WHO IS AN INTRAPRENEUR?

Abstract

Using a sample that is employed from a special theme study about Entrepreneurial Employee Activity of the Global Entrepreneurship Monitor 2011, this thesis investigates which variables are significantly correlated with an employee's engagement in intrapreneurial activities. Following existing literature in economics, this study links such an engagement to demographic, economic and organizational characteristics. More specifically, the results show that gender, age, income, education, job function and an employees' region of residence matter in be(com)ing an intrapreneur. In addition, perceptual variables, such as entrepreneurial self-efficacy and lack of fear of business failure are significantly associated with one's engagement in intrapreneurial activities. Although the data do not allow the identification of causal relationships and, in particular, a generalization of the results because of the single-country set-up, the results provide some unique insights which contribute to the scarcity of empirical research on intrapreneurship, and thus, to our better understanding of the phenomenon

Preface

Writing this preface, in my case means writing it "5 voor 12". I think all my life I have been doing things at the last moment, (un)successfully. It is something that is embedded in myself, which i cannot deny anymore. At least, that is what I have learned, among others, during my thesis "play time". Although I have experienced a lot of pressure when doing things at the last moment, it somewhat gave me also a lot of inspiration. For example, I think you are still reading my inspirational preface because now you are laughing and thinking, "how does he know that I am still reading his preface?". For the first time, I do not have to think twice about writing something, as was the case in recent months. Who is going to correct me now for being "me"?. Somewhere, I am going to miss it because I have learned a lot from my supervisor, Peter van der Zwan. In this way, I want to thank him for his supervision, statistical knowledge, theoretical insights, and above all: his patience. I will never forget his words in a moment when we had a meeting after not had any contact for a while: "Wat dacht je? Je levert even 30 pagina's in uit het niets?". This gave me the inspiration to give him another 70 pages. Also, I want to thank my family, (girl)friend(s), and my neighbors, who I do not know by name, but who have been asking me periodically: "hoe gaat het met je scriptie?". You all made me finish it on time.

Table of contents

1. Introduction

Entrepreneurship and its mindset (i.e. entrepreneurial behavior) have been emerging widely for the past years. Indeed, worldwide there tends to be a radical shift from managing economies to entrepreneurial economies. For example, governments of both the Organization for Economic Co-operation and Development[1] (OECD) countries and of several east European countries have taken the trend of restructuring their economies, which has resulted in the emergence of entrepreneurship (Audretsch and Thurik, 2001; Petrin et al., 1996). Ever since the work of Schumpeter[2], there has been much empirical research on entrepreneurship and its effect on the economy. Consequently, one of the most important empirical conclusions is the fact that entrepreneurship significantly contributes to productivity growth, employment creation and innovation (Audretsch and Thurik, 2001; Van Praag and Versloot, 2007). Although entrepreneurship tends to be beneficial for society, the concept consists of people i.e., entrepreneurs. Since their behavior seems the real reason that provokes the many benefits of the concept, it is all the more important to investigate who these entrepreneurial individuals are and what drives them to be engaged in entrepreneurship. Thus, there is a wide variety of literature regarding the individual-level determinants of entrepreneurship (Gianneti and Simonov, 2004; Van Praag and Van Ophem, 1995). However, as researchers have been mainly focusing on the concept of entrepreneurship and its determinants at both micro and macro-level (Sternberg and Wennekers, 2005; Freytag and Thurik, 2007) the question remains to what extent this entrepreneurial mindset can be applied at meso-evel, i.e., entrepreneurial behavior within organizations.

In line with this, Shane and Venkataraman (2000) divide the literature of entrepreneurship into two different "*modes of exploitation*". On the one hand there is individual entrepreneurship, i.e., opportunity pursuit by individuals owning or managing a business for their own account and risk. On the other hand there is entrepreneurship within organizations, i.e., opportunity pursuit by individuals within existing organizations. This latter "*mode of exploitation*" is relatively new to management science where mainly theoretical studies have endeavored to define a clear academic definition of the concept (Antoncic and Hisrich, 2003; Borch et al., 1999; Burch, 1986; Burgelman, 1983, 1984; Carrier, 1994; Covin and Slevin,

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[1] The mission of the OECD is to promote policies that will improve the economic and social well-being of people all around the world. It provides a forum where governments can work together to share experiences and seek solutions to common problems.

[2] Joseph Alois Schumpeter was a renowned Austrian American economist. His work was mainly derived and inspired by the Historical School of economics. It is presumable that he was the first scholar who introduced the (fundamental) theories regarding entrepreneurship.

1986; Pinchot, 1985; Souder, 1981; Stopford and Baden-fuller, 1994; Storey, 1994; Zahra, 1991). Within this second "*mode of exploitation*", a distinction can be made between top-down processes and bottom-up processes, i.e., corporate entrepreneurship (CE) and intrapreneurship[3]. Although literature has been mainly focusing on CE, studies about intrapreneurship are on the rise, which is not unjustified as the value of the concept is recognized: improvement of organizational profitability, strengthening a company's competitive position and making strategic renewal possible of existing businesses within organizations (Bosma et al., 2012; 2013; De Jong et al., 2013; Parker, 2009; 2011; Stam et al., 2012). However, there is still a lack of empirical research on intrapreneurship where in particular not much is known about the entrepreneurial employees behind the concept, i.e., intrapreneurs. Thus, it would be interesting to examine whether there are particular determinants, just as is the case with entrepreneurs, that influence the likelihood of an employee to be engaged in intrapreneurial activities, i.e., to become an intrapreneur. Investigating this would be an important contribution to the current literature of intrapreneurship as it would strengthen the theoretical framework of the concept (Goodwin, 2005). Hence, this leads to the following research question:

Which employees are most likely to be engaged in intrapreneurial activities?

In order to structurally answer the research question, the hypotheses will be classified according to the following determinants: (1) Demographics; (2) Human capital; (3) Perceptions (4) Job function and (5) Type of organization[4]. So far, only the demographic determinants have been empirically investigated by Bosma et al. (2013). Hence, in order to empirically test the hypotheses, a unique dataset is used from the 2011 Global Entrepreneurship Monitor (GEM), which for the first time has provided a special theme study on entrepreneurial employees. This special theme study, which in this thesis is solely related to the Netherlands, contains individual level data on several aspects, such as demographics, educational attainment and entrepreneurial perceptions and attitudes. Thus, a multivariate analysis is provided where binary logit regressions are performed in order to examine the influence of multiple determinants on the engagement in intrapreneurial activities. For example, these binary logit models examine whether certain job functions, such as managerial

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[3] For the remainder of this thesis, corporate entrepreneurship represents the study of entrepreneurship within organizations at the organizational level, whereas intrapreneurship represents the study of organizations at the employee level. Thus, these definitions are used interchangeably.

[4] These determinants have been chosen for the analysis on the basis of availability of the dataset.

functions, significantly increase the likelihood of an employee to be involved in intrapreneurial activities. The dependent variable indicates whether employees, for the past three years, have been involved in the development of new products for their organization. More specifically, with this information conclusions can be drawn on the individual-level determinants of intrapreneurship as the differences between employees and intrapreneurs are exposed. Further on, this thesis contributes to the existing literature by, first of all, providing a clear definition – made possible by the special theme study of GEM on entrepreneurial employees – of intrapreneurship, which is suitable for empirical research. Second, this thesis carries out an in-depth empirical analysis where not only new empirical evidence is provided for the demographic factors, but also empirical evidence of individual-level determinants that have never been empirically investigated before, such as the relationship between an employees' job function and being engaged in intrapreneurial activities.

This thesis is of interest to (potential) intrapreneurs as well as policymakers. In addition, economies in general can likewise undoubtedly use more entrepreneurial individuals as entrepreneurial employee activity is acknowledged to have a positive effect on economic development (Bosma et al., 2012; 2013). However, this does not imply that everyone is able to become an intrapreneur. Consequently, if research can determine which employees are most likely to become an intrapreneur, this can provide useful insights. For example, if employees are better informed about certain determinants that ensure them to be engaged in intrapreneurial activities, e.g., managerial job-functions or education, then they can adjust their goals accordingly. Further on, most organizations would benefit as intrapreneurs change the state of mind of organizations from cost-cutting, down-sizing and reengineering, to fully concentrate on customer value creation, which results in new revenues (Coulson-Thomas, 1999). Consequently, organizations can better serve their stakeholders' needs (owners, employees and the community) through the intrapreneurial initiatives. This capability can serve as a hidden asset requiring an entrepreneurial culture within organizations and an appropriate institutional framework.

Regarding the demographic factors, the regression results show that male and older employees are more likely to become an intrapreneur than female and younger employees. In addition, age becomes negatively related with intrapreneurship, up to a certain point, which implies that there is an inverted U-shaped relationship. Another interesting demographic result is the fact that employees who live in urban areas have a higher probability to be

engaged in intrapreneurial activities than those residing in rural areas. In line with the expectations, there is significant evidence that higher-educated employees are more likely to be involved in intrapreneurial activities. In addition, employees who are characterized by larger household incomes are also more likely to be involved in intrapreneurial activities. Further on, it can be concluded that managerial job functions, such as sales-managers, first-floor managers and senior managers as well as directors, are significantly positively related to intrapreneurship. In line with this, it might be expected that these particular job functions are most common in profit-driven organizations. However, there is no significant evidence for a direct relationship between profit-driven organizations versus non-profit organizations and intrapreneurship. Finally, the results show that intrapreneurs seem to have the same entrepreneurial perceptions as entrepreneurs.

The remainder of this thesis is structured as follows. Chapter 2 contains an overview of the literature regarding corporate entrepreneurship and intrapreneurship. Accordingly, the definitions are not only discussed in-depth, but it becomes clear what the differences are and how the two concepts have evolved from each other. Subsequently, some hypotheses will be derived. Further on, Chapter 3 describes the dataset and methodology that is employed to examine the research question. Chapter 4 contains a bivariate and multivariate analysis. Chapter 5 contains a discussion of the results and some limitations of this study. Finally, Chapter 6 contains the conclusion.

2. Literature review

In order to get an idea of the current state of knowledge, this chapter contains an extensive overview of the most important literature regarding intrapreneurship. Since intrapreneurship is part of the entrepreneurship within organizations domain, a logical step is to provide an overview of the current definitions regarding this domain. Subsequently, the focus turns on the formulation of the hypotheses by, first of all, discussing the most appropriate measurement of intrapreneurship. More specifically, since there is no generally accepted measurement of intrapreneurship, a short overview is provided of the most frequently used measurements. Second, since empirical research on the individual-level determinants of intrapreneurship is in its infancy (Bosma et al., 2012; 2013), I will, where necessary, rely on empirical evidence about the individual-level determinants of entrepreneurship. In this way, the hypotheses get more strength as being engaged in intrapreneurial activities is about entrepreneurial intentions, which implies that intrapreneurs can be seen as entrepreneurs within organizations (Pinchot, 1985).

2.1 Delineating intrapreneurship

Pinchot and Pinchot (1978) derived the word "intrapreneur" from the term "intra-corporate entrepreneur" which refers to the fact that an intrapreneur is an entrepreneur working for a large organization (Burgelman, 1983; Covin and slevin, 1991). Moreover, the concepts of corporate entrepreneurship and intrapreneurship are an extension of the entrepreneurship concept. Therefore, in order to understand the developments within the literature, it is useful to have a look at the definition of entrepreneurship, before the focus turns on corporate entrepreneurship and intrapreneurship.

2.1.1 Entrepreneurship

The term "entrepreneurship" is common in the contemporary literature. Since it was referred to as someone who "*undertakes*" an activity by Cantillon[5] (1734), it has been understood and defined in many ways. Up to the present day, there are many definitions and contributors of the concept, which is resulting in a lack of an agreed upon definition (Van Praag, 1999). Many definitions are almost identical, e.g., Casson (1982, p.23) defines entrepreneurship as "*someone who is specialized in making judgmental decisions about the co-ordination of scarce resources*", whereas Hébert and Link (1989, p.47) define entrepreneurship as "*someone who specializes in taking responsibility for and making judgmental decisions that*

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[5] See Thornton (1998).

affect the location, the form, and the use of goods, resources, or institutions". Other scholars have expressed entrepreneurship as "*carrying out new combinations*" (Schumpeter, 1934, p.74), "*the set of behaviors that initiates and manages the reallocation of economic resources and whose purpose is value creation through those means*" (Herron and Robinson, 1993, p.283) and "*the resource, process, and state of being through and in which individuals utilize positive opportunities in the market by creating and growing new business firms*" (Gries and Naudé, 2011, p.217). Although it is empirically acknowledged that the value of entrepreneurship is a significant contribution to productivity growth, employment creation and innovation (Van Praag and Versloot, 2007), it seems harder to agree upon a common definition. The reason for this is that entrepreneurship is closely linked to a complex set of adjacent and overlapping areas, such as management of change, innovation, technological and environmental turbulence, new product development, small business management, individualism and industry evolution (Low and MacMillan, 1988). Also, entrepreneurship can be studied from various disciplines such as psychology, economics, sociology, finance, history and anthropology, each of which uses its own concepts.

Despite of the fact that there is still no agreement upon a common definition, a distinction can be made between two views in the literature (Sternberg and Wennekers, 2005). The first view refers to the "*occupational notion of entrepreneurship*". This view is characterized by a dynamic and static perspective where the focus is on the creation of new businesses and the number of business owners. The second view refers to the *"behavioral notion of entrepreneurship"* where the focus is on entrepreneurial behavior in the sense of seizing an economic opportunity. It differs from the first view on the basis of the fact that individuals who pursue opportunities, do not have to be business owners. Instead, they may be entrepreneurial employees. Accordingly, this thesis extends the behavioral notion of entrepreneurship by focusing on the determinants of intrapreneurship at micro-level, i.e., recognizing employees who are most likely to seize an economic opportunity within organizations. Hence, the following subsection builds upon this view by amplifying the entrepreneurship within organizations domain. More specifically, the definition of corporate entrepreneurship and intrapreneurship are discussed and the fact how they have evolved from each other.

2.1.1 Corporate entrepreneurship

David Birch (1979) was one of the first researchers who claimed that small new firms are the engine of job creation in the economy. In addition, Acs and Audretsch (1988) argued that small firms played a major role in the commercialization of new innovations. Thus, these findings suggested a direct link between entrepreneurship and economic growth. In the years that followed, research on the relationship between entrepreneurship and economic growth not only increased, but also gained credibility (Audretsch, 1995; Caves, 1998; Sutton, 1997; Henley, 2005; Van Praag and Cramer, 2001; Van Praag and Versloot, 2007). Simultaneously, research on the topic was extending towards the implementation of entrepreneurship within organizations (Hanan, 1976). Namely, researchers became interested whether the benefits of the "*entrepreneurial spirit*" could be achieved within established organizations. The focus was primarily related to organizational innovations that supplemented the processes of product development by screening product ideas, operating exploratory studies, evaluating their results, and linking industrial needs by matching executable product attributes (Hill and Hlavacek, 1972), but soon the focus shifted on entrepreneurial behavior. Thus, entrepreneurial behavior was understood as a new factor in production, next to the classic ones of land, labor and capital (Duncan et al., 1988). Subsequently, the question became how to incorporate entrepreneurial behavior inside established organizations.

The answer to this question came gradually as entrepreneurship within organizations became conceptualized as an institution of entrepreneurial behavior requiring organizational structure and resource liability for developing innovative products (Alterowitz, 1988; Burgelman, 1984; Schollhammer, 1982). During this period, the conceptualization was met with resistance by scholars who believed that implementing entrepreneurial behavior within organizations was not possible: the conviction was that large bureaucratic companies could not provide the expectations of reward, or the autonomy which entrepreneurial individuals are attached to (Duncan et al., 1988; Morse, 1986). However, in his paper, Morse (1986) contradicted his statement by mentioning some large companies as 3M and Hewlett Packard that succeeded in motivating entrepreneurial employees by establishing a corporate culture that supported the needs of employees. Hence, this ambiguity extended the research in this area as researchers became increasingly convinced with the idea that entrepreneurial behavior not only was possible in large firms, but that it also should be encouraged for the plausible positive effects on firm performance (Burgelman, 1984; Kanter, 1985; Kuratko and Montagno, 1989).

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As time progressed, the idea of entrepreneurial behavior playing an important role in business performance got more credibility. More specifically, this idea had its peak during the digital revolution. It was a time during where organizations restructured their business-models and learned how to strengthen their competitive advantage in the global economy through innovation (Zahra et al., 1999). Innovation, resulting from entrepreneurial behavior, was seen as the cause of economic growth and prosperity (Oliner and Sichel, 2000). Moreover, Covin and Slevin (1991) formulated the main elements that underlie entrepreneurial behavior at the organizational level: (1) innovativeness, (2) pro-activeness and (3) risk-taking. Hence, these three elements were seen as an attitude that management should adopt in order to create corporate change, flexibility and renewal (Covin and Slevin 1989; Lumpkin and Dess 1996; Miller 1983). Thus, research in this area extended as the focus turned on the further development of entrepreneurial behavior within organizations (Jennings and Young, 1990; Kurtatko et al., 1990; Zahra, 1991; Merrifield, 1993; Brazeal, 1993, Hornsby et al., 1993; Zahra and Covin, 1995; Barringer and Bluedorn, 1999; Borch et al., 1999). As a result, the effects of entrepreneurship within organizations became clear: profitability (Vozikis et al., 1999; Zahra, 1993), strategic renewal (Guth and Ginsberg, 1990), innovativeness (Baden-Fuller, 1995), developing future revenues by gaining relevant knowledge (McGrath et al., 1994), international success (Birkinshaw, 1997) and efficient allocation of current resources in order to gain competitive advantages (Borch et al., 1999; Covin and Miles, 1999; Covin et al., 2000; Kuratko et al., 2009).

