedents associated with entrepreneurship, the self-efficacy of the entrepreneur and the facilitating conditions that are reflected in the external factors, can also be considered a contribution.

In the next section, we review the literature and explain the research hypothesis proposed. We then present our sample, the methodological approach and describe the empirical results. Finally, we conclude with our main contributions, and discuss the limitations and implications of this study for further research.

2. Literature review and research hypothesis

2.1. Influence of the perceived desirability and feasibility on entrepreneurial intentions

As previously stated, in order to uphold this study within a theoretically sound framework, we use entrepreneurship models based on the relationship of belief-attitude-intention as a reference (Shapero and Sokol 1982; Krueger and Brazael 1994; Krueger *et al* 2000; Krueger 2009). The election of these models is warranted by their acceptance and generalized use to explain entrepreneurial intentions in different areas and contexts, by their apparent explicative nature (Krueger 2009; Schlaegel and Koenig 2014), and by the relevance of the chief explicative variables incorporated in them. Among them, it is important to mention the Entrepreneurial Event Model (Shapero and Sokol 1982), the Entrepreneurial Potential Model (Krueger and Brazael 1994) or Krueger's Model of Entrepreneurial Intentions (Krueger 2009). All of these theoretical models concur in identifying two fundamental explicative variables of entrepreneurial intentions and of entrepreneurial behavior in general: the perceived desirability and perceived feasibility for entrepreneurship.

Shapero and Sokol (1982) define perceived desirability as the degree to which an individual finds starting their own enterprise attractive, which in essence means this concept has an impact on entrepreneurship through its influence on entrepreneurial intentions (Shapero and Sokol 1982; Krueger 1993). Guzmán-Alfonso and Guzmán-Cuevas (2012) define it as the degree of attraction of starting a new business for a person. Perceived feasibility, on the other hand, is defined as the degree to which an individual believes they are capable of starting a business (Shapero and Sokol 1982). Gasse and Tremblay (2006) state that the entrepreneur not only has to deem

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3 entrepreneurship as something desirable but they also must recognize it to be reasonably feasible. Therefore, when a
4 person perceives entrepreneurship as being something desirable and actually possible, this creates the intention to
5 take action in an entrepreneurial way (Krueger *et al* 2000; Elfving *et al* 2009). Figure 1 summarizes the Shapero-
6 Krueger Model as represented by Krueger *et al* (2000).
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11 INSERT FIGURE 1 HERE
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15 Several authors have empirically supported the direct influence of perceived desirability and perceived
16 feasibility on entrepreneurial intentions while ignoring the mediating nature of other variables such as the perception
17 of an opportunity or the propensity to act (Krueger *et al.* 2000; Audet 2002; Veciana *et al.* 2005). This approach is in
18 line with the Theory of Planned Behavior (Schifter and Ajzen 1985, Ajzen 1991), the most widely applied model of
19 general behavior in the study of entrepreneurship (Liñán and Chen 2009; Finisterra do Paço *et al.* 2011; Nabi and
20 Liñán 2013; Rueda-Sampedro, M.I. *et al.* 2014), which states that behavioral intentions are determined directly by
21 the attitude towards behavior and the perceived control of behavior; variables that have been identified as being
22 similar or even identical to perceived desirability (Uygun and Kasimoglu 2013) and perceived feasibility (Finisterra
23 do Paco *et al.* 2011; Singh *et al.* 2012), respectively. Consequently, the intentions of incubated entrepreneurs to
24 actually start a business will be determined by the desirability and feasibility they perceive in that behavior.
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35 However, because it is a widely tested model in the literature of entrepreneurship, this study does not
36 include any hypothesis on the causal relations from the variables desirability and feasibility although they are
37 included in our theoretical model and tested empirically.
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43 **2.2. Influence of the perceived risk on entrepreneurial intentions**

44 Diverse authors have revealed that entrepreneurial behavior is influenced by the perception of risk in the field of
45 entrepreneurship being envisaged as the evaluation of an individual in terms of the potential and probability of loss
46 (Mullins and Forlani 2005; Barbosa *et al.* 2007; Monsen and Urbig 2009; Nabi and Liñán 2013). In particular, risk
47 traditionally has been considered as something that hampers entrepreneurship so that the perceptions over potential
48 losses derived from business activities would negatively affect entrepreneurial intentions (Kolvereid 1996; Simon *et*
49 *al.* 2000; Keh *et al.* 2002; Janney and Dess 2006). Other authors (Dickson and Giglierano 1986; Barbosa *et al.*
50 2007a) have projected that risk can be perceived by entrepreneurs not only as a threat but also as an opportunity
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3 (associated with the prospective earnings of the new business). However, the empirical support for this approach is
4 still limited, hence this research adopts a conventional conception of perceived risk, and judges that it has a negative
5 influence on entrepreneurial behavior.
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9 H1. The perceived risk in entrepreneurship negatively influences the intention to create a new business.
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11 Despite the fact that risk is a key concept in academic literature about entrepreneurship, very few studies
12 have analyzed its effect on entrepreneurial intentions using as a theoretical framework general entrepreneurial
13 models. Amid the limited research on this topic, Barbosa *et al.* (2007) and Nabi and Liñán (2013) look at the effect
14 of perceived risk on entrepreneurship behavior, taking the Theory of Planned Behavior as a starting point. Both
15 studies maintain a negative influence of perceived risk on perceived control in entrepreneurial behavior (equivalent
16 to perceived feasibility according to Finisterra do Paco *et al.* 2011; Singh *et al.* 2012), but are opposing in regards to
17 its effect on attitudes (equivalent to desirability according to Uygun and Kasimoglu (2013) and entrepreneurial
18 intentions.
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27 The desirability to begin a new business is determined by the entrepreneur's beliefs and perceptions about
28 the positive and negative consequences of that behavior (Shapero and Sokol 1982; Singh *et al.* 2012). That means
29 desirability is related to certain results or products of entrepreneurship, in terms of the costs and benefits for the
30 entrepreneur (Wilson *et al.* 2011). In that sense, perceived risk in entrepreneurship embodies the potential
31 consequences or negative results of that type of behavior (Gimeno *et al.* 1997; Aldrich and Martínez 2001; Monsen
32 and Urbig 2009). In other words, it generates negatives beliefs about entrepreneurship, which negatively influence
33 the desirability associated with that behavior (Fitzsimmons and Douglas 2011; Nabi and Liñán 2013). In keeping
34 with this approach, the following research hypothesis is proposed:
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42 H2. The perceived risk in entrepreneurship negatively influences the perceived desirability of
43 entrepreneurship.
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46 Furthermore, according to Macko and Tyszka (2009) the perceived risk in entrepreneurship is directly
47 related to self-efficacy and the control associated with that behavior (equivalent to perceived feasibility). This
48 perspective is in line with the conclusions of Barbosa *et al.* (2007b), according to whom perceived risk can produce
49 anxiety and lower levels of self-efficacy and perceived control over the entrepreneurship. Along the same lines,
50 Nabi and Liñán (2013) obtained empirical evidence that backs the negative effect of perceived risk on perceived
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3 control over the entrepreneurship (equivalent to perceived feasibility). In line with this approach, the following
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5 research hypotheses are proposed:

