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The role of founder's human capital, new venture social capital, and initial VC funding acquisition in the SaaS industry: A comparison between a developed and an emerging economy

Ghalib Al Halim
534975
Supervisor: Julia Rose

Second Assessor: Francesco Capozza

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Abstract

This thesis analyzes the effect of founders' human capital and new venture social capital on Series A VC funding among NTBFs in the US and India. In particular, this thesis uses the SaaS industry as the sub-sector of NTBFs. The competence-based view proposes that the relationship between founders' human capital, new venture social capital, and VC funding is positive and significant. However, the majority of previous literature lacks the use of NTBF samples from emerging economies. Using data from CrunchBase of 200 NTBFs from the US and 137 NTBFs from India, this thesis finds that the effect of founders' level of education, founders' prior founding experience and number of CrunchBase contacts on Series A VC funding is positive and significant for NTBFs in the US. In comparison, with regards to NTBFs in India, this thesis suggests that the relationship between founders' level of education and VC funding is not significant. Additionally, this thesis also finds that founders' prior founding experience is negative and significant towards Series A VC funding. Lastly, this thesis finds the effect of new venture social capital on Series A VC funding is positive and significant.

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1. Introduction

In an effort to grow their business processes, ventures often seek funding through different types of resource acquisition. In general, Venture Capital (VC) financing is known to be the most acceptable financing method for new ventures (Croce et al., 2013). Ever since the COVID-19 pandemic, start-ups have been receiving a large amount of financial capital. In the US, VC-backed ventures raised over 62 billion USD in the first quarter of 2021. Specifically, over the past decade, the global average of Series A financing has been following an increasing trend from less than 6 million USD to more than 18 million USD (PwC MoneyTree Report, 2022). Within these investment deals, there is a growing startup trend operating in new technology software such as cloud computing and machine learning, because of the abundance of data (McKinsey & Company, 2021).

Such trends are related to the growth of the so-called New Technology Based Firms (NTBFs). NTBFs are known to put scientific knowledge into commercial practices and play an important role in innovation development (Hogan and Hutson, 2005). Additionally, it is important to note that NTBFs have growing interest from previous studies (Baum and Silverman, 2004; Barringer et al., 2005; Hogan and Hutson, 2005; Colombo and Grilli, 2010; Gimmon and Levie, 2010). One of the reasons is that NTBFs are important sources of job creation and spur economic growth for national economies (Colombo and Grilli, 2010). However, the creation of NTBFs requires sufficient capital funding in order to sustain growth and survival. Whereas, the lack of capital funding can result in a high likelihood of the venture to fail.

Since funding plays a significant role in NTBF survival, previous studies have put an attempt to analyze the factors that affect the access to funding especially through founders' human capital (Hall and Hofer, 1993; Colombo and Grilli, 2010; Ko and McKelvie, 2018) and new venture social capital (Batjargal and Liu, 2004; Hsu, 2007; Zheng et al., 2010; Miloud et al., 2012; Ahlers et al., 2015; Vismara, 2016; Buttice et al., 2017). However, there is little empirical evidence on the role of founder's human capital, new venture social capital and VC funding in emerging economies where economic uncertainty is greater and new ventures tend to rely on informal ways to attract VC funding (Nigam et al., 2020). Ventures within emerging economies have several differences relative to developed economies. One of them being that economic infrastructure is largely undisclosed in most emerging economies (Ahlstrom & Bruton, 2006). Instead, emerging economies are known for their uncertainty and volatile institutional environment. Liability of newness exists within new ventures (Stinchcombe, 1965), however, new ventures in emerging economies experience additional risk factors such as uncertainty and the unpredictable environment. Specifically, new ventures would suffer from uncertain property rights and the goods and services market is in the nascent stage. Hence, this thesis focuses on how founders' human capital and new

venture social capital of NTBFs affect the likelihood of obtaining VC funding specialized within a developed and an emerging economy context.

It is important to emphasize that an economy currently standing out from the rest of the emerging economies is India. In particular, India is one of the many emerging economies that is experiencing rapid growth in innovation and number of new ventures, particularly new technology ventures. Technology has been the core innovation driver for the last 25 years (Nigam et al., 2020). Majority of the current new ventures in India are technology driven and there is an increasing interest for VCs to fund these ventures. In fact, VC investments in India for technology startups hit a record of 26.5 billion dollars in 2017 (Nigam et al., 2020). Additionally, CrunchBase states that the average funding of Indian NTBFs founded by entrepreneurs with a masters degree is 7.4 million US dollars. This is 1.8 million above the average funding for Indian NTBFs. Similarly for the US, NTBFs founded by entrepreneurs with a masters degree obtain an average funding of 13.8 million US dollars. This is 1.3 million above the average funding for NTBFs in the US. Hence, the similar statistical outlook raises the question on whether traditional human capital such as education and founding experience do have an impact towards obtaining a greater VC funding amount. Another important question to bring up is whether greater number of social contacts or networks due to higher quality links to successful alumni, has an effect towards obtaining VC funding. Previous studies attempting to answer these two questions regarding human and social capital have come up with different empirical outcomes.

With regards to human capital, in order to attract VC funding, entrepreneurs must favorably impress their potential VC investors. Hence, this indicates that entrepreneurs should be able to benefit from knowing the specific human capital evaluation criteria that the VC investors use to direct their investment decisions. Several earlier studies analyzing different human capital evaluation criterias used that may affect the level of VC funding (Hall and Hofer, 1993; Colombo and Grilli, 2010; Ko and McKelvie, 2018). Overall, previous studies describing founders' human capital suggest that there are three types of human capital criteria that may affect the amount of VC funding: founders' education, founding experience and industry experience. All three types of human capital are generally found to have a positive outlook towards VC funding.

As for new venture social capital, previous studies suggest that new venture social capital plays a significant role for acquiring external investments. Specifically, social capital has been really prominent in equity crowdfunding activities (Ahlers et al., 2015; Vismara, 2016; Buttice et al., 2017). In general, all of the previous studies analyzing equity crowdfunding highlight the importance of "internal" social capital and how it can improve venture survival. Other studies have taken a different approach by looking at how new venture social capital affects the valuation of the venture (Batjargal and Liu, 2004; Hsu,

2007). Overall, previous studies describing new venture social capital suggest that there are different types of social capital including number of social network followers, number of strong ties between entrepreneurs and VCs, and number of non-founder executives recruited through the founding team's social network. All of these variables have one aspect in common: number of social network contacts. However, it is important to highlight that empirical evidence on the specific relationship between new venture social capital and VC funding is still limited.

Hence, to add value to the previous studies, this thesis will analyze how founders' human capital and new venture social capital affects the amount of VC funding that the NTBFs obtain within the US and India economy context. The United States (US) will act as the developed economy representative. Likewise, India will act as the emerging economy representative. On top of that, this thesis will focus on a subsector of NTBFs namely Software-as-a-Service (SaaS) firms. The reason is that SaaS technology is becoming a new platform for personal computing, enterprise and has potential to replace traditional products (Cusumano, 2010). Additionally, previous studies analyzing the impact of human capital and social capital towards obtaining VC funding within an emerging economy context is fairly limited. In fact, Nigam et al. (2020) claims that his study is the first empirical study on how founders' human and new venture social capital affects VC funding within an emerging economy context. Other previous studies mostly use data samples mainly from developed economies such as the US. On top of that, most prior research uses growth as their dependent variable rather than the amount of VC funding (Davila et al., 2003; Fergusson and Olofsson, 2004; Colombo and Grilli, 2010; Croce et al., 2013). Therefore, this thesis aims to answer the research question below:

How does founders' human capital and new venture social capital affect early stage Series A VC funding of NTBFs?

Moreover, following the research question, a sub-question draws up as follows:

Does higher quality of founders' human capital and new venture social capital significantly increase early stage Series A VC funding of NTBFs in developed and emerging economies?