Although many researchers agree upon the positive effects of entrepreneurship within organizations, agreeing upon a common definition seems harder. Numerous definitions are given to describe entrepreneurial behavior within organizations: corporate venturing, internal corporate entrepreneurship, internal entrepreneurship and strategic renewal (Westhead et al., 2011). Scholars have different perspectives on entrepreneurship within organizations where a distinction can be made in the literature between top-down and bottom-up processes. Sharma and Chrisman (1999) consider corporate entrepreneurship (CE) as the definition of entrepreneurship within organizations where they define CE as: "*the process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization*" (Westhead et al., 2011, p.135). According to them, this process is controlled by higher management, making the employees solely the "implementers" of the managements' initiatives. This definition of CE as a top-down process has been widely accepted by scholars as the main

definition of entrepreneurship within organizations (Antoncic and Hisrich, 2003; Bosma et al., 2012; Burgelman, 1984; Guth and Ginsberg, 1990; Morris et al., 2011; Rigtering and Weitzel, 2013; Stevenson et al., 1999; Stopford, 1994; Zahra, 1991). However, a group of scholars has been criticizing the concept as it only covers entrepreneurial behavior at the organizational level. More specifically, the conviction was that entrepreneurship within organizations can be present at every level (Kemelgor, 2002; Monsen and Boss, 2009). Thus, this conviction led to further research on entrepreneurship within organization at the individual level.

2.1.1 Intrapreneurship

Like already discussed, intrapreneurship and CE have been used interchangeably in the literature where many scholars see no differences between the concepts. For example, Lengnick-Hall (1992) positions the concept of intrapreneurship in the "*capability exploitation*" approach; together with *configuration, market-issue*, and *timing* these approaches are part of the concept of CE. In line with this, Storey (1994) positions the concept of intrapreneurship in the internal corporate venturing activities of an organization by assuming that intrapreneurs, together with venture managers, exploit new product markets. In addition, Kenney and Mujtaba (2007) relate intrapreneurship with CE by restating the four types of CE, which was introduced by Thornberry (2001). They position intrapreneurship together with "*corporate venturing*", "*organizational transformation*", and "*industry rule-bending*" as a part of CE.

Although many scholars suggest that intrapreneurship is equivalent to CE, it differs from each other in the following sense. Namely, the doctrine of intrapreneurship focuses on independent initiatives from employees (Pinchot and Pellman, 1999; Pinchot and Pinchot, 1978; Pinchot, 1985; Carrier, 1996) where Pinchot (1985) can be seen as the founder of the concept. In his book[6], he explains intrapreneurship as a revolutionary system that speeds up innovation within organizations by making better use of entrepreneurial talent of employees. Bosma et al. (2012; 2013) underline this philosophy by defining intrapreneurship as the initiatives of employees within organizations to undertake new business activities. In addition, Kuratko et al. (1990) define the concept as an autonomous strategic behavior by employees in order to exploit new business opportunities. Accordingly, in all studies on intrapreneurship, employees are explained as the bottom of the hierarchy, but still possess the freedom to innovate within their organization. Paradoxically, Pinchot (1985) emphasized this by stating that intrapreneurs

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[6] See *Intrapreneuring*, Pinchot (1985)

are employees who are given the freedom to innovate within established organizations. Hence, this freedom can only be achieved with the right organizational environment. Kanter (1984) pointed out the importance of a stimulating environment that gives people the power to act, which arises from the freedom to act, provided from innovating organizations. Thus, it is inevitable to conclude that this organizational setting is a bottom-up process where employees, i.e., intrapreneurs, actually interfere in the process of exploiting new entrepreneurial opportunities (Bosma et al., 2012; 2013). Even though it is arguable that CE, where the demand of a corporate entrepreneurship strategy is equivalent to intrapreneurial initiatives from employees, and intrapreneurship are both concerned about innovative behavior among employees, the entrepreneurial initiatives with CE are responses to requests that correspond with the strategy of the organization. Equally, from an intrapreneurship perspective, interfering in the exploitation of new entrepreneurial opportunities is comprehended as something that is rooted in the individual itself (Amo and Vereid, 2005).

Where the difference is that CE is analyzed at an organizational level, the similarities between CE and intrapreneurship can be expressed in three dimensions: (1) innovativeness, (2) pro-activeness and (3) risk-taking. Thus, each of these dimensions contains other components, which makes the total intrapreneurial phenomenon (Stam et al., 2012). Figure 1 illustrates how each of these elements is defined, and how each component corresponds with the phases of the intrapreneurial process.

Figure 1: Components of intrapreneurship
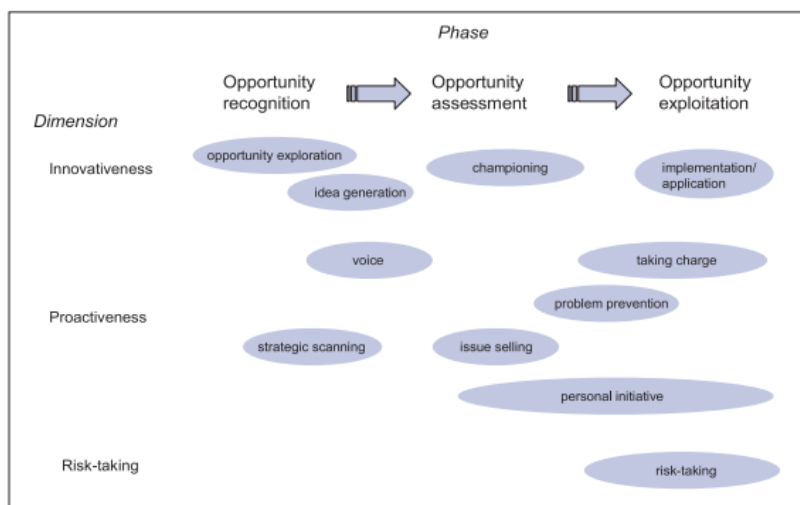
Source: (Stam et al., 2012)

2.1.1.1 Innovativeness

According to the literature of CE, innovativeness is defined as: "*a predisposition to engage in creativity and experimentation through the introduction of new products*" (Rauch et al., 2009: p.763). However, innovativeness can also be applied at the individual level. Indeed, the innovativeness of an employee is ought to be a key element of intrapreneurship. There is a wide variety of literature regarding organizational behavior, which captures various innovative work behaviors during the process of opportunity recognition and exploitation. Hence, Kanter (1988) defines innovation at the individual level as the production, adoption and implementation of useful ideas, including products or processes from outside an organization. Subequently, as can be seen in figure 1, Kanter (1988) expresses individual innovation as a process that begins with the recognition of problems, and opportunities from which ideas are generated. Second, the innovative individual champions the idea to the individual who attempts to support it. Finally, these innovations result in a prototype that can be further developed and adopted by the organization (De Jong and Den Hartog, 2010; Scott and Bruce, 1994).

2.1.1.2 Pro-activeness

Pro-activeness has been defined as an opportunity-seeking, forward-looking perspective characterized by high-awareness of external trends and events acting in anticipation (Rauch et al., 2009). Moreover, Barney (2002) defines entrepreneurial pro-activeness as the ability of the firm to predict where products or services no longer bring added value to customers or do not exist. Hence, the core element of pro-activeness has been expressed as pioneering behavior that results in initiative taking to pursue opportunities (Covin and Slevin, 1989; Lumpkin and Dess, 1996). Pinchot (1985) illustrates the importance of being pro-active within an organization by stating that typical intrapreneurs should anticipate, take control and self-initiate, even if they may get in trouble for going beyond formal job descriptions. In line with this, Parker and Collins (2010) empirically investigated three kinds of pro-active behavior, each capturing multiple components which depend on the employees' aspirations. First, pro-active behavior aims to improve the internal organizational environment by influencing colleagues or by implementing efficient work methods. It includes behaviors like voice (making innovative suggestions and recommending changes even when there is disagreement about the issue), taking charge (voluntary and constructive efforts by employees in order to effect organizational functional change with respect to how work is executed within the context of an employees' job, work unit or organization) and problem prevention (preventing the barriers to work). Second, pro-active behavior aims for a better interaction

between the organization and its environment. This includes strategic scanning (the identification of organizational threats and opportunities) and issue selling (making others aware of threats or opportunities) in order to continue making changes in the broader organizations' strategy. Finally, the third behavior mediates in the relationship between an employee and his/her organizational environment. More specifically, this behavior includes pro-actively seeking feedback, job role negotiation and career self-initiative. Although Stam et al., (2012) conclude this is not part of intrapreneurship as it emphasizes on developing the self rather than the organization, it can be argued that there is a certain interaction between the two actors as it contributes to the development of the employee and thus advancing the organization (Pinchot, 1987).

2.1.1.3 Risk taking

Risk-taking is the final dimension that completes the intrapreneurial process. Risk-taking has been viewed as a fundamental element of entrepreneurship since Cantillon (1734) defined an entrepreneur as a person who bears risk of profit or loss (Hisrich and Peters, 1998; Knight, 1921; McCelelland, 1961; Thornton, 1998). Previous research has shown that risk taking is considered as a distinctive dimension of entrepreneurship within organizations (Covin and Slevin, 1989; Lumpkin and Dess, 1996). It relates to intrapreneurship in the sense of the considerable risk that comes along with intrapreneurial activities as effort and resources must be invested before the distribution of their return is known (Stam et al., 2012). Further on, it can be argued that intrapreneurs prefer moderate rather than high risks, where they try to reduce and manage this as much as possible. However, intrapreneurs are expected to take more risks than other employees as they continuously pursue new opportunities in uncertain environments. Thus, risk-taking can be seen as part of their self.

2.2 Determinants of intrapreneurship

The aim of this thesis is to empirically investigate the determinants of intrapreneurship at the individual level. However, measuring intrapreneurship has proven to be complicated as researchers have their own ideas about the measurements. Moreover, the distinction that is made between CE and intrapreneurship in this thesis, brings both advantages and disadvantages. An advantage is the development of a clear definition of intrapreneurship, which is indispensable for scientific understanding, explanation and prediction (McKelvey, 1982). A disadvantage is the difficulty to measure intrapreneurship. Indeed, the measurements of entrepreneurship within organizations have mainly been focusing on measuring CE (Antoncic and Antoncic, 2011; Zahra, 1991; Zahra and Covin, 1995). Therefore, the

following subsection begins with deriving the most accurate measurement of intrapreneurship, before the focus turns on the determinants and the development of the hypotheses.

2.2.1 Measurements

Empirical research has shown that there are several measurements for entrepreneurship (Parker, 2009). The most frequently used measurements are new venture creation, small firms and self-employment/business ownership (Gartner and Shane, 1995; Parker, 2009). Where measuring entrepreneurship according to the amount of small firms is a more "traditional" measure which pre-dates the 1980s, and self-employment/business ownership is widely implemented via the OECD *Labour Force Statistics* database, new venture creation is operationalized empirically – according to the Total Entrepreneurial Activity (TEA) rate[7] - in the Global Entrepreneurship Monitor (GEM) data collection exercise (Reynolds et al., 2005). Compared with measuring entrepreneurship, measuring intrapreneurship is more difficult as there has not been adopted an accurate and generally accepted measurement. Furthermore, measuring intrapreneurship should not be confused with measuring CE.

More specifically, two frequently used measurements of CE are those from Antoncic and Hisrich (2001) and Zahra (1991; 1993). Hence, Antoncic and Hisrich (2001) developed a four-dimensional measure of, which they call, intrapreneurship. The model is based on two previous key measurement scales from the literature. More specifically, the first scale, i.e., the ENTRESCALE (Khandwalla, 1977; Miller and Friesen, 1978; Covin and Slevin, 1989), is intended to measure a firm's general orientation towards entrepreneurship. The scale includes two main dimensions: (1) orientation toward innovation; and (2) pro-activeness. The second scale of Zahra (1991, 1993) is developed to measure the engagement of the corporation in CE activities, such as venturing, innovation and self-renewal activities. Although Antoncic and Hisrich (2001) combine the two scales in their paper and succeed to confirm their generalizability by performing an cross-cultural empirical analysis, their model fails to depict intrapreneurship as a bottom-up process (Pinchot, 1985). More specifically, the analysis of entrepreneurship within organizations at an individual level is ignored, which makes their measurement a more CE oriented measurement.

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[7] TEA indicates the proportion of the adult population (aged 18-64 years) that is actively preparing to set up an independent business (nascent entrepreneurs) or currently owns an independent business that is less than 42 months old (owner-managers of new businesses).

Regarding intrapreneurship, Van der Sijde et al., (2013) have been attempting to measure the phenomenon to a combined set of key instruments. The first instrument relates to the 10 Freedom Factors of Pinchot (1985). In his book, Pinchot (1985) provides 10 freedoms that stimulate intrapreneurship: (1) self-selection; (2) no hand-offs; (3) doer decides; (4) corporate slack; (5) end the "home run" philosophy; (6) tolerance of risk, failure and mistakes; (7) patient money (8) freedom from turfness; (9) cross-functional teams; and (10) multiple options. The measurement is done with statements where the respondents rate the freedoms on a four point Likert-type scale[8]. Subsequently, the sum of the scores determine the degree of the organizational factors that are present to stimulate intrapreneurship. Thus, these freedoms are widely used to investigate organizational factors of intrapreneurship (Antoncic and Hisrich, 2001; Davis, 1999; Hornsby et al., 2002). The second instrument emphasizes personal characteristics (Davis, 1999). More specifically, the authors point out 8 important personal characteristics for an intrapreneur and question the respondents whether these characteristics are present in themselves and among their colleagues. The personal characteristics as described by Davis (1999) are: (1) show courage and ambition; (2) taking initiatives; (3) creativity; (4) seeking opportunities; (5) enterprising/striving for profit; (6) utilizing opportunities; (7) leadership skills and (8) social skills.

In their study, Van der Sijde et al., (2013) empirically investigate whether top management support and perceived R&D spending has an association with intrapreneurship. They questioned 711 employees via an online questionnaire throughout several Dutch organizations, resulting in 156 correct responses. Their results show that top management support is significantly positively related to intrapreneurship on both indicators. Regarding perceived R&D spending, a significant positive relationship arises between R&D spending and the organizational indicator for intrapreneurship; the more a company spends on R&D, the higher the score on the organizational indicator of intrapreneurship. However, no significant relationship is found between R&D spending and intrapreneurial behavior. Although the authors supply a thoughtful analysis and show some interesting results, there are some disadvantages regarding their indicators. First, the indicators are subject to bias as both the Freedom Factors (Pinchot, 1985) and personal characteristics (Davis, 1999) are based on what the employees perceive, and not necessarily what is factual. Also, while measurements

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[8] Likert-type scales are psychometric scales that use fixed choice response formats, consisting of statements that are designed to measure attitudes (Likert, 1932). In this case, a five-point ordinal scale is used, i.e., strongly agree, agree, disagree and strongly disagree, in order to indicate how much the respondent agrees with the statement.

such as TEA indicate the direct outcomes of entrepreneurial behavior, i.e., actively preparing or owning a business, we cannot derive such direct outcomes from the discussed indicators.

The development of a measure that satisfies the definition of intrapreneurship as a bottom-up process, and indicates the direct outcomes of the concept, was a long wait. To date, international research on entrepreneurship focused on independent entrepreneurial activity where it has given little attention to the pursuit of entrepreneurial opportunities within established organizations, and to the individuals behind these initiatives (Bosma et al., 2012; 2013). However, in an attempt to conceptualize entrepreneurship within organizations, GEM expanded its annual research on entrepreneurial activity by merging a special topic on Entrepreneurial Employee Activity (EEA) within the 2011 GEM Report, for each of the 52 participating countries[9]. This special topic study focuses on the characteristics and role of entrepreneurial employees where EEA is defined as: "*employees who in the past three years were, in one way or another, involved in the preparation, development and implementation of new activities for their main employer*". In addition, GEM distinguishes between two phases of EEA, i.e., "idea development for a new activity" and "preparation and implementation of a new activity". Further on, GEM also makes a distinction between supporting and leading roles with respect to EEA, where both can be applied to a broad and a more narrow definition of EEA[10]. GEM positions EEA as an "safe" alternative for intrapreneurship as it not directly identifies EEA as intrapreneurship because of two reasons: (1) there are different views on the definition of intrapreneurship and (2) the opinions regarding the requirements for a complete measurement of intrapreneurship vary greatly across scholars.

However, in this thesis, I will measure and define intrapreneurship according to the broadest definition of EEA: "*Employees who in the past three years were, in one way or another, involved in the preparation, development and implementation of new activities for their main employer*". In addition to the fact that the availability of data on EEA is a big advantage for the analysis on the individual-level determinants of intrapreneurship, there are two main reasons why EEA can be seen as the most accurate measurement for intrapreneurship: (1) The

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[9] In 2008, the foundation of the measurement was set when several GEM national teams conducted a pilot study on Entrepreneurial Employee Activity (EEA) in 11 countries.

[10] As a measurement for EEA, the authors assess the narrow definition as employees who, in the past three years, have been actively involved in the development of new activities for their main employer, had a leading role in at least one phase of the entrepreneurial process and are also currently involved in the development of such activities. The broad definition is almost identical, except it excludes the current involvement in such activities.

measurement of EEA takes into account the "*pursuing of opportunities*" aspect of employees, as well as the consequences of intrapreneurial behavior (development and implementation of new activities), which is a direct outcome to the organization and (2) the measurement relates to a bottom-up approach – and thus relating to the concept of in intrapreneurship – as it is assumed that employees submit their own ideas for the development, preparation and implementation of an activity[11].

As a response to the special topic on EEA, Bosma et al., (2012; 2013) published the results in two extended editions of the 2011 GEM Global Report. In their first edition (Bosma et al., 2012), the authors provide cross-national evidence on the prevalence of EEA for 52 countries that participated in GEM 2011. More specifically, they looked at three types of entrepreneurship[12] with the aim to provide an extensive picture of entrepreneurship for each of the 52 participating countries. Although their reports address mainly macro-level issues, such as the prevalence of EEA across different countries around the world, they also devote some attention to micro-level issues, which includes the characteristics of entrepreneurial employees. Regarding the macro-level issues, the authors add country data for the prevalence of EEA in the private for-profit sector. They conclude that on average across all 52 countries, two-thirds of the involvement in EEA takes place in the private-for profit sector. Also, they conclude that EEA appears to be present in all three company size classes[13], which is in line with their expectation. Regarding the characteristics of entrepreneurial employees, the authors break down the prevalence rates into age, gender, education and household income. By making use of descriptive figures, the authors conclude that the age of entrepreneurial employees follow an inverted U-shape pattern, with highest prevalence rates in the age groups between 25 and 54 years. Further on, they conclude that male employees are more likely to be involved in EEA than female employees, where higher educated individuals are positively correlated with the involvement in EEA, and thus with individuals who belong to higher (household) income levels. The second part is about entrepreneurial perceptions, such as being convinced that there are good opportunities for starting a business, being convinced to have the required skills and knowledge to start a business, and whether fear of failure would

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[11] See Appendix B, question 12.

