

Intrapreneurs, entrepreneurs and their early-stage market survival

Master Thesis

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Erasmus

ERASMUS SCHOOL OF
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Supervised by Niels Rietveld (ESE)

INTRAPRENEURS, ENTREPRENEURS AND THEIR EARLY-STAGE MARKET SURVIVAL

Master Thesis

**to obtain the degree of Master of Science in Economics and Business Economics,
specializing in Entrepreneurship and Strategy Economics**

MSc Economics and Business – Master in Entrepreneurship and Strategy Economics

ERASMUS UNIVERSITY ROTTERDAM

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The Erasmus University logo, featuring the word "Erasmus" in a stylized, cursive script.

Abstract

This article employs the Panel Study of Entrepreneurial Dynamics II (PSED II) in the study of a nationally representative sample of American entrepreneurs and intrapreneurs and their early-stage firm survival during the first six-years of startup. Building on an expansive theoretical framework this article empirically examines and investigates whether it is intrapreneurs or entrepreneurs that have the longest early-stage market survival. Results also reveal the factors (i.e. entrepreneurial capital and demographics) that are associated with venture survival.

While numerous fields of research have dedicated their time and energy into exploring the concepts of entrepreneurship and intrapreneurship, studies have, until now, avoided the examination of early-stage survival of intrapreneurial and entrepreneurial start-up efforts. This is in part due to the fact that there had been no available dataset to explore such a topic (Parker, 2011). The arrival of the PSED II dataset in 2011 changed this. Consequently, this is one of the first papers to be able to present empirical evidence comparing intrapreneurial and entrepreneurial start-up efforts. To realize this, the PSED II dataset was empirically analyzed using simple logistic and multinomial logistic regressions.

Results indicate that intrapreneurs in a corporate work environment are more likely to experience early-stage firm survival compared to entrepreneurs. In addition to this, there are several demographic factors and entrepreneurial capital factors that are also associated with venture survival. These apply to both intrapreneurs and entrepreneurs. Results show that age, race and an individuals' level of extroversion, in terms of being open to business opportunities, increase the likelihood for early-stage intrapreneurial and entrepreneurial firm survival. Based on these findings several strategic implications and recommendations will be provided.

KEYWORDS: Entrepreneurship, Intrapreneurship, Venture Creation, Early-stage survival, Entrepreneurial capital, Demographic effects

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1 Introduction

Over three decades of research has shown that entrepreneurship can go one of two ways. One can either attempt to tackle the entrepreneurial process independently or go at it within an already existing organization (Hellman, 2007; Parker, 2011). This has resulted in two separate definitions to help distinguish between independent ‘external’ entrepreneurship and internal entrepreneurship. The first is simply defined as ‘entrepreneurship’, and is seen as the act of creating a new venture externally, outside an existing organization (Parker, 2011). The latter, on the other hand, has been coined ‘intrapreneurship’ and is defined as corporate venturing (the creation of a new venture within an existing organization) (Pinchot, 1985; Sharma and Chrisman, 1999). Yet, while many authors have managed to define and tout the importance of both entrepreneurship and intrapreneurship (Pinchot, 1985; Hornsby, Kuratko and Zahra, 2002), the literature comparing both concepts has, until recently, been relatively theoretical and anecdotal in nature. In fact, much of the existing literature lacks compelling empirical evidence comparing the contributions of entrepreneurship and intrapreneurship to organizational performance (Zahra, 1991). While there have been various attempts to fill this gap in literature (Zahra and Covin, 1995; Parker, 2011; Felício, Rodrigues and Caldeirinha, 2012), there is still much more to be learned and compared about entrepreneurship and intrapreneurship in general. One such topic relates to comparing the early-stage survival of intrapreneurial and entrepreneurial start-up efforts. Early-stage in this case, implies the first six-years in a firms’ business cycle (Reynolds and Curtin, 2011). As such, this present article investigates more closely, whether it is the intrapreneurial or the entrepreneurial start-up efforts that have a longer early-stage survival rate. Moreover, and most importantly, it also examines the factors (i.e. entrepreneurial capital and demographics) that influence these survival rates.

Previous research has managed to pinpoint several reasons as to why intrapreneurial start-up efforts might be deemed as the less effective of the two. These include “their increased agency costs, which affect contracting between employees and employers; transferable human capital; and organizational limitations of incumbent firms such as bureaucracy and rigid routines” (Henderson, 1993; Anton and Yao, 1995; Klepper, 2002; Helfat and Lieberman, 2002 in Parker, 2011: 20).

However, existing research is still limited in terms of being able to provide empirical evidence that both supports these statements and manages to compare it to entrepreneurial start-up efforts (Parker, 2011). In fact, studies have yet to examine the early-stage survival rates of intrapreneurial and entrepreneurial start-up efforts, as well as what kind of factors and conditions are involved. Instead, existing papers on the subject have been mainly concerned with linking corporate entrepreneurial activity to strategic management (Burgelman, 1983); the benefits of freedom in firm performance for entrepreneurs and intrapreneurs (Ross and Unwalla, 1986); the performance of new spinoff firms when compared to parent firms (Gompers, Lerner and Scharfstein, 2005; Klepper and Thompson, 2006); and characteristics of intrapreneurs (Fayolle, 2004; Terracciano, McCrae, Brant and Costa, 2005).

Consequently, building upon current theoretical arguments, this article aims to empirically examine and test several hypotheses as to whether it is intrapreneurs or the entrepreneurs that have the longest early-stage firm survival. Furthermore, the goal is to also dive deeper into the factors that may affect the survival of these firms in the first six years of their existence. In examining factors such as an individual's entrepreneurial capital and demographic characteristics, a more comprehensive look is provided as to why certain intrapreneurial or entrepreneurial start-ups survive for longer periods of time. Consequently, the following paper utilizes data from a relatively large and representative publicly available survey of American adults, the Panel Study of Entrepreneurial Dynamics II (PSED II). Designed with the purpose to improve the scientific understanding of how and why people start a business, it contains a rich array of explanatory variables about U.S.-based individuals who are either intrapreneurs or entrepreneurs (Reynolds and Curtin, 2007). It includes information about their personal characteristics; demographics; competencies; products; the processes they undertake in the business start-up process; and the organizational environments they operate in (Aldrich, 1999; Menzel, Aaltio and Ulijn, 2007). The PSED II also contains information about existing intrapreneurs and entrepreneurs who wish to start an additional new venture. Moreover, setting aside its incredibly detailed scope, a further crucial aspect of the PSED II dataset is the fact that it is a panel study that studied individuals from September 2005 until April 2011. Its multi-year tracking of individuals starting new businesses, whereby they were identified prior to the launch of their firms and are tracked through gestation, launch,

and to the eventual growth or death of the firm, makes this the ideal dataset for the study of early-stage firm survival (Parker and Belghitar, 2006).

The present paper therefore advances on previous entrepreneurial and intrapreneurial studies by making two main contributions to the literature. First, this article enriches existing literature, as it is one of the first of its kind to present empirical evidence comparing the early-stage survival of intrapreneurial and entrepreneurial start-up efforts. In addressing this gap using a comparative quantitative inquiry through the utilization of the recently released U.S.-based Panel Study of Entrepreneurial Dynamics II (PSED II) data, this paper will expand upon the little empirical work that exists on this topic. Knowing that, until recently, the scarcity of such a dataset made it virtually impossible to do such a comparative analysis, this paper provides a novel contribution to the existing literature.

Second, this article aims to build upon the foundation set in Parker's (2011) empirical study. His pioneering work using the PSED II dataset in the exploration of "the factors that determine whether new business opportunities are exploited by intrapreneurship or entrepreneurship" provides a sound footing for this paper's inquiry into examining how entrepreneurial capital and demographic factors affect the early-stage survival of intrapreneurial and entrepreneurial start-up efforts (p.19). In addition, with the recent arrival of the complete PSED II panel study earlier this year, this study will most certainly advance upon his earlier work as their limitations included the fact that they lacked the time horizons in order to better and more transparently follow entrepreneurs and their outcomes (Parker and Belghitar, 2006; Parker, 2011). Thus by tracing his footsteps, increased empirical and theoretical evidence can be provided to the existing set of intrapreneurial and entrepreneurial literature. Lastly, considering the fact that, at this moment in time, he is one of the few published authors that has managed to utilize the PSED II dataset it only seems wise to expand on this existing knowledge set. Utilizing this knowledge base allows for a more expansive and detailed insight into this research subject, while also allowing this paper to provide a novel angle into this interesting economic research topic.

In what follows, section two will present the literature and develop theoretical arguments that support the hypotheses relating to entrepreneurship and

intrapreneurship, entrepreneurial capital, demographics as well as early-stage firm survival. The section that follows dives into the empirical analysis of the dataset, detailing the data and sample, the key explanatory and control variables as well as the method that was utilized. The fourth section outlines the results from the simple logistic model as well as the multinomial logistic regressions. Section five then concludes by discussing the results in relation to existing literature as well as the most important findings and limitations.

2 *Literature Review*

Numerous fields of research have dedicated their time and energy into exploring the concepts of entrepreneurship and intrapreneurship. Although past literature covers a wide spectrum of theories and concepts, the conceptual framework adopted here will keep its focus on two major themes. These themes are entrepreneurial capital and demographic characteristics. Nonetheless, before these themes are elaborated upon it is important to highlight what is known, and what is not known within the entrepreneurial and intrapreneurial academic spheres. Consequently, this review will first elaborate on existing entrepreneurial literature with the aim of giving a brief and condensed overview of what is known. The same will then be done using the intrapreneurial perspective, which will then be followed by a synopsis of existing research comparing intrapreneurship and entrepreneurship. The overall aim is to give the reader a better idea of what is known about early-stage firm creation. Following these condensed conceptual frameworks is the literary insight on the two major themes of entrepreneurial capital and demographic characteristics. Accordingly, based on this expansive theoretical foundation several hypotheses will be formed.

2.1 Entrepreneurship

The continuous influx of economic research on entrepreneurship in the academic and applied communities has allowed it to evolve into a very concrete and well-understood concept. Initial researchers including the likes of Richard Cantillon (1755), Jean-Baptiste Say (1803), and Joseph Alois Schumpeter (1934) set the foundations, viewing the entrepreneur as a profitable risk-taker (Cantillon, 1755); an economic allocator (Say, 1803); and as an innovator (Schumpeter, 1934). Today's interpretation has evolved beyond this and is very much a melting pot of definitions, with an overarching theme that spreads out into different research fields concerning entrepreneurship, including such topics as social entrepreneurship and intrapreneurship (Shane and Venkataraman, 2001). Consequently, in this paper it refers to "the process of uncovering and developing an opportunity to create value through innovation and seizing that opportunity without regard to either resources or the location of the entrepreneur" (Stevensen and Jarillo, 1990; Antoncic and Hisrich, 2001 in Van der Sijde and Veenker, 2013: 25).

Resultantly, with such a highly diversified set of definitions on the concept of the entrepreneur, it is no surprise that the importance of entrepreneurship is abundantly supported in existing empirical and theoretical papers. Pioneer studies following the works of Cantillon (1755) and Schumpeter (1934) highlighted some of these facets. Authors such as Baumol (1968) improved the theoretical shortcomings of Schumpeter's theory, arguing that entrepreneurship is more than just innovating; it is a social and cultural phenomenon intertwined with economic development. In fact, twenty years later Baumol (1989) even went as far as to state that any economic study of business without the inclusion of entrepreneurship is like having "the Prince of Denmark expunged from the discussion of [Shakespeare's] Hamlet" (p.66).

More recent research has only further substantiated these claims. In fact, some authors have even made the claim that there has been a move from a managed economy to an entrepreneurial economy (Van Stel and Thurik, 2004; Audretsch and Thurik, 2010). This idea centers on the fact that "economic performance is related to the start-up and growth" of entrepreneurial firms rather than by organizations that rely on "firm size, scale economies and routinized production" (Audretsch and Thurik, 2010: 2). This idea of entrepreneurship as "the engine of economic growth" has also been empirically supported (Audretsch and Thurik, 2004: 144). For example, Kirzner (1979) found that entrepreneurship is used as a tool to detect and exploit economic inefficiencies. Similarly, van Praag and Versloot (2007) noted that entrepreneurial start-up efforts have a positive effect on the economy as it increases productivity growth, helps improve commercialization of high-quality innovations and provides employment with substantial employee satisfaction. However, they noted that more established firms are less volatile and account for a greater number of innovations.

2.2 *Intrapreneurship*

Intrapreneurial research, on the other hand, has been a relatively novel phenomenon and is in comparison to entrepreneurial research, a road less traveled. Initial studies on the subject of corporate entrepreneurship date back to the early 1980s, where authors including Burgelman (1983), (1984) and Pinchot (1985) set the foundations for this "hybrid form of entrepreneurship called intrapreneurship" (Pinchot, 1985 in Hisrich, 1990: 209). In fact, it was Burgelman (1983) who was one

of the first to recognize that if corporate “organizations want to continue to be viable, they must support a degree of entrepreneurial activity within them” (p.1349). This resulted in the creation of a conceptual framework for internal entrepreneurship a year later (Burgelman, 1984). Consequently, these claims resulted in increased interest from academia and not soon thereafter various authors including Kuratko, Montagno and Hornsby (1990), Zahra (1991) and Zahra and Covin (1995) attempted to empirically verify the value and impact of intrapreneurial venturing. One of these attempts included the development of an intrapreneurship assessment instrument aimed at demonstrating the existence of factors necessary to foster entrepreneurial activity within corporations (Kuratko, Montagno and Hornsby, 1990). Factors that were identified included the requirement that there has to be management support, organizational structure and resource availability for intrapreneurship to exist. Further studies aimed to expand upon this knowledge since, despite increasing interest, the definition of intrapreneurship was still considered to be ill defined (Stopford and Baden-Fuller, 1994). Zahra (1991) coined one of the most commonly used definitions, stating that it is the “process of creating new business within established firms to improve organizational profitability and enhance a company’s competitive position or the strategic renewal of existing business” (p.260).

The following years saw various attempts to provide a more concrete understanding of the corporate entrepreneurial construct. This included a study with the aim of refining and validating the construct on a cross-cultural level (Antoncic and Hisrich, 2001). They noted that intrapreneurship is constructed using four different dimensions. These dimensions included proactiveness, self-renewal, innovativeness and new business venturing. Unbeknownst to Antoncic and Hisrich (2001), this further set the stage for various other scholars who built upon this framework, including Gündogdu (2012) who combined these dimensions to make an ‘innopreneur’. In re-thinking the existing paradigm surrounding intrapreneurship, he coined the term of the ‘innopreneur’ rather than the intrapreneur since he felt that innovative intrapreneurs are needed to keep a sustainable competitive advantage. Other attributes, such as risk-taking and self-confidence only help to manage an intrapreneurial enterprise for a certain period of time. This is also key in this paper, since the innovating intrapreneurs are often coined as the individuals who will have the biggest shot at success in the long run (Dess and Lumpkin, 2005).

Still, despite the high levels of interest in intrapreneurship, some still consider the concept to be relatively limited and fragmented in nature (Miles and Covin, 2002). As such, for the sake of clarity it is also important to highlight what is known about intrapreneurship when compared directly with entrepreneurship. This is to avoid the “danger of researchers speaking after one another, rather than to one another” (Maes, 2004: 2). Consequently, the following section will aim to take a closer look at existing theoretical and empirical literature that has managed to compare and contrast intrapreneurship and entrepreneurship.