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7 H3. The perceived risk in entrepreneurship negatively influences the perceived feasibility of
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9 entrepreneurship.

10 11 12 13 **2.3. Antecedents of the feasibility of entrepreneurship**

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16 Even though there is no consensus within the literature on entrepreneurship, this research adopts a comprehensive
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18 understanding about the perceived feasibility of starting a new business. In particular, two feasibility antecedents are
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20 contemplated: self-efficacy (internal component) and the facilitating conditions or contextual factors (external
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22 component). This conception about feasibility is backed by the literature on social psychology (Kidwell and Jewell
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24 2010), which says the control perceived in behavior (being equivalent to perceived feasibility, according to Singh *et al.*
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26 (2012) and Uygun and Kasimoglu (2013)) has internal and external components (Conner and Armitage 1998;
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28 Armitage *et al.* 1999). Therefore, contrary to the authors that liken entrepreneurial feasibility to the self-efficacy
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30 perceived by the entrepreneur (Krueger 1993; Krueger and Brazael 1994; Guerrero *et al.* 2008), feasibility would be
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32 determined by internal factors (self-efficacy) along with the contextual factors or facilitating conditions (Triandis
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34 1977; Yzer 2012) that may be present.

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36 Therefore, and in accordance with many authors on entrepreneurship (De Noble 1999; Wilson *et al.* 2007),
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38 our study adopts the conception of self-efficacy proposed by Bandura (1997), who defines it as the individual's
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40 innermost thoughts on whether they have the abilities perceived as important to task performance, as well as the
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42 belief that they will be able to effectively convert those skills into a chosen outcome. Equally, according to Triandis'
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44 approach (1977), the facilitating conditions are conceived as the external objective factors that are found in the
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46 environment that facilitate the occurrence of a determined type of conduct. This definition is in line with the
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48 conception of the facilitating conditions (Birkinshaw 1997) or the contextual factors (Lüthje and Franke 2003) that
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50 are proposed within the specific areas related to entrepreneurship.

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52 The difference between these two antecedents of the perceived feasibility is in line with the approach made
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54 by Gasse and Tremblay (2006), which shows that feasibility depends on the skills of the entrepreneur as well as the
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56 availability or access to the necessary means and resources to start a business. Along those same lines, Veciana *et al.*
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58 (2005) and Fini *et al.* (2009) observed that perceived feasibility in entrepreneurship is influenced by the availability

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3 of financial support and other external support mechanisms, such as advisory services or mentoring. As for Serida
4 and Morales (2011), they include the entrepreneur's perceived self-efficacy as well as the necessary resources and/or
5 opportunities to start a business (time, economic resources) within the perceived control over entrepreneurship.
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7 Finally, Krueger *et al.* (2000) say that self-efficacy is an antecedent to perceived feasibility, although they do not
8 include the facilitating conditions in their study. In accordance with the theories of social psychology and with the
9 evidence available on the specific areas of entrepreneurship, the follow research hypotheses are proposed:
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15 H4. The perceived self-efficacy by the entrepreneur exerts a positive influence on the perceived feasibility of
16 entrepreneurship.
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18 H5. The perceived facilitating conditions by the entrepreneur exert a positive influence the perceived
19 feasibility of entrepreneurship.
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25 **2.4. Influence of evaluation of business incubator**