This thesis covers a total of 337 SaaS startups operating in the US and India within the CrunchBase dataset. By using the latest available 2022 data, we are able to answer the above research questions and provide relevant insights. This thesis aims to contribute to three aspects of the current study: first, this thesis analyzes the importance of founders' human capital on the NTBFs' Series A VC funding amount. Second, this thesis analyzes the influence of new venture social capital on the NTBFs' Series A VC funding amount. Last but

not least, this thesis provides a comparative overview of results between developed and emerging economies. The remaining thesis has the following structure: section 2, discusses relevant literature and their results, as well as the theoretical framework to construct the hypotheses. Section 3 depicts a description of the data and methodology. Section 4 presents the empirical results and analysis providing an overview of the empirical estimations. Section 5 suggests the conclusion based on the empirical results and discussion of the possible limitations of the study and suggestions for further research.

2. Literature Review and Hypothesis Formulation

Before diving into the theories related to human capital and social capital, it is important to raise the theory of liability of newness and early-stage resource acquisition since most previous studies have linked these theories to their findings. In general, new ventures are prone to liability of newness (Stinchcombe, 1965), in which the risk of a venture dying is high during the founding years of the venture and decreases with the growing age of the venture. Shepherd et al. (2000) argues that liability of newness is dependent on the degree of uncertainty with respect to the maturity of the production technology, the customers' opinions, and the team's managerial skills.

To overcome liability of newness, new ventures seek equity financing through early-stage resource acquisition such as VC funding. New ventures achieve access to VC funding only if they are able to display their ability of gaining high return on investment (Fried and Hisrich, 1994). However, these returns are always in combination with a great deal of uncertainty. In particular, Zarutskie (2010) suggests that if a fund invests in companies that are still in their early stages, the probability of those early stage companies exit is lower than if the venture capital invested in companies during their later stage. Hence, there is no question that this is indeed a challenge for VCs providing early stage resource acquisition. With the absence of success predictors, VCs must rely on "symbolic signals of competence" (Ko and McKelvie, 2018) such as founders' human capital and new venture social capital.

2.1 Founders' Human Capital and VC funding

As mentioned before, previous studies have broken down the concept of human capital into three subcategories namely: founders' education, founding experience and industry experience. It is important to note that previous studies analyze founders' human capital instead of the general human capital of new ventures. VCs frequently rely on venture's founding members as important signals for the venture's viability (Ko and McKelvie, 2018). Regardless, the competence-based view of founders' human capital is that founders' human capital portray a significant positive relationship with VC funding (Colombo and Grilli, 2010). This broad concept is a build-up of different literatures that try to define

human capital specifically. Piazza-Georgi (2002) defines human capital as “a stock of personal skills that economic agents have at their disposal.” Rauch et al. (2005) distinguishes human capital into three subcategories: an individual's experience, education, and productivity skills. Human Capital theory was initially utilized to study the impact of education on economic value (Schultz 1961). Since then, the theory has been increasingly noticeable in numerous studies analyzing the effect of founders’ human capital on VC funding.

Moreover, it is important to highlight that previous studies use different outcome predictors with human capital as the key driver. Firstly, most previous findings utilize VC funding amount as an outcome predictor. Particularly, Ko and McKelvie (2018) suggests that the founders’ human capital significantly increases the level of obtaining VC funding. By utilizing funding information of 235 internet advising ventures, the authors observe that prior founding experience and founders’ education offer important signals that directly impact the amount of Series A VC funding. The authors’ reasoning behind this relationship is that founders’ level of education is tied with opportunity cost in which highly educated founders have greater opportunity costs in pursuing the new venture for a longer term. Whereas, other human capital variables such as industry experience does not have a significant impact on the amount of Series A VC funding. Similarly, Franke et al. (2006) show that founders’ human capital significantly increases the amount of VC funding. Using a sample of 51 interviews with 26 VC funds in Australia, the authors find that VCs would rather have founding teams with individuals having prior founding experience and obtaining managerial or engineering education. In addition to that, Beckman et al. (2007) also portray the importance of human capital with regards to VC funding. Their research considers a sample within the US NTBF landscape. Specifically, the authors investigate both the initial founding team and the current top management team of Silicon Valley’s start-ups. They show that the probability of receiving VC funding increases with the prior managerial experience of founders and current top managers. Whereas, unlike Ko and McKelvie (2018), Beckman et al. (2007) find that prior founding experience had a negative effect towards obtaining VC funding. Similarly, Baum and Silverman (2004) find that prior founding experience in which the president of the startup is involved has a significantly negative effect towards obtaining VC funding. Furthermore, it is important to note that not all previous findings find a significant positive relationship between human capital and VC funding. Unlike Ko and McKelvie (2018), Franke et al. (2006), and Beckman et al. (2007), Audretsch and Lehmann (2004) show that in a sample of 341 German start-ups, the members of firms' founding team with a doctorate degree has no significant impact on access to VC funding. Similarly, Hall and Hofer (1993) find that the founders’ human capital did not play a role in VC evaluations.

Specifically, they observe that the age and founding experience of the founding team did not play a significant role in the decision for VCs to accept or reject business proposals.

Besides using VC funding as an outcome predictor, previous empirical findings also use growth as an outcome predictor with human capital as a key driver (Barringer et al., 2005; Colombo and Grilli, 2010). Growth as an outcome predictor is relevant to the likelihood of obtaining VC funding since VCs tend to act as "scouts" (Baum and Silverman, 2004; Colombo and Grilli, 2010) which enables them to hand-pick NTBFs with better prospects if the VCs do end up provide funding for them. Barringer et al. (2005) portray a quantitative analysis of 50 fast growing firms and a comparison of 50 slow growing firms ranging from manufacturing to healthcare in the US. By using compound annual growth rate as an indicator for rapid or slow growth, the authors find that prior industry experience and university education significantly increases the likelihood of becoming a rapid-growth company. Similarly, Colombo and Grilli (2010) explore the growth drivers of 439 NTBFs in Italy. By using the number of employees of each firm as a proxy for firm growth, they find that the number of years of managerial education and technical education has a positive indirect effect on firm growth only if the relationship is moderated by access to Venture Capital funding. However, they also find that industry-specific work experience does not have any significant effect on firm growth.

On top of that, new venture valuation is also a popular outcome predictor among previous literature with human capital as a key indicator (Hsu, 2007; Miloud et al., 2012). Similar to growth, new venture valuation as an outcome predictor is relevant to the likelihood of obtaining VC funding since new venture valuation reflects the cost of capital of a venture and, hence, affecting VC evaluations for new venture assessments (Hsu, 2007). Moreover, using data of 149 early stage technology-based startup firms that participated in an MIT educational program, Hsu (2007) finds that prior founding experience significantly increases the likelihood of VC funding through new venture valuation. Additionally, he finds that founding teams with a doctorate degree holder significantly increases the likelihood to be funded by a VC. Moreover, Miloud et al. (2012) emphasize a positive relationship between human capital and venture valuation. Utilizing a sample of 102 new ventures from France, the authors find that founders' founding experience and previous managerial experience significantly and positively affect their valuation by venture capitalists.

Furthermore, analyzing the importance of human capital with regard to the different outcome predictors would be of great value to existing literature. However, due to the data availability and feasibility in CrunchBase, the focus of this thesis will be to only analyze VC funding amount as an outcome predictor. Additionally, this thesis will only focus on two particular dimensions of founders' human capital namely, the level of founders' education

and founding experience. Founders' industry experience is not within the scope of this thesis since CrunchBase does not provide suitable data for it.