2.3 *Entrepreneurship versus Intrapreneurship*

Despite the wide array of available knowledge on both entrepreneurship and intrapreneurship, most authors, to-date, have considered them to be two mutually exclusive elements (Hornsby, Naffziger, Kuratko and Montagno, 1993; Parboteeah, 2000). As a result, comparative literature is limited and a road much less traveled. Ross and Unwalla (1986), for example, attempted to provide a side-by-side comparison of entrepreneurship and intrapreneurship. This highlighted several key differences between the two, including the fact that intrapreneurs lack a certain amount of freedom, as they have to work within the structural and procedural constraints of the established organization. They asserted that this actually made the job of the intrapreneur more difficult than that of the entrepreneur, as they are constantly bombarded with internal criticism and resistance. Nevertheless, they did admit that, while entrepreneurs have more freedom and control over their environments, the financial, administrative and operational support given to intrapreneurs is extremely beneficial. An optimal world should therefore be managed by intrapreneurs while adhering to the principles of entrepreneurship (Ross and Unwalla, 1986; Carrier, 1994). In fact, eight years later Nooteboom (1994) coined the term ‘dynamic complementarity’ as the innovation that arises from successful endeavors between smaller ‘entrepreneurial’ firms and larger ‘intrapreneurial’ firms. His argument indirectly supports the claim by Ross and Unwalla (1986) as it showed that certain aspects specific to small and large firms help dynamically complement one another.

Hisrich (1990) expanded upon these initial comparative examinations by

looking into the individual behavioral characteristics of intrapreneurs and entrepreneurs. Through a more psychological paradigm Hisrich (1990) was able to recognize that for an intrapreneur to be as successful as an entrepreneur, he or she needs hybrid elements from both sides. Thus, instead of highlighting the differences like Ross and Unwalla (1986) did, Hisrich (1990) combined them and inferred that “a successful intrapreneurial venture must have a visionary leader” that is not only risk willing and persistent like an entrepreneur, but also flexible and open like a manager (p. 219). This, however, was not enough for Parker (2011), who felt that the success of an intrapreneurial venture was not simply the result of a hybrid visionary leader. Instead, his comparative research effort aimed to dig even deeper. By “exploring the factors that determine whether a new business opportunity is exploited via intrapreneurship or entrepreneurship”, his examination aimed to isolate whether factors such as age, gender and income have any influence on an individual becoming an intrapreneur or an entrepreneur (Parker, 2011: 20). Results indicated that young and old individuals were more likely to be intrapreneurs rather than entrepreneurs and that male-dominated environments were more conducive to successful intrapreneurial ventures. Nevertheless, he was unable to clarify as to why this was the case and whether these factors would hold up in the long run.

Moreover, previous research has also managed to identify several reasons as to why intrapreneurial start-up efforts might be deemed as less effective compared to entrepreneurial research efforts. These include “increased agency costs affecting relationships between employees and employers, more easily transferable human capital and organizational limitations of existing firms including bureaucracy and rigid routines” (Henderson, 1993; Anton and Yao, 1995; Klepper, 2002; Helfat and Lieberman, 2002 in Parker, 2011: 20). In one of the most recent articles, Martiarena (2013) argued that most intrapreneurs are merely employees of the firm. She noted that it is only the “engaged intrapreneur (which encompasses intrapreneurs who will acquire a stake in the firm) that can be compared to an entrepreneur” (Martiarena, 2013: 33). Through empirical analysis of the Spanish Global Entrepreneurship Monitor (GEM) database it was found that, in contrast to Hisrich’s (1990) initial findings, most intrapreneurs have a lesser set of entrepreneurial abilities often resulting in the failure to spot business opportunities. It is only those less risk averse individuals that display entrepreneurial spirit and have the capacity to run a successful

intrapreneurial venture. This coincides with the findings of Thornberry (2003), whom attempted to examine whether you could teach managers to be intrapreneurs. Results indicated that intrapreneurship is best taught to those who are willing to face risk. Those individuals “who could not come to grips [...] were encouraged to drop” out for the sake of the survival of the company (p. 338). Consequently, the conclusions pulled by authors such as Martiarena (2013) and Thornberry (2003) are consistent with Parker (2011). There simply appears to be a discrepancy between intrapreneurs and entrepreneurs in terms of skills, willingness to take risks and overall individual characteristics.

Drawing on all these past frameworks shows that the study of intrapreneurship and entrepreneurship is of substantial interest to economic theory. Still, a lot of areas are left unexplored and in need of further explanation. The following research paper therefore feels confident in its aim to explain and explore early-stage firm survival and the elements that affect early-stage firm survival rates of intrapreneurial and entrepreneurial firms. Previous research has been unable to dive into this field of research due to the lack of available data. As such, with the help of the PSED II dataset, the aim of the following study is to elaborate on these gaps in current research. By examining how entrepreneurial capital and demographic factors affect the early-stage survival of intrapreneurial and entrepreneurial start-up efforts, a novel look into early-stage intrapreneurial and entrepreneurial firm survival will be provided. Subsequently, the following section will detail what is known about these factors and how this paper will expand upon them.

2.4 Entrepreneurial Capital

Dauids (1963) was one of the first authors that put forward the idea that in order to promote entrepreneurial activity an individual must possess a certain level of competence, commitment and skill. In fact, ambition, responsibility and self-confidence were reported as the most prevalent characteristics of entrepreneurial individuals. In the late 1990s, this definition was coined ‘entrepreneurial capital’ by Ulrich (1998) and Wennekers and Thurik (1999), which suggested that any “entrepreneurial behavior within a single individual, either firm founders, mid-level managers, or their employees [...] was the result of] conditions pertaining to individual

attitudes, skills and actions” (Wennekers and Thurik, 1999: 7). More recent documentation has only further enhanced the belief that entrepreneurial capital must be strongly present for any development to take place. The contribution of Erikson (2002) even suggests that the components of entrepreneurial capital, such as competence and commitment are mutually exclusive and that both components must be “strongly present for development to take place” (p. 276). In much the same way Martiarena (2013) conjectures that individuals must be willing to accept risk in order to receive any positive entrepreneurial activity. Despite the difficulty in measuring risk, various empirical studies have backed up the claim that risk-averse individuals are more likely to become employees while less risk-averse individuals will become entrepreneurs (Blanchflower and Oswald, 1998; Kuratko and Goldsby, 2004; Parker, 2011).

The conceptual notion that all entrepreneurial individuals must possess a degree of entrepreneurial capital has also been considered in the study of intrapreneurship (Antoncic and Hisrich, 2001; Parker, 2011; Martiarena, 2013). Empirical studies in this field have, however, shown contradictory data regarding the impact that entrepreneurial capital has on intrapreneurial ventures. On the one hand, intrapreneurs are placed in parallel to entrepreneurs. In fact, certain authors believe that the building of an entrepreneurial venture within an existing firm is, in many ways, similar to doing so autonomously (Dess and Lumpkin, 2005). From this angle it is argued that entrepreneurial capital plays the same role in intrapreneurship. In order to animate and stimulate all parts of a firm’s performance the intrapreneur should be innovative, proactive, risk-taking and autonomous (Dess and Lumpkin, 2005). De Jong, Parker, Wennekers and Wu (2011) also identified these characteristics and stated there was a heavy correlation between entrepreneurial capital and within-firm success.

Still, these assumptions do not hold amongst the entire academic community. In another recent paper Martiarena (2013) explains that, while intrapreneurial success is related to the before mentioned factors, it also has to do with the fact that the individual is backed by an established firm. The empirical analysis indicated that, in contrast to autonomous entrepreneurship, entrepreneurial capital is shared between the individual and the firm. The backing of the established firm provides the intrapreneur

with the necessary safety net including financial and operational risk in case of failure (Carrier, 1994). The contractual terms subsequently dilute certain aspects of the entrepreneurial capital. In fact, Martiarena (2013) goes even further and hints that intrapreneurs have a tendency to gain less from their entrepreneurial capital once they are told to bear more risk. Increased autonomy within the firm “involves greater financial uncertainty and may imply a risk of unemployment [...] whereby the least risk-averse intrapreneurs are more likely to quit the firm and / or spin-out” (p.29). This coincides with earlier research, which indicated that the failure to success ratio of intrapreneurial enterprises is still far too high, especially when it involves taking individual risks (Douglas and Shepherd, 2002). Zahra and Covin (1995) even concluded that firms that engage in corporate entrepreneurship are at a higher risk of failure in terms of their short-term financial performance.

Entrepreneurial capital, therefore, still seems to separate the intrapreneur from the entrepreneur. Intrapreneurs simply do not have to bear the same risk of profits and / or losses during a firm life cycle, as do entrepreneurs, causing a different conception of risk and responsibility. This, as a result, may have adverse effects on firm longevity. Thus, there is an apparent and noticeable lack of certain key aspects of entrepreneurial capital that are necessary to start a firm with the prospect of long-term success and survival rates. Based on this knowledge, the following hypotheses have been molded together:

Hypothesis 1A There is higher early-stage firm survival for entrepreneurs who possess entrepreneurial capital.

Hypothesis 1B There is lower early-stage firm survival for intrapreneurs who possess entrepreneurial capital.

2.5 *Demographic Characteristics*

There has been growing emphasis on the importance that demographic characteristics play in determining the success of firm start-up efforts (Ordaz, Fernández-Alles, Ruis-Navarro, 2011). In contrast to the before mentioned aspect of entrepreneurial capital, demographic characteristics consist of topics including age,

education, gender, race and wealth. The hereditary nature of many of these traits has caused them to become internalized into our everyday being, which has resulted in “individuals becoming unaware of the many assumptions and judgments” they make in business and private life (Nishishiba and Ritchie, 2000: 349). As a result, existing studies on the influence that demographic characteristics play on intrapreneurial and entrepreneurial start-up efforts are still few and far between.

Authors are seemingly unanimous with regards to the argument that middle-aged individuals have higher entrepreneurial tendencies in comparison to their younger and older colleagues (Long, 1982; Taylor, 1996). De Jong et al. (2011) found this relationship to be equally true for those wishing to become an intrapreneur. They consider this inverted U-shape relationship to be the result of “lack of capability in young workers [and] diminished motivation in senior workers” (p.19). The unanimity stops here, however, as entrepreneurial and intrapreneurial literature provides contrasting results on the impact that age has on firm success (Bindl and Parker, 2010). For example, an empirical study on entrepreneurship by Bosma and Levie (2010) indicates that an increase in age is positively related to growth and experience, resulting in increased desire to start a business. Unger, Rauch, Frese and Rosenbusch (2011) also found that the perceived capability of entrepreneurs increases with age, which in turn increases the chances of firm success.

This, however, does not hold for intrapreneurs. According to Terracciano, McCrae, Brant and Costa (2005) the older intrapreneurial individuals get, the less open they will be to new experiences and change. Entrepreneurial values, firm innovation and performance therefore have a tendency to drop as age increases. A more expansive report done by Ordaz et al. (2011) also recounted the importance of demographic characteristics and personal values on small (creative) firm performance, hence further enhancing these beliefs. Their study followed the conventional argument that “as age increases, flexibility decreases, resistance to change rises and values of security become more relevant [... causing] the intrapreneur to adopt more conservative strategies, translating into lower innovation performance” (p.525). These results are in line with a variety of authors (e.g. Carstensen, Isaacowitz and Charles, 1999; de Lange, van Yperen, van der Heijden and Bal, 2010) whom all found some degree of negative correlation with age. Thus, it can be said that recent investigative

efforts have managed to highlight the variance between entrepreneurial and intrapreneurial age effects. This has resulted in the formation of the following hypotheses regarding the effects of increased age on early-stage firm survival.

Hypothesis 2A Age is positively related to early-stage firm survival for entrepreneurial individuals.

Hypothesis 2B Age is negatively related to early-stage firm survival for intrapreneurial individuals.

It was Hirsrich (1990) who argued that entrepreneurs are not born; they develop. Building on the proposition by Gasse (1982), who stated that entrepreneurs are better educated than the general public, it was implied by Hisrich (1990) that the knowledge acquired from formal education is crucial for entrepreneurs in the formation and management of any new enterprise. These early statements, while true to a certain extent, do not encapsulate the bigger picture. Lazear (2005) managed to provide a more extensive inquiry into the impact of knowledge and education on entrepreneurial engagement. While initially agreeing with Hisrich (1990), his argument found that entrepreneurship requires more than just education. An entrepreneur has to be a “jack-of-all-trades”, with a sufficient array of knowledge and skills to perform the different roles involved in setting up a new venture. If the individual does not possess these traits, chances of firm formation drop substantially. In even more extreme cases, education was almost removed in its entirety. Blanchflower (2004) highlighted that in general, education is negatively correlated to becoming an entrepreneur. Only those individuals living in wealthy nations with post-graduate training are likely to become entrepreneurs. Parker (2011) reaffirmed these results. Data indicated that college educated individuals are significantly more likely to engage in start-up activities and to do so as an entrepreneur, whereas other education levels had no effect. These results are in contrast with existing research on intrapreneurship.

In a set of recent papers examining the effects of education on intrapreneurship, the general consensus reported that educational attainment is strongly related to intrapreneurship (De Jong et al., 2011). Empirical studies by De

Jong et al. (2011), Martiarena (2013) and Benyovszki, Nagy and Petru (2013) all stressed the importance of cognitive development for intrapreneurial individuals. Those with a university degree were a lot more likely to be involved in intrapreneurial endeavors compared to those with no degree. Martiarena (2013) noted this was most likely because formal training is seen as a requirement for intrapreneurial start-up ventures, whereas independent ventures lack this requirement. Moreover, Ordaz et al. (2011), further detailed areas that authors such as De Jong et al. (2011) and Martiarena (2013) had not reported on, by providing added evidence on the effects of education on intrapreneurship. His team further confirmed that a large percentage of intrapreneurs do possess a degree of higher education, however this did not necessarily have a positive effect on firm innovation performance. Their study of the creative industry, which they found to be “more graduate-rich than any other sector”, showed an inverse relationship between education and firm performance. The “higher the education level of the intrapreneur, the lower the innovation performance of the creative firm” (p.526). Consequently taking into account Carrier’s (1994) definition of the intrapreneur, whereby he called them “intrapreneurial managers”, it reaffirms Brockhaus’ (1982) review, where it was concluded that while entrepreneurs are, in general better educated than the general population, they were less educated than managers. Still, while many of these reports amplified the belief that education and intrapreneurship are intertwined, many failed to expand on the effect this may have on early-stage firm survival. As a result, the following hypotheses have been created:

Hypothesis 3A Education is positively associated with involvement in intrapreneurial start-ups.

Hypothesis 3B Education is positively associated with involvement in entrepreneurial start-ups.

Hypothesis 3C Education of the intrapreneur is positively related to early-stage firm survival for intrapreneurial individuals.

Hypothesis 3D Education of the entrepreneur is positively related to early-stage firm survival for entrepreneurial individuals.

In line with the before mentioned demographic characteristics, there are various articles that manage to incorporate gender effects within the field of entrepreneurship. This is, in part, the result of over three decades of interest in the topic of gender (Fischer, Reuber and Dyke, 1993; Reynolds and White, 1997; Pines, Lerner, and Schwartz, 2010). Hence, an abundance of scholarly articles exist that have managed to examine gender effects on becoming an entrepreneur. Most of these papers found that women entering self-employment as entrepreneurs, in general, have a much harder time starting the firm and keeping it afloat (Marlow and Patton, 2005; Minniti and Nardone, 2007). This gender discrepancy is most commonly attributed to a variety of factors, including marital status, ethnicity and the number of children (Reynolds and White, 1997; Robb, 2002; Pines et al., 2010). Consequently, women entrepreneurs are hindered by these factors as social and cultural norms dictate that women should stay at home and care for the household. Resultantly, women face greater difficulties in running entrepreneurial ventures compared to men (Pines et al., 2010). Robb (2002) also noted this in a comparative research paper detailing business survival between men and women as well as between minority and non-minority groups. She found that “business owned by women fared worse than those owned by men; yet for black-owned businesses, those owned by women fared better than those owned by men” (Robb, 2002: 384). Surprisingly, an earlier study by Kalleberg and Leicht (1991) found that “businesses headed by women were not more likely to go out of business, nor less successful, than those by men” (p.136). Chell and Baines (1998) further confirmed these results and also found no difference in performance between male and female run businesses. Research has therefore not yet managed to come to a solid conclusion regarding the effects of gender on entrepreneurship, and specifically early-stage firm survival. Nonetheless, based on the overbearing gender discrepancy mentioned by a variety of authors, indicating that women face more obstacles in their entrepreneurial endeavors, the following hypothesis has been shaped:

Hypothesis 4A There is higher early-stage firm survival for entrepreneurs who are of the male gender.