[12] The three types of entrepreneurship that were employed are ambitious entrepreneurship in the sense of medium/high job growth expectation early-stage entrepreneurial activity (MHEA), less ambitious entrepreneurship in the sense of solo/low job expectation early-stage entrepreneurial activity (SLEA), and Entrepreneurial Employee Activity (EEA).

[13] The authors define the distribution of intrapreneurship across organizations in three size classes: i) less than 10 employees, ii) 10-249 employees, iii) 250 or more employees.

prevent one to start a business. The authors conclude that entrepreneurial employees, in general, have about the same perceptions as entrepreneurs. In their second extended edition of the GEM 2011 Report (Bosma et al., 2013), the authors increase the generalizability of their findings by performing a multivariate analysis. More specifically, they empirically investigate the relationship between the main demographic determinants – gender, age, education and household income – and EEA, where they include all 52 countries in their analysis. The results confirm the findings from the first edition

Another study employing the same dataset, but with a macro-level focus, is a study of Stam (2013). The author uses the GEM 2011 special theme study to conduct the first empirical study on the country-level relations between knowledge and EEA. More specifically, he links the knowledge spillover theory of entrepreneurship (Acs et al., 2009) with EEA. The key question in his study is whether innovation indicators are more related to entrepreneurship or EEA on the national level. For this analysis, he takes a subsample of 25 countries including all OECD countries. He identifies four innovation indicators[14] as the independent variables in his study, and a total of three measurements of entrepreneurship and EEA as dependent variables[15]. Subsequently, a linear regression is performed where the results show that especially R&D is strongly related to both types of TEA and EEA, although related in contrasting ways: negatively related with TEA and positively related with EEA. Also, employment in knowledge-intensive industries is positively related with EEA. The results may be considered surprising at least as the expectations were that TEA would be highly positively related to the level of knowledge investments, activities, and outputs in a country, where the opposite proved to be true. An explanation for this might be that a lot of knowledge that goes around in established organizations, is aroused by the involvement of individuals in EEA. Thus, this leaves little opportunities to pursue for independent entrepreneurs. Also, the differences between entrepreneurial employees and entrepreneurs with respect to education can be carried forward as an explanation. Hence, since entrepreneurial employees seem to be higher educated and have access to complementary assets within their organization, they are

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[14] These innovation indicators are expressed as EXPRD, i.e., gross expenditure on R&D (% of GDP), KNOEMP, i.e., employment in knowledge-intensive services (% of workforce), PCTPAT, i.e., patent applications filed at national office (per billion GDP, 2005, PPP$) and TEREDU, i.e., Tertiary school enrollment (% of gross).

[15] The measurements in this study are: i) TEA ii) percentage of the adult population involved in entrepreneurial activities that deliver products or services that are regarded as new and unfamiliar by (potential) customers (TEA_NEWPRO) iii) EEA according to the narrow definition.

more likely to pursue opportunities arising from knowledge creation in other organizations than independent entrepreneurs (Bosma et al., 2012; 2013).

Having discussed the measurements, the following subsections focus on the development of the hypotheses. As I have discussed in the introduction of this thesis, I will formulate the hypotheses on the basis of the following determinants: (1) Demographics; (2) Human capital (3) Perceptions (4) Job function and (5) Type of organization. and choice of the variables.

2.2.2 Demographics

Researchers tend to include demographic variables in their model in order to control for their effects, rather than understand them (Bindl and Parker, 2010). Moreover demographic antecedents of intrapreneurship are hardly investigated (Bosma et al., 2012; 2013). Therefore, this thesis uses the following demographic antecedents to investigate whether they significantly relate to intrapreneurship: i) gender, ii) age, iii) household income and iiii) region of residence.

Although gender differences are not widely studied for intrapreneurship (Bosma et al., 2012; 2013), this does not apply for entrepreneurship (Blanchflower, 2004; Parker, 2009). More specifically, it is evident that men are more likely to start a new business than women (Brockhaus and Horwitz, 1986; Minniti and Nardone, 2007). Women have high opportunity costs because of the role that they play in the family, and therefore do not have the time to start up a new business (Lombard, 2001). Other explanations are unemployment issues (Rosti and Chelli, 2005), work value differences (Brenner et al., 1991), psychological characteristics (Sexton and Bowman-Upton, 1990) and even cultural and discrimination factors (Clain, 2000). Thus, I do not expect other gender differences with respect to being engaged in intrapreneurial activities for the following reasons. First, I rely on the assumption that I have made regarding the fact that intrapreneurship is equivalent to entrepreneurship within organizations. Thus, there is no reason to believe that women are more likely to become an intrapreneur than men, especially if you take into account that they are less likely to become an entrepreneur. Second, female employment rates are lower than those for males[16], which indicates that male employees by definition have a higher probability to be engaged in intrapreneurial activities. In addition, empirical studies on the relationship between gender and each of the individual dimensions that embrace intrapreneurship, i.e., pro-activeness, risk-

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[16] See 'Closing the Gender Gap: Act Now', OECD Publication, December 2012.

taking and innovativeness, have shown that men are more likely to be pro-active, risk taking and innovative in an entrepreneurial context (Burke et al., 2002; Callaghan and Venter, 2011; Mueller and Dato-On, 2008; Yordanova, 2011). Taking into account these arguments, it might be expected that men are more likely to become an intrapreneur. Thus this leads to the following sub Hypothesis:

Hypothesis 1a: Male employees are more likely to be engaged in intrapreneurial activities.

Regarding age, Parker (2009) provides several reasons why older people are more likely to be engaged in entrepreneurial activities, including the fact that older people are better able to identify valuable opportunities by having continuously learned about the business environment. In addition, older people have had more time to build better social and business networks. These assertions resulted in several empirical studies confirming that older people are indeed more likely to successfully start up a new business as compared to younger entrepreneurs (Lévesque et al., 2002; Van Praag, 2003;). In addition, recent work indicates the existence of an inverted U-shaped relationship (Bosma and Levie, 2010), i.e., entrepreneurship becomes less attractive to individuals beyond a certain age. Lévesque et al., (2002) explain this by stressing out that older people are more risk-averse than younger people, and are less capable of handling the pressure of working long hours. Hence, their interest in self-employment declines when they reach a certain point in their life as they tend to be less open to new experiences (Carstensen et al., 1999). Regarding age and intrapreneurship, I expect the same inverted U-shaped relationship as it is the case with entrepreneurship. Thinking about it in a logic way, I suppose that aging employees have a higher chance of getting promotion, which usually comes down to more responsibility in their work. Consequently, it puts them in a position to generate more sales for the organization, which can be defined in exploiting new opportunities, i.e., new businesses. Eventually, I expect that the interest in exploiting new opportunities is decreased by the same reasons as for aging entrepreneurs. In line with this, Bosma et al., (2013) find empirical evidence for an inverted U-shaped relationship between age and EEA. Thus, these arguments lead to the following sub-hypothesis:

Hypothesis 1b: There is an inverted U-shaped relationship between age and being engaged in intrapreneurial activities.

Educational attainment can be seen as an investment in an individual, and thus as an input on a set of explanatory variables of "earnings functions". More specifically, education, age and other factors are analyzed as determinants of earnings in paid employment (Parker, 2009): the more you are worth by investing in yourself, the more you get paid. Relying on the this theory, it might be clear that the one affects the other. More specifically, employees who earn more are usually employees who are higher-educated, experienced (in terms of age) and hold responsible job functions (Clark and Oswald, 1996). In addition, this can also be explained the other way around: as an intrapreneur, one can expect increment or promotions when developing and implementing an idea. Moreover, employees who earn more, have more "space" and time to be engaged in intrapreneurial activities. Hence, employees who are financially very spacious, do not feel the pressure to prove themselves, and thus they conceive being engaged in intrapreneurial activities as a desire for job satisfaction or to give something back for their employer. In addition, better earning employees with a strong desire for entrepreneurship become less interested in self-employment as one of the reasons to become an entrepreneur is to make more money (Clark and Drinkwater, 2000). Instead, they can undertake something within an existing organization as they are not forced to start a new business out of economic necessity. Taking into account the above arguments, and the fact that Bosma et al., (2013) found empirical evidence for a negative relationship between lower household incomes and EEA, it might be expected that there is a positive relationship between household income and intrapreneurship. Hence, this leads to the following sub-hypothesis:

Hypothesis 1c: Employees with higher household incomes, are more likely to be engaged in intrapreneurial activities.

Finally, geographical location could play a significant role in the probability of becoming an intrapreneur as recent research has shown an increased interest in the role of environment as a stimulant for the exploitation of new business opportunities (Pennings, 1982). Although there has not been research on the direct effect of region on intrapreneurship, there are many studies that investigated the effect of region on entrepreneurship, which provide mixed evidence (Glaeser et al., 2010; 2011; Krugman, 1991; Parker, 2009; Saxenian, 1994). More specifically, Saxenian (1994) finds a positive relationship between urban areas and entrepreneurship by arguing that entrepreneurs can benefit "faster" from the exchange of knowledge as institutions like universities and large organizations are mainly situated in large cities. Also, Glaeser et al., (2010) states that entrepreneurship is superior in urban areas

because it is subject to more resources, higher returns, greater supply of ideas and differences in local culture and policies. Regarding rural areas, Burt (2000) claims that strong social networks, which he ought to be present in rural areas, are an important reason for individuals to be engaged in entrepreneurial activity. Strong social networks are also emphasized by Benneworth (2004) with respect to being engaged in entrepreneurial activity. Hence, he argues that individuals in rural areas depend more on their network for learning processes, and thus have stronger ties, as compared to individuals in urban areas. Although there is mixed evidence on this topic, there seems to be more evidence for urban areas than rural areas with respect to being engaged in entrepreneurial activity. More specifically, Freire-Gibb and Nielsen (2014) once again show the importance of urban areas as the authors conduct a study involving innovativeness and social networks, which function as determinants of entrepreneurial behavior, in both urban and rural areas. They conclude that innovative individuals from urban areas have a higher probability of being engaged in entrepreneurial activities, as compared to innovative individuals who live in rural areas. Regarding intrapreneurship, I expect the relationship not to be different. Hence, it would appear that employees who live in urban areas are more likely to be engaged in intrapreneurial activities than employees who live in rural areas. The main argumentation is that urban areas are more exposed to entrepreneurial activity, e.g., small businesses and previous successes of entrepreneurial projects which can, amongst others, ensure that they get inspired and build upon (social) networks, faster than employees in rural areas. Hence, as employees gain inspiration and expand their (social) network, it can give them ideas to exploit new business opportunities, and thus to be engaged in intrapreneurial activities. Thus, this leads to the following sub-hypothesis:

Hypothesis 1d: Employees who live in urban areas, are more likely to be engaged in intrapreneurial activities than employees who live in rural areas.

2.2.3 Human capital

An important factor that might determine the involvement of employees in intrapreneurial activities is human capital. Human capital was introduced by Schultz (1961) where he claimed that everything that could be consumed of in an individual, e.g., education, health, internal migration for better job opportunities, leisure etc., is seen as an investment of improving the quality of an individual, and thus enhancing an individual's productivity. Becker (1965) explained human capital as a theory that increases the productivity of

employees through training and education, which is the consequence of an advancement in knowledge and skills throughout the years. Applying this to the organizational context, Joia (2000) defines human capital as the sum of the expertise and skills of employees. In addition, the importance of human capital within organizations is emphasized by Petty and Gutherie (2000) who claim that human capital should be regarded as the most valuable asset, where the money spent on human resources in order to improve the efficiency and productivity should not be seen as an cost, but rather as an investment. Indeed, previous research on the relationship between organizational performance and human capital have shown that human capital, with tacit knowledge, is more likely to produce a competitive advantage than tangible resources (Hitt et al., 2001). Other empirical research can only confirm that human capital is one of the most important drivers of various aspects of firm performance (Seleim et al., 2007; Frederico et al., 2009; Shrader and Siegel, 2007).

As being engaged in intrapreneurial activities is defined as developing new products or services for the employer, this can be considered as an innovative advancement. More specifically, Bantel and Jackson (1989) reveal that more innovative organizations are managed by well-educated teams, which also tend to be diverse with respect to their areas of expertise. In addition, Dakhli and De Clerq (2004) confirm the same positive relationship between human capital and innovative performance. When looking more in an entrepreneurial context, a study of Marvel and Lumpkin (2007) shows similar positive associations as they emphasize on the importance of formal education on radical innovations within large organizations. In addition, Allen et al., (2007) conclude that education increases entrepreneurial research activities, which consequently leads to new patents.

Empirical studies on the relationship between human capital and intrapreneurship are scarce. However, De Jong et al., (2011) find a positive relationship between education and pro-active behaviors, which they define as intrapreneurship in their study. They argue this by stating that higher-educated employees are more pro-active and risk-taking as they intend to advance in their careers. The argument that they put forward is not illogical as employees who are higher educated, have the ability to pick up things quickly, and thus are better able to recognize and exploit new opportunities, i.e., being engaged in intrapreneurial activities. Therefore, taking into account the above mentioned arguments and previous research, it may be expected that the more employees are educated, the higher the probability is that they will become intrapreneurs. Thus, this leads to the following sub-hypothesis:

Hypothesis 2: The higher the employees are educated, the more likely it is that they are engaged in intrapreneurial activities.

2.2.4 Perceptual variables

Perceptual variables, i.e., entrepreneurial perceptions can be seen as cognitive constructs or mental representations of the external environment around individuals that might play a role in the intentions toward start-up (Krueger, 2000). Hence, there has been much research on the psychological motivation of individuals to behave in an entrepreneurial way (Ajzen, 1991; Boyd and Vozikis, 1994; Baumol, 1990; Douglas and Shepherd, 2000; Eisenhauer, 1995; Krueger, 1993; Shaver et al., 2001). As a result, intrapreneurs may be expected to share various entrepreneurial traits with entrepreneurs, such as self-efficacy and risk attitudes (Caliendo et al., 2009; 2014; De Jong et al., 2011; Kihlstrom and Laffont, 1979). Although GEM does not collect data on these traits, the GEM adult population survey does give information about the attitudes, perceptions and intentions of all respondents. Hence, these are good predictors with respect to the intention to be engaged in intrapreneurial activities[17] (Bird and Jelinek; 1988; Brazeal, 1993; Krueger and Carsrud, 1993; Krueger et al., 2000). More specifically, the economics of entrepreneurship has devoted considerable attention to self-efficacy. Bandura (2010) defines self-efficacy as the ability of an individual to influence events that could affect his/her life; unless individuals believe that they can achieve desired effects by their actions, they have little incentive to undertake activities. Hence, an individual's self-efficacy has been argued to be an important incentive of entrepreneurial intention (Krueger and Brazeal, 1994; Markman et al., 2002 ; Parker, 2009). Parker (2009) explains this by stating that when individuals have emotional commitments to outcomes, and believe that outcomes are under their control, the self-efficacy tends to be highest. Thus, it might be assumed that intrapreneurs have high emotional commitments when they elaborate on an idea of which they endeavor to implement themselves. Therefore, I expect that employees who have a high degree of self-efficacy, are more likely to be engaged in intrapreneurial activities. Thus, this leads to the following sub-hypothesis:

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[17] Applying the "theory of planned behavior" on entrepreneurial behavior, it is argued that entrepreneurial behavior is best predicted by intensions toward that entrepreneurial behavior. In turn, intensions depend on belief or attitudes towards the outcome of entrepreneurial behavior, where in general, the stronger the attitudes, the greater the intention to behave entrepreneurially.

Hypothesis 3a: Employees who perceive that they have the right knowledge, skills and experience to start a new business, are more likely to be engaged in intrapreneurial activities.

Risk attitudes have been widely investigated among entrepreneurs (Kihlstrom and Laffont, 1979; Rees and Shah, 1986; Stewart et al., 1999). Kihlstrom and Laffont (1979) lay the basis in their study by constructing a theory of competitive equilibrium under uncertainty using an entrepreneurial model with roots from the study of Knight (1921). By giving individuals labor which they can supply, they offer them a choice to choose between supplying it to a competitive labor market or to use as entrepreneurs in running a firm. They conclude that in the equilibrium, more risk averse individuals become employees while the more risk-taking individuals become entrepreneurs. Although there are studies that take this claim into doubt (Barsky et al., 1997; Cramer et al., 2002), a recent study of Caliendo et al., (2009) disempowers this by finding strong empirical evidence that individuals with lower risk-aversion, are more likely to become self-employed. Although I do not expect that the risk-attitudes are different for intrapreneurs, I do expect that the effect will be less strong as the risk of the failure of the intrapreneurial project is covered by the organization, while this is not the case for entrepreneurs. Therefore, employees could have a lower "fear" of taking initiative with respect to exploiting new business opportunities within organizations. Hence, the following sub-hypothesis is tested:

Hypothesis 3b: Employees who perceive that fear of failure would not prevent them to start a new business, are more likely to be engaged in intrapreneurial activities.

Further on, the availability of the data allows us to see whether other factors, such as social capital influences the likelihood of being engaged in intrapreneurial activities. More specifically, social capital refers to a hidden asset embedded in relationships of individuals, communities, networks or societies which can provide access to human capital, financial capital and other types of capital (Davidson and Honig, 2003; Greve and Salaff, 2003). As previous studies have confirmed that having a network of entrepreneurs is positively related to entrepreneurship (Kwong et al., 2012; Arenius and Minniti, 2005), I do not expect the effect to be different for intrapreneurs. Hence, entrepreneurs can play a crucial role in the question whether employees become engaged in intrapreneurial activities or not. More specifically, entrepreneurs can advise and stimulate employees by providing different perspectives,

relevant knowledge and also emotional support on the elaboration and exploitation of new ideas. Thus, this respectively leads to the last sub-hypothesis:

Hypothesis 3c: Employees who personally know other entrepreneurs, are more likely to be engaged in intrapreneurial activities.