Regardless of the data, previous studies have come up with different findings on the relationship between human capital and VC funding amount. It is important to highlight again that all outcome predictors point to a general relationship consensus that human capital positively and significantly increases the obtaining amount of VC funding. Specifically, previous studies give emphasis on founders' education and founders' founding experience having a positive and significant relationship towards obtaining Series A VC funding (Barringer et al., 2005; Franke et al., 2006; Beckman et al., 2007; Hsu, 2007; Colombo and Grilli, 2010; Miloud et al., 2012; Ko and McKelvie, 2018). Whereas, for founders' industry experience, most of the previous studies indicate that founders' industry experience does not have a significant relationship with VC funding (Colombo and Grilli, 2010; Ko and McKelvie, 2018). This suggests that based on the previous literature, only two out of the three subcategories of human capital have a positive relationship with VC funding. With that being said, this thesis proposes the following hypotheses:

H1.1: Higher levels of founders' education significantly increases the Series A VC funding amount for NTBFs

H1.2: Higher levels of founders' prior founding experience significantly increases the Series A VC funding amount for NTBFs

2.2 Social Capital and VC funding

One's social connections can also serve as a conjecture for a founder's success potential (Tinkler et al., 2015). In fact, previous studies consider the role of entrepreneurs' social capital as an important aspect within entrepreneurial finance since social network ties between founders and VC investors influence the selection of ventures to fund, overcoming information asymmetries. Considerable attention on the importance of social capital can be seen in previous studies (Batjargal and Liu, 2004; Hsu, 2007; Zheng et al., 2010; Miloud et al., 2012; Ahlers et al., 2015; Vismara, 2016; Buttice et al., 2017). The competence-based view of new venture social capital is that new venture social capital depicts a significant positive relationship with VC funding. Previous studies have put an attempt to define social capital. Batjargal and Liu (2004) define social capital as capital consisting of different relationship network contacts in which resources are built-in heavily within these contacts. Hsu (2007) claims that social capital is "a person's social characteristics" which includes the ability of having numerous social contacts: social skills and charisma. Regardless of the

different definitions, all social capital definitions mention the importance of social network amount.

Prior studies emphasize that new ventures and founders who are able to largely network and create relationships with their consumers build a successful branding image. Hence, this serves a positive signal to VCs. On top of that, as previously mentioned, social capital has been really prominent in equity crowdfunding activities (Ahlers et al., 2015; Vismara, 2016; Buttice et al., 2017). Ahlers et al. (2015) focuses on the impact of social capital, measured by the share of non-executive directors on the venture's board members, on the likelihood of obtaining funding. However, they find no statistically significant relationship between social capital and funding likelihood. On the other hand, studies that follow after Ahlers et al. (2015) depict contrary findings. Using a sample of 271 projects listed on the UK platforms, Vismara (2016) observes that entrepreneurs launching crowdfunding campaigns with greater social networks have significantly higher likelihoods of successful funding campaigns. Similarly, Buttice et al. (2017) find that entrepreneurs' social capital appears as a key driver for the success of a crowdfunding campaign. Specifically, the authors use the sum number of comments that a serial crowdfunder had gained on previous successful campaigns as a proxy for social capital.

Moreover, previous studies analyzing the relationship between social capital and VC funding also utilize new venture valuation as an outcome predictor (Hsu, 2007; Zheng et al., 2010; Miloud et al., 2012). Within the context of new venture social capital, new venture valuation relates to VC Funding since new venture social capital captures the quality of external relationships that shapes the new ventures' strategies and valuation, and therefore, reduces the rate of failure of financing deals between founders and VCs (Miloud et al., 2012). Specifically, Hsu (2007) finds founders' social capital is positively and significantly affecting new venture valuation. The author proxies social capital using the founding team's social network as a dummy variable. This dummy variable takes into account whether the share of non-founder team members are recruited through the founding team's social network. Similarly, Zheng et al. (2010) emphasize, through their sample of biotechnology companies, a new venture's network positively affects the new venture performance and eventually, the valuation of the company by venture capitalists. Additionally, Miloud et al. (2012) portray the fact that external relationships of a new venture significantly and positively affect its valuation by VCs. In particular, the authors use the venture's network size as a proxy for social capital. Besides that, the author also suggests that venture networks have benefits including technology transfer expertise, efficiency, and abundance of communication.

Above all, it is important to highlight the presence of social capital in obtaining VC funding within new ventures. In fact, Colombo and Grilli (2010) point out an important

limitation within their research relating to VCs' ability to identify the high-prospect value of NTBFs through founders' human capital. Specifically, the authors mention that it may be the case that Italian VC investors rely more on social ties within an "old boys network" than on a rigorous assessment of new ventures' distinguishing capabilities in their investment selection process. This statement implies that Colombo and Grilli (2010) acknowledge the role of social capital in obtaining VC funding even though they did not control for it. Hence, from a VC point of view, the quality and quantity of ventures' network should be definite signals to better quality ventures. Therefore, this thesis proposes a hypothesis as follows:

H2: Higher levels of ventures' number of contacts significantly increases the Series A VC funding amount for NTBFs

2.3 VC funding in emerging economies

It is important to notice that most of the previous literature analyzing how founders' human capital and new venture social capital affects the obtaining VC funding amount utilizes data samples from developed economies specifically in North America (Hall and Hofer, 1993; Davila et al., 2003; Baum and Silverman, 2004; Barringer et al., 2005; Beckman et al., 2007; Tinkler et al., 2015; Ko and McKelvie, 2018) and Europe (Hogan and Hutson, 2005; Colombo and Grilli, 2010; Miloud et al., 2012). This signifies that the external validity of the previous studies is only limited to North America and Europe, which consist mostly of developed economies. Developed economies have a lot of similar aspects within their economic infrastructure. In fact, firms founded within better macroeconomic conditions have greater rates of survival (Box, 2008). Hence, there is a need to improve the external validity by widening the sample. In other words, more credible research needs to be done in economies outside of North America and Europe. A current emerging trend is research within emerging economies (Batjargal and Liu, 2004; Gimmon and Levie, 2010; Matshekga et al., 2013; Nigam et al., 2020).

Emerging economies are fast growing countries that are improving their economic infrastructure to increase the amount of transactions that are dictated by market forces (Ahlstrom & Bruton, 2006). Additionally, emerging economies equip relatively weaker institutions and informal quality signals are much more crucial to alleviate asymmetric information (Nigam et al. 2020). Hence, it is important to raise the fact that emerging economies' weaker and informal institutions suggest that the economy is more prone to larger uncertainties. This further implies that the theory of liability of newness is not the only major concern for new ventures in emerging economies. Besides liability of newness, as previously said, uncertain property rights and goods and services markets are likely to be

within the earlier nascent stage. Therefore, implications for the significance of human capital and social capital may differ for emerging economies relative to developed economies.

2.3.1 VC funding and Human Capital in emerging economies

Founders' human capital is a topic of discussion in previous literature analyzing emerging economies (Gimmon and Levie, 2010; Matshekga et al., 2013; Nigam et al., 2020). Gimmon and Levie (2010) find that founders' human capital significantly increases the amount of obtaining VC funding. After recording a random sample of 193 high-technology start-ups in the Israel incubator program, the authors find that founders' managerial experience and education degree attracts external investment such as VC funding. However, they also find that the founders' general technical and industry experience does not have a significant relationship with the amount of obtaining VC funding. Similarly, Matshekga et al. (2013) find that human capital significantly increases the amount of obtaining VC funding. Specifically, the authors assemble a sample of entrepreneurs in Johannesburg, South Africa and find that human capital variables that illustrate the importance of education and industry experience significantly increase the likelihood of acquiring greater funding. Likewise, Nigam et al. (2020) find that founders' human capital does have a positive and significant impact on the amount of obtaining VC funding. The authors use data of 47 active startups and 55 failed startups operating in the Indian New Technology sector. In particular, the authors find that founders with a degree from an elite educational institute positively associate with the probability of obtaining financing. However, they also find that years of work experience negatively impacts the access to financing of a startup and neither do prior founding experiences.