In contrast to the relative abundance of papers on entrepreneurial gender effects, the studies that have managed to incorporate gender effects and

intrapreneurship are few and far between. Of the papers that do exist, many are recent incantations that attempt to build upon the broader entrepreneurial foundations. De Jong et al. (2011) tentatively explored the effect of gender on intrapreneurship as they believed it was an important issue that needs to be controlled for. They found that “gender is a bad proxy for intrapreneurial behavior” with little correlation amongst the variables, reporting only a small correlation between males and intrapreneurial behavior (p. 20). Parker (2011), on the other hand, reported a more significant result stating that “intrapreneurial male-dominated workplaces” flourishes more when compared to gender-balanced intrapreneurial workplaces (p.29). Unfortunately, he was unable to explain why this was the case. In one of the most recent studies, Benyovszki et al. (2013) empirically reaffirms these claims as findings show a statistically significant difference in favor of the male population in terms of those involved in intrapreneurial activity and early-stage entrepreneurial activity. Based on these initial findings, which emphasize a preference towards male-dominated success in the intrapreneurial environment, the following hypothesis was formed:

Hypothesis 4B There is higher early-stage firm survival for intrapreneurs who are of the male gender.

The pioneering works of Weber (1930), Simmel (1950) and Aldrich and Waldinger (1990) set the roots for research on race and entrepreneurship. Their pioneering efforts into the effects of social structure on trade created the foundations for subsequent literature on race and entrepreneurship (Butler and Greene, 1997; Greene and Owen, 2004). In fact, it led to the development of Bates’ (1997) influential book, *Race, Self-Employment, and Upward Mobility*. This book empirically examined the impact of race on firm survival. Specifically it examined the function that start-up capital plays in the probability of business survival. Some of his results can be found in Table 1.

Table 1

Start-up comparison by race

	White-Owned		Black-Owned		Asian-Owned	
	Active	Discontinued	Active	Discontinued	Active	Discontinued
Firm's Traits						
Gross Sales, 1987	185,458	50,602	76,971	29,819	138,996	46,294
Total Financial Capital at start-up	36,301	17,437	16,454	8,013	62,246	15,914
Capital Structure						
Leverage at start up	1.29	1.03	1.09	0.76	1.03	0.5
% of firms starting with zero capital	20.2	35.7	26.1	36.6	14	26.1
Human Capital						
% with higher education degree	40.2	29.5	30.5	29.4	57.2	60.5

Source: Bates (1987). Race, self-employment, & upward mobility

As can be seen, Bates (1997) noted relatively substantial differences between businesses based on an individual's racial background. Gross sales were the largest for active White-owned enterprises and the lowest for Black-owned firms. In addition, White and Asian owned organizations had substantially more start-up capital, paving the way to higher potential firm survival success. In short, it emphasized that firms with less initial capital were more likely to die-off compared to well-funded firms. These results run parallel with Robb's (2002) inquiry into business survival rates based on race and gender. Robb (2002) found that "Black and Hispanic-owned businesses were less likely to survive than business owned by Whites" (p. 395). On the contrary, however, the logistic regression run by Smith (2005) showed that Black self-employed individuals are not noticeably different from the White population. He argued that external factors such as whether an individual is married has an equal likelihood of affecting entrepreneurship for both the Black and White population. Moreover, in one of the earliest PSED studies, Greene and Owen (2004) used the PSED I dataset to relay that both African Americans and Hispanics were much more entrepreneurial than the White population. Their results coincided with U.S. data from 1992 to 1997, which showed that minority-owned business grew at a staggering 30% compared to just 4% for nonminority firms (U.S. Small Business Administration [SBA], 1997). Nonetheless, they were forced to admit that despite this growth difference, most active businesses were still owned by the White population. Thus, while research does indicate a change in the tide, data still appears to support the

belief that those of White descent are more likely to survive and run a long-term successful business. Based on these claims the following hypotheses were formed:

Hypothesis 5A: There is lower early-stage firm survival for African-American owned entrepreneurial enterprises relative to Caucasian owned entrepreneurial firms.

Hypothesis 5B: There is lower early-stage firm survival for Hispanic-owned entrepreneurial enterprises relative to Caucasian owned entrepreneurial firms.

Rather surprisingly, however, there are currently no known empirical works that manage to encapsulate the effects of race / ethnicity on intrapreneurial start-up efforts. Knowing that racial and minority issues in “entrepreneurship was a point of interest in the PSED from the early days” as it can bring a “sensitive lens to gender and minority issues”, this paper feels it is of significant interest to examine whether the results presented by the previous authors also hold true within intrapreneurial start-ups (Greene and Owen, 2004: 29). Consequently, the following hypotheses follow the same conceptual notion as Hypothesis 5A and 5B, since the latter hypotheses are already grounded in existing theory and one could expect the same potential outcome for intrapreneurial firms.

Hypothesis 5C: There is lower early-stage firm survival for African-American intrapreneurial-run enterprises relative to Caucasian-run intrapreneurial firms.

Hypothesis 5D: There is lower early-stage firm survival for Hispanic intrapreneurial-run enterprises relative to Caucasian-run intrapreneurial firms.

3 *Empirical Analysis*

The following section will illustrate how this paper intends to empirically test and draw useful conclusions from the above theory and hypotheses. This will be done using the Panel Study of Entrepreneurial Dynamics II (PSED II) dataset. This multi-year research program, which was conducted by means of a panel survey from September 2005 until April 2011, examines and tracks a U.S.-based, nationally representative, sample of entrepreneurs and intrapreneurs. By way of telephone surveys, mailed questionnaires and detailed telephone interviews of a randomly selected population of adults 18 years old and older, data was collected on entrepreneurial and intrapreneurial activity as well as their involvement and attitude (Reynolds and Curtin, 2007). Consequently, the elaborate nature of this dataset allows for the ability to test the hypotheses that are drawn from the theory, including detailed analysis on start-up longevity and the factors (e.g. entrepreneurial capital and demographic characteristics) that affect this. The results give the ability to summarize the state of this relationship via a new angle on the already expansive entrepreneurial knowledge base. In this section, an overview and clarification of the dataset as well as the dependent and independent variables will be provided.

3.1 Data and Sample

The ability to provide empirically substantiated evidence on this subject requires a comprehensive and detailed dataset on new firm creation. In short, the dataset should provide valid, replicable and reliable information relating to the factors that affect business start-up activity on both an entrepreneurial and intrapreneurial level. The recently completed Panel Study of Entrepreneurial Dynamics II (PSED II) dataset contains data on all of the above.

The Institute for Social Research at the University of Michigan (UMich) initiated the PSED II dataset back in 2005 with the purpose to enhance the scientific understanding of business creation. By means of a multi-year panel survey, this research project went out of its way to track a nationally representative, U.S.-based, sample of entrepreneurial individuals attempting to start new businesses. In addition to this, UMich researchers also further investigated the variety of activities

entrepreneurs are involved in during the firm creation process as well as the characteristics of start-up firms. This has resulted in PSED II becoming “the significant resource” to help advance scholarly understanding of the firm creation process (Reynolds and Curtin, 2007: 1). By providing information not covered in the 26 other existing datasets relevant to firm creation (e.g. Global Entrepreneurship Monitor (GEM), Business Dynamics Statistics (BDS)), PSED II claims to be the only quantitative dataset of its kind that has the most exhaustive amount of information on a representative national sample of nascent entrepreneurs and intrapreneurs in terms of firm creation. The PSED II dataset therefore contains all the necessary resources to allow for a fuller understanding of the firm creation process.

PSED II began its initial screening period in 2005 - 2006. Their data collection procedure involved a total of three stages. Stage one consisted of identifying a representative sample of nascent intrapreneurs and entrepreneurs. This was achieved by means of a qualitative ‘screener’ telephone survey, which was conducted between October 2005 and January 2006. This resulted in a total population of 31,845 American adults, aged 18 and over. Of these 31,845 adults, 9,104 adults indicated that they had retired. This reduced the sample to 22,741 observations, as by definition, those in retirement are not employed. Resultantly, it was deduced that 1,214 adults engage in some form of nascent intrapreneurship or entrepreneurship. Ensuing this introductory ‘screener’ survey, the second stage involved an introductory 60-minute telephone interview that aimed to exhaust all information from the nascent intrapreneurs and entrepreneurs relating to firm creation (‘Wave A’ in the PSED II documentation). Finally, five follow-up interviews were conducted “occurring 52 weeks following the first interview, the second 104 weeks and so forth” (Reynolds and Curtin, 2007: 9). The follow-up interviews are labeled as Wave B to Wave F and provide data in the same format, allowing for straightforward comparisons between the data. The ability to use this complete panel study over a period of 6 years is crucial because it gives a long-term representation of entrepreneurial and intrapreneurial U.S.-based start-up efforts. More specifically, the data allows a multi-year examination on these start-up efforts, including insights into how long these start-up efforts last, and what factors (e.g. entrepreneurial capital & demographic characteristics) affect entrepreneurial and intrapreneurial start-up efforts.

In addition, for the sake of clarity, completeness and consistency this paper will define each occupational category in a similar manner to that of Parker (2011). Having used an earlier version of the PSED II dataset, Parker's (2011) research provides an excellent base for expansion as his definitions can easily be transferred to this paper. In his documentation, he defined the independent entrepreneur as someone who satisfies four criteria. These criteria are that "1) they consider themselves to be involved in the firm creation process, 2) they have engaged in some start-up activity in the past 12 months, 3) they expect to own all or part of the new firm, and 4) their initiative has not progressed to the point where it may be considered an operating business" (Parker, 2011: 23). In contrast, the intrapreneur is an entrepreneurial individual "involved in the development of new business activities for their employer, such as establishing a new outlet or subsidiary, or launching new products and new product-market combinations for an existing organization during the last two years" (Martiarena, 2013: 31; Pinchot, 1985). As these definitions have been adhered to in the PSED II research process, whereby interviewees were asked whether they considered themselves entrepreneurs or intrapreneurs using criteria very similar to the above, it made locating and yielding the dependent variables for whether someone is an entrepreneur or intrapreneur a relatively straightforward process.

Using these definitions, the initial screener survey managed to identify a total sample of 1,214 people as being engaged in start-up activities. It must be noted, however, that this initial sample size was not used in this dataset. By means of filtering the dataset, including the removal of missing and incomplete data, excluding the retired population as, by definition, "retirees cannot be genuine nascent intrapreneurs because they do not have a current employer", and accounting for the decreasing participation numbers in the follow-up year-after-year, a smaller sample of 874 individuals was identified as being involved in some form of start-up activity and thus incorporated into this study (Parker, 2011: 23). Nonetheless, while smaller, the data is still robust, representative, generalizable and discrete, as the groups do not overlap in the sample. In addition, it highlights that just 3% of all respondents are involved start-up activities, which matches with previous studies and estimates (Reynolds, Carter, Gartner & Greene, 2004; Parker, 2011) As such, 604 individuals have been classified as independent entrepreneurs and 270 individuals as intrapreneurs.

3.2 Variable Analysis

Previous research has managed to suggest and indicate that there is a wide selection of factors that impact an individuals' likelihood to consider entrepreneurship (Martiarena, 2013). It is very probable that these, and other factors, also affect the longevity of early-stage entrepreneurial start-up efforts. The following subsection of this paper will highlight some of these variables.

Firstly, it is important to emphasize that this paper follows a comparable method as was applied by Parker (2011) in terms of defining and measuring the three dependent variables (these are defined as I and S and can be seen in Table 2):

- a) Intrapreneurship ($I=1$);
- b) Entrepreneurship ($I=0$);
- c) New Firm Starters ($S=1$).

Respondents were categorized into each category based on how they answered a set of questions. First, they were asked whether they believe they are involved in the firm creation process (Reynolds and Curtin, 2007). Those who answered that they were not involved in the firm creation process were not asked any further questions. The respondents who stated they were actively involved in start-up activities were then posed with additional questions detailing their entrepreneurial endeavors. They were considered for the dependent variable 'intrapreneurship' when they indicated at the start of the PSED II survey that they are currently running, or have the aim of starting up anew, a venture for their employer, as an intrapreneur. Here, 'I' assumes the unit value of one ($I=1$). The dependent variable 'entrepreneurship' was applied to those respondents whom indicated that are currently running, or aim to start up anew, a venture as a self-employed entrepreneur, which subsequently results in 'I' taking the value zero ($I=0$). 'S' on the other hand, takes the value of one ($S=1$) for all individuals who are in the process of starting up a venture, either as an intrapreneur or an entrepreneur. 'S' is zero ($S=0$) if the individual is already running an entrepreneurial business, but is not in the process of starting up a new venture. Table 2 provides a brief overview of the descriptive statistics for the three occupational categories that are included in the sample, namely intrapreneurs ($I=1$), entrepreneurs

($I=0$) and those individuals involved in new firm start-ups ($S=1$). Within each of the three columns in Table 2 are the independent variables and dummy variables used in this analysis. Each column comprises of the mean values for each of the variables.

A variety of dummy variables have been included to explore how general demographic characteristics affect the longevity and survival-rates of these start-up efforts. These also serve as control variables for the entrepreneurial capital variables (i.e. *Risk Taking Ability*). For example, the effect of an individuals' willingness to take risk (the independent variable) on intrapreneurial firm survival (the dependent variable) may depend on the age of the respondent (the control variable). Consequently, these dummy variables include aspects as to whether the respondent has received a college education or not (*College*), their age, which has been subdivided into several age categories ranging from the ages of 18 to 24 (*Age 18 – 24*) and continues up to the ages of 45 to 54 (*Age 45 – 54*), where those in the age category of 55+ serve as the benchmark group. Moreover there is also the aspect as to whether the individual is male or female (*Gender*), if they are in committed marital relationship (*Married*), as well as their ethnic background, which in this case consists of African American (*African American*) or Hispanic respondents (*Hispanic*), with the base category being Caucasian. Lastly a dummy for geography named *Urban* further signifies regional differences, since urbanized locations have a tendency to be more prosperous than rural areas. In addition to these control variables, the dummy variable *Full-Time* has also been added as a classification for those individuals whom are in full-time employment and work a minimum number of hours either for themselves or for his/her employer. It takes a unit value of 1 the respondent is has a full-time job and a value of 0 if it is part-time. In addition, *Household Head* is also present in the variables list, as those individuals who are considered to be in charge of the household (either male or female), have previously shown a high likelihood to participate in business-related activities (Parker, 2011).

Outside of the before mentioned dummy variables, there is also a set of variables that represent the factors related to an individuals' likelihood to consider entrepreneurial activity. These are the entrepreneurial capital variables. This includes an interval variable on *Openness*, which takes a unit value of 1 if the individual strongly agrees with the statement that he/she is extroverted and willing to

communicate and do business with others, and takes the value 5 if the respondent strongly disagrees. *Openness* is regarded as a proxy for proactive behavior, mentioned by Dess and Lumpkin (2005) as a key entrepreneurial attribute. Moreover there is *Entrepreneurial Skills*, also an interval variable whereby respondents were asked how strongly they agreed with having skills for business creation. It assumes that individuals have personally developed entrepreneurial skills or have followed courses on business creation (Reynolds and Curtin, 2007). This variable parallels the definition noted by Wennekers and Thurik (1999) whom saw entrepreneurial skills as a significant facet of entrepreneurial capital. Similarly, *Past Experience* acts as a proxy with regard to competence and the extent to which the respondent agrees with having had previous firm experience; not limited to business skills (Erikson, 2002). Explicitly, this paper also includes the interval variable *Risk Taking Ability* as a way to measure a respondents' ability to deal with risk. Previous research concluded that "a higher fear of failure significantly increases the probability of becoming an intrapreneur over an independent entrepreneur," ceteris paribus (Martiarena, 2013: 34). Taking these results into account, this study aims to further elaborate on *Risk Taking Ability*, as its effects may not solely be restricted in terms of its impact on the probability of becoming an intrapreneur, but may also be correlated to intrapreneurial and entrepreneurial firm survival.