2.2.5 Job function

The current literature indicates two types of job functions that possibly increase the possibility of becoming an intrapreneur, i.e., middle-managers and sales managers (Ghoshal and Bartlett, 1994; Hornsby et al., 2002; Kanter, 1988; Steward and Roth, 2001; Mayer and Greenberg, 2006; De Jong et al., 2011). Middle-managers focus on the communication between senior-level management and first-level management. In order to do this successfully, they should interactively merge and diffuse information relevant to creating new products, services or business units (Kuratko et al., 2005). Although middle-level managers are seen as an intermediary, many researchers think differently. Namely, middle-managers seem to possess the key elements of intrapreneurial behavior – innovativeness, pro-activeness, risk-taking – as already discussed in Chapter 2. More specifically, the fact that middle-managers are innovative is proven by Kanter (1988) who concludes that middle-managers are more likely to procreate, advocate and carry out innovative ideas. Next, managers expose more pro-active behavior than their counterparts as the hierarchical positions of employees influence their felt responsibility for change, which ultimately correlates with improvement (Fuller et al., 2006). Finally, middle-managers have been central in analyses of risk-taking behavior, where the expectation is that they need to take risk in order to innovate (Ling et al., 2008). Regarding sales managers, they meet certain requirements that fosters them to be pro-active and risk-taking, such as having a diverse network, having a strong need to conquer, and being persistent and accepting losses (Mayer and Greenberg, 2006; De Jong et al., 2011). Hence, it might be expected that managers in general and different forms, e.g., senior-level, first-floor and sales-managers, are more likely to be an intrapreneur as their responsible position demands them to continuously recognize and pursuit opportunities in order to advance the organization. Thus, this leads to the following hypothesis:

Hypothesis 4: Employees who have a management-oriented job, are more likely to be engaged in intrapreneurial activities, as compared to employees with support functions.

2.2.6 Type of organization

It is not obvious in what type of organization intrapreneurs are most likely to work, as intrapreneurship is a designation for acting entrepreneurial, and this could be done anywhere. However, in order to make an assumption, the type of organizations will be classified into: 1) private-for profit organizations, 2) non-profit organizations and 3) governmental organizations. The current literature provides a wide variety of antecedents that seem to enable intrapreneurship within organizations. Hence, this might be helpful in determining the type of organization where intrapreneurs are most likely to work. More specifically, there are a few elements that emerge frequently in this field of writing According to Kuratko et al., (1990), these elements are: (1) organizational structure; (2) rewards; (3) management support; (4) resources; and (5) risk-taking.

An organizational structure that enables a bottom-up structure where employees have the freedom to take initiatives is a structure where bureaucracy and segmentalism is being reduced within the organization (Kanter, 1985; Drucker, 1984; Brandt, 1986). Hence, Schuler (1986) indicates that reducing bureaucracy – which is expressed in tightness of arrangements, chain of command and rules and procedures – respectively facilitates the flow of information and ideas, interaction and knowledge exchange and acknowledges the dynamics in knowledge-intense activities. Consequently, segmentalism is also being reduced, i.e., the integration of teams, groups, departments and divisions which fosters idea, information and product exchanges, is realized (Kanter, 1984; Kanter, 1986b).

The second element is an effective reward system that considers feedback, clear goals, individual influence and rewards based on individual results or performance of a team (Hisrich and Peters, 1986; Kuratko et al., 1990; Sathe, 2003; Hornsby et al, 2002). People are motivated by numerous things, e.g., while entrepreneurs may see pride and financial gains as their reward when starting a new business, intrapreneurs are motivated by controllable rewards: bonuses, profit share, regular pay, expense accounts, job security, expanded job responsibilities, autonomy, promotions, free time to work on projects, money for research or trip to conferences (Morris and Kuratko, 2002). Indeed, rewards and reinforcements enhance the motivation of employees to be involved in risk-taking behavior (Hornsby et al., 1993).

The third element is management support (Hisrich and Peters, 1986; Hitt et al., 2002; Hornsby et al., 1993; Stevenson and Jarillo, 1990). Hornsby et al., (2002) point out that it is crucial that

management supports intrapreneurial activities, even if they do not understand it. The basic idea is that innovation is embedded in the role of all employees and that management should encourage this. Fry (1987) underlines this by noticing that employees define the support they get from management as not being counteracted in their initiatives, and being provided with the necessary resources

Resources are an derivative of management support as entrepreneurial projects need to have financial resources to be put into effect (Katz and Gartner, 1988; Sathe, 1985, 2003; Souder, 1981; Stevenson and Jarillo, 1990; Stopford and Baden-Fuller, 1994, Sykes and Block, 1989). However, resources are not only subject to monetary values, time and availability are equally important as employees have to feel confident and encourage to experiment (Burgelman and Sayles, 1986). Moreover, research suggests that organizations should moderate the workload of their employees, avoid putting time constraints, and stimulate collaborations between employees on long-term problem solving as it encourages experimentation and risk-taking behaviors (Hisrich, 1990; Hornsby et al., 1993; 2002)

Finally, risk is an essential part that needs to be present in order to enhance intrapreneurial activities (Bird and Jelinek, 1988; Kanter, 1985; Sathe, 1985;) On the one hand, too much risk becomes dangerous when an organization attempts to come up with a radical innovation. On the other hand, too little risk can be fatal when an organization ignores the trend and market conditions by making little or no innovation (Morris and Kuratko, 2002). In addition, the authors stress out that tolerance of failure encourages the entrepreneurial spirit; hereby considering it as an important factor concerning the willingness to take risk, and thus take into account the possibility of a project to fail.

Taking into account the above mentioned elements, it remains difficult to hypothesize in what type of organizations intrapreneurs are most likely to work. However, when looking more in depth at the elements, careful conclusions can be drawn. For example, while management support can be present in any type of organization, this does not apply to the supply of resources and an effective rewards system. More specifically, non-profit organizations do not provide rewards where resources are usually slight as they are dependent on donations. Furthermore, governmental organizations typically have a high degree of bureaucracy, which inhibits the "bottom-up" structure (Moore, 2000). Also, taking risks in order to come up with a radical innovation is not obvious within these type of organizations as they do not operate

on the market. Thus, governmental organizations have no competition concern. Hence, based on the descriptive analysis of Bosma et al., (2013), where they show that there is a high prevalence of entrepreneurial employees working in private for-profit organizations, and the fact that private-for profit organizations theoretically meet the above mentioned criteria, it might be expected that intrapreneurs are most likely to work in private-for profit organizations. Thus, this leads to the following Hypothesis:

Hypothesis 5: Employees who work for a private-for profit organization, are more likely to be engaged in intrapreneurial activities, as compared to employees who work for a non-profit organization.

3. Data and methodology

This section respectively contains an exposition and explanation of the dataset, the variables that are used in the analysis, and the methodology that is applied to investigate the research question.

3.1 Data and sample

In order to research the determinants of intrapreneurship in the Netherlands, this thesis uses data from the Global Entrepreneurship Monitor (GEM) 2011. Initiated in 1999 by academics from London Business Schools (United Kingdom) and Babson College (United States), the objectives of GEM are to provide governments and international organizations with information that helps them to facilitate international interaction and greater understanding of the mechanism between entrepreneurship and economic growth. More specifically, GEM annually collects harmonized data in order to facilitate cross national comparisons of national entrepreneurial activity, estimates the role of entrepreneurial activity in national economic growth, and determines the factors that underlie for national differences in the level of entrepreneurial activity. A big advantage of using the GEM dataset is the fact that GEM is the only institution that provides measurements of individual-level, nonhierarchical entrepreneurial processes. Thus, it is the largest international data collection effort on entrepreneurial activity. Moreover, the measurements of GEM makes it both possible to compare international outcomes and to determine and analyze the motivations that drives individual economic agents to these outcomes.

The method of collecting data requires adult population surveys (APS), unstructured interviews with national experts (NES), self-administrated questionnaires and collection of standardized measures from existing cross-national data sets. In this context, a special theme study was carried out in the framework of APS, which included additional questions about the involvement of employees in entrepreneurial activities (EEA), such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary. The objective of the extra module is to get estimates of the numbers of these "intrapreneurs" as well as the nature and scope of their activities. For the GEM 2011 report, 52 countries participated in the special theme study. A randomly selected adult sample, with a minimum of 2000 respondents in each GEM country, has been subject to telephone surveys in order to collect the data. For this thesis, I will solely use data that has been collected for the Netherlands, which includes a randomly selected adult sample of 3500 respondents.

In view, there are both advantages and disadvantages regarding the current dataset. An advantage is the opportunity to analyze intrapreneurship more in depth by comparing intrapreneurs with other employees, and to compare intrapreneurship with independent entrepreneurship, i.e., individuals who own a business, or expect to own the business they are setting up, both at macro and micro level[18]. However, since this thesis focuses exclusively on the Netherlands, the dataset is smaller and more limited in the analysis. Although the focus on one country seems to be a disadvantage, e.g., the relatively small number of observations, measures have been taken to rectify this. First, the broadest definition of EEA is chosen to measure intrapreneurship, i.e., *employees who, in the past three years, have been developing or launching new goods or services, setting up a new business unit, a new establishment or subsidiary for their main employer*. In this way, the number of observations, and thus intrapreneurs, are increased. Second, the data has been recoded and adjusted for several variables, which makes the analysis all the more unique. Hence, this is all explained in the following subsections.

3.1.1 Measuring intrapreneurship

The 3500 respondents from the survey were asked to describe their current employment status. From a list of 8 options[19] , the respondents had to fill in all the options a "*yes*" or "*no*"; 2045 respondents filled in "*yes*" to the option "*employed by others in full-time work*" or "*employed by others in part-time work*". Subsequently, these employees were asked the following question: "*In the last three years, have you been involved in the development of new activities for your main employer, such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary?*". From the 2045 employees, 548 employees answered "*yes*" to this question. Hence, these employees are considered to be intrapreneurs. In contrast to other studies[20], which make a distinction between phases of intrapreneurial activities and supporting and leading roles, this thesis does not apply this distinction. More specifically, employees who answered "*yes*" to the above mentioned question, were further questioned about their involvement in the different phases

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[18] Although it is possible to compare independent entrepreneurship with intrapreneurship with the current dataset, this thesis focuses on the comparison between intrapreneurs and other employees.

[19] These options are: (1) employed by others in full-time work; (2) employed by others in part-time work; (3) self-employed; (4) seeking employment; (5) not working because I am retired or disabled; (6) a student; (7) full-time home-maker and (8) other.

[20] See Bosma et al., (2012; 2013) and Stam (2013).

ERASMUS UNIVERSITEIT ROTTERDAM
ERASMUS SCHOOL OF ECONOMICS

of developing new activities[21]. Because both phases consist of intrapreneurial activities, I assume that, by definition, these employees can be considered as intrapreneurs. From this information, the dependent binary variable *intrapreneurship* is created, which takes a value of 1 if the employee has been engaged in intrapreneurial activities and takes a value of 0 if the employee has not been engaged in intrapreneurial activities.

3.1.2 Demographics

The demographic indicators from the dataset that are employed for the analysis include gender, age, household income and region of residence of employees. For gender effects, the binary variable *male* is created, which tests whether male employees are more likely to be engaged in intrapreneurial activities than female employees. The variable is coded 1 if an employee is male and coded 0 if an employee is female. Next, the continuous variable *age* depicts the age of an employee and is distributed over a range between 18 and 65 years. Further on, the variable *household income* depicts the employees' annual household income, for which dummy variables are created in order to classify the different levels of income. The dummy variable *low hhincome* is coded 1 if an employee earns less than €30.000, *medium hhincome* is coded 2 if an employee earns between €30.000 and €60.000, and *high hhincome* has been given a value of 3 if an employee earns more than €60.000. Regarding the analysis, *low hhincome* will serve as the reference category. Finally, in order to test the relationship between region of residence and being engaged in intrapreneurial activities, the binary variable *urban* is created. In this case, *urban* is made up of provinces that are equivalent to the Randstad, i.e., Zuid-Holland, Noord-Holland and Utrecht, where rural areas represent the rest of the provinces of the Netherlands. The variable is coded 1 if an employee lives in an urban area and coded 0 if an employee lives in a rural area.

3.1.3 Human capital

In this study, education is indicated as human capital. For the variable *education*, dummy variables are created which are adjusted to the Dutch educational system. The variable indicates 3 values of the highest level of education that a respondent has finished. The dummy variable *low education* takes the value of 1 if the respondent has not studied further than high-school, i.e., vmbo/havo/vwo[22]. The dummy variable *medium education* is coded 2 if the respondents' highest level of education is secondary vocational school, i.e., mbo. Finally, the dummy variable *high education* takes the value of 3 if the respondent has finished higher

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[21] See Appendix B, question 11.
[22] Respondents who did not finish high-school, i.e. school drop-outs, are also included in this category.

education, i.e., hbo/wo. With respect to the analysis, *low education* will serve as the reference category.

3.1.4 Perceptual variables

The measure of the employees' perceptions is subdivided into three variables. The first variable investigates the relationship between the engagement in intrapreneurial activities and the employees' self-efficacy. The employees' self-efficacy is measured by asking the respondent the following question: *"Do you have the knowledge, skill and experience required to start a new business?"*. In the context of this measurement, the binary variable *suskill* is created and is coded 1 if an employee answers with *"yes"* and coded 0 if an employee answers with *"no"*. Second, the measure on the employees' risk-attitudes is based on the question: *"Would fear of failure prevent you from starting a business?"*. The binary variable *nofearfailure* has given a value of 1 if the employee perceives that fear of failure will not prevent him/her from starting a business, and a value of 0 if fear of failure does prevent the employee from starting a business. Finally, the focus turns on the employees' social capital. More specifically, personally knowing an entrepreneur significantly increases the likelihood of an individual to undertake entrepreneurial activities as this gives individuals access to valuable resources such as knowledge on the start-up process and business contacts (Arenius and Kovalainen, 2006; De Clerq and Arenius, 2006; Morales-Gualdron and Roig, 2005). To measure whether there is an effect between the employees' social capital and being engaged in intrapreneurial activities, the binary variable *knowent* is created. This variable is based on the question: *"Do you know someone personally who started a business in the past 2 years?"*. It has given a value of 1 if an employee knows an entrepreneur and a value of 0 if an employee does not know an entrepreneur.

3.1.5 Job function

The 2045 employees were asked to fill in what their job function is. From this information, the data had to be manually edited and arranged, where a distinction has been made between three job functions: (1) managers; (2) professionals and (3) support functions. The first category includes different managerial positions within organizations, i.e., directors, floor-managers, owner-managers, but also sales-managers. Namely, functions where people need to be controlled and leadership must be shown, might relate to the three elements of intrapreneurial behavior (pro-activeness, risk-taking and innovativeness), which might have a positive effect on being engaged in intrapreneurial activities. The second category comprises

higher and secondary intellectuals or professionals, such as teachers, doctors, artists, accountants etc. Finally, the third category indicates employees with support functions, such as administrative assistants, nurses, salesclerks etc. Hence, dummy variables are added for the variable *job function* where *managers* takes the value of 1 if the employee has a managerial position within an organization. The dummy variable *professionals* takes a value of 2 if the employee is a professional, and *support functions* is coded 3 if the employee belongs to the group of employees who hold a support function within the organization, which also serves as the reference category in the analysis.

3.1.6 Type of organization

The 2045 employees were asked in what type of organization they are working for: (1) private for-profit, (2) governmental or (3) non-profit[23]. Subsequently, dummy variables are added where *private* is coded 1 if the respondent works for a private-for profit organization, *governmental* is coded 2 if the respondent works for the government and *non-profit* takes a value of 3 if the respondent works for a non-profit organization, which also serves as the reference category in the analysis.

3.2 Methodology

In order to examine which determinants significantly increase the likelihood of being engaged in intrapreneurial activities, and thus to test the hypotheses, it is important to apply the most appropriate statistical method. In the selection of choosing the most appropriate statistical method for analysis, it can be concluded that Ordinary Least Squares (OLS) regression is not advisable in this case. More specifically, the dependent variable *intrapreneurship* is a binary variable and OLS does not take into account the fact that a variable takes a value of 0 or 1. Indeed, OLS could theoretically predict a negative outcome or an outcome that is larger than 1. In order to avoid these errors, a binary logit model is more appropriate to use. In addition, the error term in a logit model is assumed to follow a logistic distribution with a mean of zero and a variance of $\pi^2/3$, which results in the following equation for the binary logit model:

$$P (y_I = 1 \mid X_i) = \frac{exp (\alpha_i + \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_1 X_2)}{1 + exp (\alpha_i + \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_1 X} \qquad (1)$$

Where the following applies:

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[23] From the 2045 employees, 2002 (98%) respondents answered this question. The remaining 43 (2%) respondents did not know in what type of organization they are working for or refused to answer.

P =Probability
Exp = Base of the natural logarithm, which approximately takes a value of 2.718
β_i = Parameter of the model; β adjusts how quickly the probability changes with changing x a single unit
y = Intrapreneurship
X_1 = Job function
X_2 = Organization type
X_3 = Male
X_4 = Age
X_5 = Age²
X_6 = Education
X_7 = Income
X_8 = Regio
X_9 = Knowent
X_{10} = Suskill
X_{11} = Opport
X_{12} = Fearfail

The above equation (1) shows the parameters of the model that is employed for the empirical analysis. To examine whether there is a non-linear relationship between *age* and *intrapreneurship*, a quadratic term of the variable *age (age^2)* is included. Further on, in order to statistically test, and thus regress the independent variables (X_1, X_2,…,X_{12}) on the dependent variable (*y= Intrapreneurship*), several variations of equation (1) are estimated. More specifically, 6 models are estimated in order to analyze if, and to what extent, the determinants significantly influence the likelihood of being engaged in intrapreneurial activities. Hypothesis 1 is tested by putting all demographic variables (*male, age, age², income, urban*), in the first model where subsequently the demographic variables act as control variables in the following models. Namely, I find it important to control for demographics as there could be mechanisms or processes that underlie an observed relationship between one of the independent variables and the dependent variable, i.e., indirect mediation effects.