Above all, the majority of the above studies indicate that human capital significantly increases the amount of obtaining VC funding. Although Nigam et al. (2020) find a negative relationship with regards to years of work experience, prior relevant experience and VC funding amount, their study includes failed startups in which certain information is absent. Additionally, including failed startups would induce survivorship bias (Colombo and Grilli, 2010) in which there may be considerable differences in human capital between the surviving and failed new ventures. Hence, the analysis incurs a flaw which induces bias within their results. It is important to highlight that this thesis will only incorporate startups with complete information in all variables in order to remove sample selection and survivorship bias. Furthermore, the hypothesis for human capital within emerging economies is as follows:

H3.1: In emerging economies, higher levels of founders' education significantly increases the Series A VC funding amount for NTBFs

H3.2: In emerging economies, higher levels of founders' prior founding experience significantly increases the Series A VC funding amount for NTBFs

2.3.2 VC funding and Social Capital in emerging economies

Likewise, founders' social capital is a topic of discussion in previous literature analyzing emerging economies (Batjargal and Liu, 2004; Pham and Talavera, 2018; Nigam et al., 2020). Batjargal and Liu (2004) examines the effect of entrepreneurs' social capital on VCs investment decisions. Using a sample of 158 venture capital decisions in the People's Republic of China, the authors find that entrepreneurs' social capital significantly and positively affects the investment selection decisions of VCs. In particular, the authors highlight that VCs substantiate networks and potential resources of founders. This also links to the cultural tendency of the Chinese to favor entrepreneurs they know (through personal relationships) and use it as a risk-alleviating role in venture financing. Moreover, Pham and Talavera (2004) also find that social capital positively affects the amount of obtaining external financing in the form of loans. By analyzing the manufacturing sector in Vietnam, the authors observe that social capital could facilitate loan applications. Specifically, firms that have a closer relationship with government officials and other business people can get loans with a longer duration. Lastly, Nigam et al. (2020) emphasize that social capital positively affects the amount of obtaining VC funding within the Indian New Technology sector. In particular, the authors find that networking and digital signals, such as social media presence of the startup on multiple social media sites, positively impacts the ability of obtaining VC funding.

Furthermore, it is clear that previous literature portray that social capital positively and significantly affects the amount of obtaining VC funding. Although Pham and Talavera (2018) depicts a relationship between social capital and external loans instead of VC funding, VC funding is practically a type of external loan. Hence, the research of Pham and Talavera (2018) is still within scope of this thesis. Additionally, the literature review within the research of Pham and Talavera (2018) utilizes venture capital funding journals as part of the reasoning behind their social capital hypothesis. Hence, the relevance of the study is valid and considerable within this thesis. Nevertheless, the hypothesis for social capital within emerging economies is as follows:

H3.3: In emerging economies, higher levels of NTBFs' number of contacts significantly increase the amount of Series A VC funding

3. Data and Methodology

3.1 Data

The sample data in this thesis comes from the Crunchbase database. CrunchBase is a database platform for finding business information about private and public companies. The database provides investments and funding information, founding members and individuals in leadership positions, mergers and acquisitions, news, and industry trends. This study only includes data sets with complete information on all variables involved within the analysis specifically due to limited data availability on funding and entrepreneurial information in Crunchbase. Moreover, this study randomly collects a whole sample of 259 US-based NTBFs and 145 India-based NTBFs. However, looking at the data validation from CrunchBase specifically for missing information, there were 59 US-based NTBFs and 8 India-based NTBFs that did not provide information on several aspects (funding amount, founding team information, number of CrunchBase contacts). Hence, this leads to our final sample size of 200 US-based NTBFs and 137 India-based NTBFs. On top of that, this thesis also uses Linkedin specifically to retrieve information regarding founders' level of education and founders' gender identity. Moreover, all companies are classified as Small Medium Enterprises (SMEs) suggesting they have fewer than 250 employees (OECD). Hence, this thesis analyzes new ventures with a maximum company size of 250 employees. The subsequent sub-chapters describe the variables within this thesis. For additional information, Appendix A describes the econometric specifications of the variables in the regression model.

3.1.1 Dependent Variable

3.1.1.1 Total Series A VC Funding

The VC funding will be the dependent variable within this thesis. Specifically, the total VC funding will be the total amount of funding a venture is able to attract in the early Series A funding stage. NTBFs usually require greater funding to support the development process (such as research and development) of their selling products (Gompers, 2022). This thesis utilizes the Series A round specifically since it is one of the earliest stages of funding where track records and historical performance of the venture is still in the nascent stage. Hence, founders' human capital and new venture social capital are one of the signals VCs look towards in their assessment for funding new ventures. The total Series A VC funding is a continuous variable and will only consist of funding from venture capitals and corporate venture capitals. Hence, investments from angel investors, debt financing, crowdfunding and other forms of investments will not be included in this analysis. The CrunchBase data

updates frequently and has data which is valid (Ter Wal et al., 2016). In fact, CrunchBase collects data from more than 350 investment firms providing their investment information (Hallen et al., 2014). Additionally, several recent studies also utilize CrunchBase as their main data source (Ko and McKelvie, 2018; Nigam et al., 2020). Hence, it is with confidence that this thesis uses reliable data on the amount of Series A VC funding.

3.1.2 Independent Variables

3.1.2.1. Founders' level of education

This thesis will use founders' level of education as one of the main independent variables of founders' human capital. Specifically, founders' level of education portrays how high the degree of education a founder has. New ventures often lack organizational performance and historical performance overview such as a stable growth in revenue. Therefore, to assess founders' human capital, the education level will act as the primary sign of ventures with high quality (Grossman, 2005). CrunchBase develops access to Linkedin profiles within the list of entrepreneurs in the database in order to record founders' education. Linkedin acts as a leader in business information services providing individuals' educational information (Ko and McKelvie, 2018). Hence, gaining information in detail on founders' level of education through Linkedin can accurately measure the human capital quality of the new ventures. Additionally, this thesis measures founders' education as each founding member's highest completed degree. Originally, this variable ranges from no degree to doctorate in which is code further into an ordinal multi-categorical variable. Moreover, the decision to code the variable into specific categories of education degrees is due to previous studies having differing views on the impact of NTBF founders with a doctorate degree towards obtaining VC funding amount (Audretsch and Lehmann, 2004; Hsu, 2007). Furthermore, more than 75 percent of the teams within the sample (both US and India) consist of at least two founders. To prevent sample bias within the data, this thesis aggregates the information on human capital of all founding team members and uses the average degree of all founders for founders' education.

3.1.2.2. Founders' founding experience

Moreover, another important aspect of human capital is founders' prior founding experience which is a very strong signal for many founders (Hsu, 2007; Gimmon and Levie, 2010; Ko and McKelvie, 2018). Using the number of new ventures founded by the founding team of each NTBF as a proxy for human capital is important since the experience and learning in prior start-up founding experience relative to prior employment experience is likely to be distinct (Hsu, 2007). Prior start-up founding entails different components such as

raising financial capital, recruiting talent, and serving new ventures' top management team which may not be provided by ordinary work and education experience. CrunchBase collects the number of founded organizations for each founder. In particular, CrunchBase's founders' prior founding experience measures the amount of companies that have been created by the founding team prior to their current operating business. Therefore, similar to founders' education, this thesis aggregates the information on founders' founding experience and uses the average of all founders for founders' founding experience. This variable follows the human capital proxy technique by Hsu (2007) for which the proxy for founders' founding experience is a collective number of start-ups of the founding team. Hence, this variable is continuous since a founder can form numerous companies according to their own interest.

3.1.2.3. Number of CrunchBase contacts

Furthermore, in an effort to measure founders' social capital, this thesis uses ventures' number of contacts. Specifically, this thesis aggregates the number of social contacts for each venture within the dataset. The number of contacts variable is a legitimate variable to proxy for social capital due to several reasons. First, the number of contacts a new venture has can be an important resource in recruiting staff and establishing ties with venture capitalists (Hsu, 2007). In particular, it is a proxy for measurable consequences such as the founding team's ability to hire from their personal network. Secondly, the number of contacts or social ties are an important medium where interpersonal obligations and trust forms among parties (Tinkler et al, 2015). With a continuous nature of the variable, using the number of contacts as a proxy can accurately measure the quality of social capital within a venture. Additionally, CrunchBase records the total number of CrunchBase contacts that associate with each venture's founder and is updated regularly. Hence, data validity should not be an issue when measuring the number of CrunchBase contacts.

3.1.3 Control Variables

This thesis controls for four additional variables including Gender, Geographic Location, Firm Age, and Number of Founders of each NTBF. The Gender variable is taken into account for cultural beliefs about gender influencing the evaluative processes of VC financing (Coleman and Robb, 2009; Tinker et al, 2015). Specifically, the gender variable takes into account whether the NTBFs have at least 1 female co-founder within their founding team. Therefore, the dummy is coded as 1 if NTBFs have at least 1 female co-founder, otherwise the dummy is coded as 0. According to data from the US, the distribution of NTBFs having a female cofounder includes 44 NTBFs out of a total 200 NTBFs (22% of the total US-based NTBF sample). Whereas, data from India suggest that

there are 14 NTBFs having a female co-founder out of a total 137 NTBFs (10.2% of the total India-based NTBF sample).