26 'Business incubators' are conceived as organizations that constitute or create a supportive environment that is
27 conducive to the 'hatching' and development of new firms (Bergek and Norrman 2008). Specifically, incubators
28 offer different types of services that are directed towards promoting the success and survival newly hatched firms
29 through training and the access to external resources and contact networks (Aerts *et al.* 2007; Bergek and Norrman
30 2008; Kilcrease 2011; Vanderstraeten and Matthyssens 2012; Voisey *et al.* 2013). The majority of the authors
31 (Aernoudt 2004; Abduh 2007; Bergek and Norrman 2008; Kilcrease 2011; Rubens *et al.* 2011; Vanderstraeten and
32 Matthyssens 2012) identify four categories of services provided by incubators to companies: a) flexible and
33 subsidized physical spaces, b) business advising, c) making access to financing better and d) networks of formal and
34 informal contacts. Several authors (Krueger 2001; Peterman and Kennedy 2003; Krueger 2007; Stephens and
35 Onofrei 2012) say that training and the entrepreneurial experience significantly affect the beliefs and attitudes of
36 individuals towards entrepreneurship. Therefore, incubating services during the phase before creating the business
37 will affect the perceptions and intentions of the incubated individuals because of the learning effect and experiences.
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50 First of all, through the counselling services and contact networks offered by incubators, individuals are put
51 into contact with other entrepreneurs, mentors and consultants that act as role models (Bollingtoft and Ulhoi 2005;
52 Buche and Scillitoe 2007, Ascigil and Magner 2009). This is, in reality, an environment in which a favorable
53 attitude towards entrepreneurship is introduced, which will lead to it being perceived as a positive professional
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3 alternative (Fernández-Ballesteros *et al.* 2002; Kickul 2006) and which increases the perceived desirability of the
4 entrepreneur (Kuehn 2008). So, if the incubated individuals value the performance in the incubator, they will have
5 the perception that the incubator provides a favourable environment for entrepreneurship, which will reinforce the
6 desirability the incubated individuals attribute to that type of behavior. Therefore, the following hypothesis is laid
7 out:
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13 H6. The entrepreneur's perception concerning the incubator's performance in providing services directly and
14 positively affects the perceived desirability of entrepreneurship.
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17 Additionally, the services provided by the business incubators are meant to increase the probabilities of
18 success for the firm (Hackett and Dilts 2004b) and to improve their performance in terms of employment, sales or
19 profitability (Colombo and Delmastro 2002; Delmar and Wiklund 2008; Schwartz 2011). Similarly, Gifford (2010)
20 observes that training services and gaining access to experts increase the information in the decision process and
21 reduce entrepreneurial risk. What is more, the possibility of accessing shared resources at a low cost (Voisey *et al.*
22 2006; Stephens and Onofrei 2012) reduces the investment the entrepreneur has to make, which makes the risks to be
23 assumed fewer in number (Petrakis, 2005). Furthermore, Wirsing *et al.* (2002) show that pre-incubation services
24 allow entrepreneurs to test their business idea, thereby reducing the risks of starting a business. That means the
25 incubated individuals should perceive less risk in creating their businesses, at least in the sense that they positively
26 value the services offered by the incubator. In line with this approach, the following hypothesis is set forth:
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37 H7. The entrepreneur's perception concerning the incubator's performance in providing services directly and
38 negatively affects the perceived risk of entrepreneurship.
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41 In relation to the antecedents of perceived feasibility in entrepreneurship, the business incubators provide
42 services that are directed at increasing the self-efficacy of the entrepreneur during the process of creating the
43 business. Specifically, counselling on business management and the mentoring by other entrepreneurs (Aernoudt
44 2004; Abduh 2007; Bergeek and Norrman 2008; Kilcrease 2011; Rubens *et al.* 2011; Schwartz 2011; Vanderstraeten
45 and Matthyssens 2012) allow the entrepreneur to access business knowledge, a variable that is been identified as an
46 antecedent or precursor to self-efficacy (Fayolle and Degeorge 2006). Similarly, Voisey *et al.* (2006) and Stephens
47 and Onofrei (2012) show that business incubators create, among other things, an increase in the entrepreneur's
48 professionalism, an improvement in business management skills and an increase on one's self confidence. More
49 specifically, Wirsing *et al.* (2002) say that pre-incubation services allow entrepreneurs to receive training and
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3 business counselling and to obtain business experience before they start off their business. As a consequence, a
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5 positive evaluation of the incubator's performance will indicate that the incubated individuals perceive they are
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7 being given counselling and knowledge that is useful for entrepreneurship, thereby reinforcing the self-efficacy to
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9 carry out that type of behavior. Therefore, the following hypothesis is suggested:

11 H8. The entrepreneur's perception concerning the incubator's performance in providing services directly and
12
13 positively affects the perceived self-efficacy in entrepreneurship.
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15 Along those same lines, one of the main functions of the business incubators is to facilitate access to
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17 physical installations, financing, technological infrastructures and contact networks that are useful in the
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19 development of the company (Aernoudt 2004; Kilcrease 2011; Schwartz 2011). In that sense, Abduh *et al.* (2007)
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21 observe that entrepreneurs believe that flexible and low-cost spaces and the installations offered by the incubators
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23 are the most valuable services for the development of their companies. As for Voisey *et al.* (2006) and Stephens and
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25 Onofrei (2012), they say business incubators favor networking (social capital) and access to resources at lower costs,
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27 both of which increase the facilitating conditions for entrepreneurship. Therefore, the evaluation of the incubator's
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29 performance will be positive to the extent that the entrepreneurs perceive that the incubator is making the access to
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31 the necessary external resources easier in order to carry out their initiatives, thereby positively influencing their
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33 perceptions towards the facilitating conditions of creating a business. Therefore, the following hypothesis is set
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35 forth:

36 H9. The entrepreneur's perception concerning the incubator's performance in providing services directly and
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38 positively affects the perceived facilitating conditions for entrepreneurship.
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40 The research hypotheses that have been set forth are used to make the research model that is shown in Figure 2.

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46 47 48 **3. Research methodology** 49

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51 In order to empirically contrast the research hypotheses that were set forth, a quantitative investigation was made
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53 with the entrepreneurs integrated in the pre-incubation phase within the business incubators of the Monterrey
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55 Institute of Technology and Higher Education, a leading academic institution in Latin America in training and
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57 support for entrepreneurship.
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3 The information was brought together using a structured questionnaire in which the variables involved in
4 the theoretical model were measured with multi-item scales (Appendix 1). This makes it possible to obtain
5 estimations of psychological variables that cannot be measured directly (Churchill and Iacobucci 2002). The
6 variables were measured using Likert scales of five positions (1 = strongly disagree with the affirmation made and 5
7 = strongly agree). The mechanisms used to measure entrepreneurial intentions and the desirability and feasibility
8 associated with that behavior were adapted from the studies of Liñán and Chen (2009) and Finisterra do Paço *et al.*
9 (2011). The scales of perceived risk were adapted from the proposals of Barbosa *et al.* (2007b). The instrument to
10 measure self-efficacy was adapted from DeNoble *et al.* (1999) and Kickul (2006), while the scale for facilitating
11 conditions was established based on the proposals by Edelman and Yli-Renko (2010). Lastly, the way in which to
12 measure the perceived performance of the business incubators stemming from their provision of services has been
13 developed based on the proposals by Meru and Struwig (2011).
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25 To acquire the sample of incubated companies, the survey questionnaire was sent by e-mail to 1,306
26 individuals who were participating in entrepreneurial pre-incubation within the Monterrey Institute of Technology
27 and Higher Education. Those entrepreneurs that did not complete the survey were telephoned in order to get a
28 response. The response rate was 18.57% while obtaining a total of 167 usable responses in the end. Table 1 shows
29 the socio-demographic profile of the nascent entrepreneurs sample utilized in this study.
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39 4. Results 40

