



POLITECNICO
MILANO 1863

SCUOLA DI INGEGNERIA INDUSTRIALE
E DELL'INFORMAZIONE

The effect of nascent entrepreneurs' human capital on nascent ventures

TESI DI LAUREA MAGISTRALE IN
MANAGEMENT ENGINEERING-INGEGNERIA
GESTIONALE

Authors: **Beatrice Cini, Giuliano Gulino**

Beatrice Cini ID:	947977
Giuliano Gulino ID:	943487
Advisor:	Evila Piva
Academic Year:	2020-21

Index

List of Tables	5
Abstract.....	7
Abstract in italiano	9
Executive Summary.....	11
1 Introduction	15
2 Literature Review	17
2.1 EDUCATION.....	21
2.1.1 Educational level	24
2.1.2 Extra-curricular education activities	27
2.1.3 Type of education	28
2.2 WORK EXPERIENCE	31
2.2.1 Years of work experience.....	34
2.2.2 Entrepreneurial-specific and managerial-specific experience	35
2.2.3 Industry-specific experience.....	41
2.3 GENERIC VS SPECIFIC HUMAN CAPITAL	46
2.4 LIMITATIONS	54
3 Theoretical Framework	55
3.1 RESEARCH QUESTION	55
3.2 THE IMPACT OF NASCENT ENTREPRENEURS' HUMAN CAPITAL ON PIVOTING	57
3.3 THE IMPACT OF NASCENT ENTREPRENEURS' HUMAN CAPITAL ON EXIT	60

4 Method	64
4.1 RESEARCH DESIGN	64
4.1.1 <i>The Research Assistant's Role</i>	65
4.1.2 <i>The interviews</i>	66
4.2 DATA COLLECTION	66
4.2.1 <i>Dependent Variable</i>	68
4.2.2 <i>Independent Variables</i>	69
4.2.3 <i>Control Variables</i>	70
5 Empirical Analysis.....	75
5.1 TESTING H1 & H2.....	75
5.2 TESTING H3, H4, H5 & H6.....	78
6 Conclusions	81
6.1 DISCUSSION OF THE RESULTS	81
6.2 CONCLUSIVE REMARKS.....	82
6.2.1 <i>Contribution to the literature</i>	82
6.2.2 <i>Managerial Implications</i>	82
6.2.3 <i>Limitations and Future Research Directions</i>	83
Appendix A.....	85
Bibliography	89

List of tables

TABLE 2.1: CORRELATION EDUCATION AND START-UP PERFORMANCE	23
TABLE 2.2: EDUCATIONAL LEVEL MEASURE AND PAPER' SAMPLES	24
TABLE 2.3: EXTRA-CURRICULAR EDUCATION ACTIVITIES MEASURE AND PAPER' SAMPLES	27
TABLE 2.4: TYPE OF EDUCATION MEASURE AND PAPERS' SAMPLES.....	28
TABLE 2.5: CORRELATION WORK EXPERIENCE AND START-UP PERFORMANCE	33
TABLE 2.6: YEARS OF WORK EXPERIENCE MEASURE AND PAPERS' SAMPLES.....	34
TABLE 2.7: ENTREPRENEURIAL-SPECIFIC AND MANAGERIAL-SPECIFIC EXPERIENCE MEASURE AND PAPERS' SAMPLE	36
TABLE 2.8: INDUSTRY-SPECIFIC WORK EXPERIENCE MEASURE AND PAPERS' SAMPLE	42
TABLE 2.9: CORRELATION GENERIC AND SPECIFIC HUMAN CAPITAL WITH START-UP PERFORMANCE	48
TABLE 2.10: GENERIC AND SPECIFIC HUMAN CAPITAL MEASURE AND PAPERS' SAMPLE	49
TABLE 4.1: CONTENTS OF THE TRAINING PROGRAM.....	65
TABLE 4.2: EDUCATIONAL LEVEL ACHIEVED IN NASCENT VENTURES.....	67
TABLE 4.3: DESCRIPTIONS OF VARIABLES	71
TABLE 4.4: DESCRIPTIVE STATISTICS OF VARIABLES.....	72
TABLE 4.5: CORRELATION MATRIX	73
TABLE 5.1: RESULTS OF H1 AND H2.....	76
TABLE 5.2: HUMAN CAPITAL AND THE PROBABILITY OF PIVOTING	77
TABLE 5.3: RESULTS OF H3, H4, H5 AND H6.....	79
TABLE 5.4: HUMAN CAPITAL AND THE PROBABILITY OF EXITING	80
TABLE A.1: SCRIPT OF THE INTERVIEWS.....	85

Abstract

Existing literature studied how human capital influence the willingness of entry in entrepreneurship and how it affects different performances of new venture. However, there are no research that study how the human capital of nascent entrepreneur influence the outcomes of nascent ventures. Starting from this gap we want to understand whether nascent entrepreneurs' human capital has effects on the outcomes of a nascent venture. From this research question we developed six different hypotheses of the effect of nascent entrepreneurs' human capital on outcomes of a nascent venture. Hypotheses are formulated on two possible outcomes: pivoting, that is the action of repeating something already done during the business model development, to develop a more viable ones; and exit, so the abandoning of the idea. For answering the research question and to validate hypotheses, we joined InnoVentureLab research group that offered to potential nascent entrepreneurs the access to a pre-accelerator program. Thanks to InnoVentureLab we analysed a sample 298 nascent ventures led by 526 nascent entrepreneurs. We measured human capital of nascent venture by studying the background of nascent entrepreneurs, formed by education and work experience. From our analysis emerges that possessing skills in various fields influence positively the probability of pivoting. Entrepreneurial-specific education has a positive effect in the likelihood of exit, meanwhile entrepreneurial-specific work experience has a negative effect in likelihood of exit.

Abstract in italiano

La letteratura esistente studia come il capitale umano influenza la probabilità di iniziare un percorso imprenditoriale e le differenti performance di impresa. Abbiamo notato che non ci sono ricerche che studiano come il capitale umano degli imprenditori nascenti influenzi i risultati delle imprese nascenti. Da questo gap, la domanda che ci poniamo è se il capitale umano degli imprenditori nascenti ha effetti sugli outcomes delle imprese nascenti. Partendo dalla domanda di ricerca abbiamo sviluppato sei diverse ipotesi sui possibili effetti. Le ipotesi sono formulate rispetto due possibili risultati: pivoting, che è l'azione di ripetere qualcosa già fatto in passato durante lo sviluppo del modello di business, in modo da cercare la migliore soluzione; e uscita, l'abbandono dell'idea. Per rispondere a questa domanda di ricerca e validare le ipotesi, ci siamo uniti ad InnoVentureLab un gruppo di ricerca che offre a possibili imprenditori l'accesso ad un programma di pre-accelerazione. Grazie ad InnoVentureLab abbiamo analizzato un campione di 298 imprese nascenti guidate da 526 possibili imprenditori. Abbiamo misurato il capitale umano studiando i vari background, a livello scolastico e lavorativo. Dalla nostra analisi è emerso che possedere skill in vari campi influenza positivamente la possibilità di effettuare un pivot. Aver studiato corsi imprenditoriali ha un effetto positivo nella possibilità di abbandonare l'idea, mentre aver avuto esperienze lavorative in ambito imprenditoriale ha un effetto negativo sulla possibilità di abbandonare l'idea.

Executive Summary

This thesis aims at investigating the effects of nascent entrepreneurs' human capital on nascent ventures. To pursue this objective, we first conducted a review of the entrepreneurship literature that investigated the effects of the main sources of entrepreneurs' human capital – i.e. education and work experience – on entrepreneurial entry and performances of new ventures. This review revealed that despite most academic studies have found that both education and work experience have positive effects on both entrepreneurial entry and several measures of new ventures' performance, some works have found negative effects of specific dimensions of education and work experience on some performance measures.

More interestingly, the literature review confirmed that there is no research on how the human capital of nascent entrepreneurs influence the outcomes of nascent ventures. We thus addressed this issue by formulating and empirically testing a number of hypotheses relating education and work experience of nascent entrepreneurs on two key outcomes of nascent ventures, namely “pivoting”, the action of repeating something already done during the business model development, and “exit”, i.e. abandoning the idea.

As existing literature has found that a generalist education background facilitates knowledge recombination and, thus, influences positively the likelihood of adapting a product to the challenges of the surrounding environment and to develop new ideas, we first hypothesize that in nascent ventures, pivoting is more likely the more generalist is the background of nascent entrepreneurs. Then, we hypothesize that nascent entrepreneurs' entrepreneurial-specific work experiences increase the likelihood of pivoting. We formulate this hypothesis because, as it has been shown that entrepreneurial experience affects positively a venture's likelihood to innovate, to adapt venture's product to the environment and to generate new ideas, we expect the knowledge acquired during past entrepreneurial experiences leaves a higher ability to

evaluate opportunities and create an entrepreneurial network that boost innovation, product adaptation and new idea generation, and so it could help nascent entrepreneurs in formulating and testing new assumptions.

We then hypothesized that abandoning an entrepreneurial idea is less likely if nascent entrepreneurs possess entrepreneurial specific education background or work experience. As the individuals who possess entrepreneurial specific skills are expected to be more effective at analysing the needs of the external environment and are more likely to know how to manage under varying environmental and organizational contexts, they will be probably better able to develop a business model for their business ideas thus being less likely to exit. We also hypothesized that abandoning an entrepreneurial idea is less likely if nascent entrepreneurs are generalists or have higher education level. Finally, education level has been associated with business survival, always in a positive way; the reason why could be that knowledge is cumulative and is built through experience a higher level of education, contributes positively to business survival in fact education can fundamentally contribute in providing skills important for surviving.

We collected data useful to test the hypotheses reported so far on a sample of 298 nascent ventures that joined the InnoVentureLab pre-accelerator program. The program consists in eight online training sessions that took place between October 2020 and February 2021 and monthly events such as webinars, workshops and bootcamps dedicated to topics of interest to start-ups and held by selected experts. The program will end in February 2022 with the final Demo Day aimed at allowing program participants to pitch their ideas to an audience of prospective investors. Through a survey administered to program participants before starting the training sessions we collected data about the human capital of the nascent entrepreneurs who would attend the program. The data on the nascent ventures' outcomes under scrutiny (i.e., pivoting and exit) were collected through periodic phone interviews that we conducted between December 2020 and September 2021 with the help of other Research Assistants

The data collected within the InnoVentureLab acceleration program were used to run logit models on the antecedents of pivoting and exiting sample ventures' business ideas.

The results of the estimates indicate that having a background thanks to which is possible to acquire different skills in different fields increases the likelihood of pivoting probably because it helps nascent entrepreneurs to adapt their nascent ventures to the request of the market. As to the effects of human capital on exit, we found a positive relationship between *entrepreneurial education* and the likelihood of exiting and a negative relationship with *entrepreneurial experience*. We explain these results arguing that while teaching individuals how to validate business ideas and discard not profitable ideas, lead nascent entrepreneurs to abandon their ideas more frequently, entrepreneurial work experience provides nascent entrepreneurs with access to knowledge, resources and contacts useful for developing their business ideas.

This thesis contributes to the literature on entrepreneurship by investigating an important topic that has been neglected so far, i.e. the effects of nascent entrepreneurs' human capital on nascent ventures. Our thesis also provides managerial implications: it indeed helps nascent entrepreneurs in understanding which could be the consequences of involving individuals with certain competences in nascent ventures.

Chapter 1

Introduction

In recent years, several studies proved that one of the main determinants on the decision of becoming an entrepreneur and on the performances of new ventures is entrepreneurs' human capital, developed through education and work experience. As our literature review shows scientific research does not analyse the effect of nascent entrepreneurs' human capital on the outcomes of nascent ventures. This point could be interesting because entrepreneurs' human capital is what guide the development of business model of nascent ventures.

Therefore, the main objective of the thesis is to understand how the human capital of nascent entrepreneurs influence the outcomes of a nascent venture. We focalized our study on two possible nascent ventures' outcomes: pivot and exit. Pivot is the action of repeating something already done during the business model development, in order to develop a more viable business model. Exit means abandoning the idea. To conduct our research, we collaborated as research assistants with a pre-accelerator program called InnoVentureLab. The pre-accelerator program received 699 applications of individual or teams with entrepreneurial ideas, only 298 were selected for participating. The program participants attended eight online teaching sessions, hold by experienced instructors, in order to develop knowledge related to fundamental business concepts for transforming a business idea into a winning business model. Educational path shares with participants a validated methodology for performing market analysis, defining the customer journey, and formulating the pricing strategy. Here we had the opportunity to collect information on entrepreneurs' background of almost three hundred nascent ventures through a survey conducted when participants enrolled in the program; we also gathered data on venture outcomes thanks to periodic interviews with program participants. We used data to run econometric analyses which revealed that nascent entrepreneurs' human

capital influences the likelihood of pivot and exit. Specifically, we found that possessing various skills in different fields increases the likelihood of pivoting. Entrepreneurial specific education influences positively the likelihood of exit while the impact on exit of entrepreneurial specific work experience is negative.

These results contribute to the existing literature by showing that, besides influencing the performance of new ventures after creation, entrepreneurs' human capital influences new ventures even in the nascent stage.

Chapter 2

Literature Review

In this chapter we focus on analysing the sources of human capital which can influence the likelihood to perform a successful path in entrepreneurship; to do this we will scan on all entrepreneurs' different backgrounds that allow them to acquire a particular set of skills and knowledge.

For at least three decades, research on entrepreneurship have studied the relationship between human capital, defined as the collective skills, knowledge, or other intangible assets of individuals that can be used to create economic value (Backer, 2008) and entrepreneurial success. Analysing the existing studies is possible to see two different sources of human capital: education and work experience.

Education increases the productivity of workers and the overall economic growth of a country (Communication from the European commission to the council, the European parliament, the economic and social committee and committee of the regions, 2002). Through education is possible to cumulate knowledge which are crucial for adapting to new situations and increase the likelihood of finding better opportunities for investing and developing new ideas (Campanella et al. 2013; Honjo, 2013). This knowledge may derive both from courses and from experiences during university path such as Erasmus, that give the possibility to be exposed to diverse social contexts and to understand new environment (Breznitz and Zhang, 2019).

Meanwhile, knowledge and skills gained from previous work experience are crucial for making strategic decisions (Fern et al. 2012). However, some studies point out that an overconfidence given by a high number of years spent in working can decrease the willingness of gathering further information that can improve business decision (Harada, 2003). Work experience in the same industry of current business gives the possibility to

better know the sector and spot technologies opportunities which can help for the running of the business (Shane, 2000). Instead, knowledge acquired during experience in entrepreneurship give the possibility to create and exploit an entrepreneurial network and provides also managerial skills fundamental for new venture success.

Education and work experience together shape the human capital. According to the skills acquired is possible to categorize the human capital as Generic or Specific. Generic human capital means to possess many different skills which could be used in different fields. So, as it is possible apply it in different contexts it increases the expected returns available in alternative employment opportunities (Gimeno et al. 1997). Possessing a diversified set of skills is beneficial for the business because make possible to exploit skills acquired related to general management (Rauch and Rijisdijk, 2011). Meanwhile specific human capital involves skills and knowledge that have productive value in a single industry (Canavati et al. 2021). Possessing a specific human capital give the possibility of being skilled in a specific field and so it increases the innovative potential in a particular industry (Canavati et al. 2021).