Moreover, this thesis also controls for geographic location to account for spatial proximity between NTBFs and VCs (Sorensen and Stuart, 2001; Nigam et al., 2020). In particular, it is important to note that all countries have premium cities, namely Tier 1 cities, in which NTBFs are likely to attract greater investments relative to other cities (Nigam et al., 2020). The geographic location variable is a dummy and is coded as 1 if the location of the NTBF is in a Tier 1 city. Otherwise it is coded as 0 if the NTBF is located in other areas. Further, Appendix B depicts the distribution of NTBFs within Tier 1 cities in the US and India in greater detail.

Additionally, the firm age of the NTBF is also one of the control variables within this thesis since venture capitalists may prefer to invest in NTBFs which are more established within their existing markets (Shane and Stuart, 2002; Hsu, 2007). Specifically, the firm age of each NTBF is calculated manually between their founding date to the current year, 2022. CrunchBase only provides the founding date of each NTBF and hence, the firm age had to be manually calculated. With that being said, firm age is a continuous variable with a maximum of 10 years founding age. The reason for adapting the 10-year range is that it snapshots the transition from a nascent venture to a more adolescent venture (Ko and McKelvie, 2018).

Furthermore, this thesis also controls for the amount of founders within a founding team since the size of a founding team has been linked to financial performance (Gompers, 2022) and can be a proxy for human capital (Baum and Silverman, 2004). In this thesis, the founding team variable is a continuous variable since there is a high variation of founding members within the sample of NTBFs in the US and India. This may influence the results since an NTBF with 3 founding members may have a different effect towards obtaining VC funding relative to an NTBF with 6 or 7 founders, for example. CrunchBase provides a list of founders within each NTBF in great detail. Hence, there is complete information on the number of founders within each NTBF.

3.2 Methodology

In order to empirically evaluate the impact of founders' human capital and social capital on Series A VC funding, this thesis will use a simple Ordinary Least Squares (OLS) multiple regression. Hence, the OLS method allows us to test H1a, H1b, and H2:

$$VCfundingSeriesA_i = \alpha + \beta_1 Education\_degree_i + \beta_2 NumberofVenturesFounded_i + \beta_3 NumberofContacts_i + \sum \beta_k X_i + e_i \quad (1)$$

where i denotes each venture

VCfundingSeriesA	=	A venture's total amount of Series A funding
Education_degree	=	A venture's founders' highest level of education
NumberofVenturesFounded	=	A ventures's founders' founding experience
NumberofContacts	=	A venture's founders' number of contacts
X_i	=	Set of control variables
e_i	=	The error term

This thesis uses STATA statistical software to conduct all OLS regression models which includes two steps. First, the thesis estimates a regression model to predict the amount of Series A VC funding as a function of the different independent variables and control variables as discussed earlier. Secondly, this analysis confirms there is no multicollinearity between the variables as the variance inflation factors (VIFs) magnitude are below 10 (Ko and McKelvie, 2018). Appendix C and D depicts an empirical overview of the VIFs.

4. Results

4.1 Descriptive Statistics, Correlation Matrix and Regression Results

To give an overview of the data usage within the analysis, this thesis will provide an overview on the descriptive statistics and correlation matrix of all the variables within the models. Table 1 and 2 carefully depicts the descriptive statistics of all the variables in the regression models with samples from the US and India, respectively. Table 1 depicts the average value of VC Funding in the Series A stage is 1.25 e+07 (12.5 million) US dollars with a data range of over 6.4 million US dollars. Similarly, table 2 shows that the average value of VC Funding in the Series A stage is 5.6 million USD with a data range of over 4.3 million USD. The wide range statistic for VC funding in table 1 and 2 signifies that the sample within the analysis consist of 337 NTBFs in total with each having their own different funding goal. The funding goal of each venture is always on the basis of their new ventures' business needs and targets. Thus, this thesis acknowledges this drawback in which it will be elaborated comprehensively in the limitations section. With that being said, it is important to

note that NTBFs from the US have greater average VC funding relative to Indian NTBFs. This is in line with the general argument that emerging economies tend to have greater uncertainties due to uncertain property rights and markets tend to be in the nascent stage. Therefore, given the expected uncertainties, NTBFs find it relatively challenging to obtain VC funding in emerging economies.

To proxy for social capital, this paper uses the number of CrunchBase contacts of the NTBFs. Moreover, table 1 and 2 also depicts the descriptive statistics of human capital and social capital. Specifically, it shows the average values, standard deviation and ranges from the second row until the fourth row. In general, NTBFs in the US have slightly higher averages relative to Indian NTBFs for both human and social capital variables. With regards to Education degree the average value for NTBFs in the US is 1.410 with a standard deviation of 0.659. Indian NTBFs have slightly lower average education degrees with 1.307 and standard deviation of 0.563. On average, this indicates that the NTBF founders in the sample have at least completed a bachelor's degree. Similarly, the Number of ventures founded depicts relatively a similar outlook with Indian NTBFs having slightly a greater Number of ventures founded. Acting as a continuous variable, the Number of ventures founded by the founding team of each NTBF from the US is 1.675 new ventures with a standard deviation of 1.027. Whereas, Indian NTBFs have an average number of ventures founded of 1.708 new ventures with a standard deviation of 1.573. In contrast, the average number of contacts within each NTBFs differ between the US and India. Empirically, the average number of contacts for NTBFs from the US is 18.375 contacts with a standard deviation of 17.209. Whereas, the average number of contacts for Indian NTBFs is slightly lower with 11.307 contacts and a standard deviation of 9.396. Additionally, the range of number of contacts differs significantly between the two countries. NTBFs from the US have a range of 98 contacts, whereas Indian NTBFs only have a range of 61 contacts. Moreover, Appendix A depicts a more comprehensive econometric overview of how the binary variables are expressed.

Furthermore, table 3 and 4 portrays the bivariate correlations between the dependent, independent and control variables within the thesis for NTBFs in the US and India, respectively. On the whole, VC Funding in the Series A stage associates positively with education degree, number of contacts, and geographic location. Whereas, VC Funding in the Series A stage associates negatively with gender, firm age and number of founders variables. However, the relationship between VC Funding in the Series A stage and Number of ventures founded portray a contrasting relationship between NTBFs in the US and India. Specifically, this thesis finds VC Funding in Series A associates positively with the Number of ventures founded for NTBFs in the US. Whereas, VC Funding in Series A associates negatively with the Number of ventures founded for Indian NTBFs.

Table 1. Descriptive Statistics of NTBFs from the US

Variables	Mean	Standard Deviation	Minimum	Maximum	Number of Observations
VC Funding Series A	1.25e+07	9127195	100000	6.50e+07	200
Education degree	1.410	0.659	0	3	200
Number of ventures founded	1.675	1.027	1	7	200
Number of Contacts	18.375	17.209	0	98	200
Gender	0.220	0.415	0	1	200
Geographic Location	0.400	0.415	0	1	200
Firm Age	5.885	2.460	1	10	200
Number of Founders	2.185	0.962	1	6	200

Table 2. Descriptive Statistics of NTBFs from India

Variables	Mean	Standard Deviation	Minimum	Maximum	Number of Observations
VC Funding Series A	5642195	6712550	3473	4.33e+07	137
Education degree	1.307	0.563	0	3	137
Number of ventures founded	1.708	1.573	1	14	137
Number of Contacts	11.307	9.396	1	62	137
Gender	0.102	0.304	0	1	137
Geographic Location	0.664	0.474	0	1	137
Firm Age	6.372	2.550	1	10	137
Number of Founders	2.372	1.213	1	8	137