41 The statistical analysis has been developed using Structural Equation Modelling (SEM) methodology, with the
42 program EQS 6.1. First, the psychometric properties of the measurement scales (reliability and validity) were
43 verified using a Confirmatory Factor Analysis (CFA). Next, the causal model was assessed in order to contrast the
44 research hypotheses.
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49 A preliminary Confirmatory Factor Analysis shows the need to remove the item FEA4 from the feasibility
50 scale, due to discriminant validity problems (excessive loading on other factors). Once this correction was made, the
51 results obtained for the goodness-of-fit indexes display an accurate specification for the measurement model. In
52 particular, there are three main classes of goodness-of-fit criteria: measures of absolute fit, measures of incremental
53 fit, and measures of parsimonious fit (Hair *et al.* 1998). In this case, we use the data provided by EQS 6.1, which is
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3 widely used in the SEM literature (Hair *et al.* 1998): Bentler–Bonett Non-Normed Fit Index (BBNNFI) and Root
4 Mean Square Error of Approximation (RMSEA) for the measurement of overall model fit; Incremental Fit Index
5 (IFI) and Comparative Fit Index (CFI) as measures of incremental fit; and Normed χ^2 for the measurement of the
6 parsimony of the model. More specifically, the results summarized in Table 2 ratify that the BBNNFI, IFI, and CFI
7 statistics surpass the recommended minimum value of 0.9, while RMSEA is positioned below the maximum limit of
8 0.08, and Normed χ^2 takes a value unmistakably under the recommended value of 3 (Hair *et al.*, 1998).
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15 INSERT TABLE 2 HERE
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17 The reliability of measurement scales is assessed from the Cronbach's Alpha, compound reliability and
18 AVE coefficients (Bagozzi and Yi 1988). It is clear that to see the values of these statistics are, in every case,
19 evidently above the required minimum values of 0.7 and 0.5 respectively (Nunally 1978; Hair *et al.* 1998), which
20 backs the inner reliability of the proposed constructs (Table 2). The convergent validity of the scales is also verified
21 (Table 2), since all items are significant at a confidence level of 95% and their standardized lambda coefficients are
22 higher than 0.5 (Steenkamp and Van Trijp 1991). The discriminant validity of the scales is verified following the
23 techniques proposed by Anderson and Gerbing (1988) and Fornell and Larcker (1981). According to Anderson and
24 Gerbing (1988), the discriminant validity of the scales is sustained, as none of the confidence intervals for the
25 correlation among factors contains value 1 (Table 3). The approach proposed by Fornell and Larcker (1981) also
26 confirms the discriminant validity of the scales, since the shared variances between pairs of construct are always
27 lower than the AVE of each construct (Table 4).
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38 The descriptive statistics of the model's variables are summarized in Appendix 2.
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40 INSERT TABLE 3 Y 4 HERE
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42 When the psychometric properties of the scales were scrutinized, the proposed causal model was calculated
43 using the Robust Maximum Likelihood estimation procedure to control non-normality of the data. The results
44 obtained in the estimation of the proposed research model (Figure 3) show that incubated companies'
45 entrepreneurial intentions are positively and directly influenced by the perceived desirability and feasibility and the
46 perceived risk (H1) in creating a new business. Perceived risk has a positive influence on perceived desirability (H2)
47 as well, but does not have a significant effect on perceived feasibility (H3). The results obtained with respect to the
48 influence of the perceived risk on intentions and desirability have the opposite outcome from the H1 and H2
49 hypotheses. Therefore, in accordance with the empirical evidence obtained, the bigger the perceived risk is, the
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3 greater the entrepreneurial intentions and desirability are towards that type of behavior for the incubated
4 entrepreneurs. These results can be justified for the conception of risk as an opportunity (Dickson and Giglierano
5 1986; Barbosa *et al.* 2007a), which says that the risk perceived is an indicator of the potential benefits of starting a
6 new business. Additionally, according to the empirical evidence obtained perceived risk does not exert a significant
7 effect on perceived feasibility, which reinforces the finding that nascent entrepreneurs perceive risk more as an
8 indicator of opportunities than as a barrier for creating a new business. Moreover, the effect of perceived risk on
9 feasibility could be inhibited due to explicitly considering other explanatory variables related to restrictions or
10 facilitators to entrepreneurship such as self-efficacy and the facilitating conditions available.
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19 INSERT FIGURE 3 HERE

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21 The results obtained in our research show that perceived feasibility in entrepreneurship is positively
22 influenced by entrepreneurs' perceptions about self-efficacy (H4) and the existing facilitating conditions to carry it
23 out (H5). More specifically, it's worth mentioning that despite some authors (Krueger 1993; Krueger and Brazael
24 1994; Guerrero *et al.* 2008) assume the concepts of feasibility and self-efficacy, the facilitating conditions have a
25 more intense effect on perceived feasibility than perceived self-efficacy. Therefore, our results confirm the
26 difference between feasibility and self-efficacy and manifest the need to incorporate the facilitating conditions into
27 the models on entrepreneurial intentions.
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35 Finally, the empirical evidence obtained demonstrates that users' perceptions about the performance of the
36 incubators providing their services positively affects desirability (H6), self-efficacy (H8) and the facilitating
37 conditions (H9). Contrarily, a significant influence is not observed on the perceptions about the performance of the
38 incubators concerning perceived risk (H7). These results determine that the services provided by business incubators
39 reinforce the predisposition of the incubated individuals to start their own business. Furthermore, the incubated
40 individuals believe the incubators contribute to increasing their self-efficacy in creating the business and improve
41 the conditions to carry the process out through access to technological resources, funding and business networks.
42 However, they do not contribute to reduce the perception of risk, which in any case acts more as an incentive than as
43 a deterrent to entrepreneurship, as it has been previously mentioned. Accordingly, a better performance of the
44 incubator may not reduce risk perception in creating a new business, because for nascent entrepreneurs perceived
45 risk is more an encouragement (indicator of future opportunities) than a barrier for entrepreneurship.
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5. Conclusions