Summing up, several are educational path and work experience taken into consideration; several are also entrepreneurial outcomes and performances which appear to be significantly impacted by human capital, sometime in a positive way sometime in a negative one. It has also happened to find research with opposite and contradictory results. In order to tidy up the situation, we decided to organize papers in **table 2.1, 2.4, 2.9**. On the raw we inserted all the different variables used for shaping human capital; on the columns, we put just entrepreneurial performance measurement which in existing research gave significant results associated with a type of human capital. In the cells there is written whether that type of human capital provides a positive or a negative influence on a performance measurement, and who are the authors that found that kind of influence. More in deep, in the cells is possible to find the sing “+” if there is a positive influence, meanwhile the sing “-“ if it is negative; after the sign there is the name of researcher or researchers which developed that study and

the publication year. Each relation could contain one paper, or more, but even zero paper if no evidence were found.

Based on what previously said, we have structured the literature review chapter into three macro sections:

- 2.1. Education
- 2.2. Work experience
- 2.3. Generic vs Specific human capital

Studying business outcomes analysed by existing literature, we spotted eight different ones, summarize as follow: entrepreneurial entry, profit, innovation, R&D investment, business survival, business growth rate, entrepreneurial performances and opportunity exploitation. The first one is the decision to becoming an entrepreneur, so what lead individual and entrepreneurial team to start a new business from scratch. Then there is profit, which measure the income of start-ups and firms; different research measured it in various ways, i.e., gross profit, ROA (return on asset), ROS (return on sales) and ROE (return on equity). The third one measure innovation of start-ups and firms studied. R&D investment measure investments done on research and development. Business Survival measure which are the factors that help the running of the business to survive over time. Business' Growth Rate analyse the ability to increase the size of the business; lot of studies used the growth rate of employees as a proxy of this variable. Entrepreneurial Performance is more about the income and the net worth of the entrepreneur as individual. Lastly opportunity Exploitation is the ability to identify an opportunity and then exploit it to have a benefit for the business; This performance gathers measure such as product adaptability, crucial in order to be able to navigate in uncertain environments (Eisenhardt and Tabrizi, 1995) and ability to generate new venture ideas.

To perform our study, we reviewed several research. We selected just papers which used education and work experience as sources of human capital -leaving out, for instance, entrepreneur cognitive ability. We exclude all papers that analysed entrepreneurs social background, hence all papers focusing on age, family and other

social factors. Of course, also research on employees' human capital, were not analysed; the focus is on the founder, or founders, of the firms, and on the people in a position of a strong decisional power.

Papers were collected through a computerized search on Scopus databases. The study started analysing all the documents which cited the paper "*Education and entrepreneurship selection and performance: A review of the empirical literature*" by the scholars Van Der Sluis et al. (2008); this paper deals with education, and how it affects firm success. The number of papers citing Van Der Sluis et al. (2008) were 215. Only few of them were selected for our studies because the research has led to contents too general and far from our main topic. So, we continue the research analysing the different documents which mention a paper written by Lazear in the 2004: "*Balanced & Skills Entrepreneurship*". This last research analyses the effects of balance skills people on the entrepreneurial success. Here a total of 405 appeared. Also, here many papers were not used because not in line with our thesis. Then we analysed all papers that cited another study of Lazear published in the 2005 called "Entrepreneurship"; here 560 documents were found but just a very small number was useful for our study.

After this we started to use some key words. The first set of keywords used was "skills, entrepreneurship, performance" 424 papers appear as result. We found a really large number of them not correlated with our research because they used skills coming not from education and work experience background, but more from social capital, i.e., the kind of person, the lifestyle, the family and so on; so here, just 3 papers out of 424 were used.

For the second set of keywords, we tried to be more specific in order to find papers which talk about work experience and educational background and the influence that this has on venture performances; keywords used were: "work, experience, education, entrepreneurship, performance"; 110 papers results using these keywords, but only 1 paper was interesting.

The last set of keywords used was “pivot, start-up, human, capital”; here we want to understand how human capital influence the decision of doing a pivot in a new business. 99 results come out, but just 2 papers were useful for our research. Additionally, some papers were found as cited by other papers.

2.1 Education

Education is the process of facilitating the acquisition of knowledge, skills, values, morals, beliefs, habits and personal development¹. In general, education -as a critical source of individuals’ human capital-, increases the efficiency of each individual worker and helps economies to move up the value chain beyond manual tasks or simple production processes (Communication from the European commission to the council, the European parliament, the economic and social committee and committee of the regions, 2002). With the increase of the proportion of educated workers the country’s economy becomes more productive, because they can more efficiently carry out tasks that require literacy and critical thinking (Radcliffe, 2020). It is important to underline that education has effects also on the country’s entrepreneurial network. In fact, secondary and tertiary education facilitate the transferring of knowledge which regards information, products, and technologies created by others. Moreover, an increase of the creativity boosts a country’s capacity to create knowledge, products and technologies (Communication from the European commission to the council, the European parliament, the economic and social committee and committee of the regions, 2002).

Time by time, it is becoming evident that education and entrepreneurship are drivers of economic growth (Kurakto, 2005; Block et al. 2011). In fact, academic institutions are boosting their programs devoted to entrepreneurship (Kurakto, 2005).

Indeed, in 2013 the European Economic and Social Committee developed an action plan based on three pillars in order to boost entrepreneurial aim among the citizens; in

¹ Wikipedia Contributors (2019). Education. [online] Wikipedia. Available at: <https://en.wikipedia.org/wiki/Education>.

particular the first one state: "Entrepreneurial education and training to support growth and business creation" (Communication from the European commission to the council, the European parliament, the economic and social committee and committee of the regions, 2002).

We started to analyse which are the effects of education in entrepreneurship. Here we found studies regarding education and how it affects the willingness to start a new business, new venture creation and new venture performances. In existing literature, we identify three ways for measuring education background:

- Educational level
- Extra-curricular education activities
- Type of education

There are different effects of education on entrepreneurial entry and entrepreneurs' performances. We summarize findings in the **table 2.1** (a) (b) below.

Table 2.1: Correlation education and start-up performance

(a)

	Entrepreneurial entry	Profit	Innovation	R&D investment
Educational Level	+Hunady et al. 2018; -Hunady et al. 2018; +Block et al. 2011;	+Joe and Lee, 1996; +Van Der Sluis et al., 2008;	+Campanella et al. 2013;	+Honjo et al. 2014;
University experience	+Breznitz and Zhang, 2019; +Campanella et al. 2013;		+Campanella et al. 2013; +Breznitz and Zhang 2019;	
TYPE of education	+Dutta et al. 2010; +Hunady et al. 2018; +Breznitz and Zhang, 2019; +Colombo and Piva, 2020; -Breznit and Zhang, 2019; +Lazear, 2005;			

(b)

	Business survival	Business' Growth Rate	Entrepreneurial performance	Opportunity Exploitation
Educational Level	+Campanella et al. 2013; +Millán et al., 2014; +vanderSluis et al. 2008; +Hunady et al. 2018;	+vanderSluis et al. 2008;		
University experience	+Campanella et al., 2013			
TYPE of education	+Hunady et al. 2018	+Colombo and Grilli, 2005; +Ganotakis, 2010; -Ganotakis, 2010;	+Dutta et al. 2010;	

2.1.1 Educational level

Educational level captures the highest degree an individual obtained. Existing research have measured educational level considering either the years devoted to education, or the degree achieved -e.g.: high school, professional school, undergraduate, graduate, master, PhD- (Jo and Lee, 1996; Van Der Sluis et al. 2008; Block et al. 2011; Campanella et al, 2013; Honjo, 2014; Millán et al. 2014; Hunady et al. 2018). **Table 2.2** explains how the different papers measured the educational level and which were the samples used.

The educational level is used as a determinant of both new venture creation and new venture performance. This latter captured by profit, sales growth rate and business survival, but also innovativeness in terms of both innovation outputs and R&D investments.

Table 2.2: Educational level measure and paper' samples

Paper	Educational level measure	Sample
Block et al. 2011	Number of years dedicated to full-time education	More than 10000 self-employment and paid employment from 27 EU countries and USA
Hunady et al. 2018	Full-time education before or after 20 years old	42080 university graduates, 40 EU and non-EU countries
Jo and Lee, 1996	Achievement of: <ul style="list-style-type: none"> • high school • professional school • undergraduate • master • PhD 	48 new start-up firms in Korea

Van Der Sluis et al. 2008	years of education and achievement of:	Review of empirical studies
	<ul style="list-style-type: none"> • college • graduate • postgraduate 	
Campanella et al. 2013	Number of years to graduate, achievement of:	1,174,508 graduates from 550 Italia university
	<ul style="list-style-type: none"> • master's degree • Phd 	
Honjo, 2013	Undergraduate and graduate education	Founders of 422 firms in Japanese manufacturing and software industry
Millán et al. 2014	Achievement of:	Individuals from EU countries
	<ul style="list-style-type: none"> • basic education • secondary education • tertiary education 	

Block et al. (2011) and Hunady et al. (2018) claim that the higher the educational level of an individual is, the easier it is for this individual to find a wage job, thus improving her/his opportunity costs for starting a new venture. At the same time, education may create awareness of the risks connected with entrepreneurship thus having a negative influence on the decision of starting a new business. Nonetheless, the empirical findings of these studies indicate that the education level has positive effects on new venture creation (Block et al, 2011; Hunady et al. 2018). Interestingly, very high levels of education -e.g., the obtainment of a PhD- decrease individuals' willingness to become entrepreneurs as individuals are more focused on research (Hunady et al. 2018). Other studies revealed that a superior education level benefits entrepreneurs because leads to higher productivity assisting the integrations and accumulation of new knowledge and the adaptation to new situations; thus allowing entrepreneurs to achieve higher venture growth and survival rates (Jo and Lee, 1996; Van Der Sluis et al. 2008; Millán et al. 2014; Hunady et al. 2018).

Talking about profit performance Jo and Lee (1996) and Van Der Sluis et al. (2008), find a positive relationship between educational level and profit. In fact, the higher is the level of education achieved the higher is the profitability. In particular, Jo and Lee (1996), found a positive effect of the educational level with the return on assets (ROA) and return on sales (ROS), where ROA is the degree to which a firm utilized efficiently a given asset to make profits, and ROS is the degree to which firms made profit compared to sale.

Knowledge is cumulative, so is possible to build it through a higher level of education, such as a PhD. In our research innovativeness is captured through the performance of Innovation and R&D investments. Campanella et al. (2013) noted that a higher academic level contributes to fostering innovation and so increase the overall quality of the firm founded. In their study they measure the innovation rate of businesses by classifying the firms according to specific taxonomy. Furthermore, the more educated are entrepreneurs the easier is to attract investors and find more and better opportunities for innovation. A higher educational level is positively connected with R&D investments, so it means that highly educated entrepreneurs have more opportunities in finding investors and investors have more incentives in investing in R&D (Honjo, 2013).

Even more educational level influence positively also the possibility of surviving of the business. All the knowledge acquired by the higher education plays crucial role when is time to follow decisions which could be important for the actual surviving of the firms. By looking to table 2.2 is possible to see that there are different papers which found an influence between educational level and business survival and this influence was always positive. (Van Der Sluis et al. 2008; Campanella et al. 2013; Millán, et al. 2014; Hunady et al. 2018).

As last performance we analysed the business' growth rate. Here Van Der Sluis et al. (2008) found a positive influence between this performance and the educational level. Using as proxy of this variable about the growth rate the growth in employment, asset, and profit.

Finally, it is worth to acknowledge that studies on the effects of the educational level on firm performance did not focus on the educational level on entrepreneurs only but considered also the educational level of employees (e.g., Millán et al. 2014).

2.1.2 Extra-curricular education activities

This section studies the extra-curricular activities which entrepreneurs pursue during their education. We want to analyse what the pursuing of these activities could leave in entrepreneurship. On this, we found only two papers which states the importance on these activities on the decision to start a new business: these papers analysed how this type of background affect innovation and the business survival (Campanella et al. 2013; Breznitz and Zhang, 2019).

The **table 2.3** summarize which are the samples of these two papers, and underline which is the proxy of extra-curricular activities during education.

Table 2.3: Extra-curricular education activities measure and paper' samples

Paper	Extra-curricular education activities measure	Sample
Campanella et al. 2013	Internship and/or Erasmus	1,174,508 graduates from 550 Italian university
Breznitz and Zhang, 2019	Whether respondents had any experience as foreign students	13,485 alumni from University of Toronto

The two studies of Campanella et al (2013) and Breznitz and Zhang (2019) take into consideration international experience, such as studying abroad, and internship. Both have a positive relationship with the decision to become an entrepreneur. The advantage for entrepreneurship in studying abroad is given by the knowledge recombination; where recombination, according to Weitzman (1996:209), refers to the process in which “*new ideas arise out of existing ideas in some kind of cumulative interactive process*”; to sum up, foreign students are more likely to be exposed to different environments, learn different types of knowledge, and come up with new ways to reorganize knowledge and ideas, all of which can drive innovation and

entrepreneurship (Breznitz and Zhang, 2019). At the same time, the higher innovative capacity could be a way to improve the performance and the ability to survive.

2.1.3 Type of education

Besides investigating the effects of educational level, scholars have studied the impact that different kind of education received could have in entrepreneurship. In the literature review various were the measure for analysing types of education. Research studied what is the impact of generalized or specialized course curriculum, entrepreneurial course, economic & managerial course, STEM and non-STEM education and technical education; the analysis highlighted significant impact on the willingness of becoming entrepreneurs, but also on the profit, the business survival, the business growth and the entrepreneurial performance (Lazear, 2005; Colombo and Piva, 2020; Dutta et al, 2010; Hunady et al. 2018; Breznitz and Zhang, 2019; Jo and Lee, 1996; Ganotakis, 2010).

All possible to see in the **table 2.4** also in terms of sample

Table 2.4: Type of education measure and papers' samples

Paper	Type of education measure	Sample
Lazear, 2005	Generalized course curriculum	School of Business alumni
Colombo and Piva, 2020	Specialized university curriculum	13,547 STEM graduates from Politecnico di Milano
Dutta et al. 2010	Entrepreneurship education	221 entrepreneurs alumni of a major public university in Northeast USA
Hunady et al. 2018	Entrepreneurship education	42080 university graduates, 40 EU and non-EU countries
Breznitz and Zhang, 2019	STEM and non-STEM	13,485 alumni from University of Toronto

Ganotakis, 2010	Technical education	751 entrepreneurs/founders from 412 UK new technology-based firms
Colombo and Grilli, 2005	Economic and managerial education	506 Italian new technology-based firms

From the **table 2.1** is possible to see that there are several studies which analyses the type of education and the influences on the willingness of becoming an entrepreneur. Analysing the **table 2.4** is possible to see that Lazear (2005) and Colombo and Piva (2020) analysed two different kind of university curriculum: generalized curriculum and specialized curriculum. Talking about generalists, it means people who have followed a variety of different courses during university and so they have a balanced mix of knowledge and skills, meanwhile specialists are highly skilled in a specific field (Colombo and Piva, 2020). According to the jack-of-all-trades, the entrepreneurs must be sufficiently good at a wide variety of skills, and not need to be experts in any single skill (Lazear, 2004). In fact, Lazear (2005) stated that the more specialized is the curriculum the less likely is the individual to start a new business; so, a generalized course curriculum is linked positively with the entrepreneurial entry. Going deep in this same argument, Colombo and Piva (2020) noted that, meanwhile a specialized university curriculum could be a liability for solo entrepreneurs, it may turn into a crucial asset for members of an entrepreneurial team, because there is the possibility to form a team with a balanced set of expert skills. Anyway, the importance of the human capital as determinant of entrepreneurial entry of recent graduates decrease over time because people develop new skills thanks to post-graduate work experience (Colombo and Piva, 2020).