In addition to the above, there is also the inclusion of the follow-up variables. These nominal variables range from 'Start-Up Status Year 1' to 'Start-Up Status Year 6'. In terms of interpretations this means that for 'Year 1', or 12-months after start-up, the firm in which the respondent is employed is either profitable, active or has quit the industry. This also accounts for every consecutive year up until 'Year 6', or 72-months after start-up. A more detailed inquiry into these variables is documented in the method section of this paper.

Table 2 summarizes all the before mentioned descriptive statistics. From this dataset we can gather that certain start-up activities (either intrapreneurial or entrepreneurial) are more likely to be undertaken by young, male, college educated, African-American individuals. These initial impressions are based on a chi-square test that examined the relationship between the categorical variables in the sample.

Table 2

Descriptive statistics.

Variable	Mean			N	p	Description of Variable
	I = 1	I = 0	S = 1			
Age 18 - 24	0.13	0.79	0.09	874	0.02	0 if not between the ages of 18 and 24; 1 if the person is.
Age 25 - 34	0.20	0.20	0.21	874	0.87	0 if not between the ages of 25 and 34; 1 if the person is.
Age 35 - 44	0.25	0.26	0.27	874	0.68	0 not between the ages of 35 and 44; 1 if the person is.
Age 45 - 54	0.28	0.28	0.28	874	0.92	0 not between the ages of 45 and 54; 1 if the person is.
College	0.70	0.78	0.76	874	0.01	Value is 0 if person is not higher educated; 1 if the person is.
Gender	0.69	0.57	0.59	874	0.00	0 if the person is female; 1 if the person is male.
Married	0.51	0.60	0.53	874	0.18	0 if the person is not married; 1 if the person is married
H.H. Head	0.91	0.93	0.92	874	0.36	0 if the person is not the head of the household; 1 if the person is.
Full-Time	0.67	0.66	0.66	874	0.63	0 if the person does not work full time; 1 if the person does.
Urban	0.56	0.50	0.53	874	0.14	0 if the person does not live in an urban area; 1 if the person does.
Hispanic	0.09	0.06	0.08	874	0.14	0 if the person is not of Hispanic descent; 1 if the person is.
Afr. American	0.14	0.09	0.11	874	0.06	0 if the person is not of African-American descent; 1 if the person is.
Openness	1.80	1.89	1.88	874	0.91	Interval variable. Extrovert in business. (1) Strongly agree to (5) strongly disagree.
Skills	1.46	1.53	1.50	874	0.25	Interval variable. Skills to run a business. (1) Strongly agree to (5) strongly disagree.
Experience	1.60	1.62	1.61	874	0.48	Interval variable. Previous firm experience. (1) Strongly agree to (5) strongly disagree.
Risk-Taking	2.72	2.84	2.80	874	0.11	Interval variable. Can deal with risk. (1) Strongly agree to (5) strongly disagree.
Start-Up Status Year 1	1.98	2.03	2.03	874	0.03	Nominal variable. 12 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 2	2.00	2.10	2.09	874	0.01	Nominal variable. 24 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 3	2.06	2.15	2.16	874	0.01	Nominal variable. 36 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 4	2.14	2.20	2.22	874	0.14	Nominal variable. 48 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 5	2.16	2.23	2.25	874	0.14	Nominal variable. 60 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 6	2.17	2.25	2.27	874	0.13	Nominal variable. 72 months after start-up firm is (1) profitable, (2) active, or (3) quit.

Notes: Source is the PSED II dataset, 2005 - 2011, using all non-retired individuals. Sample is based on a U.S., nationally representative population. I takes the value of one (1) for any individual starting up a venture, within an existing firm, as an intrapreneur (N=270). I takes the value of zero (0) if the individual starts up the venture, as an entrepreneur (N=604). S takes the value of one (1) for any individual starting up a venture, whether as an intrapreneur or an entrepreneur (N=717). S takes the value of zero (0) if individual is already an intrapreneur or entrepreneur but **not** not in process of starting up a venture (N=157). N is the total sample size for each individual variable. Any differences in the number of observations (N) are the result of missing responses. p=p-values that have been measured using chi-squared distribution for pairs of binary dummy variables for I = 1 and I = 0.

3.3 Method

The methods used to analyze the data include logistic regressions and multinomial logistic regressions. The simple logistic regression is used to estimate the likelihood of an individual choosing to engage in a start-up as an intrapreneur ($I=1$) compared to the alternative occupation, entrepreneurs given their demographic background and entrepreneurial capital. Moreover, the model is also used to predict the likelihood of an existing entrepreneur or intrapreneur choosing to engage in the start-up of a venture ($S=1$) versus those not wishing to do so as they are already running entrepreneurial business. This can be explained by means of the following equations:

$$I_i = \beta_0 + \beta_1 \text{Age} + \beta_2 \text{Education} + \beta_3 \text{Gender} + \beta_4 \text{Married} + \beta_5 \text{Household Head} + \beta_6 \text{Fulltime Job} + \beta_7 \text{Urban} + \beta_8 \text{Race} + \beta_9 \text{Entrepreneurial Capital} + \varepsilon$$

$$S_i = \beta_0 + \beta_1 \text{Age} + \beta_2 \text{Education} + \beta_3 \text{Gender} + \beta_4 \text{Married} + \beta_5 \text{Household Head} + \beta_6 \text{Fulltime Job} + \beta_7 \text{Urban} + \beta_8 \text{Race} + \beta_9 \text{Entrepreneurial Capital} + \varepsilon$$

For these equations the first variable denotes the age category of the individual, followed by a further collection of demographic control variables including educational levels, gender, whether the individual is married, if they are head of their household, they have a fulltime job, live in an urbanized environment as well as whether they are of Hispanic or African-American descent compared to Caucasian descent. This is further followed by variables representing entrepreneurial capital in terms of extroversion in business, skills to run a business, previous firm experience and a proxy for risk aversion.

Further exploration of the hypotheses involves the use of six multinomial logistic models on a year-to-year basis for all six-years, starting at 12-months after start-up and progressing consecutively until 72-months after start-up. This method is employed because the dependent variable consists of more than two categories. Thus, it allows an assessment of the likelihood of an individual being in a newly profitable firm, a newly active (but not profitable) firm, or in new venture that has quit the industry given their occupational category as an intrapreneur, entrepreneur or starter as well as their demographic characteristics and entrepreneurial capital.

Consequently, the following equations are estimated multiple times to assess what demographic characteristics, factors of entrepreneurial capital and occupation (e.g. intrapreneur) affect their likelihood of early-stage market survival. In total 18 multinomial regressions will be performed with six for intrapreneurs ($I=1$), six for entrepreneurs ($I=0$) and six for starters ($S=1$).

$$\text{Year}_i = \beta_0 + \beta_1 \text{Intrapreneur} + \beta_2 \text{Age} + \beta_3 \text{Education} + \beta_4 \text{Gender} + \beta_5 \text{Married} + \beta_6 \text{Household Head} + \beta_7 \text{Fulltime Job} + \beta_8 \text{Urban} + \beta_9 \text{Race} + \beta_{10} \text{Entrepreneurial Capital} + \varepsilon$$

$$\text{Year}_i = \beta_0 + \beta_1 \text{Starter} + \beta_2 \text{Age} + \beta_3 \text{Education} + \beta_4 \text{Gender} + \beta_5 \text{Married} + \beta_6 \text{Household Head} + \beta_7 \text{Fulltime Job} + \beta_8 \text{Urban} + \beta_9 \text{Race} + \beta_{10} \text{Entrepreneurial Capital} + \varepsilon$$

In contrast to the simple logistic regression, the dependent variable in this case is each individual start-up year (Y_n). This categorical dependent variable for each of the six years takes on three levels (k) (1 for profitable firms (p), 2 for active firms (a), and 3 for firms that have quit the industry (q)). β_1 represents the occupation of the individual, either as an intrapreneur ($I=1$) or as an existing entrepreneur or intrapreneur choosing to engage in the start-up of a venture ($S=1$). The variables β_2 to β_{10} denote the same demographic characteristic and entrepreneurial capital variables as in the simple logistic model.

Resultantly, this paper estimates a multinomial logistic model in accordance to existing theory (Greene, 1992; Cooper, Gimeno-Gascon & Woo, 1994). For each individual (i), the start-up year (Y_n) is embodied by a set of three variables that denote the outcome for the individual. Consequently, for each individual only one of the three variables can be equal to one. Y_n is defined as:

$Y_{np} = 1$ if individual is in a profitable new firm, = 0 if otherwise;

$Y_{na} = 1$ if individual is in an active new firm (not profitable) = 0 if otherwise;

$Y_{nq} = 1$ if individual is in a new firm that has quit the industry = 0 if otherwise.

This results in the following probabilities for each corresponding outcome:

$$Pr_{np} = Pr [Y_{np} = 1],$$

$$Pr_{na} = Pr [Y_{na} = 1], \text{ and}$$

$$Pr_{nq} = Pr [Y_{nq} = 1].$$

Adding Pr_{np} , Pr_{na} , and Pr_{nq} up will result in a total value of 1. These probabilities are determined through the multinomial logit model as a function of the independent variables and their corresponding coefficients (Cooper et al., 1994). This is represented in the following equation:

$$Pr_{nk} = \frac{\exp(V_{nk})}{\exp(V_{np}) + \exp(V_{na}) + \exp(V_{nq})}$$

$$k = p, a, q$$

Here

$$V_{np} = a_p + b_p x_n$$

$$V_{na} = a_a + b_a x_n$$

$$V_{nq} = 0 \text{ (} a_f \text{ and } b_f \text{ are set at zero).}$$

The x values represent the independent variables for the initial conditions for each individual. On the other hand b_s and b_a indicate the effects of the independent variables on profitable and active firms relative to firms that have quit the industry. These coefficients should be interpreted based on their average marginal effects. Consequently, by using average marginal effects in the multinomial logit model all coefficients should be interpreted as follows: the effect of the independent variables on the probability of a specific outcome (marginal profitability or marginal activity) relative to the probability of quitting the industry (Cooper et al., 1994). The shortened equation is as follows:

$$Pr_{nk} = \frac{\exp(V_{nk})}{\sum_{k=1}^3 \exp(V_{nk})}$$

4 *Results*

The results section is divided as follows. The first section estimates a simple logistic regression using *S* and *I*. It uses a model layout similar to that of Parker's (2011) initial PSED II screener study. Following this is the utilization of the follow-up data from 'Year 1' to 'Year 6' to test the remaining hypotheses and compare firm survival amongst intrapreneurial and entrepreneurial firms. Finally, several robustness checks are performed to ensure the reliability and validity of this study.

4.1 *Overall logistic regression*

As mentioned, this section estimates a simple logistic regression using *S* and *I*. The layout runs parallel to that of Parker's (2011) initial PSED II screener study. A major difference however, is the fact that this simple logistic regression encompasses data from all six years of the PSED II study, whereas Parker (2011) used a bivariate probit (BVP) model that only examined the initial screener survey data. Nonetheless, it does enable an overview of the data and also serves as a measure of reliability for the PSED II dataset. Moreover it also allows the first batch of hypotheses to be tested.

The results of the simple logistic regression are reported in Table 3 for each comparison group. These are the average marginal effects of the coefficient estimates of the logistic model. Here, intrapreneurs are compared to the alternative occupation, namely nascent entrepreneurs. In addition, the model also examines nascent entrepreneurs and intrapreneurs who are in the processing of starting up a venture to those who are already running an active entrepreneurial business.

Regarding education, the estimates of the logistic model in the first column of Table 2 shows that individuals with a higher educational college degree are significantly more likely to engage in a start-up as an entrepreneur. In comparison, people with the same level of college education are less likely to engage in intrapreneurial activities. The effect of education is not statistically significant at a 5% level for those involved in starting a new venture. As a result, Hypothesis 3A cannot be accepted as the results indicate that having a higher educational degree is not directly related to becoming an intrapreneur. Hypothesis 3B, however, is reaffirmed in

the results as the data indicates that college educated individuals are significantly more likely to engage in start-up activities as an entrepreneur. This parallels the results found by Gasse (1982) and Parker (2011).

Gender is also statistically significant at a 5% significance level. This data indicates that those of the male gender are more likely to be involved in intrapreneurship rather than entrepreneurship. On the other hand, this simple logistic model also indicates that males are significantly less likely to be involved in the starting up of a new venture as either a nascent entrepreneur or intrapreneur, if they are already running a business, when compared to their female counterparts.

Among the other variables in Table 3, one can also make inferences about the effects of age. Results show that people between the ages of 25 and 44 are significantly more likely to start or be involved a new venture, either as a nascent entrepreneur or intrapreneur, even if they are already running a business when compared to those over 55 years of age. This further confirms earlier studies that also highlighted the fact that middle-aged individuals have increased tendencies to engage in entrepreneurial and intrapreneurial activities when compared to their younger and older counterparts (Long, 1982; Taylor, 1996; De Jong et al, 2011).

Married individuals on the other hand are less likely to be involved in the start up of a venture of any kind. The reason for this may very well have to do with the fact that, at their stage in life, they are already running a successful business as an entrepreneur or intrapreneur, and are therefore not as inclined to start a new venture (Robb, 2002).

The results for race indicated that African-Americans are significantly more likely to engage in intrapreneurial rather than entrepreneurial start-up activities relative to those of Caucasian descent. The coefficients for those of Hispanic descent are not significant in this respect, however the average marginal effects in the 'starter' category show that those of Hispanic descent are significantly more likely to start or be involved a new venture, either as a nascent entrepreneur, even if they are already running a business when compared to those of Caucasian descent. This matches the earlier PSED I findings by Greene and Owen (2004).

Table 3

Simple logistic analysis showing average marginal effects for intrapreneurs and new firm starters

	Intrapreneur ^a	Starters ^b
Independent Variables		
Age 18 to 24	0.11 (0.07)	0.06 (0.06)
Age 25 to 34	0.03 (0.05)	0.12** (0.04)
Age 35 to 44	0.02 (0.05)	0.11** (0.04)
Age 45 to 54	0.04 (0.05)	0.05 (0.04)
College	-0.08** (0.04)	0.02 (0.03)
Gender	0.10** (0.03)	-0.59** (0.03)
Married	-0.02 (0.03)	-0.06** (0.03)
H.H. Head	0.01 (0.06)	0.01 (0.06)
Fulltime	0.00 (0.03)	-0.01 (0.03)
Urban	0.04 (0.03)	0.02 (0.03)
Hispanic	0.07 (0.06)	0.12** (0.07)
Afr. American	0.09* (0.05)	-0.01 (0.04)
Openness	-0.02 (0.02)	0.00 (0.01)
Skills	-0.04 (0.03)	-0.02 (0.02)
Experience	0.01 (0.02)	0.00 (0.02)
Risk-Taking	-0.01 (0.01)	-0.00 (0.01)
χ^2	32.64	28.03
Prob > χ^2	0.0082	0.0314
Pseudo R ²	0.0302	0.0341

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. N = 874, the total sample size.

^a Entrepreneur is base outcome

^b Non-Starters is the base outcome

4.2 *Yearly follow-up data*

This section will comment on the results that help us understand early-stage firm survival and the elements that affect early-stage firm survival rates of intrapreneurial and entrepreneurial firms. Resultantly, this segment of the paper only focuses on the aspects relevant to this specific topic and omits other interpretations. This is achieved by running sequential multinomial logistic models for each year after start-up. Table 4, Table 5 and Table 6 present these results as average marginal effects of the coefficient estimates for each of the first six years after start-up for intrapreneurs ($I=1$), entrepreneurs ($I=0$) and starters ($S=1$).

The data presented in Table 4 and Table 5 shows that the average marginal effects of the measures intrapreneur and entrepreneur are insignificant determinants of being in a newly profitable firm in the first 6-years after start-up, relative to being in a new firm that has quit the industry. In contrast, the average marginal effects of the measure intrapreneur on the probability of being in an active start-up, is on average significantly positive for the first three years after start-up. Consequently, intrapreneurial individuals have, on average, a higher probability of being in an active start-up in the first three years relative to nascent entrepreneurs. Thus, in simple terms, in the first three years after start-up, intrapreneurs are more likely to be part of a firm that is active in the industry rather than in a firm that has quit the industry compared to nascent entrepreneurs. The other variables for years four, five and six are not statistically significant at a 5% rejection level.