The magnitude of the coefficients of the above mentioned binary logit model cannot be observed directly from the regression results; the effect of a change in the independent variables on the dependent variable depends on the values that all the independent variables take in non-lineair models. For this reason, average marginal effects[24] will be calculated in order to be able to interpret the magnitude of the effects. The marginal effects will be

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[24] Average marginal effects indicate the marginal effect that is calculated for each respondent, i.e., where the independent variables take particular values for that employee, and the average of the marginal effects of all respondents.

calculated with robust standard errors, i.e., robust to heteroskedasticity. Furthermore, in order to be sure that there is no multicollinearity among the variables, Table 4 in Appendix A provides a correlation matrix. As Table 4 shows, there are no high correlations between the variables, except for the various categories for the variables *education, income* and *job function.* Given that higher correlation coefficients are not present across variables, but only within variables, I do not expect any problems of multicollinearity. Further on, several measures of goodness of fit can be applied to the binary logit model in order to measure how well the model fits the set of observations. For this analysis, McFadden's (pseudo) R^2 will be estimated. This goodness of fit measure compares a model with only an intercept, i.e., a restricted model, to a model where all variables are included (1) through a comparison of the log-likelihood for each model. McFadden's has a range from 0 to 1 and is estimated as follows:

$$R^2_{McF} = 1 - \frac{\ln L\left(M_{Full}\right)}{\ln L\left(M_{Intercept}\right)}$$

4. Results

To examine whether there are determinants that significantly influence the likelihood of being engaged in intrapreneurial activities, this section contains a bivariate and multivariate statistical analysis.

4.1 Bivariate analysis

Before I proceed to the multivariate analysis and attempt to answers the main question, i.e., which employees are engaged in intrapreneurial activities, I investigate the variables' distributional characteristics. More specifically, Table 1 shows the distribution of employees who are engaged in intrapreneurial activities (intrapreneurs) as compared to employees who are not engaged in intrapreneurial activities (non-intrapreneurs) for each of the explanatory variables. In this way, not only the differences between intrapreneurs and non-intrapreneurs can be observed, but the distribution of the independent variables as well. More specifically, Table 1 shows whether the dependent variable *intrapreneurship*, i.e., being an intrapreneur, and the independent variables are related. This is done by assessing a test of independence for each independent variable by using the Pearson's chi-squared test (χ^2). The values of this test are, together with the corresponding p-values, listed in the last column of Table 1.

4.1.1 Demographics

Looking at *gender* in Table 1, it can be observed that the group of intrapreneurs contains more male (51.82%) than female (48.16%). On the other hand, the group of non-intrapreneurs consists of more female (57.11%) than male (48.16%) employees. It turns out that these differences are significant: *gender* and *intrapreneurship* are not independent, which is shown by the Pearson χ^2 statistic (12.94) at a significance level of 1%. Next, Table 1 indicates that there is an inverted U-relationship between *age* and *intrapreneurship*. This can be observed by an increasing, and at a certain point decreasing, percentage of the age categories of intrapreneurs. This implies that from the age category 35-44, which has the largest percentage of being engaged in intrapreneurial activities, the percentages are lower. Indeed, there is significant evidence that *age* and *intrapreneurship* are interdependent (χ^2=19.03 at a significance level of 1%).

Table 1: Percentage of intrapreneurs and employees (non-intrapreneurs) across the explanatory variables

	Intrapreneurs	Employees (non-intrapreneurs)		
Gender				
Male	51.82	42.89	χ^2	12.94
Female	48.16	57.11	P-value	0.000
Age				
18-24	13.69	19.17	χ^2	19.03
25-34	22.08	20.71	P-value	0.001
35-44	27.74	20.31		
45-54	23.91	24.65		
55-64	12.59	15.16		
Income				
Low household income	30.78	53.30	χ^2	83.62
Medium household income	54.90	40.18	P-value	0.000
High household income	14.32	6.52		
Region				
Urban	11.50	13.43	χ^2	1.33
Rural	88.50	86.57	P-value	0.249
Human capital				
Low education	15.15	32.13	χ^2	127.60
Medium education	24.64	34.74	P-value	0.000
High education	60.22	33.13		
Perceptual variables				
Sufficient skills and knowledge	53.52	32.45	χ^2	76.21
No sufficient skills and knowledge	46.68	67.55	P-value	0.000
No fear of failure	62.96	56.90	χ^2	74.33
Fear of failure	37.04	43.10	P-value	0.000
Know entrepreneur	49.26	28.52	χ^2	5.97
Do not know entrepreneur	46.68	67.55	P-value	0.015
Job function				
Managers	33.94	11.82	χ^2	154.83
Professionals	28.28	25.85	P-value	0.000
Support functions	37.77	62.33		
Type of organization				
Private	54.07	52.80	χ^2	1.38
Governmental	19.81	18.54	P-value	0.502
Non-profit	26.11	28.66		

Source: Global Entrepreneurship Monitor (GEM) 2011.
Notes: This table is based on a sample of 548 intrapreneurs and 1497 employees (non-intrapreneurs)

Further on, an increasing percentage of intrapreneurs is observable as income rises, whereas the opposite effect holds for non-intrapreneurs. Although the percentage of the highest income category decreases for the group of intrapreneurs (14.32%), there is still significant evidence that *income* and *intrapreneurship* are interdependent (χ^2=83.62 at a significance level of 1%). Finally, Table 1 shows that both intrapreneurs (88.50%) and non-intrapreneurs (86.57%) are more common to live in rural areas, i.e., outside the Randstad, as compared to living in urban areas. Looking at the significance however, it is can be concluded that *region* is independent from *intrapreneurship* (χ^2= 1.33 with a p-value of 0.249).

4.1.2 Human capital

With respect to *human capital,* Table 1 shows that the probability of intrapreneurship increases as education increases, whereas the probability of engaging in non-intrapreneurial activities is about the same across the different levels of education. The biggest difference between intrapreneurs and non-intrapreneurs is the percentage of the highest education category (60.22% intrapreneurs; 33.13% non-intrapreneurs). Consequently, there is significant evidence that *education* and *intrapreneurship* are interdependent (χ^2=127.60 at a significance level of 1%).

4.1.3 Perceptual variables

The perception of having the sufficient skills and knowledge to start a new business, is more common among intrapreneurs (53.52%) than among non-intrapreneurs (32.45%). Again, there is significant evidence that *suskill* and *intrapreneurship* are interdependent (χ^2=74.33 at a significance level of 1%). Regarding *no fear of failure,* there is significant evidence that *fear of failure* and *intrapreneurship* are interdependent (χ^2 =5.97 at a significance level of 5%). Finally, the same conclusion can be drawn for *social capital* as there is significant evidence that *social capital* and *intrapreneurship* are interdependent (χ^2=76.21 at a significance level of 1%). Thus, knowing an entrepreneur is more common among intrapreneurs (49.26%) than among non-intrapreneurs (28.52%).

4.1.4 Job function

Looking at the results of *job function* in Table 1, two things stand out. First, there is a substantial difference in the percentage of managers among intrapreneurs (33.94%) compared with non-intrapreneurs (11.82%). In addition, the opposite effect holds for support functions. Second, the distribution of *job function* is about the same for the group of intrapreneurs whereas the distribution for the group of non-intrapreneurs is more widely distributed. Hence,

there is significant evidence that *job function* and *intrapreneurship* are interdependent (χ^2=154.83 at a significance level of 1%).

4.1.5 Type of organization

The most remarkable results of Table 1 relate to *the type of organization*. More specifically, all types of organizations have approximately the same percentages in both groups. Hence, this could be an indication that there is no dependence between *type of organization* and *intrapreneurship*. Indeed, there is significant evidence that *type of organization* is independent of *intrapreneurship* (χ^2=1.38; p-value=0.502).

The aim of performing a bivariate analysis was to examine the differences between intrapreneurs and non-intrapreneurs on basis of several determinants. Hence, the analysis provides evidence that the two groups of employees seem to differ along a variety of determinants, with the exception of *region* and *type of organization*. The biggest differences are noticeable in *education* and *job function*. Hence, the test statistics for both variables show large values (χ^2 = 127.60 for education; χ^2 = 154.83 for job function), which indicates that many employees who become an intrapreneur, differ significantly in their education and job function, as compared to non-intrapreneurs. More specifically, the group of non-intrapreneurs contains more than twice as many low-skilled than the group of intrapreneurs. A similar effect can be observed for *job function* as the group of intrapreneurs contains more than twice as many managers than the group of non-intrapreneurs. Although the analysis provides some useful hints at the results, the limitation is that it solely examines the relationship between one of the independent variables with being engaged in intrapreneurial activities. Therefore, the following section contains a multivariate analysis, which also takes into account the effects of all other variables.

4.2 Multivariate analysis

Table 2 shows the average marginal effects of the estimations of the binary logit models for employees, with *intrapreneurship* as the dependent variable. More specifically, the table shows 6 different models, as announced in Chapter 3. Model 1 tests Hypothesis 1 by examining the relationship between employees' demographics and *intrapreneurship* by adding the variables *male, age, age2, urban* and *income* to the model.

Model 2 tests Hypothesis 2 by examining whether *human capital*, i.e., the education level, significantly influences the likelihood of being engaged in intrapreneurial activities. Thus, this effect is observed by adding the variables *medium education* and *high education* to the first model, whereas the reference category, i.e., *low education*, is omitted from the model.

Model 3 tests the relationship between the *perceptual variables* and being engaged in intrapreneurial activities, thereby testing Hypothesis 3. Again, only the variables *suskill*, *nofearfailure* and *knowent* are added to the first model in order to observe the effect.

Model 4 examines the relationship between *job function* and being engaged in intrapreneurial activities, thus testing Hypothesis 4. This is conducted by adding the variables *managers* and *professionals* to the first model whereas the variable *support functions* is omitted as it serves as the reference category.

Model 5 tests Hypothesis 5 by investigating the relationship between employees' *type of organization* and being engaged in intrapreneurial activities. Again, this is initialized by adding the variables *private for-profit* and *governmental* in the model whereas the variable *non-profit* is omitted from the model since it serves as the reference category.

Finally, Model 6 includes all variables with the aim to "double check" the significance of the variables. In this way, the robustness of the variables is tested as the explanatory value of a model is most likely at its highest when it includes all variables. Moreover, definitive conclusions regarding the hypotheses can be drawn.

In brief, the following subsections are exclusively devoted to the description of the results. Any additional findings, such as indirect effects[25] or concluding remarks, will be discussed in Chapter 5.

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[25] A general explanation for the fact when an independent variable becomes no longer significant when another variable is added to the regression (control variable), is that there might be other (unobservable) factors that are correlated with the control variable that ensure a significant influence on the dependent variable (indirect effect).

Table 2: Marginal effects of binary logit models with *intrapreneurship* as dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographics						
Male	**0.057*****	**0.073*****	0.023	0.032	**0.053*****	0.028
	(0.020)	*(0.020)*	*(0.021)*	*(0.020)*	*(0.021)*	*(0.021)*
Age	**0.117****	0.075	**0.093***	0.091	**0.133****	0.058
	(0.059)	*(0.060)*	*(0.059)*	*(0.058)*	*(0.060)*	*(0.060)*
Age^2	**-0.016****	-0.010	**-0.013****	**-0.013***	**-0.018****	-0.009
	(0.007)	*(0.008)*	*(0.007)*	*(0.007)*	*(0.007)*	*(0.007)*
Medium hhincome	**0.155*****	**0.103*****	**0.135*****	**0.120*****	**0.154*****	**0.069*****
	(0.021)	*(0.022)*	*(0.022)*	*(0.022)*	*(0.022)*	*(0.023)*
High hhincome	**0.260*****	**0.154*****	**0.198*****	**0.164*****	**0.260*****	0.044
	(0.041)	*(0.041)*	*(0.041)*	*(0.040)*	*(0.041)*	*(0.038)*
Urban	**-0.059***	**-0.064****	**-0.064****	**-0.067****	**-0.060***	**-0.070****
	(0.032)	*(0.032)*	*(0.032)*	*(0.030)*	*(0.032)*	*(0.031)*
Human capital						
Medium education		**0.054****				0.031
		(0.025)				*(0.026)*
High education		**0.211*****				**0.174*****
		(0.026)				*(0.029)*
Perceptual variables						
Suskill			**0.107*****			**0.085****
			(0.021)			*(0.021)*
Nofearfailure			**0.038***			**0.045***
			(0.021)			*(0.021)*
Knowent			**0.116*****			**0.094*****
			(0.021)			*(0.020)*
Job functions						
Managers				**0.273*****		**0.208*****
				(0.032)		*(0.032)*
Professionals				**0.073*****		0.012
				(0.024)		*(0.025)*
Type of organization						
Private					0.008	-0.003
					(0.024)	*(0.025)*
Governmental					0.011	-0.005
					(0.031)	*(0.031)*
Observations	1839	1839	1747	1839	1805	1715
Log pseudolikelihood	-1034.7812	-1000.3519	-956.8031	-922.7011	-1017.1634	-886.0801
McFadden's (pseudo) R^2	0.0461	0.0778	0.0779	0.0849	0.0468	0.1325

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

4.2.1 Demographics

Model 1 in Table 2 shows that *male* is significantly positively related to *intrapreneurship*, which is in line with Hypothesis 1A. More specifically the probability of being engaged in intrapreneurial activities is 5.7 percentage points higher for male than for female employees.

Next, the results show that *age* is significantly positively related to *intrapreneurship,* which means that if the age of an employee increases by 1 year, the probability of being engaged in intrapreneurial activities increases with 11.7 percentage points. In addition, there appears to be an inverted U-shaped relationship between *age* and *intrapreneurship as age²* is significantly related with being engaged in intrapreneurial activities. More specifically, the turning point, i.e., the point where the employee reaches an age from where he or she becomes less engaged in intrapreneurial activities, is estimated at 37 years[26]. Thus, Hypothesis 1B is supported.

Further on, both income categories are significantly positively related to *intrapreneurship.* The marginal effects show that the probability of being engaged in intrapreneurial activities is 15.5 percentage points higher for employees with a medium household income, as compared to having a low household income. In addition, the probability of being engaged in intrapreneurial activities is 26 percentage points higher for employees with a high household income, as compared to having a low household income. Consequently, it can be concluded that Hypothesis 1C is supported.

Finally, *urban* is significantly negatively related to *intrapreneurship.* More specifically, living in an urban area decreases the probability of being engaged in intrapreneurial activities by 5.9 percentage points. Thus, Hypothesis 1D is not supported.

4.2.2 Human capital

Model 2 in Table 2 demonstrates the effect of *human capital* on *intrapreneurship.* Hence, the results show that both *medium education* and *high education* are significantly positively related to *intrapreneurship.* Accordingly, the probability of being engaged in intrapreneurial activities is 5.4 percentage points higher for employees who finished medium education, i.e.,

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[26] This can be calculated by setting the first order derivative of the regression equation with respect to *age* equal to zero. The regression equation shows a coefficient of 0.61667 for *age* and -0.08429 for *age2.* Subsequently, the first order derivative is taken from the equation: $0.61667age = -0.08429age^2$, which gives $0.61667 = -0.016858age$, which gives a solution of *age* = 36.58 years. Hence, rounding this off gives an age of 37 years.

mbo, as compared to have finished low education, i.e., high-school. In addition, the probability of being engaged in intrapreneurial activities is 21.1 percentage points higher for employees who finished high education, i.e., hbo or university, as compared to employees who have finished high school. Thus, Hypothesis 2 is supported.

4.2.3 Perceptual variables

Model 3 in Table 2 shows the marginal effects of *perceptual variables* on being engaged in intrapreneurial activities. As can be noticed, all the variables are significantly positively related to *intrapreneurship*. More specifically, *suskill* is significantly positively related to *intrapreneurship* where the probability of being engaged in intrapreneurial activities is 9.3 percentage points higher for employees who perceive they have the right skills and knowledge to start up a business, as compared to employees who do not think they have the right skills and knowledge. Hence, Hypothesis 3a is supported.

Next, *nofearfailure* appears to be significantly positively related to *intrapreneurship* where the probability of being engaged in intrapreneurial activities is 3.8 percentage points higher for employees who perceive that fear of failure would not prevent them to start a business, as compared to employees who are held back by fear of failure in starting a business. Therefore, Hypothesis 3b is supported.

Finally, *knowent* refers to an employees' social capital where it investigates the relationship between employees who personally know an entrepreneur and being engaged in intrapreneurial activities. The results show that the probability of being engaged in intrapreneurial activities is 11.6 percentage points higher for employees who personally know an entrepreneur, as compared to employees who do not know an entrepreneur. Hence, Hypothesis 3c is supported.

4.2.3 Job function

Model 4 in Table 2 shows the regression results of the independent variable *job function* on *intrapreneurship*. More specifically, the marginal effect of *managers* is significantly positively related to *intrapreneurship*. The probability of being engaged in intrapreneurial activities is 27.3 percentage points higher for employees who hold a management position, as compared to employees who hold support functions. Thus, it can be concluded that Hypothesis 4 is supported. Furthermore, the results show that *professional* is also significantly

positively related to *intrapreneurship.* Thus, the probability of being engaged in intrapreneurial activities is 7.3 percentage points higher for employees who are professionals within organizations, i.e., holding specific job functions, as compared to employees who hold support functions.

4.2.4 Type of organization

Model 5 shows the effect of *type of organization* on *intrapreneurship.* In contrast to the expectations, both *private* and *governmental* are not significantly related to *intrapreneurship*. Hence, Hypothesis 5 is not supported.

4.3 Robustness check

As all empirical models are subject to uncertainty, a commonly accepted method to test the structural validity of an empirical research is the robustness check. A robustness check examines how certain regression coefficients behave when some variables are removed or added (White and Lu, 2010). If the coefficients do not deviate much from the original model, then the coefficients are plausible and robust, which is interpreted as evidence of structural validity.

As it has been already explained, I have chosen the broadest definition of EEA as my dependent variable. To recall, my dependent variable, i.e., *intrapreneurship* is based on the question: "*In the last three years, have you been involved in the development of new activities for your main employer, such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary?".* This question is asked only to employees because intrapreneurs are entrepreneurial employees within organizations, and thus making it the most logical option as my dependent variable. Because of this, individuals who are currently unemployed, self-employed, seeking employment, disabled or retired, student or full-time home maker[27], are omitted from the analysis. Thus, this is not entirely fair as these individuals may have been intrapreneurs in the past three years, e.g., someone who is currently unemployed, may have been employed and engaged in intrapreneurial activities two years ago. Therefore, I have performed the robustness check in the following way.

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[27] See Appendix B, question 7.