Additionally, evidence has shown that attending entrepreneurial courses during the academic path helps people *“to put all the pieces -from previous business courses-together”*, and so, it has a positive impact on the likelihood of future venture creation (Dutta et al. 2010). Also, Hunady et al. in 2018 supported this finding; in fact, they found

out a positive relationship between those who attend a school course on entrepreneurship and probability of starting up a business.

Another kind of division between the different types of academic backgrounds analysed in the literature is between STEM -Science, Technology, Engineering, and Mathematics- and non-STEM backgrounds. Past studies have underlined that non-STEM graduates are more likely to become entrepreneurs compared with STEM graduates (Breznitz and Zhang, 2019); this could be explained by the fact that STEM graduates could earn higher wages, compared to non-STEM, and so this makes the willingness to become entrepreneur decreasing (Cai and Winters, 2017; Breznitz and Zhang, 2019).

As specified before, effects of the type of education are not only on the willingness of becoming an entrepreneur but also on the performance of the business created. In particular Hunady et al. (2018) found that respondents who developed entrepreneurial skills during their education appear to be more likely to start a business that is going to last for a longer time, so increasing the chance of surviving.

Colombo and Grilli (2005) state that education in economic and managerial fields positively influences the growth of the business, calculated as the employment growth. This is because entrepreneurs are in an ideal position to seize neglected business opportunities and so can take effective strategic decisions that are crucial for the success of new firms (Colombo and Grilli, 2005). Ganotakis (2010) claims that possessing higher technical education on its own cannot guarantee the success of a business, in fact, it has a negative impact on the growth of the business; but the existence of both technical and business education in an entrepreneurial team gives the possibility to have higher growth rate of the business, calculated as the number of employees hired in the firm.

Even more, the correlation of entrepreneurship education with the diversity of the educational experience, which means going beyond the entrepreneurship discipline, seems to have a critical impact for the success of the business. In fact, entrepreneurs thanks to the entrepreneurial education will be better equipped to set up and manage entrepreneurial venture, which positively influences wealth creation from

entrepreneurial ventures in terms of entrepreneur's personal income and net worth (Dutta et al. 2010).

Summing up, we understand that the education background is directly connected with the decision of becoming an entrepreneur and the various performance which can be measured during the actual running of a business. In particular, the educational level makes possible to accumulate knowledge over time which gives the skills for adapting to new situation and helps in the running of a new business (Van Der Sluis et al, 2008). Moreover, the different experiences during education give the possibility to be exposed to different social contexts and so improve the knowledge having a positive impact on innovation (Breznitz and Zhang, 2019). And to end with the discussion, the type of education could help entrepreneurs in developing a set of skills that could be beneficial for the activities (Ganotakis, 2010; Colombo and Piva, 2020).

2.2 Work Experience

Numerous studies point out that entrepreneurial success not only depends on education, but also depends on different practical skills, knowledge of the business environment and problem-solving abilities that can be gained from past work experience. In fact, *"The traditional educational model linked to education limited to School desks, must be supported by a continuous learning throughout the life span, as a barrier to the obsolescence of skills"* (Assolombardia, 2020:10); among the many ways, this learning process is encouraged also by all the job experiences had during the entire life of an individual. Moreover, previous working experience are crucial for making strategic decisions in entrepreneurship (Fern et al. 2012), so working experience are a very important part of the background of entrepreneurs. According to Inmyxai and Takahashi (2010), experience accumulated from past and present work can be realized in knowledge and in skills including management, teamwork, sales, cooperation and industrialization. A higher number of work experience give to entrepreneurs, higher ability of managing the running business, increasing the likelihood of succeeding (Fern et al. 2012).

In this section we want to deep analyse the various types of work experience associated with entrepreneurial outcomes and performances that provide significant results.

In the existing literature, we found many papers regarding work experience and how it affects the willingness to start a new business and new venture performances. We identified three ways for analysing previous work experience:

- Years of work experience
- Entrepreneurial-specific and managerial-specific experience
- Industry-specific experience

This structure recalls the structure used previously in **paragraph 2.1**; in fact, symmetrically years of work experience are associated with the educational level while entrepreneurial, managerial and industry specific experience are types of work experience and therefore can be associated with **subsection 2.1.3**, i.e. types of education.

We have summarized findings in the **table 2.5 (a) (b)** below.

Table 2.5: Correlation work experience and start-up performance

(a)

	Entrepreneurial entry	Profit	Innovation	R&D investment
Years of work experience	+Lazear,2005;			
Entrepreneurial & Managerial Experience		+Bosma et al. 2004; -Spanjer and Witteloostuijn, 2017; -Jo and Lee, 1996;	+Stuart and Abetti 1990;	+Stuart and Abetti, 1990; + Cao and Im 2017; +McGuire, 2021;
Industry-specific experience		+Jo and Lee, 1996; +Bosma et al, 2004; +Spanjer and Witteloostuijn, 2017;		+Honjo et al. 2014; +Kato, 2019; +Cao and Im 2017;

(b)

	Business survival	Business' Growth Rate	Entrepreneurial performance	Opportunity Exploitation
Years of work experience		-Ganotakis, 2010;		
Entrepreneurial & Managerial Experience	+Bosma et al. 2004;	+Colombo and Grilli, 2005; +Bosma et al. 2004; +Ganotakis, 2010;	+ Reddi and Gerard,2012	+Ucbasaran et al. 2003; +Furr, 2019;
Industry-specific experience	+Bosma et al, 2004;	+Joe and Lee, 1996; +Colombo and Grilli 2005; +Bosma et al. 2004; +Ganotakis, 2010;	+ Reddi and Gerard; 2012	-Furr, 2019;

2.2.1 Years of work experience

Years of work experience refers to cumulative years of prior work experiences. Some studies have found insignificant results regarding this variable (Bruderl et al. 1992; Colombo and Grilli, 2005). Only two papers found out a correlation between this independent variable and the outcomes connected with entrepreneurship, but they show conflicting results. The reason why could be that they investigated the impact on two very different entrepreneurial outcome: the decision of becoming an entrepreneur (Lazear, 2005) and the growth rate of the business (Ganatokis, 2010). Moreover, they use different sample of analysis summarize in the **table 2.6**.

Table 2.6: Years of work experience measure and papers' samples

Papers	Years of work experience measure	Sample
Lazear, 2005	Total years of work experience	School of Business alumni
Ganatokis, 2010	Total years of work experience	751 entrepreneurs/founders from 412 UK new technology-based firms

Lazear (2005) found out that entrepreneurs with more years of cumulative work experience are more inclined in starting a new venture. In fact, he states that five years of additional experience increase the likelihood of being an entrepreneur by about 0.014, or about one-fifth the probability that an employment spell is an entrepreneurial one. This is probably since after the fifth year of work experience people are more confident in opening their own business.

Ganatokis (2010) discovered, that mostly founders that have close to 22 years of experience have a quite big company, measure as the number of employees -on average 12 employees-. However, experience of more than 22 years induces a marginal reduction in the expected size of the company. Negative relationship can be the result of overconfidence by highly experienced entrepreneurs regarding their skills and knowledge which leads them to stop from gathering further information that can

improve business decisions (Harada, 2013). Additionally, another reason why high levels of experience might have a detrimental effect on the performance of a firm is that it is expected to be highly associated with high entrepreneurial age (Chuang et al. 2007), which may have an adverse effect on the performance of a firm.

2.2.2 Entrepreneurial-specific and managerial-specific experience

In this paragraph we focus on entrepreneurial-specific work experience and managerial-specific work experience. These two experiences are of course different, but the reason why are exposed together in our literature review -and sometime also by some existing research- is that usually they lead to the same results (Stuart and Abetti, 1990) and provide similar skills. Entrepreneurial experience refers to the *"experience which one obtains in the course of founding and organizing the previous firm as an entrepreneur and in the course of starting up a previous organization"* (Jo and Lee, 1996:2) or *"the number of previous ventures and the role played by the entrepreneur in ventures"* (Stuart and Abetti, 1990:10). Instead, managerial experience is obtained by managing a firm before the starting of a new venture (Jo and Lee, 1996). These types of experience provide leadership skills and the ability to coordinate resources allowing complex operational and strategic decisions for the success of a firm (Ganotakis, 2010).

Indeed, our analysis of the literature has shown that entrepreneurial and managerial experiences are essential to improve entrepreneurial results not only in relation to profitability factors -Profit, ROA- but also to performance such as innovation ability, research and development investment, business survival, growth rate of business and opportunity exploitation.

Papers described in this paragraph use different measure for the variable entrepreneurial-specific and managerial-specific experience; some papers studied entrepreneurial experience and managerial experience as a unique variable, others as separated variables. The following **table 2.7** summarize papers found, the measure used, and the sample studied.

Table 2.7: entrepreneurial-specific and managerial-specific experience measure and papers' sample

Paper	Type of entrepreneurial-specific and managerial-specific experience measure	Sample
Bosma et al. 2004	Unique variable that includes: <ul style="list-style-type: none"> • Earlier experience in starting up a business. • The membership of an association for small business founders 	3000 Dutch newly registered company that started their business in 1994
Jo and Lee, 1996	Separate variables: <ul style="list-style-type: none"> • Managerial Experience: obtain by managing a firm. • Entrepreneurial Experience: experience obtained as previous entrepreneur • Start-up Experience: obtained while starting up a previous organization 	48 new start-up firms in Korea
Spanjer and Witteloostuijn, 2017	Number of years of experience as entrepreneur	1304 US entrepreneurs
Stuart and Abetti, 1990	Separate variable: <ul style="list-style-type: none"> • Entrepreneurial Experience: number of previous businesses founded, and the role played in such ventures • Managerial experience 	Approximately 150 US firms selected from a data base of public and private technical ventures
Cao and Im, 2017	Entrepreneurial experience: self employed	307 new technology ventures in the field of manufacturing industries

McGuire, 2021	Entrepreneurial experience: self-employed	4928 selected firms from high- and medium-tech industries
Colombo and Grilli, 2005	Unique variable that includes: <ul style="list-style-type: none"> • Entrepreneurial experience: self employed • Managerial experience 	506 Italian new technology-based firms
Ganotakis, 2010	Entrepreneurial experience: self employed	751 entrepreneurs/founders from 412 UK new technology-based firms
Ucbasaran et al. 2003	Entrepreneurial experience	773 Great Britain entrepreneurs
Reddi and Gerard, 2012	Start-up experience	611 US entrepreneurs
Furr, 2019	Unique variable that includes: <ul style="list-style-type: none"> • Entrepreneurial experience: the proportion of TMT members who have pre-entry experience in an entrepreneurial setting • Business experience: the proportion of TMT members who have pre-entry experience in a business context 	North America start-up's top management team

First, in the existing literature it has been investigated how entrepreneurs with previous entrepreneurial and managerial specific experiences influenced profitability performances; results found by the different research are quite in contrast to each other. In fact, positive results have been found as regards how these specific work experience affect the possibility of run a profitable business (Bosma et al. 2004); but other studies have shown that a background of previous entrepreneurial and managerial

work experiences lead to a decrease of this performance (Jo and Lee 1996, Spanjer and Witteloostuijn, 2017). These contradictory findings can be explained because they use different ways to compute profit. For instance, Bosma et al. (2004) equated profit with the profit made in 1997 - i.e., after two years from the foundation of the companies used as sample- because in the first two years the profit can be a bit misleading, due to possible initial sunk costs; instead, Spanjer and Witteloostuijn (2017) did not use just the profit as object of analysis, but the gross profit measured as the gross annual income obtained from wage and business income. Furthermore, Spanjer and Witteloostuijn (2017) explain that results were insignificant until the depreciation rate of experience was changed. For "experience depreciates over time" they mean experience gained recently. Despite others research agree that experience gained recently is more important for success than experience gained longer ago (Darr et al. 1995; Groot 1998; Arrazola and Hevia 2004; Arthur and Huntley 2005; Boone et al. 2008; Madsen and Desai 2010), Spanjer and Witteloostuijn explain that new experiences negatively affect the likelihood of generate new profit. This conclusion is the opposite of what we show in **paragraph 2.1** about education, in fact as here researchers argue that new entrepreneurial experience is negatively associated with venture performance - i.e., old experience is positively associated to venture performances-, in **paragraph 2.1** researchers claim that the effect of education on entrepreneurial performances diminishes over time. A possible explanation could be that an entrepreneur will not be able to exploit learning opportunities offered by any new experience to the fullest, as she or he does not fully understand relationships between outcomes and experience (Spanjer and Witteloostuijn, 2017). Similar results were found regarding the influence of previous entrepreneurial and managerial experiences on the return on asset (ROA); it was discovered that entrepreneurs or teams of entrepreneurs with this type of work experience negatively affect ROA (Jo and Lee, 1996). As shown in **table 2.7** Jo and Lee used as a unique variable both managerial and entrepreneurial experiences, so the negative influence is explained as follows:

"One reason is that when an entrepreneur has managerial experience, there is a tendency to negligent capital management; that is, the entrepreneur may not be as

meticulous in the management of funds as the non-expert ones, who instead would dwell on every little detail for fear of making a mistake. Another reason is the fact that when he/she has had a previous experience in a company, his/her management model is rigid and characterized by the use of the old frameworks already used previously; this is thus an obstacle for the dynamic environment which is instead that of technology-intensive small businesses” (Jo and Lee, 1996: 7).

Moreover, Stuart and Abetti (1990) focus on technical differentiation that “*measures the extent to which a firm is pursuing a strategy based on innovation and new products or services*” Stuart and Abetti (1990:3), what we have labelled in the **table 2.5** under the name “innovation”. They analysed different types of work experience and they found out that entrepreneurial experience is the most significant experience that affects the ability to innovate in a new venture. Like this performance, there is the likelihood of invest in research and development. Many papers found insignificant results on this business performance, but some other argue that entrepreneurs with previous entrepreneurial experience are more likely pursue R&D investment (Stuart and Abetti, 1990, Cao and Im, 2017; McGuire, 2021). This is an essential performance for firms and start-ups as they acquire knowledge, generate alternatives, and solve issues by conducting research. The findings can be explained by the fact that experienced founders starting a new business are more willing to take risks and invest more in R&D (McGuire, 2021). In addition, prior entrepreneurial experience sends a positive signal to business angels which provide money that can be reinvested in R&D. For example, Stuart and Abetti (1990) showed that venture capitalists’ investment decisions are closely related to founders’ prior entrepreneurial and managerial experience. Differently from someone, Stuart and Abetti analysed separately these two types of experiences. The most significant variable in their study was entrepreneurial experience of the leader, more important than any other dimension of the firm's context. The other measure - i.e., a prior managerial experience-, similarly showed a high correlation with R&D performance. Of course, they discovered that this variable was also correlated with entrepreneurial experience and therefore does not reflect an independent effect. In fact, they claim that *“it appears that the high levels of managerial experience were*

obtained in entrepreneurial activities, and therefore we are looking at two measurements of the common factor, upper management experience in entrepreneurial ventures" (Stuart and Abetti, 1990:10). These entrepreneurs are better at identifying and evaluating opportunities, thanks to the knowledge of how to do things, but also thanks to the entrepreneurial network created.