Table 3. Bivariate Correlation matrix of NTBFs from the US

Variables	VC Funding Series A	Education degree	Number of ventures founded	Number of Contacts	Gender	Geographic Location	Firm Age	Number of Founders
VC Funding Series A	1.000							
Education degree	0.142**	1.000						
Number of ventures founded	0.247***	-0.018	1.000					
Number of Contacts	0.149*	-0.062	0.008	1.000				
Gender	-0.140*	0.054	-0.067	-0.136	1.000			
Geographic Location	0.140*	-0.028	0.100	-0.039	-0.064	1.000		
Firm Age	-0.116	-0.160**	-0.023	0.397***	-0.005	-0.049	1.000	
Number of Founders	-0.030	0.094	-0.061	-0.012	0.027	-0.062	-0.076	1.000

Note. ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1

Table 4. Bivariate Correlation matrix of NTBFs from India

Variables	VC Funding Series A	Education degree	Number of ventures founded	Number of Contacts	Gender	Geographic Location	Firm Age	Number of Founders
VC Funding Series A	1.000							
Education degree	0.171**	1.000						
Number of ventures founded	-0.119	-0.048	1.000					
Number of Contacts	0.272**	-0.003	-0.071	1.000				
Gender	-0.068	0.116	-0.076	0.079	1.000			
Geographic Location	0.028	-0.107	-0.083	0.018	-0.066	1.000		
Firm Age	-0.464***	-0.049	-0.121	-0.177**	-0.021	0.037	1.000	
Number of Founders	-0.075	0.026	-0.020	0.034	0.115	-0.091	-0.029	1.000

Note. ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1

Following the descriptive statistics and bivariate correlations of all variables, it is important to examine the results of all regression models. Table 5 and 6 depicts the OLS regression of VC Funding in Series A stage on different sources of founders' human capital and new venture social capital for NTBFs in the US and India, respectively. In particular, table 5 and 6 consists of four columns each portraying the results of 4 different models to test the hypotheses. The first columns (models 1 and 5) represent the direct effect of VC Funding Series A on the different education degrees, setting no education degree as the reference category. It is with intention that model 1 will directly test hypothesis 1.1 and model 5 to directly test hypothesis 3.1. Moreover, the second columns (models 2 and 6) resemble the direct effect of VC Funding Series A on founders' number of ventures founded. Hence, the model 2 will aim to directly test hypothesis 1.2 and model 6 will directly test hypothesis 3.2. Further, the third column (models 3 and 7) reports the direct effect of VC Funding Series A on the number of CrunchBase contacts of an NTBF. Therefore, model 3 will attempt to

directly prove hypothesis 2 and model 7 will directly test hypothesis 3.3. Lastly, the fourth column (models 4 and 8) depicts the full OLS regression model using all the variables in the analysis.

Table 5. The relationship between VC funding in Series A with different sources of founders' human capital and new venture social capital for US-based NTBFs

	(1) VC Funding Series A	(2) VC Funding Series A	(3) VC Funding Series A	(4) VC Funding Series A
Education degree				
Bachelor's Degree	7099789** (3080247)			5515708* (3002054)
Master's Degree	8790327*** (3155927)			7251921** (3067981)
Doctorate Degree	7705209* (4092289)			7331613* (3942851)
Number of ventures founded		2001426*** (612894)		1944614*** (595779)
Number of Contacts			115701*** (40054)	104155*** (39342)
Gender	-3244345* (1523245)	-2617166* (1504006)	-2278985 (1526531)	-2306870 (1486114)
Geographic Location	2463740* (1288539)	1920204 (1278269)	2410055* (1281069)	2114290* (1244566)
Firm Age	-362346 (260459)	-399069 (253910)	-739218*** (278450)	-623950** (272375)
Number of Founders	-438036 (661644)	-196703 (651029)	-349719 (653805)	-336739 (637384)
Constant	-438036** (3756358)	1.17e+07**** (2612744)	1.50e+07*** (2379737)	5380052 (3761792)
N	200	200	200	200
R^2	0.088	0.100	0.089	0.166

Note. The reference category for the education degree variable is founders with no degree. Standard errors are in parenthesis for each variable. ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1

Table 6. The relationship between VC funding in Series A with different sources of founders' human capital and new venture social capital for India-based NTBFs

	(5) VC Funding Series A	(6) VC Funding Series A	(7) VC Funding Series A	(8) VC Funding Series A
Education degree				
Bachelor's Degree	-424350			655406
	(2536740)			(2462401)
Master's Degree	2354984			3183365
	(2611762)			(2528430)
Doctorate Degree	-1355120			-1932157
	(6372520)			(6135338)
Number of ventures founded		-781846**		-665353**
		(324307)		(316030)
Number of Contacts			147547***	140450**
			(54296)	(53479)
Gender	-2404802	-2259815	-2296853	-3050768*
	(1689977)	(1676499)	(1666827)	(1636929)
Geographic Location	721281	214721	333735	472326
	(1084573)	(1072948)	(1063645)	(1047745)
Firm Age	-1231276***	-1295599***	-1142435***	-1185505***
	(198851)	(198926)	(199460)	(196400)
Number of Founders	571405	530256	576689	-582174
	(427809)	(419678)	(417652)	(411849)
Constant	1.14e+07***	1.41e+07****	9898809***	9905306***
	(2963330)	(1919927)	(1936138)	(3145908)
N	137	137	137	137
R^2	0.270	0.265	0.273	0.334

Note. The reference category for the education degree variable is founders with no degree. Standard errors are in parenthesis for each variable. ***p-value < 0.01, **p-value < 0.05, *p-value < 0.1

4.1.1 Hypothesis 1

4.1.1.1 Hypothesis 1.1

It is important to recall that hypothesis 1.1 analyzes whether higher levels of founders' education level significantly increases the Series A VC funding amount for NTBFs. The regression analyzing this effect can be seen in model 1 for NTBFs in the US. Model 1 includes Series A VC funding amount as the dependent variable and Education degree as the independent categorical variable. Additionally, model 1 also includes a full set of control variables. Looking at the regression, model 1 shows that the relationship between Series A VC Funding amount is positive and statistically significant for NTBF founders with a bachelor's degree as well as NTBF founders with a master's degree. Specifically, NTBF founders with a bachelor's degree increase the obtaining amount of Series A VC funding persists at the 5% significance level with a coefficient of 7099789, ceteris paribus. In addition, NTBF founders with a master's degree increase the obtaining amount of Series A VC funding persists at the 1% level with a coefficient of 8790327, ceteris paribus. Thus, NTBF founders with a master's degree have a stronger positive effect with a greater coefficient relative to founders with a bachelor's degree. In addition, NTBF founders with a doctorate degree increase the Series A VC Funding amount with a coefficient of 7705209 significant at the 10% significance level, ceteris paribus. Similarly, model 4 comprising all the variables in the analysis also depicts a positive and significant result for all levels of education degrees. Although, model 4 portrays a slightly lower coefficient and has less significance relative to model 1.

Overall, the regression results for hypothesis 1.1 indicate a positive and significant result for all education levels of NTBF founders. This further indicates that there is an effect between Series A VC funding amount and founders' education level. This finding is in line with previous literature reporting a positive significant effect between VC Funding amount and founders' education level (Barringer et al., 2005; Franke et al., 2006; Beckman et al., 2007; Hsu, 2007; Colombo and Grilli, 2010; Miloud et al., 2012; Ko and McKelvie, 2018). Hence, higher degree of education positively and significantly increases Series A VC funding amount for NTBFs in the US. With that being said, this thesis accepts hypothesis 1.1: higher levels of founders' education level significantly increases the Series A VC funding amount for NTBFs.

4.1.1.2 Hypothesis 1.2

In addition, it is important to highlight that hypothesis 1.2 analyzes whether higher levels of founders' prior founding experience significantly increases the Series A VC funding amount for NTBFs. Model 2 portrays the regression results analyzing the founding

experience effect inclusive with the full set of control variables within NTBF samples in the US. Using the Number of ventures founded as a proxy for founders' prior founding experience, model 2 shows a positive association between Series A VC funding amount and average number of founded ventures significant at the 1% significance level. Specifically, an additional venture founded by an NTBF founder significantly increases the obtaining amount of Series A VC funding with a coefficient of 2001426, ceteris paribus. A similar result is seen in model 4 as model 4 includes all variables in the analysis and also depicts a positive and significant at the 1% significance level, with a slightly lower coefficient of 1944614, ceteris paribus.