4.3.1 Adult population

To begin, I have estimated binary logit models, with *intrapreneurship* as the dependent variable, based on the sample that includes the individuals who have been omitted from the analysis in this thesis, which I have named as the adult population. In this way, we can observe the effect of an increase in the sample size. Moreover, as there can be made a distinction between leading and supporting roles with respect to *intrapreneurship*[28], I have also estimated binary logit models based on intrapreneurs with a leading role, which as dependent variable I have named as *intrapreneurship leading*. In this way, we can observe the effect of a decrease in the amount of intrapreneurs, since not all intrapreneurs have had a leading role. However, a small side note that has to be mentioned is the ommitance of the variables *job_function* and *organization_type*, which could not be included in the analysis. More specifically, the questions to which these variables are based, have only been answered by individuals who are currently in paid-employment.

4.3.2 Employment population

For the second part of the robustness check, I have focused on the sample size that has been used for this thesis, i.e., the employment population. More specifically, I have estimated binary logit models with the dependent variable based on employees who are currently engaged in intrapreneurial activities, which I have named as *intrapreneurship now*. In this way, we can observe the effect of a more narrow definition of *intrapreneurship* as current intrapreneurs are a subgroup of employees who were engaged in intrapreneurial activities during the past three years. Because current intrapreneurs might have had a leading role as well, I have estimated binary logit models with current intrapreneurs who have a leading role, which as dependent variable I have named as *intrapreneurship now and leading*. In this way the dependent variable is even more constricted, which will add more value to the robustness check.

4.3.3 Results

Table 5,6,7,8 and 9 in Appendix A of this thesis show the results of the robustness check. More specifically, Table 5 and 6 refer to the first part of the robustness check, i.e., the adult population. Table 5 includes binary logit models with *intrapreneurship* as dependent variable and adult population as the sample size. The results show no major differences compared to the original models, i.e., Table 2. Thus, the significance of the independent variables

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[28] See Appendix B, question 11a and question 12a.

correspond with the significance of the independent variables of the original models, whereas a small difference is that *suskill* is no longer significant in Model 4. This is an interesting finding as *suskill* is fully mediated by *education* in Model 4, whereas it first showed a significant influence on *intrapreneurship* in Model 3. Thus, this implies that *education* plays an important role in the employees' perception of having the right knowledge and skills with respect to start up a business. Also, *male* is fully mediated by the *perceptual variables* in Model 3, whereas it had a significant influence on *intrapreneurship* in Model 1. In addition, the marginal effects show no large deviations compared with the original model, except for *age,* which shows relatively high marginal effects. However, this is not entirely unexpected since the analysis is based on a larger sample size. Further on, Table 6 shows the results of *intrapreneurship leading* based on the adult population sample size. The significance of the independent variables are quite similar to the original model, except for *urban* and *medium education.* Both variables do not have a significant influence on *intrapreneurship leading.* With respect to education this is not surprising as higher educated employees are more likely to get a responsible task (leading intrapreneur) than medium educated employees. In addition, it must be noted that the marginal effects of Table 6 are relatively smaller compared to the original models. Thus, the reason lies in the more narrow definition of being an intrapreneur (leading), in spite of the fact that Table 6 is also based on a larger sample size.

Table 7, 8 and 9 relate to the second part of the robustness check, i.e., the employment population. Table 7 shows the results of *intrapreneurship now*, which focuses on current intrapreneurs. The significance of the models correspond with the significance of the original models, except for *medium education* and *urban*. Also, the marginal effects are extremely smaller, which is not illogical as *intrapreneurship now* is a more narrow definition of *intrapreneurship* with a reduced number of intrapreneurs. Table 8 shows the results of *intrapreneurship leading* for the employment population. The results are similar to the results from Table 7 where in addition there are also a few indirect effects noticeable. In addition to the fact that *male* is fully mediated by both *perceptual variables* and *job_function* in respectively Model 3 and 4, *high income* is fully mediated in Model 6, whereas it had a significant influence on *intrapreneurship now* in Model 1. Finally, Table 9 relates to the results of *intrapreneurship now and leading.* As we have once again narrowed our dependent variable, this is noticeable in the results. Not only are the marginal effects smaller, but also the significance is less strong compared to the original models. To conclude, the results of both the adult population and employment population are quite similar to the original model.

Although there are a few outliers, such as *urban* and *medium education*, approximately the same significant results can be observed, which confirms the results of our original models, i.e. Table 2, to be robust.

5. Discussion

This chapter provides further insights into the regression results by discussing the determinants that have been subject to the empirical analysis. Subsequently, some limitations and recommendations for further research are discussed.

5.1 Discussion of the results

Before we have performed the multivariate analysis, we have taken a look at the first results by carrying out a bivariate analysis. The results showed that intrapreneurs and non-intrapreneurs differed most in education and job function. More specifically, within the group of intrapreneurs it was noticeable that the highest education level had the largest proportion of intrapreneurs, whereas relatively few intrapreneurs finished a medium or low education. Hence, this would imply that employees who complete an education at the highest level, i.e., university or higher vocational education, have the highest chance to be engaged in intrapreneurial activities. A similar effect was noticeable with respect to job function, only the other way around. More specifically, support functions had the largest proportion of non-intrapreneurs, whereas very few non-intrapreneurs had management oriented jobs: there are roughly two times as less managers within the group of non-intrapreneurs as in the group of intrapreneurs. Hence, this would imply that employees with support functions have the smallest chance to be engaged in intrapreneurial activities. Another remarkable result was the percentage of both intrapreneurs and non-intrapreneurs with respect to region of residence. Namely, the results showed that both intrapreneurs and non-intrapreneurs are most common to live in rural areas than urban areas, which is in contradiction with Hypothesis 1d.

Subsequently, what followed was a multivariate analysis consisting of 6 binary logit models with the aim to observe the effect on each of the independent variables while taking into account other variables in the regression. A summary of the regression results and conclusions regarding the hypotheses can be found in Table 3.

Table 3: Summary of the regression results.

Hypothesis	Regression result	Conclusion
Hypothesis 1a: Male employees are more likely to be engaged in intrapreneurial activities.	+	*Hypothesis supported*
Hypothesis 1b: There is an inverted U-shaped relationship between age and being engaged in intrapreneurial activities.	Inverted U-relationship	*Hypothesis supported*
Hypothesis 1c: Employees with higher household incomes, are more likely to be engaged in intrapreneurial activities.	+	*Hypothesis supported*
Hypothesis 1d: Employees who live in urban areas are more likely to be engaged in intrapreneurial activities than employees who live in rural areas.	–	*Hypothesis not supported*
Hypothesis 2: The higher the employees are educated, the more likely it is that they are engaged in intrapreneurial activities.	+	*Hypothesis supported*
Hypothesis 3a: Employees who perceive that they have the right knowledge, skills and experience to start a new business, are more likely to be engaged in intrapreneurial activities.	+	*Hypothesis supported*
Hypothesis 3b: Employees who perceive that fear of failure would not prevent them to start a new business, are more likely to be engaged in intrapreneurial activities.	+	*Hypothesis supported*
Hypothesis 3c: Employees who personally know other entrepreneurs, are more likely to be engaged in intrapreneurial activities.	+	*Hypothesis supported*
Hypothesis 4: Employees who have a management-oriented job, are more likely to be engaged in intrapreneurial activities, as compared to employees with support functions.	+	*Hypothesis supported*
Hypothesis 5: Employees who work for private-for profit organizations, are more likely to be engaged in intrapreneurial activities, as compared to employees who work for a non-profit organization	0	*Hypothesis not supported*

Notes: This table provides a summary of the estimated regression results. "+" implies that there is a significant positive relationship between the corresponding variable and intrapreneurship. "-" implies that there is a significant negative relationship between the corresponding variable and intrapreneurship. "0" implies that there is no significant relationship between the corresponding variable and intrapreneurship.

Hypothesis 1 is related to the demographic determinants of intrapreneurship and is divided into four sub-hypotheses. The first sub-hypothesis (Hypothesis 1a) tested the relationship between *gender* and *intrapreneurship*. The results of Model 1 showed that male employees are more likely to be engaged in intrapreneurial activities. Having hypothesized Hypothesis 1a partly on the relationship between gender and entrepreneurial activity, the confirmation of the hypothesis was expected as most of the previous studies in this field show that men are about twice as likely involved in entrepreneurial activity than women (Dalmar and Davidsson, 2000; Reynolds et al., 2002a; Minniti et al., 2005). Regarding EEA, Bosma et al., (2013) come to the same conclusion as they point out that male employees are on average almost twice as likely to be involved in entrepreneurial employee activity as female employees. The main difference is that Bosma et al., (2013) include 52 countries in their analysis (without including variables that identify different countries), whereas the results in this thesis solely relate to Dutch employees. Thus, the statistical evidence for the fact that Dutch male employees are more likely to be engaged in intrapreneurial activities is an unique insight, and thus a starting point for further research as there are studies that point to the substantial variations between countries in the involvement of men or women in entrepreneurial activity due to specific country conditions (Delmar, 2003), which may also apply to intrapreneurship. Indeed, Nystrom (2012) uses data from the Swedish 2011 GEM in order to empirically investigate the differences between Swedish entrepreneurial employees and independent entrepreneurs. Thus, she concludes that there is no significant association between gender and entrepreneurial employee activity, which is in contrary to the results in this thesis.

Looking at Hypothesis 1b, it can be concluded that the age of an employee is significantly positively related to being engaged in intrapreneurial activities, which is also in line with previous research. More specifically, where the study of Douglas and Fitzsimmons (2012) does not find a significant relationship between entrepreneurial intentions and age, there are more studies that do (Bosma et al., 2013; Carstensen et al., 1999; Levesque and Minniti, 2006). In addition, the results of the second sub-hypothesis showed an inverted U-shaped relationship between age and being engaged in intrapreneurial activities.

Thus, this implies that employees are increasingly likely to become intrapreneurs as they age, up to a certain point, after which the probability of becoming an intrapreneur declines with age. However, it is most likely that, provided that the research into intrapreneurship continues to expand, studies in this field will provide mixed results. More specifically, where De Jong et

al., (2011) explore how intrapreneurial behavior[29] correlates with several individual and job-related variables and find the same inverted U-shaped relationship, Bosma et al., (2013) do not find any statistical evidence for an inverted U-shaped relationship between age and EEA. Indeed, they conclude that all age categories[30], except for category 25-34, are positively significantly related to EEA, which is in contradiction with the findings in this study. This indicates that an inverted U-shaped relationship between age and intrapreneurship is far away to be generalized where further research is needed in order to either confirm the existence of the relationship, or to prove the contrary.

Further on, the results regarding Hypothesis 1c showed that the higher the household income of an employee, the more likely the employee is to be engaged in intrapreneurial activities. Moreover, *high hhincome* had the largest marginal effect of all demographic determinants, which implies that employees who are in the highest household income category, i.e., a household income of more than €60.000, are 26 percentage points more likely to be engaged in intrapreneurial activities than those in the lowest household income category, i.e., a household income of less than €30.000. However, it should be noted that *high hhincome* may have an association with other variables, such as *job function.* More specifically, having a higher position in an organization most likely leads to a higher household income, which could explain the fact why *household income* is significantly positively related to *intrapreneurship.* An interesting question then is whether *household income* is still positively related to *intrapreneurship* when controlling for *job function.* In other words, is there a positive relationship between *household income* and *intrapreneurship* within the group of *managers* or *professionals*? The correlation matrix in Appendix A of this thesis (Table 4) shows that there is a significant modest positive relationship between *managers* and *hh income* (r=0,244) and a significant weak positive relationship between *professionals* and *hh income* (r=0.092), which is also visible in Model 4 from Table 2 as *household income* remains significant when controlling for *job function.* In addition, it cannot be concluded that *job function* "explains" why employees in a higher household income category are more likely to be engaged in intrapreneurial activities.

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[29] In their study, the authors define intrapreneurial behavior, and thus the dependent variable, as a higher-order construct reflected in three dimensions: innovativeness, pro-activeness and risk-taking. They construct their dependent variable on a nine-item measure (consisting of survey data from 179 employees and their peers.

[30] In their study, the authors divide age in the following categories: 18-25; 25-34; 35-44; 45-54; 55-65 where the last category serves as the reference category.

Finally, the results of Hypothesis 1d show that there is a significant negative relationship between *urban* and *intrapreneurship*. More specifically, employees who live in rural areas have a higher probability of being engaged in intrapreneurial activities, as compared to employees who live in urban areas. This finding is in contradiction with previous research as the conviction is that urban areas are positively related to entrepreneurial activity (Freire-Gibb and Nielsen, 2014; Lee et al., 2006). However, there are a few studies that indicate that entrepreneurial activity is more common in rural than urban areas, because of the country-specific effects (Alanen, 1997; Tervo, 2008). More specifically, Tervo (2008) investigates the transition and alternation between self-employment, paid-employment and non-employment in Finland for the years 1987-1999 by estimating several logit models in order to observe the effect of rural areas. He concludes that serial entrepreneurship between different labour markets, i.e., self-employment, paid-employment and non-employment, is more common in rural than urban labour markets in Finland. However, a side note is that rural labour markets in Finland are characterized by lower rates of employment, self-sufficiency and dependency, which implies that self-employment is a necessity. Another study of Jaiswal et al., (2012), that focuses on India, concludes that women who live in rural areas are more likely to become self-employed than women who live in urban areas. This is explained by the emerging labour market for women in India as they are becoming increasingly important in generating income for the family. Thus, these and other (cultural) factors could play a role in the decision of women who live in rural areas to become self-employed.

These studies not only demonstrate how important country-specific effects are, but it also may explain the significant negative relationship between *urban* and *intrapreneurship* in this thesis. More specifically, as this thesis exclusively focuses on the Netherlands, there are a few explanations possible when taking into account some possible specific effects for the Netherlands. First, "Het Nieuwe Werken" [31] in the Netherlands enables employees, among others, to work from home and thus gives employees more "space" and freedom to choose where they would want to live (employees will be more inclined in choosing to live in an rural area with "Het Nieuwe Werken" than without, provided that their preference is to live in an

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[31] This concept in the Netherlands is part of a multidisciplinary development caused by the digital revolution. It involves renewing the physical workplace, the organizational structure and culture, management style, and not to mention the mentality of the knowledge worker and his manager. Consequently, this flexibility not only gives employees the opportunity to work from home, but it also reduces health-issues and may contribute to positive lifestyle behaviors (Bijl, 2009; Botterweck, 2003; Grzuwacz; Karasek, 1979; Karasek and Theorell, 1990; Joseph G., 2007).

rural area). In addition, as we have seen in Tabel 1, the age category 35-44 had the largest proportion within the group of intrapreneurs, which implies that the most intrapreneurs are in middle age. Taking into account the fact that people in middle age are usually "settled", this may also be an explanation for the fact why *urban* is significantly negatively related to *intrapreneurship* as "settled" people are often keen to found a family and therefore choose to live out of town because of the many positive externalities (Aday and Miles, 1982). However, further research should reveal whether these assumptions are true for the Netherlands. Thus, this could be a starting point for further research in order to examine why in some countries living in a urban area is positively related to being engaged in intrapreneurial activities and why in some countries not.

Hypothesis 2 tested the relationship between human capital and being engaged in intrapreneurial activities. Thus, the results from Model 2 showed that both variables, i.e., *medium education* and *high education,* were significantly positively related to *intrapreneurship.* In addition, where *medium education* had a moderate marginal effect (5.4 percentage points), *high education* had a high marginal effect (21 percentage points). These results are not unusual as many studies find evidence of strong correlations between high education and self-employment (Arenius and Minniti, 2005; Davidsson and Honig, 2003; Dickson et al., 2008). On the other hand, there are studies arguing that higher levels of education might have an opposite effect on self-employment, especially in countries with strong economic opportunities as they offer greater opportunities for high paid employment (Le, 1999; Van der Sluis et al., 2004). Hence, this could be an explanation for the results in this thesis, i.e., the strong effect of *high education* on *intrapreneurship,* as higher educated employees in the Netherlands (which is in general considered to be a country with strong economic opportunities) with a high degree of entrepreneurial behavior might rather opt for paid-employment instead of self-employment, despite the fact that they might have entrepreneurial intentions. However, choosing paid employment would not have to restrict them in exhibiting their entrepreneurial intentions as they have the option to be engaged in developing new products or services for their employer, i.e., being engaged in intrapreneurial activities. In line with this, De Jong et al., (2011) empirically investigated whether educational attainment is related to intrapreneurial behavior[32]. They conclude that employees who have a Master degree, are most likely to exhibit intrapreneurial behavior, whereas workers having a

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[32] The authors add the dummy variables: "Master degree" and "Bachelor degree" to their regression, whereas "none degree" serves as their reference category.

Bachelor degree were rated to be intrapreneurial as well (as compared to those with no degree at all), but not as strong as employees with a Master degree. Thus, their results correspond with the findings in this thesis and points out to the importance of employees' cognitive development where investment in additional education and training seems legitimate.

Furthermore, it must be noted that other unobservable factors may play a role in the relationship between *education* and *intrapreneurship*. More specifically, *education* might be endogenous, which means that there may be other factors that are related to the employees' education level and being engaged in intrapreneurial activities. For example, employees with a higher level of ability might have a higher education level as it takes them little effort to obtain this education. If these employees tend to be engaged in intrapreneurial activities, this might be due to the ability instead of the "effects" of their education level. Also, higher-educated employees could possess certain characteristics, such as pro-activeness and risk-taking (which has been discussed in the literature section) that could influence the likelihood of being engaged in intrapreneurial activities through *education*. Although most studies ignore the endogenous nature of education, there are a few studies that take into account this effect, for example, on the performance of entrepreneurs. Consequently, these studies show that education is indeed endogenous (Parker and Van Praag, 2006; Van der Sluis and Van Praag, 2004). However, further research is needed not only to determine whether *education* is endogenous with respect to *intrapreneurship*, i.e., further research should observe the effect of *education* when controlling for endogeneity, but also to investigate which unobservable factors that are.