Additionally, research discovered that entrepreneurial and managerial experience has a positive effect on the survival time of the firms, defined as "*hazard out of business ownership*" (Bosma et al. 2004:5). This may be explained because when creating something from nothing, founders are exposed to a variety of new responsibilities and tasks, and in order to succeed in their business, they need to develop a broad range of skills, in particular talent scouting skills and managerial skills. Indeed, experienced founders are less confused about venture structures and can more effectively allocate employees to tasks (Shepherd et al. 2000), thus, favour the long-term survival of the firm.

Moving ahead, some scholars discovered that entrepreneurs with an entrepreneurial and managerial experiences' background are positively correlate with the growth rate of the business (Bosma et al. 2004; Colombo and Grilli 2005; Ganotakis, 2010). This positive relationship could be explained by the fact that people possessing entrepreneurial and managerial experiences develop the ability to exploit easily business opportunities and make the right strategic decisions, crucial for new venture success and growth (Colombo and Grilli 2005). Indeed, a study on market imperfection suggests that founders with greater human capital -that include entrepreneurial and managerial experience- have access to greater financial resources and thus can relax the financial constraints and boost the firm's growth (Carpenter and Petersen, 2002). Then, talking about the positive effect on employment created –a measure of growth rate of the business- researchers explain that managerial and entrepreneurial experience are expected to further aid an individual's understanding of the market and the ability to respond to its changes, identify opportunity and product introduction with a known customer in demand in the market; subsequently, they produce better performance and more jobs in the enterprise (Bosma et al. 2004; Ganotakis, 2010).

Moreover, just a paper show that this type of experience has a positive influence on ability to retain more equity and be more selective when they are sharing equity with their stakeholders (Reddi and Gerard, 2012); results are explained as follow: *“entrepreneurs with prior entrepreneurial and managerial experience are able to raise a higher count of professional resources from their helpers. Indeed, these findings are consistent with the human capital and agency view that says that specific experience enables entrepreneurs to selectively distribute ownership and also raise more resources. Individuals with start-up experience are also likely to be aware of the resources needed to create a successful venture, and from whom these resources can be secured”* (Reddi and Gerard, 2012:15). Furthermore, serial entrepreneurs are more likely to raise capital from professional investors with greater ease (Gompers et al. 2005), which allows the entrepreneur to be selective in offering equity to fewer individuals.

At last, different papers study the relationship between entrepreneurial and managerial experience and the likelihood of exploiting opportunities. They spotted a positive influence (Ucbasaran et al. 2003; Shane and Venkataraman, 2000; Reddi and Gerard, 2012; Furr, 2019). In the performance “opportunity exploitation” we gathered also papers that study the likelihood to adapt the product to the surrounding environment (Furr, 2019). Previous entrepreneurial and managerial experiences allow to learn quickly the environment (Furr, 2019) and so they increase the opportunity exploitation because *“learning reduces opportunity costs”* (Shane and Venkataraman, 2000:2); moreover, these kinds of entrepreneurs are *“more likely to passionately seek opportunities”* and consequently exploit them (Ucbasaran et al. 2003:1). The underlying reasoning is that prior experience related to the discovery of opportunities such as start-up/entrepreneurial or managerial experience makes entrepreneurs able to identify higher quality opportunities than novice entrepreneurs without experience, which further increases the expected value of the new venture (Shane, 2000).

2.2.3 Industry-specific experience

Industry-specific experience wants to study whether an entrepreneur has developed experience in the line of the actual business, i.e., it refers to the kind of experience that

an individual obtains in the same field of the new firm such as commercial or technical (Jo and Lee, 1996; Colombo and Grilli, 2005). Also, innovation experience is discussed in this paragraph as it is an experience used to measure experience in product/process innovation prior to start-up and it is “*a variable indicating the founders’ technological capability*” (Honjo, 2013:7). Industry-specific experience provides knowledge and skills in a specific field in which a particular entrepreneur operates and it is “*important to perform entrepreneurial task in an efficiency and effective way*” (Spanjer and Witteloostuijn, 2017:2). Generally, this type of experience has a good influence on the overall entrepreneurial performance; especially the dependent variables here analysed are: profitability performance, research and development investment, business survival, business growth rate and opportunity exploitation.

Authors, type of industry-specific measure and sample are summing up in the **table 2.8** below. Work experience in other industries not included in this table turns out to play a negligible role.

Table 2.8: industry-specific work experience measure and papers’ sample

Papers	Type of industry-specific measure	Sample
Joe and Lee, 1996	Unique variable: <ul style="list-style-type: none"> • Functional area experience • Experience in the line of business 	48 new start-up firms in Korea
Bosma et al. 2004	Experience in the specific industry	3000 Dutch newly registered company that started their business in 1994
Spanjer and Witteloostuijn, 2017	Experience in the same line of business	Data on 1304 US entrepreneurs
Honjo, 2014	Innovation experience	Founders of 422 firms in Japanese manufacturing and software industry

Cao and Im, 2017	Same industry experience	307 new technology ventures in the field of manufacturing industries
Kato, 2019	Innovation experience	672 Japanese start-up firms
Colombo and Grilli, 2005	<ul style="list-style-type: none"> • Technical: context-specific knowledge and skills of founders in R&D, process design, engineering, and production. • Commercial experience: relates to marketing, sales, and customer care activities. 	506 Italian new technology-based firms
Reddi and Gerard, 2012	Experience in the same line of business	611 US entrepreneurs
Furr, 2019	The concentration of pre-entry experience in the focal industry	North America start-up's top management team

Entrepreneurs with previous industry-specific experience affect positively profitability performances (Jo and Lee, 1996; Bosma et al. 2004; Spanjer and Witteloostuijn, 2017). These entrepreneurs have a better knowledge of any underdeveloped technological and marketing opportunities in that specific sector that provides a good potential for market exploitation (Shane, 2000) and then, more profit.

Much discussed for this type of job experience, is also the effect on R&D investment. All the research that uses this as dependent variable obtained strongly positive results (Honjo, 2013; Cao and Im, 2017; Kato, 2019). It is important to underline a recurring similarity in papers that use R&D as performance to study: most of the papers included innovation experience in the measurement of industry-specific experience. This finding

may be explained in two ways. First, thanks to prior industry-specific work experience entrepreneurs are more familiar with the business context developing a more mature industry network (Barringer et al. 2005). These established relationships can help founders acquire new information effectively and provide channels for transferring and exchanging knowledge (Cooper et al. 1994), enhancing the efficacy of R&D search activities. Second, founders may experience less risk when managing similar tasks and situations (Shepherd et al. 2000) and are thus willing to invest more in R&D activities.

Just one paper studied how prior industry-specific experience influences the survival rate of the business (Bosma et al. 2004). Industry-specific experience may help an entrepreneur to recognize an opportunity in a domain that is related to this industry (Kirzner, 1997; Shane, 2000) and so increase the likelihood of the business to survive longer. As it happened for entrepreneurial and managerial experience showed in the **paragraph 2.2.2**, also here was found that a background with industry-specific experience has a positive relationship with this dependent variable. This may be true because, *“according to the human capital theory, the returns to a specific investment should be sufficiently large to outweigh the cost attached to the investment. Contrarily, the returns to an investment in a more general asset might accrue to the investor during a longer period of time while performing various activities”* (Bosma et al. 2004:9).

The growth rate of the business is strictly correlated to business survival, as business growth reduces the opportunity costs associated with alternative employment opportunities and, therefore, reduces the likelihood of terminating the business venture; in fact, all studies found, agree that there is a positive relationship between this dependent variable and people with a background of previous industry-specific work experience (Joe and Lee, 1996; Colombo and Grilli, 2005; Bosma et al, 2004). In particular, Colombo and Grilli (2005) focused their studies on the effect of industry-specific experience and business growth rate, founding significant result just on entrepreneurs with previous commercial and technical experience. Instead, the majority of research analysed how this type of experience affect the number of employees in a firm (Joe and Lee, 1996; Bosma et al. 2004; Ganotakis, 2010). The explanation of these results is that experience in similar markets can benefit a firm through the existence of

past relationships with suppliers/customers and familiarity with more appropriate sales techniques and capital requirements and so favour business growth rate.

Furthermore, Reddi and Gerarrd (2012) argue a positive relationship between industry-specific experience and the capability to retain more equity. In particular, they state that entrepreneurs with industry experience *“can gather and use new information faster than entrepreneurs without such information; so, industry participation provides knowledge of the norms, practices, and routines in an industry. By adopting the dominant logic of organization in industry, entrepreneurs can increase the legitimacy of the venture in the eyes of resource providers and consequently, they are more able to raise resources and exploit business opportunities”* (Reddi and Gerarrd, 2012:4).

Lastly, opportunity exploitation associate to prior industry experience was analysed by just one paper written by Furr (2019). This research spotted a negative effect between these two variables. Furr (2019) studies how “depth” experience, -i.e., the concentration of pre-entry experience in the focal industry- affects the likelihood of adaptation of a product. The negative relationship may be explained as follow: first, although top management team (TMT) with deep industry-specific pre-entry experience may have significant absorptive capacity in the focal industry (Cohen and Levinthal 1990, Zahra and George, 2002), they may have limited absorptive capacity regarding knowledge from other fields and sectors influencing the industry. Second, independent of the sources of knowledge in an industry, since TMTs with deep pre-entry experience share knowledge about the focal industry, they may have fewer opportunities to mix knowledge in new ways (Kogut and Zander, 1992). Third, TMTs with deep pre-entry experience are more likely to be more narrowly path-dependent in their search or decision-making as the industry evolves.

To sum up, the effect that entrepreneurs with previous work experience, have on entering the world of entrepreneurship and on business performances, is mostly positive; however, we found some contradictory results and negative effects on some types of performances. This all depends on the type of experience considered: in some cases, entrepreneurial/managerial experience may give an entrepreneur greater benefit

than industry experience, as the previous operates less as a constraint on an entrepreneur's decision making; but this evidence refers to some entrepreneurial performances only, such as profit, business growth rate and the ability of adapting the product to the environment. Furthermore, years of experience appear to have a positive effect only on the likelihood of opening a new business, but a negative effect on the growth in the number of employees in a company. However, by combining the various types of experience, that is, forming a diversified set of experiences, they compensate for the lack of knowledge and skills that could have only one type of experience; this will explain in the next **paragraph 2.3**.

2.3 Generic VS Specific human capital

This third part of the literature review wants to study how the different compositions of human capital impacts the entrepreneurial decisions, and the performance connected with the running of a business. To introduce this section, we need to specify what human capital means. For human capital we mean "the collective skills, knowledge, or other intangible assets of individuals" (Dictionary.com, 2019)². In particular, in the literature review about this last topic there is a usual division between two groups: generic and specific human capital. Where generic human capital means people with overall education and work experience which can be adapted to different contexts, having skills which are useful across a wide range of occupational alternatives (Gimeno et al, 1997); on the other side specific human capital means people with education and experience which have a limited scope in applicability and creates a value in a particular business context (Gimeno et al, 1997).

Generic and Specific human capital are part of a continuous which see these two as extreme. On one side the situation in which people own different skills but are not master of none of these, on the other side the situation in which the skills possessed are in a narrow range but there is the mastering of these. In the centre there could be

² www.dictionary.com. (2019). the definition of human capital. [online] Available at: <https://www.dictionary.com/browse/human-capital>

hybrids situation. Moreover, it doesn't mean that are opposite in terms of influencing the performance.

So this last part wants to analyse what is the effect of the composition of the human capital. **Table 2.9** underline the results found in the literature. **Table 2.10** Summarize all the papers found, how they measured the human capital and what was the sample analysed.

Table 2.9: Correlation generic and specific human capital with start-up performance

(a)

	Entrepreneurial entry	Profit	Innovation	R&D investment
Generic Human Capital	+Lazear, 2004; +Backes-Gellner and Moog, 2013;	+Spanjer and Witteloostuijn, 2017;		
Specific Human Capital	-Backes-Gellner and Moog, 2013;			+Kato, 2019;

(b)

	Business survival	Business' Growth Rate	Entrepreneurial performance	Opportunity Exploitation
Generic Human Capital	+Rauch and Rijisdijk 2011; +Siepel et al. 2017;	+Rauch and Rijisdijk, 2011; +Siepel et al. 2017;		+Canavati et al. 2021; +Furr, 2019;
Specific Human Capital	+Rauch and Rijisdijk 2011; +Siepel et al. 2017;			+Canavati et al. 2021;

Table 2.10: Generic and Specific human capital measure and papers' sample

Papers	Measure	Sample
Lazear, 2004	Generic or specific education	5000 Stanford alumni
Backes-Gellner and Moog, 2013	Generic or specific education	More than 2000 German university students
Spanjer and Witteloostuijn, 2017	Diversity of experience and skill possessed	9964 individuals
Rauch and Rijdsdijk, 2011	Generic and specific human capital	100,000 citizens, founders or owners of enterprises which could be classified as small-scale firms (between 1 and 50 employees).
Siepel et al. 2017	Generic and specific human capital	202 high-tech UK firms
Canavati et al. 2021	Generic human capital measured as: education-based knowledge and work experience Specific human capital: entrepreneurship and industry experience	126 studies including 146 independent sample
Kato, 2019	Specific human capital: prior innovation experience & industry-specific work experience	Japanese' start-up firms
Ganotakis, 2010	Technological and commercial skills	412 UK new technology-based firms
Colombo and Grilli, 2005	economic-managerial and technical-scientific education correlated with industry-specific work experience in technical and commercial functions	506 Italian young firms in high-tech industries
Furr, 2019	Breadth of pre-entry experience	start-up top management teams

The jack-of-all-trades theory formulated by Lazear affirms that people possessing a variety of skills in different fields are more versed in becoming entrepreneur. This means that an individual need not excel in any skill but be competent in many. The idea under this theory is that entrepreneurs have the talent to combine a variety of skills. Although entrepreneurs can hire others, the entrepreneur must be sufficiently well versed in a variety of fields to judge the quality of applicants. In fact, those who want founding a business prepare themselves by taking a variety of different courses that they hope will later prove useful when they start businesses. Quoting Lazear: *“Entrepreneurs perform many tasks. Consider the founder of a new small restaurant. In addition to being a good cook, the founder must be able to obtain funds, hire workers, choose location and decor, obtain food supplies at a reasonable cost, keep books, and market the restaurant. Being a good cook is insufficient for success. In order to hire someone to perform the other tasks, it is necessary to have at least some basic knowledge of the outsourced area so that the right vendor decisions are made”* (Lazear, 2004:208) In fact, the diversification of the portfolio of skills and work experience makes people more disposed to become entrepreneurs because are more likely to be successful. Meanwhile people with specific human capital are better in an employment relationship because of the narrow set of skills owned, and so less disposed of becoming entrepreneurs (Backes-Gellner and Moog, 2013).