On the other hand when observing the data provided in Table 6, the average marginal effects of being a starter entrepreneur or intrapreneur on the probability of being in a profitable start-up is on average significantly negative in the fourth, fifth and sixth year after start-up. Thus in the fourth, fifth and sixth year after start-up, intrapreneurs and entrepreneurs whom have recently set up a new venture are, on average, less likely to be part of a profitable firm and more likely to have quit the industry when compared to existing intrapreneurs and entrepreneurs whom have not recently set up a new venture. This is also true for the second category active start-ups. Here the probability of being in an active start-up is also significantly negative. In this case, in the second, third, fifth and sixth year after start-up, all the people

whom have recently set up a new venture are, on average, less likely to be part of an active firm and more likely to have quit the industry when compared to existing intrapreneurs and entrepreneurs whom have not recently set up a new venture.

The last four rows in Table 4 and Table 5 show that three measures of entrepreneurial capital, mainly the skills to run a business, previous firm experience and risk-taking propensity are insignificant determinants of an intrapreneurial or entrepreneurial individual having a profitable firm or an active firm relative to having a firm that has quit the industry. In contrast, however, the variable for openness, also defined as how extroverted an individual is in business, does have strong effects in the fourth and fifth year after start-up within an active firm. As such, an increase in an individuals' level of extroversion in terms of being open to business opportunities increases the probability of being in an active start-up in the fourth and fifth year after start-up, relative to having a firm that has quit the industry. These findings partially support Hypothesis 1A and negate Hypothesis 1B, since individuals who possess the entrepreneurial qualities of being extroverted in business are more likely to be in an active firm. This gives reason to believe that there is higher early-stage firm survival in the fourth and fifth year for both intrapreneurs and entrepreneurs who possess this specific factor of entrepreneurial capital. Aside from this single factor of entrepreneurial capital however, the findings indicate that engagement in nascent entrepreneurial activity is not fully explained by an individuals' entrepreneurial capital.

The first rows of both Table 4 and Table 5 provide the outcomes required to test Hypotheses 2A and 2B. The average marginal effects show that individuals who fall within the age categories of 25 and 34, and 34 and 44 have a significantly negative effect on the likelihood to be part of a newly active firm within the first 6-years of start-up. As such they are, on average, significantly less likely to be part of a newly active firm and more likely to have quit the industry, within the first 6-years of start-up, when compared to individuals over the age of 55. This supports Hypothesis 2A, which suggested that an increase in age would lead to higher early-stage firm survival for entrepreneurial individuals. At the same time, the results do not support Hypothesis 2B, since the same accounts for intrapreneurial individuals. Here, younger intrapreneurial individuals are, on average, also significantly less likely to be part of a

newly active firm, within the first 6-years of start-up, compared to individuals over the age of 55.

In addition to this, the twelfth and thirteenth row in Tables 4 and 5 show the results related to Hypotheses 5A, 5B and 5C. Based on these figures it can be deduced that being of African-American descent has a significantly positive association with being part of a newly active firm within the first 6-years of start-up, compared to being of Caucasian descent. Resultantly, African-American owned enterprises are, on average, significantly more likely to survive and be ‘active,’ and less likely to quit the industry, within the first 6-years of start-up, when compared to Caucasian-owned firms. For this reason, Hypothesis 5A and Hypothesis 5C cannot be supported since the results indicate there is higher early-stage firm survival for African-American entrepreneurial and intrapreneurial enterprises compared to Caucasian-owned firms. These results are not completely surprising however since it does in some aspects reaffirm the findings by Greene and Owen (2004) and Smith (2005). It must be said that for the second racial dummy variable, namely for Hispanic-owned enterprises, the coefficients and effects are positive but not significant at the 5% rejection threshold. Thus, Hypothesis 5B and 5D cannot be supported.

While the results in Table 3 did indicate gender differences, the same cannot be said for the data in Table 4 and Table 5. The results in row 7 present the results relating gender to being in a profitable or active start-up compared to being in a start-up that has quit the industry. For this variable none of the effects are significant. This coincides with previous research reports that also had difficulties in reporting gender effects using the PSED II dataset (Parker, 2011). The results in row 7 subsequently indicate that the gender of an individual does not help explain whether it is the intrapreneurial or the entrepreneurial start-up efforts that have a longer early-stage survival rate. For this reason Hypothesis 4A and 4B cannot be supported and as such, further research is advised in this field of study.

Similarly, the impact of college education levels appears to be analogous to that of gender. While the estimates of the logistic model in Table 3 also signaled educational variations, the average marginal effects models in Table 4, Table 5 and Table 6 refute any long-term effects. One could argue that having a college degree or

higher has a positive effect on being part of a profitable or active start-up in the latter years of the start-up, for both existing intrapreneurs, entrepreneurs and individuals in the process of starting up a venture, yet the data is not statistically significant at a 5% level. The findings therefore do not support the idea that having a college education influences and explains whether it is intrapreneurial or entrepreneurial start-up efforts that have sustained early-stage firm survival rates. Accordingly, these interactions do not support Hypothesis 3C and Hypothesis 3D.

In fact, majority of the remaining demographic variables are insignificant determinants of being in profitable start-up or an active start-up relative to being in a firm that has quit the industry for both intrapreneurs and starters. Having a fulltime job or living in an urban environment has no significant effect in any of the models. Nonetheless, there are exceptions. Those individuals who indicated they considered themselves as the head of the household noted a positive and significant effect on being in a profitable start-up, in the third year after start-up, relative to being in a firm that has quit the industry. Marriage is also noted as having some significance, however this time negative, in terms of the average marginal effect on being in an active start-up, 6-years after start-up. The outcome noted that those individuals who are married experience a decrease in the probability of being in an active start-up, compared to those who are not married. Nonetheless, while these results are significant at a 5% rejection level, they represent a snapshot in time and do not highlight the long-term survival prospects for intrapreneurial and entrepreneurial firms as is required for this study. Consequently, no valid inferences can be made from these outcomes.

4.3 Robustness Checks

Empirical studies often inspect the plausibility and robustness of coefficients by means of a “robustness check.” In a multinomial logistic regression used to model choices this examination of structural validity requires the use of a Hausman test in order to consider whether the Independence of Irrelevant Alternatives (IIA) holds (Train, 2003). In short, the IIA assumption reasons that the “odds of choosing alternative A over B should not depend on whether some other alternative C is present or absent” (Allison, 2012). For example, choosing a Twix over Snickers should not

depend on Mars being present or absent. The dependent variable in this paper, however, consists of three nominal categories (Profitable, Active and Quit) where the IIA assumption already holds. Each category is mutually exclusive and not dependent on an alternative being present or absent. The odds of a respondent changing their choice from being in a profitable firm over an active firm if one alternative were to disappear (e.g. 'Quit') are relatively slim, thus introducing or removing choice has “no effect on the proportion of probability assigned to each of the other alternatives” (About.com, 2013). Resultantly, I was unable to apply a structurally informative Hausman test.

An additional measure that can be used to explain the model involves observing the amount of variance explained by the models. This is done by means of Pseudo R-Squares. Although this is not directly a measure of robustness, it does provide insight into how well the models fit the data. Firstly, when explaining the effect that demographic and entrepreneurial capital indicators have on intrapreneurship (Table 3), 3% of the variance is explained. 3% of the variation is also explained for the starter category. Furthermore, based on the data in Table 4 indicators of intreprenurship, demographics and capital are able to explain 5% of the variation in the first year after start-up (Year 1); 3% of the variation in Year 2; 4% of the variation in Year 3; and 3% of the variation in Years 4, 5 and 6. Similarly, in Table 5 the indicators of starting entrepreneurs, demographics and capital are able to explain 6% of the variation in the first year after start-up (Year 1); 3% of the variation in Year 2; 4% of the variation in Year 3; 3% of the variation in Year 4; and 4% of the variance in Years 5 and 6. These low Pseudo R-Squared values do not necessarily indicate that the models in this paper do not fit the data. While, in general, high R-squared values are seen as signs of better fit, “in some fields it is entirely expected that R-squared values will be low [especially in] fields that attempt to predict human behavior” (Frost, 2013:). Considering the fact that these models attempt to explain entrepreneurial factors that are closely aligned with hard to predict human behavior, lower R-squared values are to be expected. Moreover, considering the fact that the Pseudo R-Squared values all hover around the same approximate value, it does help represent and illustrate that these yearly models are closely aligned to one another. Consequently this information is still very valuable.

Finally, considering the fact that 18 separate multinomial logistic regressions have been run in sequential order with no apparent disparities or outliers also serves as a solid measure of robustness. In fact, the data provided in Table 6 serves as an additional measure of robustness, since it examines all individuals in the process of starting up a venture ($S=I$), whether as an intrapreneur or an entrepreneur, relative to those not in the process of starting up a venture. Thus, knowing that the data presented in Table 4, Table 5 and Table 6 were tested numerous times to see the effects of the independent variables on the yearly dependent variable, where all coefficients seem to be in line with one another, gives cause to believe that the data is robust.

Table 4

Multinomial logit model showing average marginal effects for intrapreneurs ranging from first year of start-up to six years after start-up^a

Profitable Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Intrapreneur	0.00 (0.02)	0.01 (0.03)	0.00 (0.03)	0.00 (0.03)	0.02 (0.03)	0.03 (0.03)
Age 18 to 24	-0.02 (0.05)	-0.05 (0.06)	-0.02 (0.06)	-0.01 (0.06)	-0.03 (0.07)	-0.03 (0.07)
Age 25 to 34	0.01 (0.03)	0.01 (0.03)	0.01 (0.04)	-0.00 (0.05)	-0.01 (0.05)	-0.01 (0.05)
Age 35 to 44	0.03 (0.03)	0.01 (0.04)	0.01 (0.04)	0.01 (0.04)	-0.00 (0.04)	0.00 (0.04)
Age 45 to 54	-0.03 (0.03)	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.07 (0.04)
College	0.00 (0.02)	0.02 (0.03)	0.06* (0.03)	0.06* (0.04)	0.06* (0.04)	0.05 (0.04)
Gender	0.02 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)
Married	0.01 (0.02)	0.01 (0.02)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)	0.04 (0.03)
H.H. Head	0.11 (0.07)	0.10 (0.07)	0.16** (0.08)	0.11 (0.07)	0.12* (0.07)	0.10 (0.07)
Fulltime	0.01 (0.02)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)
Urban	0.01 (0.02)	-0.02 (0.02)	0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Hispanic	-0.11 (0.07)	-0.02 (0.05)	-0.04 (0.06)	-0.01 (0.06)	-0.02 (0.06)	-0.04 (0.06)
Afr. American	-0.02 (0.03)	-0.04 (0.04)	-0.08 (0.05)	-0.06 (0.05)	-0.09 (0.05)	-0.10* (0.05)
Openness	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)
Skills	0.01 (0.02)	0.01 (0.02)	0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Experience	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Risk-Taking	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)

Active Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Intrapreneur	0.06** (0.03)	0.08** (0.04)	0.09** (0.04)	0.05 (0.04)	0.04 (0.03)	0.04 (0.03)
Age 18 to 24	-0.06 (0.07)	-0.00 (0.08)	-0.04 (0.08)	-0.10 (0.07)	-0.07 (0.07)	-0.04 (0.06)
Age 25 to 34	-0.11** (0.05)	-0.10* (0.05)	-0.13** (0.06)	-0.14** (0.06)	-0.13** (0.05)	-0.11** (0.05)
Age 35 to 44	-0.09** (0.04)	-0.04 (0.05)	-0.10* (0.05)	-0.12** (0.05)	-0.10* (0.05)	-0.10** (0.05)
Age 45 to 54	-0.06 (0.04)	-0.01 (0.05)	-0.03 (0.05)	-0.08 (0.05)	-0.05 (0.05)	-0.05 (0.05)
College	0.04 (0.03)	0.04 (0.04)	-0.02 (0.04)	-0.04 (0.04)	-0.05 (0.04)	-0.03 (0.04)
Gender	0.01 (0.03)	-0.00 (0.03)	-0.01 (0.04)	0.03 (0.04)	0.04 (0.03)	0.05 (0.03)
Married	-0.02 (0.03)	-0.01 (0.03)	-0.05 (0.03)	-0.03 (0.03)	-0.06* (0.03)	-0.08** (0.03)
H.H. Head	-0.14* (0.08)	-0.06 (0.07)	-0.09 (0.07)	-0.05 (0.07)	-0.05 (0.06)	0.02 (0.06)
Fulltime	-0.00 (0.03)	0.00 (0.04)	0.04 (0.04)	0.03 (0.04)	0.02 (0.04)	0.01 (0.03)
Urban	-0.03 (0.03)	-0.01 (0.03)	0.00 (0.03)	-0.02 (0.03)	-0.04 (0.03)	-0.06* (0.03)
Hispanic	0.13* (0.07)	0.06 (0.07)	0.06 (0.07)	0.04 (0.07)	0.04 (0.06)	0.05 (0.06)
Afr. American	0.10** (0.05)	0.17** (0.06)	0.18** (0.06)	0.15** (0.05)	0.14** (0.05)	0.16** (0.05)
Openness	0.02 (0.01)	0.02 (0.02)	0.03* (0.02)	0.03** (0.02)	0.03** (0.02)	0.02 (0.02)
Skills	-0.03 (0.02)	-0.04 (0.03)	-0.05 (0.03)	-0.05 (0.03)	-0.04 (0.03)	-0.02 (0.03)
Experience	0.00 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Risk-Taking	0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)

χ^2	53.13	53.35	67.22	49.22	52.32	54.56
Prob > χ^2	0.0194	0.0185	0.0006	0.0442	0.0232	0.0141
Pseudo R ²	0.0542	0.0343	0.0375	0.0265	0.0281	0.0294

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. Quit the industry is the base outcome. N = 874. ^aQuit the industry is base outcome.