Taking the entrepreneurship models based on the beliefs-attitude-intention relation (Shapero and Sokol 1982; Krueger and Brazael 1994; Krueger 2009) as a reference, this research examines the effect that incubator performance has during the pre-incubation phase on entrepreneurial intentions and its antecedents. More specifically, the results that were obtained confirm that perceived desirability and feasibility in entrepreneurship positively influence the incubated individuals' intentions to start their own business. Also, the risk perceived by the incubated individuals is observed to have a positive influence on entrepreneurial intentions and on the desirability attributed to those actions. Furthermore, it is been confirmed that perceived feasibility of the business initiative is positively influenced by the incubated individuals' perceptions with respect to self-efficacy and the facilitating conditions to start their own business. Finally, the empirical evidence that has been obtained supports the positive effect of the perceived performance of the business incubators during the pre-incubation stage on the desirability attributed to that behavior and on self-efficacy and the facilitating conditions to start their own business.

The results of this research provide various relevant conclusions with respect to the previous academic literature. First of all, this paper contributes to the limited amount of empirical evidence on the effects of incubator services in the entrepreneurship process (Schwartz 2011). Specifically, this research is focused on the stage before the creation of a company and adopts an approach that is based on the perspective of the entrepreneur, which is barely explored in the available literature (Hannon 2005; Meru and Struwig 2011). In that sense, it has been confirmed that the performance of the business incubators has a favorable influence on the entrepreneurial process during the pre-incubation stages, which reinforces the incubated individuals' perceptions with respect to desirability, self-efficacy and the facilitating conditions to start a business. In accordance with these results, and coinciding with the approaches of Fernández-Ballesteros *et al.* (2002), Kickul (2006) or Kuehn (2008), the social environment favorable to entrepreneurship that is provided by incubators fosters the desirability attributed to this type of behavior by entrepreneurs. At the same time, along the lines of the results of Stephens and Onofrei (2012), the counselling services and the access to resources and contact networks have an influence on the self-efficacy perceived by the incubated individuals and on the perception about the most favorable facilitating conditions to start a business.

This study also supposes a contribution on a theoretical and conceptual level from the identification of two antecedents of the feasibility that are associated with entrepreneurship: the self-efficacy of the individual and the facilitating conditions to start a business. Therefore, compared to the theoretical approaches that liken feasibility to

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3 self-efficacy (Krueger 1993; Krueger and Brazael 1994; Guerrero *et al.* 2008) or only consider self-efficacy to be an
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5 antecedent to feasibility (Krueger, 2009), our results confirm that feasibility is also determined by the perceived
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7 facilitating conditions. Furthermore, the empirical evidence obtained shows that perception about the facilitating
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9 conditions has a stronger effect on feasibility than self-efficacy.

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11 Another finding that has relevant implications to entrepreneurship theory is related to the effect of the
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13 perceived risk. In that sense, in contrast to the traditional approach, which conceives risk as a barrier or impediment
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15 to entrepreneurship (Kolvereid 1996; Simon *et al.* 2000; Keh *et al.* 2002; Janney and Dess 2006), according to the
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17 empirical evidence obtained, perceived risk has a positive effect on entrepreneurial intentions and the desirability
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19 attributed to this type of behavior in incubated individuals. These results support the conceptualization of risk as an
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21 opportunity (Dickson and Giglierano 1986), which means that entrepreneurs would associate the risk with the
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23 potential benefits when create a business. As a consequence, seeing risk as an opportunity would have a positive
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25 influence on entrepreneurial intentions (Barbosa *et al.* 2007a) or on the perceived desirability to start a business
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27 (Nabi and Liñán 2013). g

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29 The results of this research also have relevant implications from an applied point of view, especially for the
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31 management of business incubators. Firstly, the effectiveness of these types of organizations to provide incentives
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33 and facilitate the creation of new companies is confirmed (Bergek and Norman 2008), which justifies investment in
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35 business incubators on a public as well as private level. Moreover, from a business incubator management point of
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37 view, evidence is found on the relevance of the different types of services provided (Kilcrease 2011; Vanderstraeten
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39 and Matthyssens 2012) in order to reinforce entrepreneurial intentions during the pre-incubation stage. In that sense,
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41 and in line with previous literature (Bollingtoft and Ulhoi 2005, Ascigil and Magner 2009), the business incubators
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43 need to provide a social environment that is favorable to entrepreneurship by facilitating the contact with
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45 professionals, counsellors and mentors who reinforce the entrepreneurs' perceived desirability to start a business
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47 depending on its feasibility and opportunity. Furthermore, our results show that incubators have to provide
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49 counselling and training services that increase the perceived self-efficacy by the incubated individuals (Voisey *et al.*
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51 2006) as well as access services to find resources that improve the facilitating conditions to start a business. Finally,
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53 our study is focused on the perceptions of the incubated individuals, which means that an adequate management of
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55 an incubator not only requires good performance in the provision of these services but it also has to be
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3 communicated and explained correctly to its users. That means it's necessary to establish the correct types of
4 information mechanisms so that incubates can truly feel the quality of the services provided to them.
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7 To conclude, it is necessary to mention that in spite of the systematic methodology followed throughout the
8 development of this paper, the research that was carried out does present some limitations. First, this study is
9 focused on Mexico and specifically on the business incubator system of the Monterrey Institute of Technology and
10 Higher Education, which could limit the generalization of the results. However, it would be interesting to replicate
11 the research in other geographical areas in order to examine potential cross-cultural differences. Furthermore,
12 according to GEM (2014), Mexico is highly representative of the Latin American countries regarding
13 entrepreneurship. Additionally, the Monterrey Institute of Technology and Higher Education was chosen as a
14 reference because it is a leading academic institution in Latin America in training and support for entrepreneurship.
15 Moreover, this study takes entrepreneurial intentions as a dependent variable, but it does not examine the actual
16 entrepreneurial behavior. This is to say, it does not measure a posteriori if entrepreneurial intentions are actually
17 leading to the creation of a new business. In that sense, it would be interesting to examine the actual entrepreneurial
18 behavior of the subjects in future research.
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For Review Only