The composition of the human capital has effects not only in the decision of becoming an entrepreneur, but also on the different performance of a running business.

Possessing a diversified set of skills give the possibility to people to be useful in various situations for completing the different tasks. Spanjer.A., Witteloostuijn.A. (2017) states that until a certain threshold the higher is the number of skills of the entrepreneur the higher is the profit of the business, the threshold of the number of skills is equal to 23, this point is when entrepreneurs enjoy the highest performance. A broad set of knowledge helps entrepreneurs in mastering various situations, more over knowledge on growth management are crucial for assuring the optimal results of the business.

Thanks to the mastering of different skills generic human capital is positively related to growth, and negatively to the failure of the enterprise (Rauch and Rijdsdijk, 2011). On the other side the absence of general skills in the early years of a firm has a long-term impact on the firm's success, and it can be a significant barrier to firm growth and survival (Siepel et al, 2017). In particular Rauch and Rijdsdijk (2011) took as horizon for growing enterprise after the first 5 years, meanwhile for analysing the failure after 12 years. Because the long period could cover more aspects of the life cycle time of a firm, and a lot of new business close in a few years. So, studies using short time frames may identify only a small proportion of failing firms and, therefore, distort results.

Possessing a big variety of skills may seem advantageous for entrepreneurs, on the other hand, also be a master in a specific field could be beneficial. In fact, having experience in similar settings, reduces the number of unknowns and provides entrepreneurs with more relevant and accurate information about the environment. In fact, entrepreneurs skilled in a specific field are confident with the environment and so are more able in investing in R&D thanks to the depth knowledge of the sector possessed. An entrepreneur confident with the environment could help the enterprise in staying in a specific niche and so be crucial for the surviving of the business, fact Rauch and Rijdsdijk (2011) found a negative relationship of specific human capital with the failure of the enterprise. Moreover, firms previously grown unable in accessing specialized resources are not able to support continuous innovation and growth and so are more probable to incur into a failure (Siepel et al,2017).

As already specified, to be successful in a dynamic environment entrepreneurs must be able to adapt their business to the external factors. Furr (2019) found a positive correlation between a top management team with different work experience and the probability to adapt the product to the dynamic environment. For studying the breadth of pre-entry experience he took into account "the diversity of industries in which top management team members have pre-entry experience" Furr (2019:3). First, TMTs with a greater breadth of pre-entry experience may have a greater breadth of absorptive capacity, increasing their ability to integrate diverse information that leads to product

adaptation. Second, TMTs with a greater breadth of pre-entry experience may engage in more knowledge recombination, thereby increasing opportunities and the likelihood for product adaptation. Third, TMTs with a greater breadth of pre-entry experience are more likely to have developed integrative knowledge that increases the likelihood of product adaptation. Fourth, the decision-making process for TMTs that collectively have greater experience breadth may lead to faster, less-constrained decision making that increases the likelihood of product adaptation. Finally, the team-building process in TMTs with greater experience breadth may increase their ability to access complementary knowledge that in turn affects product adaptation (Eisenhardt and Schoonhoven 1990).

For being always connected with the customers answering to their unmet needs and to represent value proposition specific to a given target is important to generate new venture ideas. Canavati et al (2021) found a positive relationship between generic human capital and the generation of new venture ideas. For their study they used, as explained in **table 2.10**, education-based knowledge and work experience as dimensions for grasping the human capital. They show that education-based knowledge can be used to make sense of novel, this knowledge can be helpful in focusing on those parts of technologies, techniques, and theories that are likely to increase an individual's ability to generate new product or service ideas; meanwhile, work experience in multiple industries could enhance individuals' ability to generate idea. On the other hand, specific human capital is influencing positively the creation of new ventures idea. Specific human capital measured as entrepreneurship and industry experience, gives by entrepreneurship experience active imagination for creating new ideas, resources and markers; meanwhile the industry experience left to people the possibility to incorporate what they learned from their experience about the market, way to serve it, customer needs, regulation, existing technologies and techniques in the industry, so increasing the possibility of generating new venture ideas. Over more, a strong mix of generic and specific human capital is very impactful in generating new venture ideas (Canavati et al, 2021).

Analysed the situation in which the people running the business possess a large set of skills but not very deep and the opposite in which the set is not large but very deep, now we underline what is the effect analysing situation which are more particular.

It is important to understand which are the skills that people need to possess in a business. For example, in the case of high-tech firms there is the need of being skilled on the technical side and also on the commercial one. In fact, technological skills are essential due to the need of a technological competitive advantage for operating in a challenging market where the life cycle of the products is very short; commercial skills are crucial because there is always the need to have management skills to support the long life of the business (Oahey 2003; Aspelund et al. 2005; Newbert et al. 2007). So, the mastering of these skills complementary to each other exert a positive influence on the business growth, calculated as growth of employees (Ganotakis, 2010). So, doing a step back and remembering the negative effect of the technical education alone on the performance, found by Ganotakis (2010), now combining the right performance change the results. Moreover, Colombo and Grilli (2005) demonstrated that university education in economic-managerial and technical-scientific fields in correlation with industry-specific work experience in technical and commercial functions in an entrepreneurial founding team have a positive effect on the growth rate of the business measured as the number of employees, thanks to the heterogeneous formation of the team.

Summing up all the results of this section is possible to understand that individual or teams which possess a generic human capital acquire a broad set of skills which is useful when there is the need of managing different situations, it gives the possibility to have a point of view of the whole situation. But at the same time, it does not give the possibility to have deep knowledge if needed. Specific human capital meanwhile makes people less disposed of becoming entrepreneur, but once they are in the running of the business, they can exploit their deep technical knowledge for being always in an innovative position. A mix of the two meanwhile is what give more possibility for running a business in the proper way.

2.4 Limitations

Researchers have studied different typologies of human capital focusing on educational path and work experiences and analysing how the mix of these diverse backgrounds of entrepreneurs can impact the future of businesses.

The findings show that the more skilled and experienced are entrepreneurs, the more positively affect the firm's performances which permit the company to achieve a more sustainable position in the market. We found big difference analysing the willingness of becoming entrepreneur. In fact, people with a broad set of skills are more disposed in becoming entrepreneurs, meanwhile people which possess skills in a specific field are better in an employment relationship (Lazear, 2004; Backes-Gellner and Moog, 2013). This opposite situation disappears when instead of the willingness of becoming entrepreneurs, it is analysed the performance of a firm. In fact, a broad set of skills helps entrepreneurs in recognize opportunities when managing new situations (Furr, 2019; Canavati et al. 2021). However, also being skilled in each field is important for sustaining the current business (Rauch and Rijdsdijk, 2011; Siepel, 2017).

What we have analysed so far was, on one side, how the composition of the human capital led to the decision of becoming an entrepreneur, on the other side how human capital affects performances of start-up or already in the market firms, in terms of growth, profit, survival and performance connected with the ability of innovate. However, there are no papers that study what are the influence of nascent entrepreneurs' human capital on the outcomes of a nascent venture. What happens between the decision of running a new business and the actual running has never been investigated.

So, we found a gap between these two stages. It means understanding what the impact of entrepreneurs' human capital on the outcomes of a nascent venture is.

Chapter 3

Theoretical Framework

3.1 Research Question

Starting from the gap found, we focus on the analysis of nascent entrepreneur's effect on nascent ventures.

Our research question is the following one:

“How does the human capital of nascent entrepreneurs affect the outcomes of nascent ventures?”

This question is worth researching because existing studies focused attention on start-ups or already established businesses and how their human capital impacts venture's outcomes. Hence, what is happening between the decision to pursue an idea and the moment in which there is the actual running of the business has been under investigated, perhaps due to a problem connected with the collection of data; in fact, to analyse companies already formed it's easier because on existing firms is possible to access to public data -e.g., balance sheets, income statements, cash flows-. Meanwhile, it is impossible to find public data of nascent ventures, so it is more difficult to develop research in this field.

Conceptually, what happens between the decision of running a new business and the actual running, it is subject of high uncertainty and variability.

In fact, first, nascent entrepreneurs should detect a problem and start analysing it; here it is important to understand intensity and severity of weaknesses, to evaluate opportunity's cost and consequently consider alternatives. Hence, nascent entrepreneurs must focus on customer need that wants to be addressed, analysing surrounding environment for understand if there is already a solution that cover this need or, in the opposite case, there is a space in the market. Listening to potential

customers, which will be the final user and the exploiter of the value generated by the new idea, is an effective way for doing it³.

Once the need has been identified, it is important to find the right solution to satisfy this need. During this step, assumptions and hypotheses about potential solutions must be identified. After that, it is possible to proceed with the validation of the assumptions, for understanding whether the possible solution could answer to the customer needs, and consequently it could worth investments in terms of time and money. The goal here is to confirm or reject the assumptions. In case of confirmation, the process can continue, but in the opposite situation -when there is a rejection- there is the need to pivot towards new assumptions⁴.

By construction, this process has a lot of variables, but few are the possible outcomes. What a nascent venture could have as outcomes is the decision to: persevere, pivot, and exit.

Persevering with the idea means to understand that the testing assumptions have value and so it could lead to the right solution for entering in the business.

Pivot is the action of repeating something already done during the business model development, to build up a more viable one.

Exit means abandoning the idea; here all time and eventually all money spent, are wasted.

The process described above is quite variable and people need to deal with uncertainty. Human capital of people who are developing a nascent venture is one of the most important variables that influence the decision of persevere, pivot or exit, so it is fundament to understand how different human capital's measures affect these outcomes. Of course, other variables influence this process, for example, the sector in which they operate, but in this study are not considered.

^{3 4} www.cemexventures.com. (n.d.). What Are The Six Stages Of A Startup? | CEMEX Ventures. [online] Available at: <https://www.cemexventures.com/startup-stages-phases/>

3.2 The impact of nascent entrepreneurs' human capital on pivoting

Pivoting is the action of repeating something already done in the past. In case of nascent ventures, it means repeating the same step during the development of the new business, if some assumptions were rejected; for instance, a pivot is to reformulate the description of the target segment on the Business Model Canvas, changing the assumptions, and testing new hypothesis. The final aim, of course, is to improve the business model and to achieve potential business's success.

In our literature review, we did not find research that considers pivot as object of study influenced by entrepreneurs' human capital. In order to formulate hypotheses on this outcome, we used performances showed in the literature review and clustered under the label "opportunity exploitation", which could be associated with the pivot decision. These performances are: "*innovation*", "*product adaptation*" and "*generation of new ideas*".

Although these performances are different from pivot, we believe that can be used for the purpose of formulating hypotheses about the impact of nascent entrepreneurs' human capital on pivot. In fact: the performance "*innovation*" refers to the capacity of developing every type of innovation -for instance in the field of national defence, healthcare, disease prevention, climate change, etc.-, so it means to adapt to the "*rapid pace of technological change, determining the competitiveness of firms and localities*" (Breznitz and Zhang, 2019:4); the performance "*product adaptation*" means "*adds, removes, or alters the products or service*" (Dencker et al. 2009:520), i.e., it refers to the evolution of a product over the life of a venture; and lastly the performance "*generation of new ideas*" represents the generation of a new preliminary and mostly incomplete mental image (Vogel, 2017) of a value proposition, an unmet customer need or a specific customer segment, or a resource/capability, or a combination of these (Abell, 1980; Davidsson, 2015).

In **Chapter 2** we found many results on these performances. Findings spotted by researchers are the following: firms composed of individuals or teams possessing skills in various fields -i.e., Generalist- influences positively the likelihood of adapting a product to the challenge of the surrounding environment and the odd to develop new ideas (Furr, 2019; Canavati et al. 2021). More in detail, Furr (2019) analysed how top management team (TMT) composed of people with diversified prior work experiences increase the likelihood of product adaptation. The reason of this positive relationship is that entrepreneurs with a greater diversity of work experience may have a greater breadth of absorptive capacity, i.e. they may be able to integrate more diverse information that leads to product adaptation. Moreover, they may engage in more knowledge recombination, thereby increasing opportunities exploitation for adapt a product. Furthermore, decision-making process for entrepreneurs that collectively have worked in many fields with many roles, may lead to faster, less-constrained decision making that increases the likelihood for product adaptation (Furr, 2019). Finally, focusing on TMTs, team-building process in TMTs with greater experience background may increase their ability to access complementary knowledge that in turn affects product adaptation (Eisenhardt and Schoonhoven, 1990).

Instead, Canavati et al. (2021) concentrated their efforts in understanding how generalist entrepreneurs, that acquire skills and knowledge through education and work experience, influence generation of new ideas. The positive correlation discovered may be explained by the fact that knowledge acquired through education in multiple fields can be used to make sense of novel and can be helpful in focusing on those parts of technologies, techniques, and theories that are likely to increase an individual's ability to generate new product or service ideas (Canavati et al., 2021).

Given these results, it is possible to affirm that nascent entrepreneurs composed by people possessing a diversified background of skills and knowledge -i.e., generalist-acquired both through education and work experience, are more likely to be able to recognize the risks and opportunities of the context surrounding it, hence increase the odds of pivot.

From this, we formulate the first hypothesis.

Hypothesis 1: *in nascent ventures, pivoting is more likely the more generalist is the background of nascent entrepreneurs.*

Let now focus the attention on skills and knowledge's background acquire through previous entrepreneurial work experience. All the findings show that entrepreneurship experience have a positive effect on product innovation, product adaptation and generation on new ideas (Stuart and Abetti, 1990; Furr, 2019; Canavati 2021). In particular, Stuart and Abetti (1990) focused on technical differentiation that "measures the extent to which a firm is pursuing a strategy based on innovation and new products or services" (Stuart and Abetti, 1990:3), what we called for simplification in tables of **chapter 2**, innovation. They analysed different types of work experience and they found out that entrepreneurial experience is the most significant experience that affects the ability to innovate in a new venture. Then, Canavati (2021) shows that entrepreneurship experience has been seen as a driver for the generation of new venture ideas. Findings on innovation and generation of new ideas may be explain by the fact that entrepreneurial experience leaves to people a higher active imagination (Canavati, 2021).

Moreover, Furr (2019) found a positive relationship between entrepreneurial experience background's and the odd of adapting a product to a context in continuous development. People with entrepreneurial pre-entry experience are more likely to recognize the importance of product adaptation. Furthermore, entrepreneur with pre-entry experience in entrepreneurial settings may have accumulated enough practice which develop capabilities for facilitating product adaptation (Eisenhardt et al. 2010). Bingham et al. (2007) studied what people learn in entrepreneurial settings and found that start-up top management team members develop capabilities that facilitate strategy adaptation, including product adaptation, while capturing entrepreneurial opportunities. Thus, entrepreneurial experience may be a type of pre-entry experience that increases the likelihood that start-up TMTs adapt their products (Furr, 2019).

Summing up all the results, we can say that nascent entrepreneurs which have matured entrepreneurial experiences, acquire knowledge and skills that could increase the likelihood to recognize, evaluate and exploit new opportunities and solve problems.

So, we formulate the following hypothesis.