Therefore, the regression results suggest that there is a positive effect between founders' prior founding experience and VC funding. These results are in line with previous studies stating that there is a significant positive effect between Series A VC funding and founders' prior founding experience (Barringer et al., 2005; Franke et al., 2006; Hsu, 2007; Colombo and Grilli, 2010; Miloud et al., 2012; Ko and McKelvie, 2018). Additionally, this finding is not in line with several older previous studies (Hall and Hofer, 1993; Beckman et al., 2007) suggesting that prior founding experience did not play a significant role. Even if the effect is significant, it would be negatively associated with VC funding. Nevertheless, this thesis accepts hypothesis 1.2: higher levels of founders' prior founding experience significantly increases the Series A VC funding amount for NTBFs.

4.1.2 Hypothesis 2

Moreover, hypothesis 2 analyzes whether a higher number of contacts significantly increases the Series A VC funding amount for NTBFs. By utilizing NTBFs from the US, the third column denotes the regression results that examines the social capital effect with the full set of control variables. Model 3 results suggest that there is a positive association between Series A VC funding with the number of contacts which is significant at the 1% significance level. Specifically, an additional number of CrunchBase contacts increases Series A VC funding with a coefficient of 115701, ceteris paribus. Model 4 also portrays a similar result with all the variables inclusive in the analysis. Persisting at the 1% significance level, model 4 shows that an additional number of CrunchBase contacts significantly increases Series A VC funding with a relatively lower coefficient of 104155, ceteris paribus.

Above all, this is in line with previous literature stating the competence view that VC funding and social capital portray a positive and significant relationship (Hsu, 2007; Zheng, 2010; Miloud et al, 2012, Vismara, 2016; Buttice, 2017). However, this finding is not in line with the study of Ahlers et al. (2015) claiming that there is no significant relationship between social capital and funding likelihood. All in all, the results within this thesis suggest that the more contacts an NTBF founding team has, the greater the obtaining Series A VC funding

amount. With that being said, this thesis accepts hypothesis 2: higher levels of ventures' number of contacts significantly increases the Series A VC funding amount for NTBFs.

4.1.3 Hypothesis 3

4.1.3.1 Hypothesis 3.1

Despite the results for hypothesis 1 and 2, it is important to highlight the relevance of the results within emerging economies. Hypothesis 3.1 analyzes one of the human capital aspects, specifically on whether higher levels of founders' education significantly increases the Series A VC funding amount for NTBFs in emerging economies. As a representative for emerging economies, this thesis randomly selects 137 NTBFs from India. The regression analyzing this effect can be seen in model 5. Model 5 derives the relationship between Series A VC funding amount and founders' level of education degree inclusive with the full set of control variables. By examining the regression results, model 5 emphasizes that there is no significant relationship between Series A VC funding amount and founders' level of education degree. Similarly, this thesis also does not find any significant relationship for this particular relationship in model 8. Model 8 includes all the variables in the analysis for India-based NTBFs.

Further, this finding is not in line with all the previous studies (Gimmon and Levie, 2010; Matshekga et al., 2013; Nigam et al., 2020). Moreover, it is important to note that the analysis Nigam et al. (2020) also utilizes NTBFs from the Indian New Technology sector. However, Nigam et al. (2020) includes a sample of 55 failed startups operating in India. The authors further highlight that the information on the 55 failed startups tend to be "absent". Hence, the validity of their results may be in question. Similarly, Matshekga et al. (2013) conducts questionnaires in order to obtain data from new ventures in which they did not take into account firm survivorship bias. Moreover, Gimmon and Levie (2010) has a significantly different methodology relative to this thesis. Specifically, Gimmon and Levie (2010) obtain data by conducting surveys with NTBF founders operating under similar founding situations, seed funding conditions and supportive logistics as provided by their incubators. Hence, this shows that the methodology by Gimmon and Levie (2010) controls for the founders' conditions to a granular level such as seed funding conditions and supportive logistics. Whereas, this thesis took a sample of Indian NTBFs from CrunchBase in which controlling for granular level conditions is not possible. Regardless, this thesis rejects hypothesis 3.1: In emerging economies higher levels of founders' education significantly increases the Series A VC funding amount for NTBFs.

4.1.3.2 Hypothesis 3.2

Moreover, hypothesis 3.2 analyzes whether higher levels of founders' prior founding experience significantly increases the Series A VC funding amount for NTBFs in emerging economies. Model 6 displays the regression results for this specific effect. Looking at the regression results, model 6 shows that there is a negative and significant relationship between Series A VC funding and the number of ventures founded inclusive with a full set of control variables. Specifically, an additional new venture founded significantly decreases Series A VC funding with a coefficient of -781846 persisting at the 5% significance level, ceteris paribus. Similarly, model 8 inclusive of all variables also show a negative relationship between Series A VC funding and number of ventures founded with a lower coefficient of -665353 significant at the 5% significance level.

Therefore, this finding is not in line with most previous studies indicating a positive and significant relationship between VC funding and founders' prior founding experience (Barringer et al., 2005; Franke et al., 2006; Hsu, 2007; Colombo and Grilli, 2010; Miloud et al., 2012; Ko and McKelvie, 2018). Regardless, this finding is in line with notable previous studies (Baum and Silverman, 2004; Beckman et al., 2007; Nigam et al., 2020). Previous studies emphasize two reasons for the negative relationship between VC funding and prior founding experience. Firstly, founders of new ventures that do not receive sufficient VC funding may need more founding experience (Beckman et al., 2007). Even though prior founding experience decreases the amount of obtaining VC funding, Beckman et al. (2007) find that prior founding experience significantly increases the rate of IPO. Hence, new ventures that did not get an IPO may need more founding experience in order to gain IPO and more importantly, attract VC funding. Secondly, it may be that VCs perceive NTBF founders with a lot of founding experience to have greater failure experiences (Baum and Silverman, 2004). Additionally, it may be challenging to obtain VC funding for founders with greater failure experiences in the past. In that regard, this thesis rejects hypothesis 3.2: In emerging economies, higher levels of NTBFs' number of contacts significantly increase the amount of Series A VC funding.

4.1.3.3 Hypothesis 3.3

Furthermore, hypothesis 3.3 discusses the new venture social capital aspect. Specifically, hypothesis 3.3 analyzes whether higher levels of NTBFs' number of contacts significantly increase the amount of Series A VC funding in emerging economies. Referring back to table 6, model 7 displays the regression results analyzing the relationship between Series A VC funding and NTBFs' number of contacts. The results of model 7 indicate that there is a positive and significant effect between Series A VC funding and NTBFs' number of contacts significant at the 1% significance level. In particular, an increase in NTBFs' number

of contacts significantly increases Series A VC funding amount with a coefficient of 147547, ceteris paribus. Likewise, model 8 includes all variables in the analysis where it also finds a positive relationship between NTBFs' number of contacts and Series A VC funding amount with a relatively lower coefficient of 140450 and significant at the 5% significance level.

With that being said, the results of model 6 are in line with previous studies analyzing external funding and new venture social capital in emerging economies (Batjargal and Liu, 2004; Pham and Talavera, 2018; Nigam et al., 2020). Thus, it is also in line with the tendency of emerging economies to rely on informal quality signals to attract external funding or alleviate asymmetric information (Nigam et al., 2020). This also relates to the "old boys network" implications put forward by Colombo and Grilli (2010) in which VCs tend to invest only in new ventures with the highest mutual contacts with founding members. Nevertheless, this thesis accepts hypothesis 3.3: In emerging economies, higher levels of NTBFs' number of contacts significantly increase the amount of Series A VC funding.