Appendix 1

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5	Entrepreneurial Intention
6	INT1. I have the clear intention to create my own business in less than one year.
7	INT2. My professional objective is to create my own business in less than one year.
8	INT3. I am determined to create my own business in less than one year.
9	INT4. I will do anything possible to create my own business in less than one year.
10	Desirability
11	DES1. The idea of creating my own business seems attractive to me.
12	DES2. The idea of creating my own business really appeals to me.
13	DES3. Creating my own business would be a huge satisfaction for me.
14	DES4. My calling is to create my own business.
15	Feasibility
16	FEA1. Creating a business in less than one year would be easy for me.
17	FEA2. It's very feasible to create my own business in less than one year.
18	FEA3. For me it will be simple to create my own business in less than one year.
19	FEA4. I'm in a good position to create my own business in less than one year.
20	Perceived Risk
21	RSK1. Creating a business is very risky.
22	RSK2. The probability that the new business fails is very high.
23	RSK3. There is a lot of uncertainty around the success of a newly created business.
24	RSK4. A lot of risks exist that are associated with the creation of a new business.
25	Self-efficacy
26	SEF1. I believe I am capable of developing innovative ideas and products.
27	SEF2. I can identify new market opportunities for innovative products and services.
28	SEF3. I am able to discover new forms of existing products.
29	SEF4. I am capable of identifying business opportunities with growth potential.
30	SEF5. I am able to react rapidly to take advantage of business opportunities.
31	SEF6. I believe I am capable of creating new products that satisfy customers' unsatisfied needs.
32	SEF7. I can design a plan of action to take advantage of business opportunities.
33	Facilitating conditions
34	FCO1. The minimum capital necessary to create a business can be accessed easily.
35	FCO2. It's easy to find the necessary contacts to be able to take a business forward.
36	FCO3. It's easy to gain access to experts to develop a new business.
37	FCO4. I could easily get access to specialised counselling in a sector of specific activity.
38	FCO5. It's easy to share experiences with successful entrepreneurs in order to develop a business.
39	FCO6. It's easy to access physical spaces (offices, meeting rooms, laboratories, etc...) during the business creation stage.
40	Evaluation of business incubator
41	BIP1. The installations and infrastructures the incubator offers favour the creation of your own business.
42	BIP2. The incubator allows for access to high-level tutors and counsellors, which favours the creation of your own business.
43	BIP3. The incubator allows you to access the experience of successful entrepreneurs and business people, which favours the creation of your own business.
44	BIP4. The incubator facilitates the access to contact networks that favour the creation of your own business.
45	BIP5. The incubators facilitates the access to funding sources to create your own business.
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Appendix 2

Variable	Mean	Standard Dev.	Skewness	Kurtosis
INT1	4.63	0.72	-2.03	3.46
INT2	4.36	0.96	-1.57	1.79
INT3	4.53	0.97	-2.25	4.43
INT4	4.48	0.96	-1.91	2.91
DES1	4.74	0.73	-3.78	15.71
DES2	4.75	0.77	-3.96	16.19
DES3	4.71	0.85	-3.46	11.83
DES4	4.49	0.86	-2.05	4.54
FEA1	3.38	1.12	-0.25	-0.65
FEA2	3.83	1.08	-0.73	-0.08
FEA3	3.52	1.07	-0.31	-0.42
FEA4	4.39	0.83	-10.29	0.97
RSK1	3.33	1.11	-0.23	-0.40
RSK2	3.33	1.17	-0.10	-0.82
RSK3	3.51	1.09	-0.35	-0.45
RSK4	3.58	1.08	-0.37	-0.53
SEF1	4.59	0.69	-2.06	5.55
SEF2	4.45	0.75	-1.73	4.43
SEF3	4.38	0.77	-1.33	2.23
SEF4	4.19	0.85	-0.91	0.57
SEF5	4.11	0.86	-0.91	0.65
SEF6	4.37	0.82	-1.50	2.67
SEF7	4.31	0.85	-1.31	1.83
FCO1	3.08	1.19	0.05	-0.79
FCO2	3.25	1.11	-0.08	-0.62
FCO3	3.54	1.04	-0.25	-0.61
FCO4	3.61	0.99	-0.14	-0.83
FCO5	3.73	1.04	-0.70	0.09
FCO6	3.51	1.15	-0.27	-0.81
BIP1	4.27	0.97	-1.34	1.32
BIP2	4.36	0.96	-1.61	2.29
BIP3	4.21	1.05	-1.31	0.93
BIP4	4.06	1.12	-0.98	0.01
BIP5	3.79	1.27	-0.82	-0.41