Finally, as demographics are controlled in Model 2, a few interesting results can be observed. First, the marginal effect of *male* increases by almost 30%. As the bivariate analysis already showed us that 52% of intrapreneurs consists of men, Table 12 in appendix A of this thesis confirms that male employees also predominate across the different education levels with respect to being engaged in intrapreneurial activities. More specifically, Table 12 shows that there are significantly more male than female employees engaged in intrapreneurial activities across all education levels. In addition, there are more female employees (57.11%) that prove to be non-intrapreneurs, as compared to male employees (42.89%). In other words, it seems a matter of course that male employees are more likely to be engaged in intrapreneurial activities within the group of medium and high educated employees. Thus, it is hard to give an explanation for this finding as adding *education* to the model does not "explain" why *male*

is related to *intrapreneurship* as both variables are significant in Model 2. Hence, further research is needed to determine the exact cause of this finding as this could be a case of endogeneity. Second, *age* and *age^2* are no longer significant when *education* is simultaneously included in the regression, which implies that *age* and *age*2 run partly through *education,* and thus, there is an indirect effect in Model 2. In other words, *education* explains why aging employees, up to a certain point, are more likely to be engaged in intrapreneurial activities.

In addition, when all variables are simultaneously included in the regression, i.e., in Model 6, another interesting observation can be noticed with respect to *education*. More specifically, *medium education* is no longer significant in Model 6, whereas it showed a significant impact on *intrapreneurship* in Model 2. In order to investigate the cause, I have estimated binary logit models with *education* and *demographics* as control variables so that the remaining determinants can be added in order to observe what changes the significance of *medium education*. Hence, Table 10 in Appendix A of this thesis shows the results of this investigation where it can be noticed that the *perceptual variables* ensure that *medium education* is no longer significant, which can be observed in Model 2. These observations are not unusual as it has been proven in previous studies that perceptual factors may mediate the effects of *education* and *household income* (Dolinsky et al., 1993).

Hypothesis 3 tested whether *perceptual variables* are significantly related to *intrapreneurship.* More specifically, the results of Model 3 showed that employees who know an entrepreneur (*knowent*), perceive that they have the right skills and knowledge to start a new business *(suskill)* and perceive that fear of failure would not prevent them from starting a new business (*nofearfailure),* are more likely to be engaged in intrapreneurial activities. Hence, the findings in this thesis point to the importance of individual perceptions as determinants of being engaged in intrapreneurial activities, particularly because, to date, no association has been found between perceptual variables and being engaged in intrapreneurial activities (Martierena, 2013). However, the current findings do correspond with studies that investigate the influence of perceptual variables in other areas, such as entrepreneurship. More specifically, Arenius and Minniti (2005) use a large sample of individuals from 28 countries in order to investigate which variables significantly influence the decision to become an entrepreneur. They conclude among other things that all four perceptual variables in their regression, i.e., knowing other entrepreneurs, opportunity perception, confidence in one's

skills and fear of failure, are highly significant. Also, the study of Köllinger and Minniti (2006), which investigates the differences in the rate of entrepreneurial involvement between black and white Americans, emphasizes the importance of perceptual variables in the decision to start a new business by providing strong and significant results in their models.

In addition to the main results, another interesting fact can be observed from Model 3. More specifically, where gender significantly influenced the likelihood of being engaged in intrapreneurial activities in Model 1, it does not anymore when *perceptual variables* are included in the regression in Model 3. In other words, there is an explanation found for the fact why *male* is positively significantly related to *intrapreneurship* in Model 1, as it runs partly through the variables *suskill, nofearfailure* and *knowent* in Model 3. In order to be more precise, I have estimated separate binary logit models, which can be observed in Appendix A of this thesis, in order to find out which variable explains this "gender effect". More specifically, Table 11 shows the marginal effects of *suskill, nofearfailure* and *knowent,* where each *perceptual variable* is added separately to the demographic ones included in Model 1. The results show that *male* is significantly positively related to *intrapreneurship* in each model, except for Model 3. More specifically, *male* is no longer significant when *suskill* is added to the regression and thus it can be concluded that *suskill* is the variable that explains the "gender effect". In other words, specific knowledge and skills that employees perceive to have, seem to be essential in explaining why male employees are more likely to be engaged in intrapreneurial activities. Hence, further research is needed to determine what knowledge and skills this is as this might be very useful information for policymakers.

Hypothesis 4 tested the relationship between *job functions* and *intrapreneurship.* Hence, the results showed that both *managers* and *professionals* are significantly positively related to *intrapreneurship,* which is in accordance with several other studies in the field of entrepreneurial behavior. More specifically, the literature of CE already recognized middle-managers as a source of entrepreneurial activity by empirically showing that managers face better opportunities to identify and implement entrepreneurial ideas with the help of their different organizational roles (Hornsby et al., 2009; Kuratko et al. 1990). Regarding entrepreneurship, Kim et al. (2006) find a positive association between managerial work experience and becoming an entrepreneur: ten years of managerial experience doubles the likelihood of someone trying to start their own business. With respect to intrapreneurial

behavior, De Jong et al., (2011) find that both sales employees and managers, are more likely to exhibit intrapreneurial behavior, which is aligned to the findings in this thesis as sales managers are included in *managers*. In addition, Bosma et al. (2013) provide descriptive figures where they show a high prevalence of entrepreneurial employees in both managerial and professional job functions, which can only be confirmed from the results in this thesis. Hence, this emphasizes the importance of job functions at the higher hierarchical level with respect to being engaged in intrapreneurial activities as being a manager increases the probability of being engaged in intrapreneurial activities by 27 percentage points, which is an exceptional strong effect.

To recall, the reason for having used demographics as control variables was to observe whether there would be indirect effects among the independent variables. As we have already seen such an effect in Model 2 and Model 3, the same effect is noticeable in Model 4. More specifically, *male* becomes no longer significant anymore when *male* and *job function* are simultaneously included in the regression. In addition, the marginal effect of *male* is significantly lower in Model 4 (decreases with 42%). Consequently, it can be concluded that *male* does not influence the probability of being engaged in intrapreneurial activities anymore, whereas a significant relationship between *male* and *intrapreneurship* was found in Model 1. In other words, the influence of *male* on *intrapreneurship* runs partly through *job function*, and hence, there is an indirect effect here. The direct effect of *male* that was present in Model 1 is fully mediated by *job function* in Model 4. Another mediation effect occurs between *job function* and *education*. More specifically, Model 6 shows the marginal effects when all variables are simultaneously included in the regression. The results show that *professionals* becomes no longer significant, whereas it had a direct effect on *intrapreneurship* in Model 4. Hence, Table 10 in Appendix A of this thesis shows that *education,* especially higher education, is the cause of the indirect effect as the direct effect of *professionals* is fully mediated by *education* in Model 3. In general, further research is needed on this topic to find out what kind of characteristics in the discussed job functions explain the "gender effect" and what exact role does education play in the process of being engaged in intrapreneurial activities.

Finally, Hypothesis 5 tested whether the type of organization influences the likelihood of being engaged in intrapreneurial activities. As we have already seen, the results of the bivariate analysis showed that there are about the same amount of intrapreneurs as non-

intrapreneurs working for a private-for profit organization (intrapreneurs, 54.07%; non-intrapreneurs, 52.80%). In addition, the results of the multivariate analysis showed that *organizationtype* has no significant association with *intrapreneurship,* where the marginal effects are also very small. These findings suggest that it does not matter in which organization an employee works for as this does not significantly increase the probability of being engaged in intrapreneurial activities. However, if the dataset had made it possible, the type of organization could be refined, e.g., the nature of the product or service, the primary customer base or the detailed sector of activity, where perhaps significant results would emerge. An alternative approach might be to investigate the specific structure/characteristics of organizations that significantly increase the probability of employees to be engaged in intrapreneurial activities. For example, Alpkan et al., (2010) investigate the effects of organizational support factors, i.e., management support, allocation of free time, work discretion, performance based reward systems and tolerance for risk-taking, on the innovative performance of organizations, which is defined as intrapreneurship in their study. Via a questionnaire study covering 183 organizations in Turkey, they conclude that management support for idea development and tolerance of risk taking are significantly positively related to intrapreneurship, whereas work discretion is significantly negatively related to intrapreneurship. Moreover, as management support is found to be significantly positively related to intrapreneurship in multiple studies (Antoncic and Hisrich, 2001; Van der Sijde et al., 2013), this could be a good starting point for further research. More specifically, further research could focus on the validation of management support with respect to intrapreneurship, and if so, find out in what kind of organization, on the basis of clearly refined characteristics, this is common. In this way, we could get more insight in the exact type of organization that is related to intrapreneurship.

5.2 Limitations

Although this thesis provides some interesting results and indicates some important implications for policymakers, there are some limitations that should be taken into consideration when interpreting the results and drawing conclusions as there is scarcely any previous empirical research available to which the findings can be compared.

First of all, there have been a few attempts to measure intrapreneurship in previous studies, but for the first time intrapreneurship at the individual level is measured by, what GEM indicates as, entrepreneurial employee activity (EEA). Although I have tried to give robust

results by measuring intrapreneurship according to the broadest definition of EEA, using other definitions to measure intrapreneurship could lead to different results, which was also noticeable while performing the robustness check by using more narrow measurements of EEA. Furthermore, a major limitation of the dataset is the number of observations, and thus number of "intrapreneurs". "548" out of "2045" employees seems a rather small number of observations, which was also visible in the low explanatory power of the econometric models. More specifically, the R^2 values of all the logistic regressions were quite low, which means that a considerable degree of the variance of the models remains unexplained and consequently implies that the models have missing variables.

Regarding the independent variables, data on individual income levels is lacking with GEM surveys, so household income levels have been used instead. However, this leads to a measurement error: individuals from a household can hold different occupations at different organizations. Also, it should be kept in mind that *urban* only captures the province in which the employees live, and therefore does not consider infrastructure, migration movements, commuting, social networks and large/small cities. In the future, it would be interesting to develop a more precise measure of the region where employees live and work. Furthermore, the questions that were asked to employees in order to obtain variables, such as *suskill* and *nofearfailure* might elicit the respondent to give biased answers as the questions are based on what the respondent perceives. Hence, there might be a difference in perceiving something and actually observing something. Therefore, it is advisable for future research to use a more exact measure of the perceptual variables. In addition, endogeneity issues (e.g., with *education)* cause some implications whereby the interpretation of the results become less casual as I may be omitting significant variables that are not provided by the GEM survey, such as work experience, tenure or industry categories

Further on, since the dataset is solely focused on the Netherlands, there are both advantages and disadvantages. An advantage is that the study of a single country can be very intensive and conducted in considerable detail (Landman, 2008). More specifically, as I have shown that *urban* is negatively related to *intrapreneurship* in the Netherlands, this might have to do with country-specific effects, which can be different for each other country. At the same time, this is a disadvantage as the results are difficult to generalize where other conclusions could be drawn while investigating intrapreneurship in other countries. Nystrom (2012) illustrates this fact by investigating the differences between Swedish entrepreneurial employees and

independent entrepreneurs where she finds that only education and perceptions are significantly related to entrepreneurial employee activity, whereas this thesis finds many more (other) significant results. The study of Douglas and Fitzsimmons (2012), which investigates intrapreneurial intentions among 414 MBA students, shows the advantage of a multiple country study by adding dummy variables of 5 different countries in their multivariate analysis. In this way, the results of the different countries can be compared with each other where the presence of country-specific effects will become clear. Thus, further research should take these country-specific effects into account as this might further explain why employees choose to be engaged in intrapreneurial activities. Also, more diverse countries should be taken into account as it would be interesting to examine whether the conclusions of this thesis also apply to, for example, developing countries. More specifically, as developing countries are characterized by, on average, higher unemployment rates compared to developed countries, it would be interesting to examine whether this implies that individuals who are in paid-employment, get the chance to be engaged in intrapreneurial activities. Organizations in developing countries are perhaps less risky with respect to exploiting new business opportunities, so that intrapreneurial activity could be low. Thus, it would then be interesting, for example, to examine whether intrapreneurial individuals in developing countries take more risks as job security also tends to be low compared to developed countries.

6. Conclusion

This thesis was devoted to an exploratory study into the individual-level determinants of intrapreneurship in the Netherlands. Exploratory because, to date, such an empirical study was lacking for the Netherlands. Using special data that was measured at the individual level, I have attempted to find an answer on the question: *"Which employees are most likely to be engaged in intrapreneurial activities?"* To answer this question structurally, I have subdivided the question into the following determinants: Demographics, human capital, perceptions, job function and type of organization.

The demographic determinants consisted of gender, age, household income and region where the employees live. I have come to the conclusion that all demographic determinants have a significant association with the engagement in intrapreneurial activities. More specifically, male employees, aging employees (up to a certain age), employees with a higher household income (as compared to employees with a low household income) and those who live outside the Randstad, have a higher probability to be engaged in intrapreneurial activities. With respect to human capital, I conclude that the higher an employee is educated, the higher the probability that the employee is engaged in intrapreneurial activities, as compared to employees who have not studied further than high-school. The premise of investigating the individual perceptions, i.e., social capital, self-efficacy and risk-taking, was to see whether intrapreneurs have the same perceptions as entrepreneurs, and thus whether this has an influence on being engaged in intrapreneurial activities. Hence, it appeared that all perceptions had a significant influence on the engagement in intrapreneurial activities. More specifically, employees who know other entrepreneurs (social capital), perceive that they have the right skills and knowledge to start a new business (self-efficacy) and not be held back by fear of failure when thinking about starting a new business (risk-taking), have a higher probability to be engaged in intrapreneurial activities, as compared to their counterparts. Furthermore, the job function within the organization also proved to be important with respect to being engaged in intrapreneurial activities. Namely, managers in general (e.g., sales managers, floor managers, directors) and professionals within organizations, have a higher probability to be engaged in intrapreneurial activities, as compared to employees who hold support functions within organizations. The last determinant concerned the type of organization, where I endeavored to examine whether employees who work for private for-profit organizations, have a higher probability to be engaged in intrapreneurial activities, as compared to employees who work for non-profit organizations. The results did not appear to

be significant, and thus it can be concluded that the type of organization does not increase the probability of an employee to be engaged in intrapreneurial activities.

While performing the analysis in this thesis, some additional findings came to light which explained some of the determinants, also referred to as indirect effects. More specifically, the gender effect, which concerns the question why some outcomes are different for men or women, seems to be explained by one of the perceptions. More specifically, having a high degree of self-efficacy, i.e., perceive to have the right knowledge and skills to start a new business, and being a manager, explains why male employees are more likely to be engaged in intrapreneurial activities. Moreover, perceptions seem to be an important factor in explaining the determinants as they also explain why employees with a medium education, i.e., mbo, are more likely to be engaged in intrapreneurial activities. Another additional finding with respect to job-function was that the engagement in intrapreneurial activities by professionals, is explained by the educational attainment. More specifically, finishing higher education, i.e. university or hbo, explains why professionals are more likely to be engaged in intrapreneurial activities.

To conclude, in addition to the fact that this thesis contributes to the poor amount of empirical studies on intrapreneurship, it also indicates some interesting insights for future research where a new perspective on the determinants of intrapreneurship is provided. More specifically, there has been given a clear picture of the Dutch intrapreneur where many determinants play a significant role in becoming one. In particular, it has been found that perceptions, education and being a manager play an important role in the process of being engaged in intrapreneurial activities. However, perceptions are hardly to change as this is something that is embedded in an individual's personality, e.g., fear of failure, whereas obtaining the right knowledge and skills or becoming a manager can be achieved through education and training. Thus, this can point to a key message for policymakers, e.g., to improve the education system using educational activities (programs/teaching methods) related to the development of entrepreneurial competences and initiatives at all educational levels as it seems that education is a connecting piece with many other factors. More specifically, it not only explains the association between other determinants and intrapreneurship, but also possibly moderates other determinants with respect to being engaged in intrapreneurial activities. However, further research should investigate the specific role of education by, first of all, validate the results of this thesis as I have used a rather small

sample in my analysis by focusing solely on the Netherlands. Thus, it is recommended for other countries to carry out an identical empirical research with respect to intrapreneurship as this will contribute to our better understanding of the phenomenon. Despite of the fact that the results should be interpreted in prudence, policymakers, researchers in the Netherlands and researchers all over the world could benefit from these unique insights by considering it as a stepping stone towards the ultimate goal: integrating both intrapreneurship and entrepreneurship in our lives.

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8. Appendix A

Table 4: Correlation matrix of the independent variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Intrapreneurship																			
(2) Male	.08***																		
(3) Age	.01	-.05***																	
(4) Age^2	-.00	-.05**	.99***																
(5) Low hhincome	-.12***	-.07***	-.07***	-.04**															
(6) Medium hhincome	-.08***	-.05**	-.02	-.03	-.63***														
(7) High hhincome	.19***	.14***	.10***	.09***	-.25***	-.59***													
(8) Urban	-.03	-.03	-.02	-.02	.06***	-.05**	.00												
(9) Low education	-.17***	-.00	.08***	.11***	.23***	-.05**	-.18***	.00											
(10) Med education	-.10***	.03	-.10***	-.10***	-.01	.12***	-.15***	-.05***	-.46***										
(11) High education	.25***	-.03	.01	-.01	-.21***	-.07***	.31***	.05**	-.53***	-.51***									
(12) Knowent	.19***	.11***	-.07***	-.08***	-.09***	-.07***	.18***	.00	-.10***	-.02	.11***								
(13) Suskill	.19***	.20***	.06***	.04*	-.12***	-.07**	.20***	.00	-.14***	.00	.14***	.23***							
(14) Nofearfailure	.05	.08***	.05***	.06***	-.01	-.05**	.08***	.00	.01	.01	-.03	.03*	.10***						
(15) Managers	.26***	.10***	.06***	.05**	-.09***	-.15***	.26***	.03	-.11***	-.05**	.14***	.14***	.15***	.02					
(16) Professionals	.02	.13***	-.02	-.02	-.11***	.07***	.07***	-.01	-.17***	-.09***	.24***	.01	.06**	.02	-.28***				
(17) Supportfunctions	-.22***	-.19***	-.03	-.02	.17***	.10***	-.27***	-.02	.23***	.11***	-.32***	-.12***	-.16***	-.03	-.52***	-.67***			
(18) Private	.01	.21***	-.11***	-.11***	.02	-.01	.00	-.02	.13***	.02	-.14***	.08***	.13***	-.01	.07***	-.06**	-.00		
(19) Governmental	.01	-.08***	.05**	.05**	-.05**	.02	.02	.00	-.11***	-.08***	.17***	-.03	-.07***	-.05**	-.06***	.17***	-.11***	-.51***	
(20) Non-profit	-.03	-.16***	.08***	.08***	.03	-.00	-.02	.02	-.05**	.04*	.01	-.06***	-.08***	.05**	-.02	-.09***	.10***	-.66***	-.30***

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.