Hypothesis 2: *in nascent ventures, pivot is more likely if nascent entrepreneurs have prior entrepreneurial-specific work experiences.*

3.3 The impact of nascent entrepreneurs' human capital on exit

Now we want to analyse what is the impact of nascent entrepreneurs' human capital on the exit decision. In the literature review, we spotted "business survival"- i.e., successful business that could survive over time- but also "business failures" -i.e., exit generated by poor performance- (Rauch and Rijdsdijk, 2011) as performances on which researchers focused their studies.

Existing studies found that a significant influence on business survival is given by entrepreneurs who acquired entrepreneurial specific skills, both through education and work experience (Hunady et al. 2018, Dutta et al. 2010; Bosma et al. 2004).

Hunady et al. (2018) states that students that attended courses or activities devoted to entrepreneurship are more likely to start a successful business that could last for a longer time. Dutta et al. (2010), discovering the same result of Hunady et al., affirms that thanks to entrepreneurial education, entrepreneurs will be better equipped, to set up and manage entrepreneurial venture. Entrepreneurial education leaves to people a broad-based educational experience which enable them to recognize emerging opportunities. Furthermore, individuals with entrepreneurial education will likely be more effective in utilizing their specialized knowledge in running the venture (Dutta et al. 2010). They are expected to operate more strategically, being more effective at analysing the needs of the external environment. Given their broad-based education, these individuals are likely to be effective in managing relationships with employees,

customers, suppliers, financiers and others (Dutta et al. 2010). Additionally, these individuals will be more likely to know how to manage under varying environmental and organizational contexts (Ford and Hegarty 1984; Gioia and Manz 1985; Gioia and Poole 1984).

Similar results were found analysing the entrepreneurial background given by the work experience. Bosma et al. (2004) discovered that entrepreneurial work experience has a positive effect on the survival of the firms. The explanation of these result may be that founders that have already established a venture, are less confused about the structuring of a new venture and are more able to manage employees (Shepherd et al. 2000), thus, favouring the long-term survival of the firm. So, the acquisition of specific skills and knowledge needed in entrepreneurship helps in developing an entrepreneurial attitude which seems to impact positively on the duration of the business.

Referring the above arguments to the case of nascent entrepreneurs, it is possible to claim that nascent ventures formed by nascent entrepreneurs which have a specific entrepreneurial background, acquired by education or work experience, make possible to decrease the likelihood of exit, i.e., abandoning the idea of founding a start-up.

Here we can formulate two hypotheses:

Hypothesis 3: *In nascent ventures, the abandonment of the idea is less likely if they are formed by individuals which possess entrepreneurial specific education background.*

Hypothesis 4: *In nascent ventures, the abandonment of the idea is less likely if they are formed by individuals which possess entrepreneurial specific work experience.*

Going ahead in the literature review, we reported what is the effect of possessing skills in different fields (i.e., be generalist). Common results of these research identify that generalist negatively influence the likelihood of business failure, thus increasing odd business survival (Rauch and Rijdsdijk, 2011, Siepel et al. 2017).

Rauch and Rijdsdijk (2011) stated that start-ups formed by people, considered generalist, negatively influences the probability of failure after 12 months. On the same line, Siepel et al (2017) found that the impossibility in accessing general skills in the early years of a

firm has a long-term impact on the firm's success, and it can be a significant barrier to firm survival. An explanation could be that entrepreneurs with a generalist background develop knowledge, skills and problem-solving abilities (Cooper et al. 1994), very important for the running of a business. A generalist entrepreneur motivates people to acquire new knowledge that helps individuals in adapting to new situations (Davidsson and Honig, 2003). Moreover, generalists increase the quality and consistency of delivered work (Becker and Mincer, 1974) and is beneficial to the acquisition of external financing (Bruederl et al., 1992; Parker & Van Praag, 2006).

From what explained so far, we can say that running an enterprise in a successful way over a long period may require broad knowledge related to growth management. Generalists' background helps to learn and acquire such knowledge.

The fifth hypothesis is:

Hypothesis 5: *In a nascent venture, the abandonment of the idea is less likely the more generalist is the background of nascent entrepreneurs.*

Lastly, also education level has been associated with business survival, always in a positive way (Van Der Sluis et al, 2008; Campanella et al, 2021; Millán et al, 2014; Hunady et al, 2018).

Van Der Sluis et al. (2008) states that a higher education level leads to a better survival rate because education favours the accumulation of new knowledge and so the adaptation to new situations. The same reasoning was reported by Millan et al. (2014). Campanella et al (2013) analysing the business survival related to the educational level of an entrepreneur, noted that as knowledge is cumulative and is built through experience a higher level of education such as a PhD, contributes positively to business survival, in fact education can fundamentally contribute to providing skills important for surviving.

The different statements underline that knowledge acquired through education, grow with the increase of the years spent for the education itself. Hence, having a high level

of education gives the possibility to develop skills which are important for the survival of the business.

From these observations we obtained the last hypothesis:

Hypothesis 6: *In nascent ventures, the abandonment of the idea is less likely the higher is the education level of the nascent entrepreneurs.*

Chapter 4

Method

4.1 Research Design

The research setting was InnoVentureLab, a pre-acceleration program for nascent entrepreneurs launched by three prestigious Italian universities: Politecnico di Milano, Politecnico di Torino, and Università Bocconi. InnoVentureLab offers entrepreneurs who are developing the business model of new ventures access to eight online training sessions, periodic webinars, and support from successful entrepreneurs, instructors, coaches, and mentors from accelerators and incubators. In order to transmit knowledge for pursuing success. The program aim is to provide nascent entrepreneurs with knowledge and tools to move from idea concept to market entry. The educational path shares with participants a validated methodology for performing market analysis, defining the customer journey, and formulating the pricing strategy. More specifically, the training sessions started on the 17th of October 2020 and ended the 13th of February 2021. The contents of these sessions are presented in Table 4.1. Starting from March 2021, for about a year from the end of the training sessions, InnoVentureLab gives the opportunity to participate in monthly events, webinars, workshops and bootcamps dedicated to topics of interest to start-ups, held by selected sector experts. The path will end with a final Demo Day aimed at allowing program participants to pitch their ideas to an audience of prospective investors. Since December 2020 participants have been involved in periodic interviews aimed at monitoring the progress of their nascent venture.

699 nascent entrepreneurs submitted the application to the program and 298 were selected. We contributed to the program working as Research Assistants, i.e. we

provided technical support during the lecture and conducted periodic interviews with some entrepreneurs in order to monitor their progress.

Table 4.1: Contents of the training program

Week	Date	Programme
LECTURE 1	17/10/2020	Business Model Canvas
LECTURE 2	31/10/2020	Understanding potential customers' problems
LECTURE 3	14/11/2020	Validation of customer problem and conducting interviews with potential customers
LECTURE 4	28/11/2020	How identify and target the right market segment
LECTURE 5	12/12/2020	How take decisions based on metrics and information
LECTURE 6	16/01/2021	Offer and solution validation
LECTURE 7	30/01/2021	Pricing methods
LECTURE 8	13/02/2021	Wrap-up & more offer and solution validation tests
AFTER THE COURSE		Monthly events of general interest, until final Demo Day

4.1.1 The Research Assistant's Role

We joined the InnoVentureLab program as Research Assistants (RAs). RAs were a team of students who helped in ensuring a rigorous, transparent, and ethical data collection process. The activities of the RAs started in September 2020, when they supported the collection of data about the entrepreneurs engaged in the 298 nascent ventures through a survey administered before starting the training process. Then, the RAs provided technical support during lectures. As a last task, RAs held the periodic interviews every

seven weeks starting from the first week of December. Each RA called around fifteen entrepreneurs in order to understand how they developed their nascent venture in the most recent period, and, most important for our research, to understand the decision of pivoting or exiting the venture project.

4.1.2 The interviews

The aim of the interviews is to monitor the progress during and after the training of nascent entrepreneurs. First, each entrepreneur has to autonomously answer a survey, then a phone interview takes place. The interview is divided into different phases; it starts from an initial phase just for breaking the ice and for collecting basic information, then the RA searches to understand the approach adopted in the last period, and what factors led to the most important decisions, and for concluding an ending part for wrap-up the decisions done during the last period and the progress. For what concerned our study, pivot and exit decisions were the most important. These data are part of the last section of the interview. The interviews were conducted every 7 weeks always to the same person, the nascent venture's referent, each interview lasts, on average, 15 minutes for the survey part and 30 minutes for the phone interview.

4.2 Data Collection

To test our hypotheses, we created a dataset containing participants' information provided to the baseline survey, and information collected during the periodic interviews. The data were provided by the entrepreneur assured by the fact that InnoVentureLab will keep them and no transfer to third parties and won't use it except in anonymous and aggregate form. Through the baseline survey we collected general data of each nascent venture' team, as number of members, average working hours and the composition of the team, in terms of academic and work background. This initial information was complemented by the information gathered during the training period about the decision made for the nascent venture, in particular the decisions of pivoting or exit. The dataset includes nascent ventures composed by one to 7 nascent

entrepreneurs; the average number of nascent entrepreneurs per venture is equal to 1.77.

This sample includes 298 nascent ventures with a total of 526 people.

401 nascent entrepreneurs are males (76.23%) while 125 are female (23.77%). The average age is a bit more than 30 years, with a minimum of 18 years and a maximum of 61 years. 173 people are aged between 18 and 25, 253 are aged between 26 and 35, 79 are between 36 and 50 years, and 21 are over 50 years.

The mean of the years of working experience among the people is 5.77 years. 240 (45.63%) entrepreneurs are working in other companies while launching their new ventures, 144 (27.38%) are students, 83 (15.78%) are both studying and working in other companies, while only 59 (11.22%) dedicate all of their time to the nascent venture. Among the workers 69% are full-time and 31% part-time. 486 entrepreneurs are Italian, so only 40 (7.6%) are foreign entrepreneurs. 21 entrepreneurs live abroad meanwhile 505 live in Italy. 314 entrepreneurs live in the north of Italy, 102 live in the centre, 89 in the south, and islands.

For what regards education, 305 (57.98%) participants have a bachelor degree, 185 (35.17%) gained a master degree, 93 (17.68%) attended a postgraduate course, and only 19 (3.61%) have a PhD. Table 4.2 above shows what is the educational level achieved in nascent ventures.

Table 4.2: educational level achieved in nascent ventures

Variable	Obs	Mean	Std. Dev.	Min	Max
bachelor	298	0.607	0.489	0	1
master	298	0.416	0.494	0	1
postgraduate course	298	0.235	0.425	0	1
PhD	298	0.050	0.219	0	1

From table 4.2 is possible to see that more than the half of the nascent ventures have at least one person with a bachelor degree, meanwhile very few have at least one person with a PhD. 539 (64.45%) nascent entrepreneurs have attended economics and management courses, while 199 (37.83%) have attended entrepreneurship courses. For what concern nascent ventures, 216 (72.48%) have at least one person with economic background and 147 (49.33%) have at least one person with entrepreneurial background during studies. 131 (24.9%) participants have managerial experience, while 96 (18.25%) have already founded a firm. Out of these 96 individuals with entrepreneurial experience, 66 (68.75%) have already founded 1 firm, 21 (21.88%) 2 firms, 5 (5.21%) 3 firms, and 4 (4.16%) more than 3 firms. As a result, 110 nascent ventures (36.91%) have at least one person with managerial experience, and 85 (28.52%) have at least one person with prior entrepreneurial experience. 23 (7.72%) nascent ventures offer product and service, 83 (27.85%) offer a product and 192 (64.43%) offer a service.

4.2.1 Dependent Variable

Information to build these variables was collected through the periodic interviews. In particular, the variable *pivot* is a dummy variable which assumes the value of 1 whether the referent of the nascent ventures affirms that at least one of the three statements below are true in the period intercurrent two interviews:

- At least one element of the business model canvas has been changed during the last period
- The idea and/or the value proposition/key value has been changed during the last period
- The business model typology has been changed

The other dependent variable is *exit_idea*, a dummy equal to 1 if the nascent venture's team decided to abandon the idea, 0 if they were still working on it when the last interview with the referent of the team was conducted.

4.2.2 Independent Variables

The independent variables are measures of human capital focusing on education and work experience, and also according to what are their feeling on generalists and specialists. Information to build these variables was collected in September 2020, before beginning the course and not updated during periodic interviews.

The first three independent variables are about the university education. In fact, the first variable (*educational_level*) captures the maximum level of university education achieved, takes into consideration the member which has the highest number of years of education in the team, and is calculated as the sum of the years of study of the individual. We used 3 years for bachelor, 2 for Master of Science, 1 for postgraduate study and 3 for PhD.

Another variable (*economic_&_management_studies*) captures whether at least one member of the nascent venture team has attended economic and management courses during university education. It is a dummy variable which assumes the value of 1 whether at least one member did it, otherwise the value of 0.

Finally, the third variable (*entrepreneurial_studies*) captures if at least one of the members of the nascent venture has attended entrepreneurial courses. If that is the case, the value of the variable is 1, if none attended these kind of courses the value is 0.

Then, there are other three variables capturing nascent entrepreneurs' work experience. *experience_functions* is a variable measuring how many different working functions the team had experienced. In the baseline survey, each member in the team answered a question about the function in which they had work experience. We created a dummy variable for each function, then the final variable (*experience_functions*) is a sum of the dummy of each function (of course, if two or more members had experience in the same function, the value of the function dummy). The functions considered were: administration, communication, quality control, finance, legal, marketing & sales, planning & control, production, R&D, human resources, information services, strategy, and others. So, the maximum value that the variable could assume is 13.

entrepreneurial_experience captures if at least one member of the team of the nascent venture has already founded at least one firm. *entrepreneurial_experience* is a dummy variable equal to 1 if someone had entrepreneurial experience, 0 elsewhere.

managerial_experience is another dummy variable capturing whether at least one member of the nascent venture's team had managerial experience in its working background. If someone has entrepreneurial experience, the value is equal to 1, otherwise is 0.

The variable *generalist* is based on self-evaluation of the skills developed by the individual through their work experience. We created this variable as a mix of answers to three questions included in the baseline survey. In the three questions, the respondent had to use a 7-point Likert scale to self-assess to what extent, thanks to his/her background, he/she owns different skills in different fields, and he/she feels able to perform different tasks in many field but not very specialized in any. As the Cronbach's alpha is quite high (0.71), we created a variable computed as the average of the three answers. *generalist* was then computed as the maximum of the values for the team members, thus being a proxy of the general human capital of the team.

4.2.3 Control Variables

We included in the econometric models different control variables built using data collected through the baseline survey. Specifically, we included the number of members (*members*) in the nascent ventures, the average age of the team members (*age*), the average weekly working hours of the team (*working_hours*) for the nascent venture itself, the percentage of male members in the teams (*male*) and a dummy equal to one for nascent ventures in service industries (*service*). All the variables described so far are listed in Table 4.5.