Appendix 1

<p>Entrepreneurial Intention</p> <p>INT1. I have the clear intention to create my own business in less than one year.</p> <p>INT2. My professional objective is to create my own business in less than one year.</p> <p>INT3. I am determined to create my own business in less than one year.</p> <p>INT4. I will do anything possible to create my own business in less than one year.</p>
<p>Desirability</p> <p>DES1. The idea of creating my own business seems attractive to me.</p> <p>DES2. The idea of creating my own business really appeals to me.</p> <p>DES3. Creating my own business would be a huge satisfaction for me.</p> <p>DES4. My calling is to create my own business.</p>
<p>Feasibility</p> <p>FEA1. Creating a business in less than one year would be easy for me.</p> <p>FEA2. It's very feasible to create my own business in less than one year.</p> <p>FEA3. For me it will be simple to create my own business in less than one year.</p> <p>FEA4. I'm in a good position to create my own business in less than one year.</p>
<p>Perceived Risk</p> <p>RSK1. Creating a business is very risky.</p> <p>RSK2. The probability that the new business fails is very high.</p> <p>RSK3. There is a lot of uncertainty around the success of a newly created business.</p> <p>RSK4. A lot of risks exist that are associated with the creation of a new business.</p>
<p>Self-efficacy</p> <p>SEF1. I believe I am capable of developing innovative ideas and products.</p> <p>SEF2. I can identify new market opportunities for innovative products and services.</p> <p>SEF3. I am able to discover new forms of existing products.</p> <p>SEF4. I am capable of identifying business opportunities with growth potential.</p> <p>SEF5. I am able to react rapidly to take advantage of business opportunities.</p> <p>SEF6. I believe I am capable of creating new products that satisfy customers' unsatisfied needs.</p> <p>SEF7. I can design a plan of action to take advantage of business opportunities.</p>
<p>Facilitating conditions</p> <p>FCO1. The minimum capital necessary to create a business can be accessed easily.</p> <p>FCO2. It's easy to find the necessary contacts to be able to take a business forward.</p> <p>FCO3. It's easy to gain access to experts to develop a new business.</p> <p>FCO4. I could easily get access to specialised counselling in a sector of specific activity.</p> <p>FCO5. It's easy to share experiences with successful entrepreneurs in order to develop a business.</p> <p>FCO6. It's easy to access physical spaces (offices, meeting rooms, laboratories, etc...) during the business creation stage.</p>
<p>Evaluation of business incubator</p> <p>BIP1. The installations and infrastructures the incubator offers favour the creation of your own business.</p> <p>BIP2. The incubator allows for access to high-level tutors and counsellors, which favours the creation of your own business.</p> <p>BIP3. The incubator allows you to access the experience of successful entrepreneurs and business people, which favours the creation of your own business.</p> <p>BIP4. The incubator facilitates the access to contact networks that favour the creation of your own business.</p> <p>BIP5. The incubators facilitates the access to funding sources to create your own business.</p>

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Figure 1. Shapero-Krueger Model

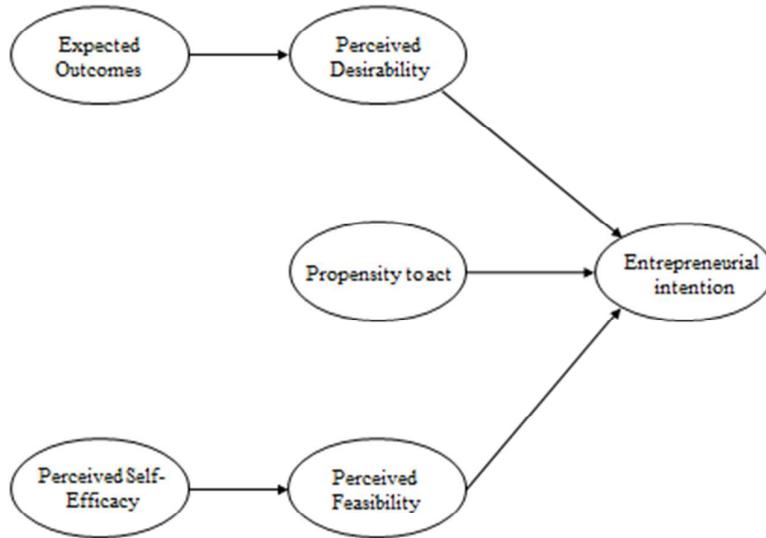
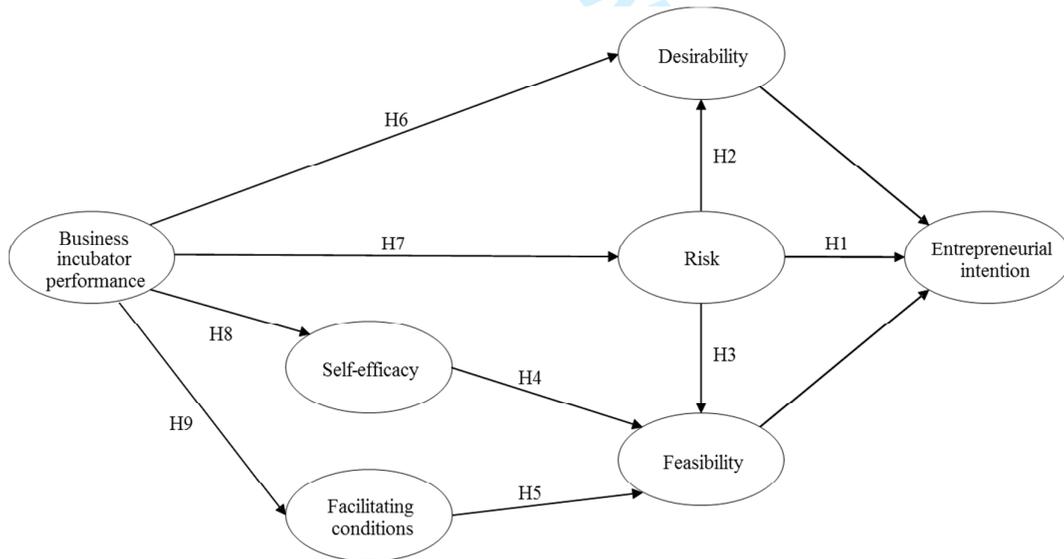


Figure 2. Research Model



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Figure 3. Structural model estimation