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Table 5: Robustness check for the adult population with *intrapreneurship* as the dependent variable

	Model 1	Model 2	Model 3	Model 4
Demographics				
Male	**0.038****	**0.049*****	0.023	**0.036****
	(0.015)	*(0.015)*	*(0.016)*	*(0.016)*
Age	**0.173*****	**0.136*****	**0.153*****	**0.121*****
	(0.041)	*(0.042)*	*(0.044)*	*(0.044)*
Age^2	**-0.025*****	**-0.020*****	**-0.022*****	**-0.018*****
	(0.005)	*(0.005)*	*(0.005)*	*(0.005)*
Medium hhincome	**0.138*****	**0.095*****	**0.129*****	**0.090*****
	(0.016)	*(0.017)*	*(0.018)*	*(0.018)*
High hhincome	**0.200*****	**0.109*****	**0.168*****	**0.088*****
	(0.033)	*(0.031)*	*(0.031)*	*(0.031)*
Urban	**-0.055****	**-0.060****	**-0.060****	**-0.064*****
	(0.024)	*(0.024)*	*(0.025)*	*(0.025)*
Human capital				
Medium education		**0.051*****		**0.048*****
		(0.018)		*(0.019)*
High education		**0.179*****		**0.171*****
		(0.020)		*(0.021)*
Perceptual variables				
Knowent			**0.067*****	**0.062*****
			(0.017)	*(0.017)*
Suskill			**0.035****	0.026
			(0.017)	*(0.017)*
No fearfailure			**0.000**	**0.010**
			(0.016)	*(0.016)*
Observations	2543	2543	2408	2408
Log pseudolikelihood	-1192.9324	-1150.2857	-1130.2867	-1093.2155
McFadden's (pseudo) R^2	0.0630	0.0965	0.0719	0.1024

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

Table 6: Robustness check for the adult population with *intrapreneurship leading* as the dependent variable

	Model 1	Model 2	Model 3	Model 4
Demographics				
Male	**0.026****	**0.036*****	**0.015**	**0.026****
	(0.011)	*(0.011)*	*(0.012)*	*(0.012)*
Age	**0.131*****	**0.113*****	**0.107*****	**0.093*****
	(0.032)	*(0.034)*	*(0.033)*	*(0.035)*
Age^2	**-0.017*****	**-0.015*****	**-0.014*****	**-0.013*****
	(0.004)	*(0.004)*	*(0.004)*	*(0.004)*
Medium hhincome	**0.079*****	**0.050*****	**0.074*****	**0.047*****
	(0.011)	*(0.012)*	*(0.012)*	*(0.012)*
High hhincome	**0.168*****	**0.086*****	**0.138*****	**0.067*****
	(0.027)	*(0.022)*	*(0.026)*	*(0.021)*
Urban	**-0.012**	**-0.018**	**-0.014**	**-0.019**
	(0.017)	*(0.017)*	*(0.018)*	*(0.018)*
Human capital				
Medium education		**0.005**		**0.002**
		(0.011)		*(0.011)*
High education		**0.119*****		**0.171*****
		(0.015)		*(0.015)*
Perceptual variables				
Knowent			**0.042*****	**0.039*****
			(0.013)	*(0.012)*
Suskill			**0.030****	**0.025****
			(0.013)	*(0.012)*
No_fearfailure			**0.000**	**0.008**
			(0.012)	*(0.012)*
Observations	2543	2543	2408	2408
Log pseudolikelihood	-722.7325	-677.0707	-677.8799	-634.6405
McFadden's (pseudo) R^2	0.0828	0.1408	0.0959	0.1535

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

Table 7: Robustness check for the employment population with *intrapreneurship now* as the dependent variable.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographics						
Male	**0.034***	**0.047***	**0.018**	**0.017**	**0.032***	**0.022**
	(0.018)	(0.017)	(0.018)	(0.018)	(0.018)	(0.019)
Age	**0.127***	**0.105***	**0.115***	**0.111***	**0.136***	**0.091***
	(0.051)	(0.053)	(0.052)	(0.051)	(0.052)	(0.055)
Age^2	**-0.016***	**-0.013***	**-0.014***	**-0.014***	**-0.017***	**-0.011***
	(0.0056)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)
Medium hhincome	**0.121***	**0.078***	**0.107***	**0.099***	**0.122***	**0.059***
	(0.018)	(0.019)	(0.019)	(0.019)	(0.018)	(0.021)
High hhincome	**0.180***	**0.090***	**0.140***	**0.116***	**0.181***	**0.031**
	(0.037)	(0.034)	(0.037)	(0.035)	(0.037)	(0.032)
Urban	**-0.033**	**-0.038**	**-0.034**	**-0.039**	**-0.032**	**-0.041**
	(0.027)	(0.027)	(0.028)	(0.027)	(0.028)	(0.028)
Human capital						
Medium education		**0.012**				**0.006**
		(0.020)				(0.022)
High education		**0.159***				**0.140***
		(0.023)				(0.026)
Perceptual variables						
Knowent			**0.067***			**0.052***
			(0.019)			(0.019)
Suskill			**0.058***			**0.043***
			(0.019)			(0.019)
Nofearfailure			**0.016**			**0.025**
			(0.019)			(0.018)
Job functions						
Managers				**0.174***		**0.130***
				(0.029)		(0.029)
Professionals				**0.049***		**-0.000**
				(0.021)		(0.021)
Type of organization						
Private					**0.008**	**0.007**
					(0.020)	(0.021)
Governmental					**0.034**	**0.024**
					(0.027)	(0.028)
Observations	1839	1839	1747	1839	1805	1715
Log pseudolikelihood	-831.1764	-799.740	-784.1949	-807.9020	-820.307	-732.6805
McFadden's (pseudo) R^2	0.0445	0.0806	0.0590	0.0713	0.0462	0.1107

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

Table 8: Robustness check for the employment population with *intrapreneurship leading* as the dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographics						
Male	**0.039*****	**0.051*****	0.017	0.019	**0.037****	0.018
	(0.015)	*(0.015)*	*(0.016)*	*(0.015)*	*(0.016)*	*(0.016)*
Age	**0.133*****	**0.113****	**0.100****	**0.112****	**0.134*****	0.067
	(0.047)	*(0.050)*	*(0.046)*	*(0.046)*	*(0.047)*	*(0.049)*
Age^2	**-0.017*****	**-0.014****	**-0.013****	**-0.015****	**-0.017*****	-0.009
	(0.006)	*(0.006)*	*(0.006)*	*(0.006)*	*(0.006)*	*(0.006)*
Medium hhincome	**0.094*****	**0.055*****	**0.084*****	**0.071*****	**0.094*****	**0.033***
	(0.015)	*(0.016)*	*(0.016)*	*(0.015)*	*(0.015)*	*(0.018)*
High hhincome	**0.227*****	**0.122*****	**0.168*****	**0.142*****	**0.227*****	0.041
	(0.036)	*(0.032)*	*(0.033)*	*(0.031)*	*(0.036)*	*(0.026)*
Urban	**-0.010**	**-0.016**	**-0.010**	**-0.015**	**-0.009**	**-0.019**
	(0.023)	*(0.023)*	*(0.023)*	*(0.022)*	*(0.024)*	*(0.024)*
Human capital						
Medium education		0.012				-0.011
		(0.020)				*(0.017)*
High education		**0.159*****				**0.125*****
		(0.023)				*(0.022)*
Perceptual variables						
Knowent			**0.070*****			**0.057*****
			(0.016)			*(0.015)*
Suskill			**0.070*****			**0.056*****
			(0.016)			*(0.015)*
Nofearfailure			0.020			**0.030****
			(0.016)			*(0.015)*
Job functions						
Managers				**0.199*****		**0.156*****
				(0.025)		*(0.025)*
Professionals				**0.051*****		0.011
				(0.017)		*(0.017)*
Type of organization						
Private					0.014	0.008
					(0.018)	*(0.018)*
Governmental					0.025	0.018
					(0.024)	*(0.023)*
Observations	1839	1839	1747	1839	1805	1715
Log pseudolikelihood	-656.4677	-615.8582	-602.0786	-616.6489	-652.3493	-532.5802
McFadden's (pseudo) R^2	0.0710	0.1284	0.1053	0.1273	0.0706	0.2032

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

Table 9: Robustness check for the employment population with *intrapreneurship now and leading* as the dependent variable.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Demographics						
Male	0.024*	0.033**	0.011	0.010	0.024*	0.014
	(0.014)	(0.013)	(0.014)	(0.014)	(0.014)	(0.014)
Age	0.105***	0.093**	0.086**	0.092**	0.107***	0.066
	(0.040)	(0.044)	(0.041)	(0.041)	(0.041)	(0.045)
Age^2	-0.012**	-0.011**	-0.010**	-0.011**	-0.013**	-0.008
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Medium hhincome	0.073***	0.043***	0.067***	0.059***	0.073***	0.029*
	(0.013)	(0.014)	(0.014)	(0.013)	(0.013)	(0.016)
High hhincome	0.160***	0.080***	0.128***	0.102***	0.161***	0.031
	(0.032)	(0.026)	(0.030)	(0.027)	(0.032)	(0.023)
Urban	-0.008	-0.011	-0.011	-0.011	-0.007	-0.017
	(0.020)	(0.020)	(0.021)	(0.020)	(0.021)	(0.021)
Human capital						
Medium education		0.012				-0.007
		(0.020)				(0.015)
High education		0.159***				0.102***
		(0.023)				(0.020)
Perceptual variables						
Knowent			0.038***			0.028**
			(0.015)			(0.014)
Suskill			0.046***			0.036***
			(0.014)			(0.014)
Nofearfailure			0.006			0.012
			(0.014)			(0.014)
Job functions						
Managers				0.133***		0.108***
				(0.022)		(0.023)
Professionals				0.032**		0.006
				(0.015)		(0.015)
Type of organization						
Private					-0.004	-0.006
					(0.016)	(0.016)
Governmental					0.003	-0.002
					(0.021)	(0.020)
Observations	1839	1839	1747	1839	1805	1715
Log pseudolikelihood	-536.8569	-504.8469	-505.8505	-513.2283	-534.2428	-456.0801
McFadden's (pseudo) R^2	0.0639	0.1197	0.0816	0.1051	0.0629	0.1671

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

Table 10: Marginal effects of binary logit models with *intrapreneurship* as dependent variable

	Model 1	Model 2	Model 3	Model 4
Demographics				
Male	0.073***	0.040**	0.054***	0.066***
	(0.020)	(0.021)	(0.020)	(0.020)
Age	0.075	0.061	0.058	0.088
	(0.060)	(0.060)	(0.059)	(0.061)
Age^2	-0.010	-0.009	-0.009	-0.012
	(0.008)	(0.007)	(0.007)	(0.008)
Medium hhincome	0.103***	0.088***	0.080***	0.102***
	(0.022)	(0.023)	(0.023)	(0.023)
High hhincome	0.154***	0.095**	0.088**	0.149***
	(0.041)	(0.040)	(0.039)	(0.041)
Urban	-0.064**	-0.067**	-0.070**	-0.064**
	(0.032)	(0.032)	(0.031)	(0.032)
Human capital				
Medium education	0.054**	0.041	0.046*	0.054**
	(0.025)	(0.026)	(0.025)	(0.025)
High education	0.211***	0.192***	0.185***	0.211***
	(0.027)	(0.027)	(0.028)	(0.027)
Perceptual variables				
Knowent		0.111***		
		(0.021)		
Suskill		0.094***		
		(0.021)		
Nofearfailure		0.046**		
		(0.021)		
Job functions				
Managers			0.234***	
			(0.032)	
Professionals			0.027	
			(0.024)	
Type of organization				
Private				0.024
				(0.024)
Governmental				-0.020
				(0.030)
Observations	2543	2543	2408	2408
Log pseudolikelihood	-1192.9324	-1150.2857	-1130.2867	-1093.2155
McFadden's (pseudo) R^2	0.0630	0.0965	0.0719	0.1024

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

Table 11: Marginal effects of binary logit models with *intrapreneurship* as dependent variable

	Model 1	Model 2	Model 3	Model 4
Demographics				
Male	**0.057***	**0.046***	**0.033**	**0.051***
	(0.020)	(0.020)	(0.020)	(0.020)
Age	**0.117***	**0.120***	**0.077**	**0.123***
	(0.059)	(0.059)	(0.059)	(0.060)
Age^2	**-0.016***	**-0.016***	**-0.011**	**-0.017***
	(0.007)	(0.007)	(0.007)	(0.007)
Medium hhincome	**0.155***	**0.141***	**0.144***	**0.156***
	(0.021)	(0.022)	(0.021)	(0.022)
High hhincome	**0.260***	**0.219***	**0.221***	**0.253***
	(0.041)	(0.041)	(0.041)	(0.042)
Urban	**-0.059***	**-0.060***	**-0.060***	**-0.060***
	(0.032)	(0.032)	(0.031)	(0.032)
Perceptual variables				
Knowent		**0.132***		
		(0.020)		
Suskill			**0.131***	
			(0.020)	
Nofearfailure				**0.047**
				(0.021)**

*** denotes significance at 1%; ** denotes significance at 5%; * denotes significance at 10%.
Source: Global Entrepreneurship Monitor (GEM) 2011.
The variable *age* is divided by 10 and *age2* by 10^2.
Robust standard errors are in parentheses.
The estimate of the parameter is not shown.

Table 12: Distribution of intrapreneurs across the different education levels

Intrapreneurship across different education levels	Female	Male
None	57.11%	42,89%
Low education	48.19%	51.81%
Medium education	45.19%	54.81%
High education	49.39%	50.61%

Pearson Chi2(3) = 13.6220; P=0.003

9. Appendix B

Selected questions from the GEM 2011 Adult Population Survey

Q1. What is your gender? **{GENDER}**

Male…………………………………….............. 1
Female…………………….…................. 2
Don't know…………………………….............-1
Refused…………………………….........……-2

Q2. What is your current age (in years)? **{AGE}**

Enter exact age at time of interview……………..
Don't know……………………   -1
Refused   -2

Q3. Which of these ranges best describes the total annual income of all the members of your household, including your income, as one combined figure? **{NLHHINC}**

Less than €30,000..   1
€ 30,000…………...   2
€30,000 to €60,000   3
€ 60,000…………...   4
More than €60,000……….....................................   5
Don't know...   -1
Refused..   -2

Q4. What is the name of the main region you live? **{NLHHINC}**

Randstad (Amsterdam, Rotterdam, The Hague).................   1
Rest of western region…………...................................   2
Northern region…………….   3
Eastern Region……………...   4
Southern region…………...   5
Refused...   -2

Q5. What is the highest level of education you have completed? **{NLREDUC}**

University...   0
Higher vocational training………………………........   1
Grammar school………………………………….......   2
Secondary vocational training…..   3

Secondary education/initial vocation…................................... 4
Primary education…............... 5
No education…………………... 6

Q6.

	Yes	No	Don't Know	Refused
Q6a. Do you know someone personally who started a business in the past 2 years? {KNOWENT}..	1	2	-1	-2
Q6b. Do you have the knowledge, skill and experience required to start a new business? {SUSKILL}...	1	2	-1	-2
Q6c. Would fear of failure prevent you from starting a business? {FEARFAIL}..	1	2	-1	-2

Q7. Which of the following describes your current employment status? Chose all that apply. {OCCU}

	Yes	No	Don't Know	Refused
Q7a. Employed by others in full-time work {OCCUFULL}...................	1	2	-1	-2
Q7b. Employed by others in part-time work {OCCUPART}	1	2	-1	-2
Q7c. Self-employed {OCCUSELF}..	1	2	-1	-2
Q7d. Seeking employment {OCCUSEEK}..	1	2	-1	-2
Q7e. Not working because I am retired or disabled {OCCURD}...........	1	2	-1	-2
Q7f. A student {OCCUSTU}...	1	2	-1	-2
Q7g. Full-time home-maker {OCCUHOME}	1	2	-1	-2
Q7h. Other (SPECIFY) _____ {OCCU_OTH}				

Q8. What type of organization are you working for: for a private for-profit firm, for the government or for a not for-profit organization? {IPORGTYPE}

Private for- profit 1
Government 2
Not for-profit 3
Other (SPECIFY) _____ {IPORGTYPE_OTH} ... 4

Q9. In the last three years, have you been involved in the development of new activities for your main employer, such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary?{IPACTIVE}

Yes…………... 1
No 2

Don't know .... -1
Refused... -2

Q10. And are you <u>currently </u>in the development of new activities for your main employer, such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary? **{IPACTIVENOW}**

Yes…………...   1
No   2

Don't know ....   -1
Refused...   -2

Q11. I will now mention two phases that can be identified for developing new activities. Could you indicate for each of these phases whether you have made a contribution in the past three years? **{IPPHASE1}**

Yes…………...   1
No ....   2→**(SKIP TO QUESTION Q9)**

Don't know ....   -1→**(SKIP TO QUESTION Q9)**

Refused...   -2→**(SKIP TO QUESTION Q9)**

Q11a. And could you tell me whether you had a leading or a supporting role in this phase? **{IPPHASE1ROLE}**

Leading role   1
Supporting role..   2
Both...   3
Don't know ....   -1
Refused...   -2

Q12. The second phase concerns preparation and implementation of a new activity. This includes for example promoting your idea, preparing a business plan, marketing the new activity or finding financial sources and acquiring a team of workers. Have you been actively involved in this phase in the past three years? **{IPPHASE2}}**

Yes…………...   1
No ....   2→**(SKIP TO QUESTION Q13)**

Don't know ....   -1→**(SKIP TO QUESTION Q13)**

Refused...   -2→**(SKIP TO QUESTION Q13)**

Q12a. And could you tell me whether you had a leading or a supporting role in this phase? **{IPPHASE2ROLE}**

Leading role	1
Supporting role...	2
Both...	3
Don't know	-1
Refused..	-2

Q13. I would like you to consider the most significant new activity you have been actively involved with in the past three years for your main employer. Could you describe this new activity in one sentence? **{IPTYPE}**

_____
_____

Q14.What is your job title?

The job title refers to the employment that the respondent indicated as one of the occupation options earlier in the question. **{IPJOBTL}**

_____
_____