Table 4.3: Descriptions of variables

Variable	Description
<i>Dependent Variable</i>	
pivot	Dummy variable that is equal to 1 if during the period analysed the nascent venture has done at least one pivot, 0 otherwise
exit_idea	Dummy variable that is equal to 1 if during the period analysed the nascent venture has decided to abandon the idea, 0 otherwise
<i>Independent Variable</i>	
educational_level	Maximum educational level inside the nascent venture. See section 4.2.2 for details on the measurement of the variable
economic_&_management_studies	Dummy variable that is equal to 1 if, at least, one member of the nascent venture took a course of economics or management
entrepreneurial_studies	Dummy variable that is equal to 1 if, at least, one member of the nascent venture took a course of entrepreneurship
experience_functions	Previous work experience in different function. See section 4.2.2 for details on the measurement of the variable
entrepreneurial_experience	Dummy variable that is equal to 1 if, at least, one member of the nascent venture founded a firm before
managerial_experience	Dummy variable that is equal to 1 if, at least, one member of the nascent venture worked as manager
generalist	Self-judgement of generalists' skills. See section 4.2.2 for details on the measurement of the variable
<i>Control Variable</i>	
members	Number of members, at the time of registration, in the team of the nascent venture
age	Average of member's age at the time of registration
working_hours	Average weekly hours of the members, at the time of registration
male	Percentage of male inside the nascent venture
service	Dummy variable that indicates whether the nascent venture is developing a service 1, or a product 0

Table 4.4: Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent Variables</i>					
pivot	298	0.724	0.448	0	1
exit_idea	298	15.852	16.487	0	110
<i>Dependent Variables</i>					
educational_level	298	3.023	2.705	0	9
economic_&_management_studies	298	0.725	0.447	0	1
entrepreneurial_studies	298	0.493	0.501	0	1
experience_functions	298	2.987	2.295	0	12
entrepreneurial_experience	298	0.282	0.451	0	1
managerial_experience	298	0.369	0.483	0	1
generalist	298	4.289	0.927		
<i>Control Variable</i>					
members	298	2.292	1.481	1	9
age	298	30.779	7.978	18	57.5
working_hours	298	15.852	16.487	0	110
male	298	0.791	0.363	0	1
service	298	0.721	0.449	0	1

Table 4.5: Correlation matrix

	Variables	1	2	3	4	5								
1	pivot	1												
2	exit_idea	-0.080	1											
3	educational_level	-0.003	-0.037	1										
4	economic_&_management_studies	0.034	0.033	0.312	1									
5	entrepreneurial_studies	0.113	0.116	0.200	0.443	1								
6	experience_functions	0.145	-0.091	0.320	0.252	0.213	1							
7	entrepreneurial_experience	-0.024	-0.213	0.113	0.068	0.023		1						
8	managerial_experience	0.008	-0.144	0.117	0.067	0.010			1					
9	generalist	0.145	0.009	0.420	0.352	0.285				1				
10	members	0.140	-0.095	0.313	0.213	0.291					1			
11	age	-0.171	-0.087	0.344	-0.089	-0.152						1		
12	working_hours	0.023	-0.159	0.046	0.002	0.081							1	
13	male	0.039	-0.009	-0.084	-0.152	-0.010								1
14	service	0.114	0.020	0.116	0.070	0.074								

	6	7	8	9	10	11	12	13	14
1									
2									
3									
4									
5									
6	1								
7	0.359	1							
8	0.335	0.448	1						
9	0.300	0.148	0.035	1					
10	0.315	0.118	0.159	0.368	1				
11	0.258	0.368	0.306	-0.014	-0.011	1			
12	0.178	0.139	0.221	0.015	0.099	0.168	1		
13	-0.081	-0.059	0.022	-0.077	-0.046	-0.138	0.074	1	
14	0.117	0.106	0.072	0.072	0.143	0.109	0.045	0.003	1

Chapter 5

Empirical Analysis

The variables described in chapter 4 were used in order to test our hypotheses. In order to test all the different hypothesis, we used the same control and independent variables.

In line with H1, we expect a positive relationship between the independent variable which measures the generic human capital and the dependent variable pivot. We ran a set of logistic regressions in order to understand the influence of the independent variables on pivoting. To testing H3, H4, H5 and H6, we run the same models with a different dependent variable, i.e. *exit_idea*.

5.1 Testing H1 & H2

The model in table 5.1 is aimed at testing H1 and H2. First of all, let us focus on the control variables. The average age of the nascent venture's members (*age*) has a negative and significant ($p < 0.01$) effect on the probability of pivoting. In terms of marginal effects, when the variable assumes the value of the mean, 30.8 years old, the probability of pivoting is 73.6% meanwhile, in order to see the negative effect, adding the value of the standard deviation, equal to 8, the probability of pivoting decrease to 64.6% in nascent ventures with 38.8 years old as mean. This outcome could be explained by the greater openness to change and readiness to explore new ways of working of younger people.

Another control variable that influences the pivoting decision is the industry dummy. *service* influences positively and significantly ($p < 0.05$) the probability of pivoting. In terms of marginal effects, when *service* assumes the value of 1 the probability of pivoting increases by 11.3% compared to when the value is 0 (i.e., from 65.1% to 76.4%). Probably, pivoting on a service venture idea is easier than pivoting on a product idea.

Also *experience_functions* has a positive effect on pivoting. The probability of pivoting is equal to 73.9% when the variable assumes the value of the mean that is 3. In order to understand the variability of the variable which has a standard deviation equal to 2.3, adding this last value to the mean, and so when the variable assumes the value of 5.3 the pivoting probability increase by the 7.8% (going to a value of 81.7%). We explain this positive effect arguing that, having experience in different functions, the team' members have skills in more varied areas; thus, they can better understand how the idea could work and fix it to make it work better.

A weakly positive effect is found also between the variable *generalist* and pivoting. When *generalist* assumes the mean value, 4.3, the probability of pivoting is equal to 73.7%. Analysing the variability, and so using the standard deviation as factor for analysis, that has the value of 0.9. Adding the standard deviation and so when the value is 5.2 the probability goes up to 78.3% (increasing of the 4.6%). Generalists, having more varied skills, could find it easier to change the business model, for finding better solutions.

The positive influence of *experience_functions* and *generalist* give the possibility to support the first hypothesis. **Table 5.1** summarize whether the hypotheses on the decision of pivoting are supported, confuted or no evidence were found.

Table 5.1: results of H1 and H2

Hypothesis:	Supported/confuted/no evidence:
H1	Supported
H2	No evidence for confuting or supporting

Table 5.2: Human Capital and the probability of pivoting

Pivot		
cons	0.64 (2.037)	
<i>Independent variable</i>		
educational_level	-0.73 (0.062)	
economic_&_management_studies	-1.34 (0.226)	
entrepreneurial_studies	0.67 (0.392)	
experience_functions	2.65 (0.102)	***
entrepreneurial_experience	-0.80 (0.276)	
managerial_experience	-0.11 (0.353)	
generalist	1.68 (0.245)	*
<i>Control variables</i>		
members	0.88 (0.125)	
age	-2.76 (0.020)	***
working_hours	0.15 (0.009)	
male	0.30 (0.423)	
service	2.02 (0.553)	**

Standard error in round brackets.

* $p < 0.1$

** $p < 0.05$

*** $p < 0.01$

5.2 Testing H3, H4, H5 & H6

Let us once again start from the analysis of the control variables.

members is negatively influencing the abandoning of the idea ($p < 0.1$). Analysing the mean of the value, equal to 2.3 members for team, the probability of exit is equal to 25.2%. Adding to the mean the standard deviation, that is 1.5, so with a total number of members equal to 3.8, the probability of exiting decrease of the 5.1% going to a value of the 20.1%. The higher the number of members in the nascent venture, the lower is the probability of exit, probably because being in a big number the team of the nascent ventures could find easier solutions to problem thanks to the combining of different point of view.

Another control variable has a negative and significant effect ($p < 0.05$). In fact, *working_hours* when assumes the value of the mean, 15.9, correspond to a probability of the 24.5% of exiting. In order to understand the negative effects, adding the value of the standard deviation, 16.5, so with a total working hour equal to 32.4 the probability of exit decrease of the 6.9%, going to a probability equal to 17.6%. So, this inverse relation between the working hours and the probability of exit could be explained by the fact that working more on the nascent venture the nascent entrepreneurs have more possibility to better understand the business and it increases their ability to change the business model instead of exiting.

Let us now analyse the independent variables. *entrepreneurial_studies* has a positive influence ($p < 0.05$) on exit; the probability of exit assumes the value of 18.6% when nobody in the team attended entrepreneurial courses during the studies, while it takes the value of 33.5% if there is at least one team member, so the probability of exit increase of the 14.9%. For sure having attended entrepreneurial courses leave something to the nascent entrepreneurs, but our research proves that what they learn so far is not enough for ensuring a good running of the business.

Another result is the negative and significant ($p < 0.01$) coefficient of *entrepreneurial_experience*. The probability of exit decrease from 30.7% to 11.4% if

there is at least one person in the team who has already founded a firm before starting this nascent venture. Different from the case above this time the nascent entrepreneur had a real experience in entrepreneurship, so this experience helps the nascent venture to find a better outcome.

But the results of the analysis is possible to confute the third hypothesis and to support the fourth one. **Table 5.3** summarize whether the hypotheses on the decision of exiting are supported, confuted or no evidence were found.

Table 5.3: results of H3, H4, H5 and H6

Hypothesis:	Supported/confuted/no evidence:
H3	Confuted
H4	Supported
H5	No evidence for confuting or supporting
H6	No evidence for confuting or supporting

Table 5.4: Human Capital and the probability of exiting

Exit		
cons	-1.36 (0.241)	
<i>Independent variable</i>		
educational_level	-0.57 (0.063)	
economic_&_management_studies	-0.07 (0.374)	
entrepreneurial_studies	2.56 (0.806)	**
experience_functions	-0.23 (0.077)	
entrepreneurial_experience	-2.93 (0.121)	***
managerial_experience	-0.30 (0.320)	
generalist	0.87 (0.221)	
<i>Control variables</i>		
members	-1.76 (0.098)	*
age	0.67 (0.024)	
working_hours	-2.33 (0.011)	**
male	-0.01 (0.395)	
service	0.92 (0.436)	

Standard error in round brackets.

* $p < 0.1$

** $p < 0.05$

*** $p < 0.01$

Chapter 6

Conclusions

6.1 Discussion of the results

This thesis has studied the impact of human capital of nascent entrepreneurs on the outcomes of nascent ventures. We developed a series of hypotheses and empirically tested them using data collected within the pre-acceleration program InnoVentureLab.

The results of econometric analyses reveal that a diversified education and work background have positive effects on nascent entrepreneurs' odd of pivot. In particular, we argue that entrepreneurs who gained education and work experiences in different fields developed varied skills which are useful for adapting the potential business to the new request of the market, being ready for answering to the needs of a possible customer. Moreover, knowing different fields could open the mind of entrepreneurs increasing their willingness to innovate the business. We also performed studies about human capital' effects on the decision of exit; surprisingly knowledge and skills acquired through entrepreneurial education have the opposite effect on exit compared to the ability acquired through entrepreneurial work experience; while entrepreneurial education influences positively the decision of exit the nascent venture, entrepreneurial work experience has negative effects on it. This could be explained by the fact that education in entrepreneurship teach people how to validate business ideas and discard ideas that appears not very profitable, so it could lead individuals in abandoning more frequently the idea in which they are trying to build a business model. Meanwhile, previous experience in entrepreneurship permits nascent entrepreneurs to access resources and contacts which can be useful for developing their business' idea; so, it helps nascent entrepreneurs to abandon venture idea less frequently because their perception makes them think that they have all the resources for implementing that idea.

6.2 Conclusive Remarks

In this final section, we will synthesize the key contributions to entrepreneurship literature and the main limitations of our work, that open avenues for future investigations.

6.2.1 Contribution to the literature

Our study contributes to the existing literature in entrepreneurship.

We contributed to literature by exploring a phase – the nascent stage – that has been scarcely analysed before. Specifically, we explored the impact of entrepreneurs having broad vs. small sets of skills on the outcomes of nascent ventures. We discovered that sources of human capital influence the outcomes of a possible nascent venture. Mastering a broad set of skills has a positive impact on the likelihood of pivot. Meanwhile entrepreneurial background has a positive influence on the decision of exit if given by education, and a negative effect if given by work experience. The empirical study was conducted on the nascent ventures participating in InnoVentureLab 2020 pre-accelerator program. Anyway, our research could help for understating which kind of experience and composition of team could influence the outcomes of a nascent ventures.

6.2.2 Managerial Implications

Our study also has some managerial implications. In fact, it gives indication on which are the more probable outcomes in functions to the characteristics of nascent entrepreneurs, so it could help individuals in choosing which kind of studies and experiences perform for starting a new possible venture. Moreover, it could help to understand which could be the consequences of involving individuals with certain competences in nascent entrepreneurial teams, these consequences could be relevant also for stakeholders in contact with the nascent venture, in particular accelerator and incubator.

6.2.3 Limitations and Future Research Directions

We acknowledge that our analysis presents some limitations, that however, open future research ways. First, our research focuses on the composition of the nascent entrepreneurial team when InnoVentureLab pre-acceleration program began, not considering possible entries in/exits from the team occurred during or after the program; so, it could be interesting to understand the impacts on the outcomes studying also the evolution of the team through time. Second, we did not consider what is the time which occurred for the decision of pivot/exit; it could be interesting creating a survival model that could underline the effect of the human capital on the time occurred before pivot and exit.

Appendix A

Table A.1: Script of the interviews

Step	Questions
ICE-BREAKER	Capire se è un buon momento per parlare. Specificare la durata e il tipo dell'intervista. Dare informazioni riguardo il trattamento dei dati.
BASIC INFORMATION	Quante ore (per settimana) ogni team member dedica in media all'impresa nascente? Come si organizza il team?
APPROCCIO SCIENTIFICO	
Teoria	Puoi raccontarmi come si sta evolvendo il percorso della tua start-up? Rispetto all'ultima chiamata, ci sono stati dei cambiamenti nello sviluppo della vostra offerta/soluzione? (Se sì) quali? Per quale motivo? Cosa vi ha portato a definire la vostra attuale offerta/soluzione? Perché pensi che questa soluzione possa avere successo? Come sei/siete arrivati a questa conclusione?
Ipotesi	Quali sono gli aspetti principali della vostra offerta/soluzione ad oggi? Ci sono aspetti sui quali state ancora investigando alcune cose? Cosa vi ha portato a definire questi aspetti? State parlando con clienti potenziali e/o effettivi per capire alcuni aspetti della vostra offerta/soluzione? [Se sì] Che cosa volevate capire nello specifico e perché? ìche domande avete fatto e perché?