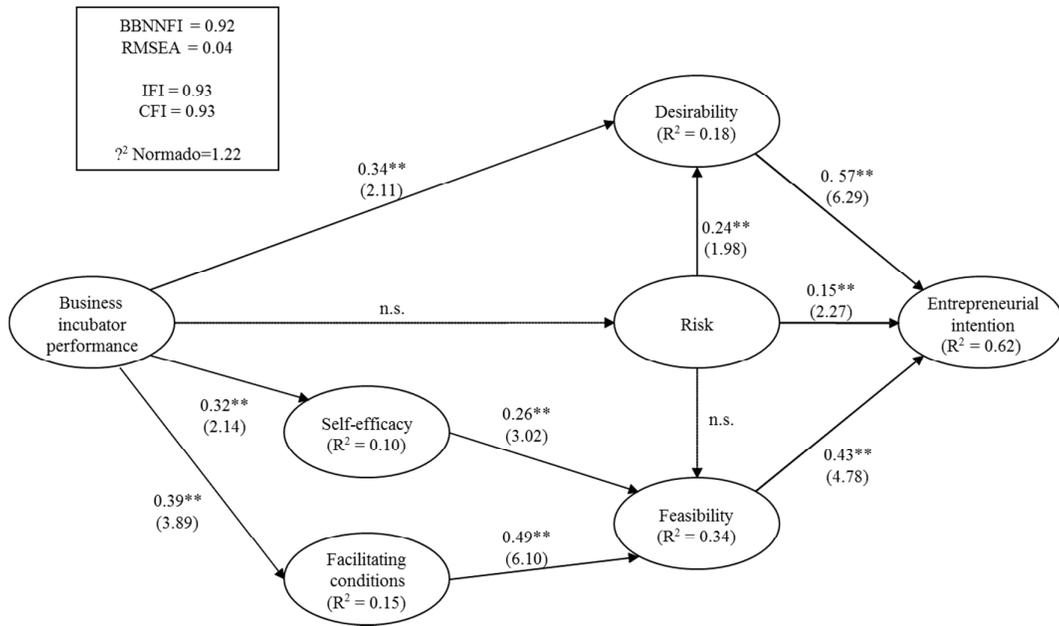


Table 1. Socio-demographic profile of the sample

Variable	%	Variable	%
Gender		Education field (finished / on course)	
Male	58.3	Business	52.5
Female	41.7	Engineering	32.7
Age		Humanities	12.3
24 years or less	53.1	Health	2.5
25 to 34 years	27.4	Entrepreneur in the family	
35 years or more	19.5	Yes	65.9
Education		No	34.1
Secondary	26.1	Occupation	
Graduate	57.6	Student	74.8
Post-graduate	11.5	Employee	18.4
Doctorate	4.8	Unemployed	6.7

Table 2. Confirmatory factor analysis for the model variables

Latent variable	Measured variable	Stand. Lambda	R ²	α Cronbach	Composite Reliability	AVE	Goodness of fit
Entrepreneurial Intention	INT1	0.80	0.64	0.90	0.89	0.67	BBNFI = 0.93 RMSEA = 0.03 IFI = 0.94 CFI = 0.94 S-B χ^2 Normed=1.18
	INT2	0.81	0.65				
	INT3	0.87	0.77				
	INT4	0.80	0.64				
Desirability	DES1	0.86	0.74	0.91	0.92	0.74	
	DES2	0.94	0.89				
	DES3	0.91	0.84				
	DES4	0.72	0.51				
Feasibility	FEA1	0.90	0.81	0.88	0.88	0.71	
	FEA2	0.78	0.60				
	FEA3	0.85	0.72				
Risk	RSK1	0.73	0.54	0.88	0.88	0.66	
	RSK2	0.76	0.58				
	RSK3	0.85	0.72				
	RSK4	0.89	0.80				
Self-efficacy	SEF1	0.71	0.50	0.90	0.90	0.57	
	SEF2	0.82	0.67				
	SEF3	0.78	0.61				
	SEF4	0.77	0.59				
	SEF5	0.73	0.53				
	SEF6	0.79	0.63				
	SEF7	0.70	0.49				
Facilitating conditions	FCO1	0.77	0.59	0.90	0.90	0.60	
	FCO2	0.76	0.57				
	FCO3	0.81	0.65				
	FCO4	0.79	0.62				
	FCO5	0.76	0.58				
	FCO6	0.75	0.57				
Business incubator performance	BIP1	0.81	0.65	0.92	0.91	0.68	
	BIP2	0.81	0.66				
	BIP3	0.83	0.86				
	BIP4	0.89	0.79				
	BIP5	0.78	0.60				

Table 3. Confidence intervals for the correlations between pairs of latent variables

Latent variable	1. Entrepreneurial Intention	2. Desirability	3. Feasibility	4. Risk	5. Self-efficacy	6. Facilitating conditions
2. Desirability	0.693 (0.531 ; 0.855)					
3. Feasibility	0.522 (0.354 ; 0.690)	0.227 (-0.005 ; 0.459)				
4. Risk	0.216 (0.006 ; 0.426)	0.251 (-0.007 ; 0.509)	-0.193 (-0.405 ; 0.019)			
5. Self-efficacy	0.388 (0.130 ; 0.646)	0.505 (0.217 ; 0.793)	0.408 (0.268 ; 0.548)	0.050 (-0.164 ; 0.264)		
6. Facilitating conditions	0.308 (0.120 ; 0.496)	0.223 (-0.023 ; 0.469)	0.568 (0.442 ; 0.694)	-0.209 (-0.421 ; 0.003)	0.312 (0.150 ; 0.474)	
7. Business incubator performance	0.268 (0.038 ; 0.498)	0.335 (0.105 ; 0.565)	0.121 (-0.075 ; 0.317)	0.025 (-0.247 ; 0.197)	0.314 (0.104 ; 0.524)	0.391 (0.197 ; 0.585)

Table 4. Shared variances (squared correlations) between pairs of construct

	1. Entrepreneurial Intention	2. Desirability	3. Feasibility	4. Risk	5. Self-efficacy	6. Facilitating conditions
2. Desirability	0.480					
3. Feasibility	0.272	0.052				
4. Risk	0.047	0.063	0.037			
5. Self-efficacy	0.151	0.255	0.166	0.003		
6. Facilitating conditions	0.095	0.050	0.323	0.044	0.097	
7. Business incubator performance	0.072	0.112	0.015	0.001	0.099	0.153