Table 5

Multinomial logit model showing average marginal effects for entrepreneurs ranging from first year of start-up to six years after start-up^a

Profitable Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Entrepreneur	-0.00 (0.02)	-0.01 (0.03)	-0.00 (0.03)	-0.00 (0.03)	-0.02 (0.03)	-0.03 (0.03)
Age 18 to 24	-0.02 (0.05)	-0.05 (0.06)	-0.02 (0.06)	-0.01 (0.06)	-0.03 (0.07)	-0.03 (0.07)
Age 25 to 34	0.01 (0.03)	0.01 (0.03)	0.01 (0.04)	-0.00 (0.05)	-0.01 (0.05)	-0.01 (0.05)
Age 35 to 44	0.03 (0.03)	0.01 (0.04)	0.01 (0.04)	0.01 (0.04)	-0.00 (0.04)	0.00 (0.04)
Age 45 to 54	-0.03 (0.03)	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.07 (0.04)
College	0.00 (0.02)	0.02 (0.03)	0.06* (0.03)	0.06* (0.04)	0.06* (0.04)	0.05 (0.04)
Gender	0.02 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)
Married	0.01 (0.02)	0.01 (0.02)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)	0.04 (0.03)
H.H. Head	0.11 (0.07)	0.10 (0.07)	0.16** (0.08)	0.11 (0.07)	0.12* (0.07)	0.10 (0.07)
Fulltime	0.01 (0.02)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)
Urban	0.01 (0.02)	-0.02 (0.02)	0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Hispanic	-0.11 (0.07)	-0.02 (0.05)	-0.04 (0.06)	-0.01 (0.06)	-0.02 (0.06)	-0.04 (0.06)
Afr. American	-0.02 (0.03)	-0.04 (0.04)	-0.08 (0.05)	-0.06 (0.05)	-0.09 (0.05)	-0.10* (0.05)
Openness	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)
Skills	0.01 (0.02)	0.01 (0.02)	0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Experience	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Risk-Taking	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)

Active Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Entrepreneur	-0.06** (0.03)	-0.08** (0.04)	-0.09** (0.04)	-0.05 (0.04)	-0.04 (0.03)	-0.04 (0.03)
Age 18 to 24	-0.06 (0.07)	-0.00 (0.08)	-0.04 (0.08)	-0.10 (0.07)	-0.07 (0.07)	-0.04 (0.06)
Age 25 to 34	-0.11** (0.05)	-0.10* (0.05)	-0.13** (0.06)	-0.14** (0.06)	-0.13** (0.05)	-0.11** (0.05)
Age 35 to 44	-0.09** (0.04)	-0.04 (0.05)	-0.10* (0.05)	-0.12** (0.05)	-0.10* (0.05)	-0.10** (0.05)
Age 45 to 54	-0.06 (0.04)	-0.01 (0.05)	-0.03 (0.05)	-0.08 (0.05)	-0.05 (0.05)	-0.05 (0.05)
College	0.04 (0.03)	0.04 (0.04)	-0.02 (0.04)	-0.04 (0.04)	-0.05 (0.04)	-0.03 (0.04)
Gender	0.01 (0.03)	-0.00 (0.03)	-0.01 (0.04)	0.03 (0.04)	0.04 (0.03)	0.05 (0.03)
Married	-0.02 (0.03)	-0.01 (0.03)	-0.05 (0.03)	-0.03 (0.03)	-0.06* (0.03)	-0.08** (0.03)
H.H. Head	-0.14* (0.08)	-0.06 (0.07)	-0.09 (0.07)	-0.05 (0.07)	-0.05 (0.06)	0.02 (0.06)
Fulltime	-0.00 (0.03)	0.00 (0.04)	0.04 (0.04)	0.03 (0.04)	0.02 (0.04)	0.01 (0.03)
Urban	-0.03 (0.03)	-0.01 (0.03)	0.00 (0.03)	-0.02 (0.03)	-0.04 (0.03)	-0.06* (0.03)
Hispanic	0.13* (0.07)	0.06 (0.07)	0.06 (0.07)	0.04 (0.07)	0.04 (0.06)	0.05 (0.06)
Afr. American	0.10** (0.05)	0.17** (0.06)	0.18** (0.06)	0.15** (0.05)	0.14** (0.05)	0.16** (0.05)
Openness	0.02 (0.01)	0.02 (0.02)	0.03* (0.02)	0.03** (0.02)	0.03** (0.02)	0.02 (0.02)
Skills	-0.03 (0.02)	-0.04 (0.03)	-0.05 (0.03)	-0.05 (0.03)	-0.04 (0.03)	-0.02 (0.03)
Experience	0.00 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Risk-Taking	0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)

χ^2	53.13	53.35	67.22	49.22	52.32	54.56
Prob > χ^2	0.0194	0.0185	0.0006	0.0442	0.0232	0.0141
Pseudo R ²	0.0542	0.0343	0.0375	0.0265	0.0281	0.0294

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. Quit the industry is the base outcome. N = 874. ^aQuit the industry is base outcome.

Table 6

Multinomial logit analysis showing average marginal effects for firm starters ranging from first year of start-up to six years after start-up^a

Profitable Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Start-up	-0.04* (0.02)	-0.01 (0.03)	-0.06* (0.03)	-0.07** (0.03)	-0.08** (0.03)	-0.09** (0.04)
Age 18 to 24	-0.01 (0.05)	-0.05 (0.06)	-0.02 (0.06)	-0.01 (0.06)	-0.02 (0.07)	-0.02 (0.07)
Age 25 to 34	0.01 (0.03)	0.01 (0.04)	0.02 (0.04)	0.00 (0.05)	0.00 (0.05)	0.00 (0.05)
Age 35 to 44	0.04 (0.03)	0.01 (0.04)	0.02 (0.04)	0.02 (0.04)	0.01 (0.04)	0.01 (0.04)
Age 45 to 54	-0.03 (0.03)	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.05 (0.04)	-0.06 (0.04)
College	0.00 (0.02)	0.02 (0.03)	0.06* (0.03)	0.06* (0.03)	0.06* (0.04)	0.05 (0.04)
Gender	0.02 (0.02)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Married	0.01 (0.02)	0.01 (0.02)	0.01 (0.03)	0.00 (0.03)	0.02 (0.03)	0.03 (0.03)
H.H Head	0.11 (0.07)	0.10 (0.07)	0.15** (0.08)	0.11 (0.07)	0.12* (0.07)	0.10 (0.07)
Fulltime	0.00 (0.02)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)	-0.01 (0.03)	0.02 (0.03)
Urban	0.01 (0.02)	-0.02 (0.02)	0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.02 (0.03)
Hispanic	-0.11 (0.07)	-0.01 (0.05)	-0.03 (0.06)	0.00 (0.06)	-0.01 (0.06)	-0.03 (0.06)
Afr. American	-0.02 (0.03)	-0.04 (0.04)	-0.08 (0.05)	-0.06 (0.05)	-0.08 (0.05)	-0.10* (0.05)
Openness	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)
Skills	0.01 (0.02)	0.01 (0.02)	0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Experience	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Risk-Taking	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)

Active Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Start-up	-0.03 (0.04)	-0.10** (0.04)	-0.09** (0.04)	-0.08* (0.04)	-0.10** (0.04)	-0.09** (0.04)
Age 18 to 24	-0.05 (0.07)	0.01 (0.08)	-0.02 (0.08)	-0.09 (0.07)	-0.06 (0.07)	-0.03 (0.07)
Age 25 to 34	-0.11** (0.05)	-0.08 (0.05)	-0.12** (0.06)	-0.13** (0.06)	-0.12** (0.05)	-0.09* (0.05)
Age 35 to 44	-0.10** (0.04)	-0.04 (0.05)	-0.09* (0.05)	-0.11** (0.05)	-0.08* (0.05)	-0.09* (0.05)
Age 45 to 54	-0.05 (0.04)	-0.03 (0.05)	-0.03 (0.05)	-0.08 (0.05)	-0.05 (0.05)	-0.04 (0.05)
College	0.03 (0.03)	0.03 (0.04)	-0.02 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.04 (0.04)
Gender	0.01 (0.03)	0.00 (0.03)	-0.00 (0.04)	0.03 (0.04)	0.04 (0.03)	0.04 (0.03)
Married	-0.02 (0.03)	-0.02 (0.03)	-0.06* (0.04)	-0.03 (0.03)	-0.06* (0.03)	-0.08** (0.03)
H.H Head	-0.14* (0.08)	-0.06 (0.07)	-0.09 (0.07)	-0.05 (0.07)	-0.05 (0.06)	0.02 (0.06)
Fulltime	-0.00 (0.03)	0.00 (0.04)	0.04 (0.04)	0.03 (0.04)	0.01 (0.04)	0.01 (0.03)
Urban	-0.03 (0.03)	0.02 (0.03)	0.01 (0.03)	-0.02 (0.03)	-0.04 (0.03)	-0.05* (0.03)
Hispanic	0.14* (0.07)	0.08 (0.07)	0.08 (0.07)	0.05 (0.07)	0.05 (0.06)	0.06 (0.06)
Afr. American	0.10** (0.05)	0.18** (0.06)	0.19** (0.06)	0.15** (0.05)	0.14** (0.05)	0.16** (0.05)
Openness	0.02 (0.01)	0.02 (0.02)	0.03* (0.02)	0.03** (0.02)	0.03** (0.02)	0.02 (0.02)
Skills	-0.04 (0.02)	-0.05* (0.03)	-0.05* (0.03)	-0.05* (0.03)	-0.04 (0.03)	-0.02 (0.03)
Experience	0.00 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Risk-Taking	0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)

χ^2	54.17	51.63	72.22	58.72	65.40	67.87
Prob > χ^2	0.0154	0.0269	0.0001	0.0053	0.0010	0.0005
Pseudo R ²	0.0552	0.0332	0.0402	0.0316	0.0351	0.0366

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. Quit the industry is the base outcome. N = 874. ^a Quit the industry is base outcome.

5 *Conclusion*

The purpose of this paper was to use the Panel Study of Entrepreneurial Dynamics II (PSED II) dataset to investigate the early-stage survival of intrapreneurial and entrepreneurial start-up efforts. Additionally, the paper also sought to examine whether demographic factors and entrepreneurial capital play a determining role and have any influence on the early-stage survival of individual start-up efforts. Based on the results of the empirical analysis, this section will elaborate and connect the findings to current theory. The following segment is divided into three sections: early-stage entrepreneurial and intrapreneurial survival, demographic factors and entrepreneurial capital. In addition, this section will also present several academic and managerial implications, limitations and future directions.

5.1 *General Discussion*

The results presented in the previous section have helped enhance our current understanding of intrapreneurs, entrepreneurs and their early-stage market survival. With previous research having been unable to explore this field due to basic lack of available data, these findings give a novel look into whether, in general, intrapreneurs or entrepreneurs are more likely to survive in the first six-years since their establishment (Parker, 2011). Using the variables for ‘entrepreneur’ and ‘intrapreneur’ as provided by the PSED II study, results indicate that intrapreneurs in a corporate work environment have longer early-stage survival rates compared to entrepreneurs. Looking back on past frameworks, it builds on the conclusions by Dess and Lumpkin (2005) whom noted that innovating intrapreneurs have a large shot at success. This may in part be the result of the environment in which intrapreneurs operate. They have access to an existing customer base and have substantially more financial, administrative and operational support handed to them by the parent company, which may explain why intrapreneurs are more likely to be found in active enterprises versus non-active ones in the first years after start-up (Ross and Unwalla, 1986; Carrier, 1994). In addition, when observing the variable for those whom have recently started a firm (‘starters’: both entrepreneurs or intrapreneurs) and compared to incumbent intrapreneurs and entrepreneurs, it is noted that new firm starters are more likely to be in a firm that has quit the industry in the first 6-years after start-up. This corresponds

to earlier findings, as intrapreneurs and entrepreneurs in incumbent firms are much less at risk of failure when they are not involved in the start-up of a new venture (Parker, 2011). Moreover, this also indirectly enhances the finding that entrepreneurial individuals are much less likely to survive in the short term compared to intrapreneurs as the variable for new firm starters ($S=I$) consists of 717 individuals, of which a majority are entrepreneurs and not intrapreneurs; also considering the fact that the total number of intrapreneurs in the dataset totals 270 individuals. Thus, intrapreneurs in a corporate work environment have longer early-stage survival rates compared to entrepreneurs. The question remains whether demographic factors and entrepreneurial capital have any influence on these early-stage survival rates.

The effect of age shows two significant outcomes. Firstly, middle-aged intrapreneurial and entrepreneurial individuals in the 25-44 year age range are more likely to start a new venture compared to those over the age of 55. The idea that age can be seen as an inverted U-shape relationship where middle-aged individuals have higher entrepreneurial tendencies compared to their younger and older counterparts is therefore endorsed (Long, 1982; Taylor, 1996; Parker, 2011; De Jong et al., 2011). Nonetheless, their increased desire to start a new venture does not automatically translate into success. In fact, individuals in the 25-44 year age range have lower early-stage firm survival rates when compared to individuals over the age of 55. While these findings coincide with the verdict by Bosma and Levie (2010) and Unger et al. (2011) whom found that, as entrepreneurs get older they are more likely to have firm success, it is in stark contrast with existing intrapreneurial literature. The expectation was that as intrapreneurial individuals get older the less likely it is that they experience firm success (Terracciano et al., 2005; Ordaz et al., 2011). Surprisingly, however, the influence of age on intrapreneurial early-stage survival rates is the exact opposite. Apparently intrapreneurs over the age of 55 also note positive early-stage firm survival compared to their younger counterparts. It would be of interest to further examine the reason behind this in future research studies.

Bates (1997) proposed a somewhat tenacious theory that White-owned start-ups are noticeably more prone to survive compared to Black-owned start-ups. His idea was grounded in the fact that they have substantially more access to start-up capital, which paves the way towards much higher levels of early-stage firm survival. Robb

(2002) further expanded upon this and found that it was not only the Black-owned businesses but also the “Hispanic-owned business that were less likely to survive” (p.395). In this paper, however, it is deduced that those of African-American descent actually observe higher early-stage firm survival and are more likely to be part of an active new firm compared to those of Caucasian descent. This accounts for both entrepreneurial and intrapreneurial enterprises, and as such African-American individuals appear to be more prone to early-stage firm success regardless of whether they are an intrapreneur or entrepreneur. Remarkably, while this counters Bates’ (1997) initial argument it expands on the findings by Greene and Owen (2004) and Smith (2005). On the one hand, this is not totally surprising as the former was one of the pioneers in the use of the PSED studies. They conveyed that African-Americans as well as Hispanics show noticeably more entrepreneurial behavior compared to the White population. Interestingly, however, this paper cannot fully endorse these results when looking at the Hispanic population in terms of early-stage firm survival. Nonetheless, it can be said that they are more likely to be involved in a new venture, either as an intrapreneur or entrepreneur, compared to those of Caucasian descent. This also mirrors the results by Greene and Owen (2004).

The remaining demographic variables, however, are not entirely able to explain their effects on early-stage startup survival. In terms of gender effects, for example, literature hinted towards female-owned entrepreneurial enterprises having greater difficulties staying afloat compared to males (Marlow and Patton, 2005; Pines et al, 2010). Similarly, intrapreneurial firms are also seen as more likely to flourish under male control rather than when under the control of women (Parker, 2011). Yet, based on the results provided here, gender does not have a significant effect on early-stage startup survival for either category. As such it is currently not possible to make any solid inferences as to whether male-owned firms or female-owned firms fare better or worse in terms of early-stage startup survival. In this sense gender can be observed as a “bad proxy for intrapreneurial behavior” (De Jong et al., 2011: 20). Results do, however, indicate that being of the male gender has a positive effect on the likelihood to be involved in intrapreneurship rather than entrepreneurship, which is in line with the idea that males favor involvement in intrapreneurial activity (Parker, 2011; Benyovszki et al., 2013). Surprisingly, however, males are significantly less likely to be involved in the start-up of a new venture as either an

entrepreneur or intrapreneur, if they are already running a business, when compared to their female counterparts. On the one hand this result is logical as they may not want to face a higher chance of failure by getting involved in another startup, however it is somewhat counterintuitive in that it suggests that women have a higher likelihood to get themselves involved in the startup of a venture. A potential reason for these ambiguous results is that the social and cultural norms that used to dictate that women should stay at home are changing and that they are more willing and able to accept the consequences in getting involved in the startup of a new venture.

Similarly, the impact of having a college education is also negligible in terms of its effect on early-stage startup survival. While you could argue that there is an apparent positive effect when it comes to having higher education on the likelihood to survive as either a profitable or active startup, for both intrapreneurs and entrepreneurs, it is not advisable as the data is not statistically significant at a 5% level. Therefore, there is no empirical reason to make any logical inferences based on this variable. The findings therefore do not support the idea that having a college education influences and explains whether it is intrapreneurial or entrepreneurial start-up efforts that have sustained early-stage firm survival rates. Still, based on the simple logistic model it was found that individuals with a college degree are significantly more likely to engage in a start-up as an entrepreneur compared to being an intrapreneur. This parallels the results found by Parker (2011), where he showed that “people with some college education are significantly more likely to engage in a start-up [as a] nascent entrepreneur” (p.28). Yet, it is also somewhat surprising, since it presents an opposite point of view to the empirical studies of de Jong et al. (2011) and Benyovzski et al. (2013) whom all found that those who completed their university degree were more likely to be associated with intrapreneurial endeavors rather than entrepreneurial ones. Martiarena (2013) also concluded that those with a post-secondary education were more inclined to be intrapreneurs. Their results however were counterintuitive to that of their original hypothesis, where they considered “balanced human capital to be linked [more] to independent entrepreneurship” rather than intrapreneurship (Martiarena, 2013: 35). Consequently, these results show that educational training and higher education does encourage people to cross the frontier into entrepreneurship. Reason for the discrepancy between this paper and that of Martiarena (2013) may also have to do with the fact that this paper considers

individuals who have completed *at least* a college education, whereas they focused on post-secondary education.