Step	Questions
Test	<p>In che modo avete indagato o state indagando gli aspetti del vostro business su cui pensate di aver bisogno di raccogliere più informazioni? Ad esempio, avete raccolto dei dati? che tipo di ricerche avete fatto? Che domande avete fatto? A chi le avete fatte? Cosa vi ha portato a scegliere che tipo di ricerca fare?</p>
Valutazioni	<p>Che cosa emerge dai dati che avete raccolto? Che cosa vi ha portato a queste conclusioni?</p> <p>Dove avete archiviato i dati? Come li avete analizzati?</p>
Decisione	<p>Come avete usato le informazioni raccolte / quanto emerge dai dati raccolti? Che conclusioni avete tratto? Come avete tratto eventuali conclusioni? Avete impostato delle soglie minime per decidere come valutare i dati raccolti? Come?</p>
EFFECTUATION	
Bird in hand	<p>Quali fattori hanno condizionato le scelte fatte finora? Da che cosa siete partiti per prendere le decisioni più rilevanti? Cosa vi ha portato a scegliere questi fattori?</p> <p>Che ruolo hanno avuto le vostre conoscenze personali e professionali e le vostre connessioni nell'evoluzione della vostra idea di business dall'ultima chiamata?</p>

Step	Questions
Affordable loss	<p>Che tipo di risorse (di tipo economico e non) state utilizzando per sviluppare il vostro business?</p> <p>Quante di queste risorse avete investito nel progetto finora? Come avete definito quante risorse investire sul progetto?</p> <p>come avete deciso che tipo di investimenti fare?</p>
Crazy quilt	<p>Vorrei parlare delle tue relazioni con fornitori, concorrenti, altri imprenditori, eventuali partner. Hai sviluppato qualche relazione con loro?</p> <p>di che tipo? (partnership, alleanze) Con chi le hai fatte (fornitori, clienti, potenziali competitor)?</p> <p>Quando hai iniziato a pensare/stringere queste relazioni?</p>
Lemonade	<p>Riesci a ricordare una situazione in cui è successo qualcosa di inaspettato? Se si, come hai reagito?</p> <p>Quali decisioni hai preso in seguito a questo/i evento/i?</p>
Contingency plan	<p>Se una grande e affermata impresa dovesse entrare nel tuo mercato, cosa faresti?</p>
Pilot in the Plan	<p>Vorrei parlare dei fattori e dei potenziali rischi che ritieni possano determinare il futuro della tua startup ad oggi. Quali sono? Perché pensi che questi fattori saranno importanti? come gestite i rischi e più l'incertezza riguardo il futuro?</p>

Step	Questions
PERFORMANCE	
Customer Activation/Acquisition	Pensando alle attività svolte nell'ultimo periodo, quanti clienti sono stati attivati/acquisiti?
Costi nuovi/totali	Quanti costi avete sostenuto dalla chiamata precedente ad oggi? E in totale?
Ricavi	State già fatturando/producendo dei ricavi?
Time to revenue	Tra quanti mesi pensate di poter iniziare a fatturare?
Parte cambiata Business Model Canvas	Pensando a quanto svolto dalla chiamata precedente ad oggi, ci sono stati cambiamenti nel tuo modello di business?
Motivo cambio BM	Qual è stato il motivo per cui hai cambiato questo aspetto del tuo modello di business?
Probabilità cambio BM	In base alla vostra situazione attuale, con quale probabilità pensate di cambiare il vostro business model canvas nelle prossime 7 settimane?

Bibliography

- Abell, D. F. (1980). *Defining the business: The starting point of strategic planning*. Englewood Cliffs, N.J.: Prentice-Hall.
- Arrazola, M., & de Hevia, J. (2004). *More on the estimation of the human capital depreciation rate*. *Applied Economics Letters*, 11(3), pp. 145–148.
- Arthur, J. B., & Huntley, C. L. (2005). *Ramping up the organizational learning curve: assessing the impact of deliberate learning on organizational performance under gainsharing*. *Academy of Management Journal*, 48(6), pp. 1159–1170.
- Aspelund, A., Berg-Utby, T., & Skjevdal, R. (2005). *Initial resources' influence on new venture survival: A longitudinal study of new technology-based firms*. *Technovation*, 25, pp. 1337–1347.
- Assolombardia (2020). *Investire sul capitale umano*. p.10.
- Backes-Gellner, U. and Moog, P. (2013). *The disposition to become an entrepreneur and the jacks-of-all-trades in social and human capital*. *The Journal of Socio-Economics*, 47, pp.55–72
- Barringer, B. R., Jones, F. F., & Neubaum, D. O. (2005). *A quantitative content analysis of the characteristics of rapid growth firms and their founders*. *Journal of Business Venturing*, 20(5), pp. 663–687.
- Becker, G.S. (2008). *Human capital : a theoretical and empirical analysis, with special reference to education*. Chicago: University Of Chicago Press.
- Bingham C, Eisenhardt K, Furr N (2007) *What makes a process a capability? Heuristics, strategy and effective capture of opportunities*. *Strategic Entrepreneurship J.* 1(1) pp. 27–47.
- Boone, T., Ganeshan, R., & Hicks, R. L. (2008). *Learning and knowledge depreciation in professional services*. *Management Science*, 54(7), pp. 1231–1236.

- Breznitz, S.M. and Zhang, Q. (2019). Determinants of graduates' entrepreneurial activity. *Small Business Economics*.
- Block, J.H., Hoogerheide, L. and Thurik, R. (2011). Education and entrepreneurial choice: An instrumental variables analysis. *International Small Business Journal: Researching Entrepreneurship*, 31(1), pp.23–33
- Bosma, N., van Praag, M., Thurik, R. and de Wit, G. (2004). The Value of Human and Social Capital Investments for the Business Performance of Startups. *Small Business Economics*, 23(3), pp.227–236
- Bruderl, J., Preisendorfer, P. and Ziegler, R. (1992). Survival Chances of Newly Founded Business Organizations. *American Sociological Review*, 57(2), pp.227-242
- Cai, Z. and Winters, J.V. (2017). Self-employment differentials among foreign-born STEM and non-STEM workers. *Journal of Business Venturing*, 32(4), pp.371–384.
- Campanella, F., Della Peruta, M.R. and Del Giudice, M. (2013). The Role of Sociocultural Background on the Characteristics and the Financing of Youth Entrepreneurship. An Exploratory Study of University Graduates in Italy. *Journal of the Knowledge Economy*, 4(3), pp.244–259
- Canavati, S., Libaers, D., Wang, T., Hooshangi, S. and Sarooghi, H. (2021). Relationship between human capital, new venture ideas, and opportunity beliefs: A meta-analysis. *Strategic Entrepreneurship Journal*.
- Cao, X. and Im, J. (2017). Founder human capital and new technology venture R&D search intensity: the moderating role of an environmental jolt. *Small Bus Econ*, 50, pp.625–642
- Carpenter, R.E. and Petersen, B.C. (2002). Capital Market Imperfections, High-Tech Investment, and New Equity Financing. *The Economic Journal*, 112(477), pp.F54–F72.
- Chuang, T., Nakatani, K., Chen, J. C. H., & Huang, I. (2007). Examining the impact of organizational and owner's characteristics on the extent of e-commerce adoption in SMEs. *International Journal of Business and Systems Research*, 1, 61–80.

- Cohen WM, Levinthal D (1990) Absorptive capacity: A new perspective on learning and innovation. *Admin. Sci. Quart.* 35: pp. 128–152.
- Colombo, M.G. and Grilli, L. (2005). Founders' human capital and the growth of new technology-based firms: A competence-based view. *Research Policy*, 34(6), pp.795–816
- Colombo, M.G. and Piva, E. (2020). Start-ups launched by recent STEM university graduates: The impact of university education on entrepreneurial entry. *Research Policy*, 49(6), pp.1-16
- Cooper, A.C., Gimeno-Gascon, F.J., & Woo, C.Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9, 371–395.
- Communication from the European commission to the council, the European parliament, the economic and social committee and committee of the regions. (2002). *Science and Engineering Ethics*, 8(1), pp.113–117.
- Darr, E. D., Argote, L., & Epple, D. (1995). The acquisition, transfer, and depreciation of knowledge in service organizations: productivity in franchises. *Management Science*, 41(11),pp. 1750–1762.
- Davidsson, P. & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18, pp. 301–332.
- Davidsson, P. (2015). Entrepreneurial opportunities and the entrepreneurship nexus: A re-conceptualization. *Journal of Business Venturing*, 30(5), pp. 674–695.
- Dencker JC, Gruber M, Shah SK (2009) Pre-entry knowledge, learning, and the survival of new firms. *Organ. Sci.* 20(3): pp. 516–537.
- Dutta, D.K., Li, J. and Merenda, M. (2010). Fostering entrepreneurship: impact of specialization and diversity in education. *International Entrepreneurship and Management Journal*, 7(2), pp.163–179
- Eisenhardt K, Furr N, Bingham C (2010) Micro-foundations of performance: Balancing efficiency and flexibility in dynamic environments. *Organ. Sci.* 21(6):1263–1273.

- Eisenhardt KM, Schoonhoven CB (1990) Organizational growth: Linking founding team, strategy, environment, and growth among U.S. semiconductor ventures, 1978-1998. *Admin. Sci.Quart.* 35(3):pp. 504–529.
- Fern, M.J., Cardinal, L.B. and O’Neill, H.M. (2011). The genesis of strategy in new ventures: escaping the constraints of founder and team knowledge. *Strategic Management Journal*, 33(4), pp.427–447.
- Ford, J. D., & Hegarty, W. H. (1984). Decision makers’ beliefs about the causes and effects of structure: An exploratory study. *Academy of Management Journal*, 27(2), 271–291.
- Furr, N.R. (2019). Product Adaptation During New Industry Emergence: The Role of Start-Up Team Preentry Experience. *Organization Science*, 30(5), pp. 1076–1096
- Ganotakis, P. (2010). Founders’ human capital and the performance of UK new technology based firms. *Small Business Economics*, 39(2), pp.495–515
- Gimeno, J., Folta, T., Cooper, A., &Woo, C. (1997). Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*, 42, pp. 750–783.
- Gioia, D. A., & Manz, C. C. (1985). Linking cognition and behavior: a script processing interpretation of vicarious learning. *Academy of Management Review*, 10(3), pp. 527–539.
- Gioia, D. A., & Poole, P. P. (1984). Scripts in organizational behavior. *Academy of Management Review*, 9(3), pp. 449–459.
- Groot,W. (1998). Empirical estimates of the rate of depreciation of education. *Applied Economics Letters*, 5(8), pp. 535–538.
- Harada, N. (2003). Who succeeds as an entrepreneur? An analysis of the post-entry performance of new firms in Japan. *Japan and the World Economy*, 15, 211–222.
- Honjo, Y., Kato, M. and Okamuro, H. (24AD). R&D investment of start-up firms: does founders’ human capital matter? *Small Bus Econ*, pp.207–220.

- Hunady, J., Orviska, M. and Pisar, P. (2018). The Effect of Higher Education on Entrepreneurial Activities and Starting Up Successful Businesses. *Engineering Economics*, 29(2)
- Inmyxai, S. and Takahashi, Y. (2010). Performance Contrast and Its Determinants between Male and Female Headed Firms in Lao MSMEs. *International Journal of Business and Management*, 5(4).
- Jo, H. and Lee, J. (1996). The relationship between an entrepreneur's background and performance in a new venture. *Technovation*, 16(4), pp.161–211
- Kirzner, I. M. (1997) "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach." *Journal of Economic Literature*. XXXV: 60–85.
- Kuratko, D.F. (2005). The Emergence of Entrepreneurship Education: Development, Trends, and Challenges. *Entrepreneurship Theory and Practice*, 29(5), pp.577–598.
- Lazear, E.P. (2004). Balanced Skills and Entrepreneurship. *American Economic Review*, 94(2), pp.208–211.
- Lazear, Edward P. (2005). Entrepreneurship. *Journal of Labor Economics*, 23(4), pp.649–680
- Kato, M. (2019). Founders' human capital and external knowledge sourcing: Exploring the absorptive capacity of start-up firms. *Economics of Innovation and New Technology*, pp.1–22
- Kogut B, Zander U (1992) Knowledge of the firm, combinative capabilities, and the replication of technology. *Organ. Sci.* 3(3): 383–397
- Kotha, R. and George, G. (2012). Friends, family, or fools: Entrepreneur experience and its implications for equity distribution and resource mobilization. *Journal of Business Venturing*, 27(5), pp.525–543
- McGuire, E. (2021). Entrepreneurial experience and firm exit over the business cycle. *Journal of Economics & Management Strategy*

- Millán, J.M., Congregado, E., Román, C., van Praag, M. and van Stel, A. (2014). The value of an educated population for an individual's entrepreneurship success. *Journal of Business Venturing*, 29(5), pp.612–632
- Minniti, M. and Bygrave, W. (2001). A Dynamic Model of Entrepreneurial Learning. *Entrepreneurship Theory and Practice*, 25(3), pp.5–16.
- Madsen, P. M., & Desai, V. (2010). Failing to learn? The effects of failure and success on organizational learning in the global orbital launch vehicle industry. *Academy of Management Journal*, 53(3), pp. 451–476.
- Newbert, S. L., Kirchhoff, B. A., & Walsh, S. T. (2007). Defining the relationship among founding resources, strategies, and performance in technology-intensive new ventures: Evidence from the semiconductor silicon industry. *Journal of Small Business Management*, 45, pp. 238–266.
- Oakey, R. P. (2003). Technical entrepreneurship in high technology small firms: Some observations on the implications for management. *Technovation*, 23, pp. 679–688.
- Parker, S.C. & Van Praag, M. (2006). Schooling, capital constraints, and entrepreneurial performance: The endogenous triangle. *Journal of Business and Economic Statistics*, 24(4), pp. 416–431.
- Rauch, A. and Rijdsdijk, S.A. (2011). The Effects of General and Specific Human Capital on Long-Term Growth and Failure of Newly Founded Businesses. *Entrepreneurship Theory and Practice*, 37(4), pp.923–941
- Shane, S. (2000). Prior Knowledge and the Discovery of Entrepreneurial Opportunities. *Organization Science*, 11(4), pp.448–469
- Shane, S. and Venkataraman, S. (2000). The Promise of Entrepreneurship as a Field of Research. *The Academy of Management Review*, 25(1), p.217.
- Shepherd, D.A., Douglas, E.J. and Shanley, M. (2000). New venture survival. *Journal of Business Venturing*, 15(5-6), pp.393–410.

- Siepel, J., Cowling, M. and Coad, A. (2017). Non-founder human capital and the long-run growth and survival of high-tech ventures. *Technovation*, 59, pp.34–43
- Spanjer, A. and van Witteloostuijn, A. (2017). The entrepreneur's experiential diversity and entrepreneurial performance. *Small Business Economics*, 49(1), pp.141–161.
- Stuart, R.W. and Abetti, P.A. (1990). Impact of entrepreneurial and management experience on early performance. *Journal of Business Venturing*, 5(3), pp.151–162
- Ucbasaran, D., Westhead, P., Wright, M. and Binks, M. (2003). Does Entrepreneurial Experience Influence Opportunity Identification? *The Journal of Private Equity*, 7(1), pp.7–14.
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: a meta-analytical review. *Journal of Business Venturing*, 26(3), pp. 341–358.
- Van der Sluis, J., van Praag, M. and Vijverberg, W.P.M. (2008). Entrepreneurship Selection and Performance: A Meta-analysis of the Impact of Education in Less Developed Countries. *SSRN Electronic Journal*
- Vogel, P. (2017). From venture idea to venture opportunity. *Entrepreneurship Theory and Practice*, 41(6), pp. 943–971.
- Weitzman, M.L. (1996). Hybridizing Growth Theory. *The American Economic Review*, [online] 86(2), pp.207–212. Available at: <https://www.jstor.org/stable/2118124> [Accessed 14 spy. 2021].
- Zahra SA, George G (2002) Absorptive capacity: A review, reconceptualization, and extension. *Acad. Management Rev.* 27(2):1 pp. 85–203.