Drawing on existing entrepreneurial and corporate entrepreneurial literature, this paper proposed that higher early-stage firm survival of intrapreneurial and entrepreneurial firms is reflected in an individuals' openness, entrepreneurial skills, past experience and risk-taking ability. Thus, it is argued that these four dimensions, which have been coined under the term 'entrepreneurial capital,' play a key role in influencing the survival of early-stage startups. This is in part because previous research has used these dimensions (Parker, 2011; Martiarena, 2013) and proxies of these constructs in related research on entrepreneurship and intrapreneurship (Blanchflower and Oswald, 1998; Dess and Lumpkin, 2005). Yet, despite the notion that it plays such a central role in the performance of individuals, three of the four measures of entrepreneurial capital, mainly the skills to run a business, previous firm experience and risk-taking propensity all indicated to be insignificant determinants on early-stage firm survival. Average marginal effects, based on a multinomial logistic model did however confirm a stronger correlation between openness, also defined as how extroverted an individual is in business. As such, the idea that an increase in an individuals' level of extroversion, in terms of being open to business opportunities, increases the likelihood for early-stage intrapreneurial and entrepreneurial survival echoes earlier studies (Davids, 1963; Hisrich, 1990; Antoncic and Hisrich, 2001; Dess and Lumpkin, 2005). Their studies generally found that entrepreneurial as well as intrapreneurial activity is boosted when an individual possesses certain levels of self-confidence and pro-activeness. In this paper, the variable for openness is seen as a proxy for pro-active behavior, which is also closely tied to the idea of self-confidence. Yet, while Kuratko and Goldsby (2004) and De Jong et al. (2011) found that aspects including risk-taking ability and individual entrepreneurial skills are necessary factors in order for entrepreneurial development to take place, this paper cannot suggest that they also play a key part in ensuring the early-stage market survival of such firms. Consequently, aside from the single dimension of openness, this document cannot fully confirm the presuppositions that were formed based on previous research as the findings indicate that overall, 'entrepreneurial capital' does not play a central role in influencing the survival of early-stage entrepreneurial and intrapreneurial startups.

5.2 *Implications*

The results presented by this study are based on a nationally representative U.S.-based sample. For this reason the data can be generalized for those economies that fall within a similar economic paradigm (Blanchflower, 2004). By analyzing the most recent sample of the PSED II dataset, an effort was made to examine whether intrapreneurial or entrepreneurial start-up efforts that have a longer early-stage survival rate and what factors (i.e. entrepreneurial capital and demographics) influence these survival rates. Based on these findings there are a number of practical implications attached to this paper that should not be overlooked and may even prove beneficial to those working within both the free range entrepreneurial environment and the more rigid structures of large corporations (MacMillan, Block and Narashima, 1986).

One of the primary academic findings based on this analysis is that intrapreneurs in a corporate work environment have longer early-stage survival rates compared to entrepreneurs. Surprisingly, however, when combined into a single variable for those whom have recently started a firm ('starters': both entrepreneurs or intrapreneurs) and compared to existing intrapreneurs/entrepreneurs who are already in the business, it is noted that they are more inclined to quit the industry in the first 6-years after start-up. Based on this data one implication is that potential intrapreneurs may be more inclined to seek a start-up opportunity within their existing corporate environment as the chances of firm survival are significantly higher compared to their entrepreneurial counterparts. Nonetheless, while the findings do indicate that early-stage firm survival rates drop when compared to incumbent intrapreneurs and entrepreneurs, one can still infer that there is increased likelihood for intrapreneurial firms to survive, which is in part expected due to the backing of the established firm, which provides the intrapreneur with the necessary safety net (Ross and Unwalla, 1986). This safety net includes reduced financial and operational risk in case of failure, ease of access to capital, readily available resources (e.g. labor and technology), as well as access to a large existing customer base (Carrier, 1994). Future research may want to further explore the effects of these factors on early firm-survival rates.

In addition, these findings also carry further implications for managers and firm owners. It is noted that individuals in the 25 to 44 year age range are significantly less likely to be part of a newly active firm and more likely to have quit the industry in the first six-years of start-up, when you compare them to individuals over the age of 55. This parallels the findings by Bosma and Levie (2010) and Unger et al (2011), where it was noted that there was a positive relationship between age, growth and business experience, which increases the chances of firm success.

Moreover, these results also indirectly contribute to Parker's (2011) findings where it was found that those in the 25 to 44 year age range are significantly more likely to engage in independent start-ups. Thus, according to Parker (2011) people within this age category are more likely to engage in entrepreneurial ventures, however based on the findings in this paper, they are not likely to experience long-run early-stage firm success. This may in part be the result of the before mentioned lack of experience. Furthermore, it was also noted that, "younger and older employees are significantly more likely to engage in nascent intrapreneurship than in nascent entrepreneurship" (Parker, 2011: 31). Taking into account that intrapreneurial ventures have higher early-stage firm survival rates and the fact that those over the age of 55 are more likely to be in an active or profitable firm, it implies that age plays an important role in higher early-stage firm survival for intrapreneurial individuals. Consequently, based on these findings it is advised that large incumbent reconsider their policies with regard to discarding employees and specifically intrapreneurs whom are over the age of 55 as they note more positive early-stage firm survival compared to their younger counterparts

In addition, the impact of race was also put forward by this paper and raises an important point in terms of how management and research communities see African-American entrepreneurs. As of right now, there is still a skewed representation that sees African-American owned businesses as sub-optimal and somewhat inferior to that of Caucasian owned enterprises. The results of this study, however, imply a different point of view. Based on the PSED II data it was found that African-American owned nascent enterprises are more likely to survive and be 'active,' and less likely to quit the industry, within the first 6-years of start-up, when compared to Caucasian-owned firms. This casts a new light on research and reaffirms initial PSED

studies, including those by and Greene and Owen (2004) where it was relayed that both African Americans and Hispanics are more entrepreneurial and more likely to fare well compared to the Caucasian population. Consequently, research indicates a change in the tide. Nonetheless, while this is an interesting development it must be observed with caution as it does raise questions about what type of firms are being run by minority versus nonminority groups. One can very well be comparing ‘mom-and-pop’ stores to large multinational enterprises.

The results also raise some important implications for the impact of entrepreneurial capital on early-stage firm survival rates. This study showed strong support for the impact of extroversion and openness on entrepreneurial and intrapreneurial firms. Expanding on earlier research by Dess and Lumpkin (2005) it shows that employees who possess these qualities appear to be the most promising candidates with the biggest chance to succeed in terms of early-stage firm success for both intrapreneurial and entrepreneurial firms. Training future employees, managers and entrepreneurs on this facet of entrepreneurial capital should be conducive the future success of newly founded firms. Nonetheless, while the other three measures of entrepreneurial capital, mainly the skills to run a business, previous firm experience and risk-taking propensity proved to be insignificant determinants of early-stage firm success, they should not be discarded as they are a necessarily element for development to take place (Parker, 2011).

5.3 *Limitations and Future Directions*

Finally, several limitations of this paper will be presented. In acknowledging these constraints, it will hopefully serve as a stimulus for future research to build upon these constraints.

One of the limitations of this paper is that it uses an approximate measure of entrepreneurial capital. It is noted earlier on in this paper that entrepreneurial capital contains aspects including, but not limited to, individual attitude, competence, commitment and skills in order for entrepreneurial development to take place. Unfortunately, due to the nature of the PSED II database, it is difficult to measure genuine individual entrepreneurial capital. Consequently, certain variables do contain components of entrepreneurial capital, but these are best seen as proxies. As a result, one can infer that there are more accurate ways to measure these variables. It is advised for future research to provide better-defined measures of entrepreneurial capital in order to make more concrete assumptions.

In addition there are also potential endogeneity issues in the before mentioned entrepreneurial capital variables. In the broadest sense, endogeneity problems occur when there is a correlation between the independent variable (X) and the error term. Thus, there may be certain factors related to the dependent variable (Y) are also related to the independent variable(s) (X). This limitation is not new. In fact, it was previously highlighted and brought forward by authors including Parker and van Praag (2006), Parker (2011), and Martiarena (2013). In fact, Parker (2011) emphasized that due to the nature of the PSED II dataset it was “not possible to check whether [the variables of] human capital [are] endogenous (p. 31). Consequently, this endogeneity concern is still present in this paper since there are certain overlaps in Parker’s (2011) human capital variables and the entrepreneurial capital variables formulated in this document.

A further limitation relates to the processing and assembling of the dataset, in which a significant share of missing variables were omitted and dropped. While this was not without reason, since one sample size both simplifies and increases comparability of the dataset and models, it must be noted that dropping variables has

notable effects on the final results. The reason this is a concern is due to the fact that respondent response rates in the PSED II study dropped significantly over the years ('Year 1' to 'Year 6'). Many respondents dropped out of the study, as they were simply not able, or willing, to participate in the survey (Reynolds and Curtin, 2011). Consequently, a large number of these participants had to be dropped from the dataset since their inclusion would lead to biased results, as you cannot compare respondents who only reported half of the variables to those who reported all of the variables. This resulted in a final sample size of 874, which is more than reasonable. Still, reliability and validity of such large-scale studies could be improved upon in the future by ensuring that more respondents stay around for the entire duration of the study.

What is more, this document also purposefully omitted several variables provided by the PSED II dataset. These include components such as whether they had management experience, their tenure as well as more detailed demographic data on their number of children, wealth status as well as other financial data that could compare the financial success and trends of intrapreneurs and entrepreneurs over the six-year period. Many of these variables were deemed to be either too narrow in scope or too complex to be included in this model. Nonetheless, future studies may want to consider including these variables to identify more precisely as well as increase understanding of their effects on entrepreneurial and intrapreneurial firm survival.

In addition to these limitations, there are also opportunities for future research. For example it would be interesting to examine this study using an even more extensive panel study over an even larger and more extended period of time. While this paper managed to incorporate all six years of this panel study, which is already a large step up from the two-year period used by Parker (2011), this panel study should still be extended even further. Doing so would increase reliability, validity as well as give even more intricate insights into the relationship between entrepreneurial and intrapreneurial dynamics of U.S.-based enterprises.

Another issue that can be tackled in future studies relates to the effect of income and wealth on start-ups survival rates. This paper lacked the inclusion of income levels in its models, as such it would be interesting to see if there is a connection between early-stage firm survival and the amount of financial leverage the

intrapreneur or entrepreneur has when he or she starts the firm.

Moreover, this paper found noticeable gender differences in the involvement of males in starting up a new venture as either an entrepreneur or intrapreneur, if they are already running a business. Results noted that females are have a higher likelihood to get themselves involved in the startup of a venture, either as an entrepreneur or intrapreneur, if they are already running a business compared to males. This paper reasoned that it is because they are more able to accept the consequences of getting involved in the startup of a new venture. Nonetheless no solid reasoning was found for these findings and as such it may be interesting for future research to examine this topic.

The primary contribution of this paper was to provide a new angle into entrepreneurial and intrapreneurial empirical research by examining the early-stage survival of these firms. The findings provided by this research paper suggest that intrapreneurs in a corporate work environment have longer early-stage survival rates compared to entrepreneurs. In addition to this, there are also several demographic factors and entrepreneurial capital factors that are associated with venture survival. These apply to both intrapreneurs and entrepreneurs. Factors including age, race and an individuals' level of extroversion, in terms of being open to business opportunities enable higher early-stage intrapreneurial and entrepreneurial firm survival. This paper hopes to have filled a void in existing research by shining a new light on a topic of growing interest (Parker, 2011).

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7 *Appendix*

Table 1

Start-up comparison by race

	White-Owned		Black-Owned		Asian-Owned	
	Active	Discontinued	Active	Discontinued	Active	Discontinued
Firm's Traits						
Gross Sales, 1987	185,458	50,602	76,971	29,819	138,996	46,294
Total Financial Capital at start-up	36,301	17,437	16,454	8,013	62,246	15,914
Capital Structure						
Leverage at start up	1.29	1.03	1.09	0.76	1.03	0.5
% of firms starting with zero capital	20.2	35.7	26.1	36.6	14	26.1
Human Capital						
% with higher education degree	40.2	29.5	30.5	29.4	57.2	60.5

Source: Bates (1987). Race, self-employment, & upward mobility.

Table 2

Descriptive statistics.

Variable	Mean			N	p	Description of Variable
	I = 1	I = 0	S = 1			
Age 18 - 24	0.13	0.79	0.09	874	0.02	0 if not between the ages of 18 and 24; 1 if the person is.
Age 25 - 34	0.20	0.20	0.21	874	0.87	0 if not between the ages of 25 and 34; 1 if the person is.
Age 35 - 44	0.25	0.26	0.27	874	0.68	0 not between the ages of 35 and 44; 1 if the person is.
Age 45 - 54	0.28	0.28	0.28	874	0.92	0 not between the ages of 45 and 54; 1 if the person is.
College	0.70	0.78	0.76	874	0.01	Value is 0 if person is not higher educated; 1 if the person is.
Gender	0.69	0.57	0.59	874	0.00	0 if the person is female; 1 if the person is male.
Married	0.51	0.60	0.53	874	0.18	0 if the person is not married; 1 if the person is married
H.H. Head	0.91	0.93	0.92	874	0.36	0 if the person is not the head of the household; 1 if the person is.
Full-Time	0.67	0.66	0.66	874	0.63	0 if the person does not work full time; 1 if the person does.
Urban	0.56	0.50	0.53	874	0.14	0 if the person does not live in an urban area; 1 if the person does.
Hispanic	0.09	0.06	0.08	874	0.14	0 if the person is not of Hispanic descent; 1 if the person is.
Afr. American	0.14	0.09	0.11	874	0.06	0 if the person is not of African-American descent; 1 if the person is.
Openness	1.80	1.89	1.88	874	0.91	Interval variable. Extrovert in business. (1) Strongly agree to (5) strongly disagree.
Skills	1.46	1.53	1.50	874	0.25	Interval variable. Skills to run a business. (1) Strongly agree to (5) strongly disagree.
Experience	1.60	1.62	1.61	874	0.48	Interval variable. Previous firm experience. (1) Strongly agree to (5) strongly disagree.
Risk-Taking	2.72	2.84	2.80	874	0.11	Interval variable. Can deal with risk. (1) Strongly agree to (5) strongly disagree.
Start-Up Status Year 1	1.98	2.03	2.03	874	0.03	Nominal variable. 12 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 2	2.00	2.10	2.09	874	0.01	Nominal variable. 24 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 3	2.06	2.15	2.16	874	0.01	Nominal variable. 36 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 4	2.14	2.20	2.22	874	0.14	Nominal variable. 48 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 5	2.16	2.23	2.25	874	0.14	Nominal variable. 60 months after start-up firm is (1) profitable, (2) active, or (3) quit.
Start-Up Status Year 6	2.17	2.25	2.27	874	0.13	Nominal variable. 72 months after start-up firm is (1) profitable, (2) active, or (3) quit.

Notes: Source is the PSED II dataset, 2005 - 2011, using all non-retired individuals. Sample is based on a U.S., nationally representative population. I takes the value of one (1) for any individual starting up a venture, within an existing firm, as an intrapreneur (N=270). I takes the value of zero (0) if the individual starts up the venture, as an entrepreneur (N=604). S takes the value of one (1) for any individual starting up a venture, whether as an intrapreneur or an entrepreneur (N=717). S takes the value of zero (0) if individual is already an intrapreneur or entrepreneur but **not** not in process of starting up a venture (N=157). N is the total sample size for each individual variable. Any differences in the number of observations (N) are the result of missing responses. p=p-values that have been measured using chi-squared distribution for pairs of binary dummy variables for I = 1 and I = 0.

Table 3

Simple logistic analysis showing average marginal effects for intrapreneurs and new firm starters

	Intrapreneur ^a	Starters ^b
Independent Variables		
Age 18 to 24	0.11 (0.07)	0.06 (0.06)
Age 25 to 34	0.03 (0.05)	0.12** (0.04)
Age 35 to 44	0.02 (0.05)	0.11** (0.04)
Age 45 to 54	0.04 (0.05)	0.05 (0.04)
College	-0.08** (0.04)	0.02 (0.03)
Gender	0.10** (0.03)	-0.59** (0.03)
Married	-0.02 (0.03)	-0.06** (0.03)
H.H. Head	0.01 (0.06)	0.01 (0.06)
Fulltime	0.00 (0.03)	-0.01 (0.03)
Urban	0.04 (0.03)	0.02 (0.03)
Hispanic	0.07 (0.06)	0.12** (0.07)
Afr. American	0.09* (0.05)	-0.01 (0.04)
Openness	-0.02 (0.02)	0.00 (0.01)
Skills	-0.04 (0.03)	-0.02 (0.02)
Experience	0.01 (0.02)	0.00 (0.02)
Risk-Taking	-0.01 (0.01)	-0.00 (0.01)
χ^2	32.64	28.03
Prob > χ^2	0.0082	0.0314
Pseudo R ²	0.0302	0.0341

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. N = 874, the total sample size.

^a Entrepreneur is base outcome

^b Non-Starters is the base outcome

Table 4

Multinomial logit model showing average marginal effects for intrapreneurs ranging from first year of start-up to six years after start-up^a

Profitable Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Intrapreneur	0.00 (0.02)	0.01 (0.03)	0.00 (0.03)	0.00 (0.03)	0.02 (0.03)	0.03 (0.03)
Age 18 to 24	-0.02 (0.05)	-0.05 (0.06)	-0.02 (0.06)	-0.01 (0.06)	-0.03 (0.07)	-0.03 (0.07)
Age 25 to 34	0.01 (0.03)	0.01 (0.03)	0.01 (0.04)	-0.00 (0.05)	-0.01 (0.05)	-0.01 (0.05)
Age 35 to 44	0.03 (0.03)	0.01 (0.04)	0.01 (0.04)	0.01 (0.04)	-0.00 (0.04)	0.00 (0.04)
Age 45 to 54	-0.03 (0.03)	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.07 (0.04)
College	0.00 (0.02)	0.02 (0.03)	0.06* (0.03)	0.06* (0.04)	0.06* (0.04)	0.05 (0.04)
Gender	0.02 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)
Married	0.01 (0.02)	0.01 (0.02)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)	0.04 (0.03)
H.H. Head	0.11 (0.07)	0.10 (0.07)	0.16** (0.08)	0.11 (0.07)	0.12* (0.07)	0.10 (0.07)
Fulltime	0.01 (0.02)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)
Urban	0.01 (0.02)	-0.02 (0.02)	0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Hispanic	-0.11 (0.07)	-0.02 (0.05)	-0.04 (0.06)	-0.01 (0.06)	-0.02 (0.06)	-0.04 (0.06)
Afr. American	-0.02 (0.03)	-0.04 (0.04)	-0.08 (0.05)	-0.06 (0.05)	-0.09 (0.05)	-0.10* (0.05)
Openness	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)
Skills	0.01 (0.02)	0.01 (0.02)	0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Experience	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Risk-Taking	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)

Active Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Intrapreneur	0.06** (0.03)	0.08** (0.04)	0.09** (0.04)	0.05 (0.04)	0.04 (0.03)	0.04 (0.03)
Age 18 to 24	-0.06 (0.07)	-0.00 (0.08)	-0.04 (0.08)	-0.10 (0.07)	-0.07 (0.07)	-0.04 (0.06)
Age 25 to 34	-0.11** (0.05)	-0.10* (0.05)	-0.13** (0.06)	-0.14** (0.06)	-0.13** (0.05)	-0.11** (0.05)
Age 35 to 44	-0.09** (0.04)	-0.04 (0.05)	-0.10* (0.05)	-0.12** (0.05)	-0.10* (0.05)	-0.10** (0.05)
Age 45 to 54	-0.06 (0.04)	-0.01 (0.05)	-0.03 (0.05)	-0.08 (0.05)	-0.05 (0.05)	-0.05 (0.05)
College	0.04 (0.03)	0.04 (0.04)	-0.02 (0.04)	-0.04 (0.04)	-0.05 (0.04)	-0.03 (0.04)
Gender	0.01 (0.03)	-0.00 (0.03)	-0.01 (0.04)	0.03 (0.04)	0.04 (0.03)	0.05 (0.03)
Married	-0.02 (0.03)	-0.01 (0.03)	-0.05 (0.03)	-0.03 (0.03)	-0.06* (0.03)	-0.08** (0.03)
H.H. Head	-0.14* (0.08)	-0.06 (0.07)	-0.09 (0.07)	-0.05 (0.07)	-0.05 (0.06)	0.02 (0.06)
Fulltime	-0.00 (0.03)	0.00 (0.04)	0.04 (0.04)	0.03 (0.04)	0.02 (0.04)	0.01 (0.03)
Urban	-0.03 (0.03)	-0.01 (0.03)	0.00 (0.03)	-0.02 (0.03)	-0.04 (0.03)	-0.06* (0.03)
Hispanic	0.13* (0.07)	0.06 (0.07)	0.06 (0.07)	0.04 (0.07)	0.04 (0.06)	0.05 (0.06)
Afr. American	0.10** (0.05)	0.17** (0.06)	0.18** (0.06)	0.15** (0.05)	0.14** (0.05)	0.16** (0.05)
Openness	0.02 (0.01)	0.02 (0.02)	0.03* (0.02)	0.03** (0.02)	0.03** (0.02)	0.02 (0.02)
Skills	-0.03 (0.02)	-0.04 (0.03)	-0.05 (0.03)	-0.05 (0.03)	-0.04 (0.03)	-0.02 (0.03)
Experience	0.00 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Risk-Taking	0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)

χ^2	53.13	53.35	67.22	49.22	52.32	54.56
Prob > χ^2	0.0194	0.0185	0.0006	0.0442	0.0232	0.0141
Pseudo R ²	0.0542	0.0343	0.0375	0.0265	0.0281	0.0294

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. Quit the industry is the base outcome. N = 874. ^aQuit the industry is base outcome.

Table 5

Multinomial logit model showing average marginal effects for entrepreneurs ranging from first year of start-up to six years after start-up^a

Profitable Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Entrepreneur	-0.00 (0.02)	-0.01 (0.03)	-0.00 (0.03)	-0.00 (0.03)	-0.02 (0.03)	-0.03 (0.03)
Age 18 to 24	-0.02 (0.05)	-0.05 (0.06)	-0.02 (0.06)	-0.01 (0.06)	-0.03 (0.07)	-0.03 (0.07)
Age 25 to 34	0.01 (0.03)	0.01 (0.03)	0.01 (0.04)	-0.00 (0.05)	-0.01 (0.05)	-0.01 (0.05)
Age 35 to 44	0.03 (0.03)	0.01 (0.04)	0.01 (0.04)	0.01 (0.04)	-0.00 (0.04)	0.00 (0.04)
Age 45 to 54	-0.03 (0.03)	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.07 (0.04)
College	0.00 (0.02)	0.02 (0.03)	0.06* (0.03)	0.06* (0.04)	0.06* (0.04)	0.05 (0.04)
Gender	0.02 (0.02)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)
Married	0.01 (0.02)	0.01 (0.02)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)	0.04 (0.03)
H.H. Head	0.11 (0.07)	0.10 (0.07)	0.16** (0.08)	0.11 (0.07)	0.12* (0.07)	0.10 (0.07)
Fulltime	0.01 (0.02)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)
Urban	0.01 (0.02)	-0.02 (0.02)	0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Hispanic	-0.11 (0.07)	-0.02 (0.05)	-0.04 (0.06)	-0.01 (0.06)	-0.02 (0.06)	-0.04 (0.06)
Afr. American	-0.02 (0.03)	-0.04 (0.04)	-0.08 (0.05)	-0.06 (0.05)	-0.09 (0.05)	-0.10* (0.05)
Openness	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)
Skills	0.01 (0.02)	0.01 (0.02)	0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Experience	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Risk-Taking	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)

Active Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Entrepreneur	-0.06** (0.03)	-0.08** (0.04)	-0.09** (0.04)	-0.05 (0.04)	-0.04 (0.03)	-0.04 (0.03)
Age 18 to 24	-0.06 (0.07)	-0.00 (0.08)	-0.04 (0.08)	-0.10 (0.07)	-0.07 (0.07)	-0.04 (0.06)
Age 25 to 34	-0.11** (0.05)	-0.10* (0.05)	-0.13** (0.06)	-0.14** (0.06)	-0.13** (0.05)	-0.11** (0.05)
Age 35 to 44	-0.09** (0.04)	-0.04 (0.05)	-0.10* (0.05)	-0.12** (0.05)	-0.10* (0.05)	-0.10** (0.05)
Age 45 to 54	-0.06 (0.04)	-0.01 (0.05)	-0.03 (0.05)	-0.08 (0.05)	-0.05 (0.05)	-0.05 (0.05)
College	0.04 (0.03)	0.04 (0.04)	-0.02 (0.04)	-0.04 (0.04)	-0.05 (0.04)	-0.03 (0.04)
Gender	0.01 (0.03)	-0.00 (0.03)	-0.01 (0.04)	0.03 (0.04)	0.04 (0.03)	0.05 (0.03)
Married	-0.02 (0.03)	-0.01 (0.03)	-0.05 (0.03)	-0.03 (0.03)	-0.06* (0.03)	-0.08** (0.03)
H.H. Head	-0.14* (0.08)	-0.06 (0.07)	-0.09 (0.07)	-0.05 (0.07)	-0.05 (0.06)	0.02 (0.06)
Fulltime	-0.00 (0.03)	0.00 (0.04)	0.04 (0.04)	0.03 (0.04)	0.02 (0.04)	0.01 (0.03)
Urban	-0.03 (0.03)	-0.01 (0.03)	0.00 (0.03)	-0.02 (0.03)	-0.04 (0.03)	-0.06* (0.03)
Hispanic	0.13* (0.07)	0.06 (0.07)	0.06 (0.07)	0.04 (0.07)	0.04 (0.06)	0.05 (0.06)
Afr. American	0.10** (0.05)	0.17** (0.06)	0.18** (0.06)	0.15** (0.05)	0.14** (0.05)	0.16** (0.05)
Openness	0.02 (0.01)	0.02 (0.02)	0.03* (0.02)	0.03** (0.02)	0.03** (0.02)	0.02 (0.02)
Skills	-0.03 (0.02)	-0.04 (0.03)	-0.05 (0.03)	-0.05 (0.03)	-0.04 (0.03)	-0.02 (0.03)
Experience	0.00 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Risk-Taking	0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)

χ^2	53.13	53.35	67.22	49.22	52.32	54.56
Prob > χ^2	0.0194	0.0185	0.0006	0.0442	0.0232	0.0141
Pseudo R ²	0.0542	0.0343	0.0375	0.0265	0.0281	0.0294

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. Quit the industry is the base outcome. N = 874. ^aQuit the industry is base outcome.

Table 6

Multinomial logit analysis showing average marginal effects for firm starters ranging from first year of start-up to six years after start-up^a

Profitable Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Start-up	-0.04* (0.02)	-0.01 (0.03)	-0.06* (0.03)	-0.07** (0.03)	-0.08** (0.03)	-0.09** (0.04)
Age 18 to 24	-0.01 (0.05)	-0.05 (0.06)	-0.02 (0.06)	-0.01 (0.06)	-0.02 (0.07)	-0.02 (0.07)
Age 25 to 34	0.01 (0.03)	0.01 (0.04)	0.02 (0.04)	0.00 (0.05)	0.00 (0.05)	0.00 (0.05)
Age 35 to 44	0.04 (0.03)	0.01 (0.04)	0.02 (0.04)	0.02 (0.04)	0.01 (0.04)	0.01 (0.04)
Age 45 to 54	-0.03 (0.03)	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.05 (0.04)	-0.06 (0.04)
College	0.00 (0.02)	0.02 (0.03)	0.06* (0.03)	0.06* (0.03)	0.06* (0.04)	0.05 (0.04)
Gender	0.02 (0.02)	0.02 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)
Married	0.01 (0.02)	0.01 (0.02)	0.01 (0.03)	0.00 (0.03)	0.02 (0.03)	0.03 (0.03)
H.H Head	0.11 (0.07)	0.10 (0.07)	0.15** (0.08)	0.11 (0.07)	0.12* (0.07)	0.10 (0.07)
Fulltime	0.00 (0.02)	0.03 (0.03)	0.01 (0.03)	0.02 (0.03)	-0.01 (0.03)	0.02 (0.03)
Urban	0.01 (0.02)	-0.02 (0.02)	0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.02 (0.03)
Hispanic	-0.11 (0.07)	-0.01 (0.05)	-0.03 (0.06)	0.00 (0.06)	-0.01 (0.06)	-0.03 (0.06)
Afr. American	-0.02 (0.03)	-0.04 (0.04)	-0.08 (0.05)	-0.06 (0.05)	-0.08 (0.05)	-0.10* (0.05)
Openness	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)
Skills	0.01 (0.02)	0.01 (0.02)	0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Experience	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Risk-Taking	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)

Active Start-up	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Start-up	-0.03 (0.04)	-0.10** (0.04)	-0.09** (0.04)	-0.08* (0.04)	-0.10** (0.04)	-0.09** (0.04)
Age 18 to 24	-0.05 (0.07)	0.01 (0.08)	-0.02 (0.08)	-0.09 (0.07)	-0.06 (0.07)	-0.03 (0.07)
Age 25 to 34	-0.11** (0.05)	-0.08 (0.05)	-0.12** (0.06)	-0.13** (0.06)	-0.12** (0.05)	-0.09* (0.05)
Age 35 to 44	-0.10** (0.04)	-0.04 (0.05)	-0.09* (0.05)	-0.11** (0.05)	-0.08* (0.05)	-0.09* (0.05)
Age 45 to 54	-0.05 (0.04)	-0.03 (0.05)	-0.03 (0.05)	-0.08 (0.05)	-0.05 (0.05)	-0.04 (0.05)
College	0.03 (0.03)	0.03 (0.04)	-0.02 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.04 (0.04)
Gender	0.01 (0.03)	0.00 (0.03)	-0.00 (0.04)	0.03 (0.04)	0.04 (0.03)	0.04 (0.03)
Married	-0.02 (0.03)	-0.02 (0.03)	-0.06* (0.04)	-0.03 (0.03)	-0.06* (0.03)	-0.08** (0.03)
H.H Head	-0.14* (0.08)	-0.06 (0.07)	-0.09 (0.07)	-0.05 (0.07)	-0.05 (0.06)	0.02 (0.06)
Fulltime	-0.00 (0.03)	0.00 (0.04)	0.04 (0.04)	0.03 (0.04)	0.01 (0.04)	0.01 (0.03)
Urban	-0.03 (0.03)	0.02 (0.03)	0.01 (0.03)	-0.02 (0.03)	-0.04 (0.03)	-0.05* (0.03)
Hispanic	0.14* (0.07)	0.08 (0.07)	0.08 (0.07)	0.05 (0.07)	0.05 (0.06)	0.06 (0.06)
Afr. American	0.10** (0.05)	0.18** (0.06)	0.19** (0.06)	0.15** (0.05)	0.14** (0.05)	0.16** (0.05)
Openness	0.02 (0.01)	0.02 (0.02)	0.03* (0.02)	0.03** (0.02)	0.03** (0.02)	0.02 (0.02)
Skills	-0.04 (0.02)	-0.05* (0.03)	-0.05* (0.03)	-0.05* (0.03)	-0.04 (0.03)	-0.02 (0.03)
Experience	0.00 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Risk-Taking	0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)

χ^2	54.17	51.63	72.22	58.72	65.40	67.87
Prob > χ^2	0.0154	0.0269	0.0001	0.0053	0.0010	0.0005
Pseudo R ²	0.0552	0.0332	0.0402	0.0316	0.0351	0.0366

*Asterisks indicate significance level where *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are reported in parentheses. Quit the industry is the base outcome. N = 874. ^a Quit the industry is base outcome.