5. Conclusion and Discussion

Overall, this thesis examines how founders' human capital and new venture social capital impacts the amount of VC funding. Additionally, this thesis provides a comparative overview of the effect by comparing a developed economy (United States) and an emerging economy (India). Hence, this results in the proposed research question: ***How does founders' human capital and new venture social capital affect early stage VC funding of NTBFs?***

After proposing the research question, this thesis attempts to empirically answer the research question by using the OLS regression method. In addition, this thesis adds value to literature and finds three significant points. Firstly, this thesis analyzes the importance of founders' human capital in obtaining VC funding. This thesis deduces that the relationship is significantly positive for NTBFs in the US. In other words, NTBF founders with a higher education degree and an additional prior number of ventures founded increases the obtaining amount of Series A VC funding. This result is in line with most of the previous studies analyzing founders' level of education and VC funding in developed economies (Barringer et al., 2005; Franke et al., 2006; Beckman et al., 2007; Hsu, 2007; Colombo and Grilli, 2010; Miloud et al., 2012; Ko and McKelvie, 2018). Essentially, this justifies the general notion that VCs look at founders' level of education as a signal for venture quality (Hsu, 2007). Specifically, founders' level of education is tied with opportunity cost and hence, VCs perceive highly educated founders to have attractive NTBFs especially for survival in the longer term. Whereas, prior founding experience reflects the ability for NTBFs to commercialize their product offerings or to maneuver changes within the industry of interest (Ko and McKelvie, 2018).

Secondly, this thesis examines the effect of new venture social capital in obtaining VC funding. In particular, this thesis deduces that an additional number of CrunchBase contacts significantly increases Series A VC funding for NTBFs in the US. Thus, this result is in line with most previous literature studying new venture social capital and VC funding (Batjargal and Liu, 2004; Hsu, 2007; Zheng et al., 2010; Miloud et al., 2012; Vismara, 2016; Buttice et al., 2017). However, this finding is not in line with the crowdfunding study by Ahlers et al. (2015) claiming that there is no significant relationship between social capital and funding likelihood. Despite the alignment of the study, it is important to recognize that Ahlers et al. (2015) study is based on equity crowdfunding projects in which they use the share of non-executive directors in a venture as the proxy for social capital. This proxy is not justifiable since the effect a non-executive director has towards supporting a venture is not identical to all other non-executive directors in other NTBFs. For example, a single non-executive director within NTBF A may have twice the effect in helping a venture relative

to two non-executive directors in NTBF B. Nevertheless, this finding shows that VCs take into account new venture social capital as an important criteria for funding NTBFs. Several implications include that new venture social capital can overcome information asymmetries (Tinkler et al., 2015) as well as benefiting from technology transfer and communication abundance (Miloud et al., 2012).

Lastly, this thesis provides a comparative outlook of founders' human capital and new venture social capital on Series A VC funding. Specifically, this thesis compares the regression results between a developed and an emerging economy with the US and India as the representative for each type of economy, respectively. Providing an outlook comparison between a developed and an emerging economy is essential to improve the external validity in the current literature. Currently, there is only a handful of literature analyzing VC funding with various types of capital within emerging economies (Batjargal and Liu, 2004; Gimmon and Levie, 2010; Matshekga et al., 2013; Nigam et al., 2020). Hence, to provide the comparative analysis, this thesis constructs a sub-question: ***Does higher quality of founders' human capital and new venture social capital significantly increase early stage Series A VC funding of NTBFs in developed and emerging economies?***

This thesis concludes significantly different findings with respect to NTBFs in India relative to the US especially for founders' human capital. The general relationship consensus between VC funding and founders' human capital is a positive and significant relationship. However, this thesis finds that the relationship between Series A VC funding and founders' level of education is not significant. This is not in line with the majority of previous studies analyzing founders' level of education and VC funding in emerging economies (Gimmon and Levie, 2010; Matshekga et al., 2013; Nigam et al., 2020). Essentially, this finding implies that founders' level of education may be less of an importance for VCs in India.

Additionally, this thesis also finds that the relationship between Series A VC funding and founders' prior founding experience is negative and significant. This finding is not in line with most previous studies analyzing prior founding experience and VC funding (Barringer et al., 2005; Franke et al., 2006; Hsu, 2007; Colombo and Grilli, 2010; Miloud et al., 2012; Ko and McKelvie, 2018). However, this finding is in line with several previous studies (Baum and Silverman, 2004; Beckman et al., 2007; Nigam et al., 2020). The reasons for the negative effect include the majority of the startups may need more founding experience and VCs may perceive NTBF founders with a lot of founding experience to have greater failure experiences.

With regards to the new venture social capital in India, this thesis finds a positive and significant relationship between Series A VC funding and number of contacts. Thus, this finding is in line with most previous studies analyzing new venture social capital in emerging economies (Batjargal and Liu, 2004; Pham and Talavera, 2018; Nigam et al., 2020). Further,

this supports the ideology of emerging economies relying on informal quality signals to attract external funding. Overall, the above findings indicate that the system on how VCs work is significantly different between a developed economy such as the US and an emerging economy such as India. VCs in the US place importance for both founders' human capital and new venture social capital when assessing the funding potential of an NTBF. Whereas, India uses the "old boys network" concept where VCs would rather invest in NTBFs with larger social networks and greater mutual contacts.

Moreover, this thesis identifies certain limitations when interpreting the results. Firstly, this thesis analyzes the specific effect of different sources of capital towards Series A VC funding. However, this thesis does not control whether the funding goals of an NTBF have been met. Initially, this thesis assumes that NTBFs within the same industry (SaaS) would not have significantly differing goals. Table 1 and 2 depicts the high variation in Series A VC funding, specifically the wide range between the minimum and maximum points in the sample. This indicates that each NTBF has their own funding goal. Besides, not all NTBFs seek large VC funding amounts since it might dilute their stake of equity (Ko and McKelvie, 2018). Future research should take into account NTBF funding goals when analyzing human capital and new venture social capital. Perhaps using a categorical variable for whether the NTBF has met their funding goals after securing their Series A funding round as the basis for the dependent variable. Secondly, this thesis does take into account the university reputation in which the founder attained their degree. Additionally, this thesis also does not take into account whether the founder graduates from a technical or management university. NTBFs especially SaaS ventures would need at least an entry level of engineering knowledge in building the Software. Future research should take into account these effects by using a categorical variable of whether the NTBF founder has a degree from a technical or a management university. Thirdly, with regards to new venture social capital, this thesis does not control for the socioeconomic importance of each CrunchBase contact the founder has. Having more CrunchBase contacts does not necessarily imply a better network if the contact itself does not provide socioeconomic support to the NTBF. Fourth, this thesis uses a multivariate OLS regression method in which possible endogeneity concerns may arise. Additionally, controlling for omitted variable(s) is important for validity. Hence, future research should consider other methods to tackle endogeneity concerns or use additional variables such as industry experience within their human capital analysis. Lastly, the validity of the data and results are restricted to the data platform this thesis uses, CrunchBase and Linkedin. Several discrepancies such as verifiability of the data may be of concern since not all NTBFs have sufficient information in CrunchBase. Thus, future research should cross-check data with other databases such as Tracxn, Dealroom, Pitchbook, etc., in order to verify the collected data.

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7. Appendix

Appendix A. Description of variables

Variable Name	Description	Source
Dependent Variable Definition		
Total Series A VC Funding	Continuous variable that measures the total Series A VC funding of an NTBF	CrunchBase
Independent Variable Definitions		
Founders' level of education	Multi-categorical variable that measures the education degree of the NTBF founders. 0 - No degree 1 - Bachelor's degree 2 - Master's degree 3 - Doctorate degree	CrunchBase and Linkedin
Number of ventures founded	Continuous variable that measures the average number of ventures founded of each NTBFs founding team	CrunchBase
Number of CrunchBase contacts	Continuous variable that measures number of social contacts affiliated with the NTBF founder	CrunchBase
Control Variable Definitions		
Gender	Dummy variable that takes the value 1 if at least one of the founders is female and 0 otherwise.	Linkedin
Geographic Location	Dummy variable that takes the value 1 if the NTBF is located in a tier 1 city and 0 otherwise.	CrunchBase
Firm Age	Continuous variable that measures the age of the firm in years calculated from their founding year until the present year 2022.	CrunchBase
Number of Founders	Continuous variable that measures the total number of founders in each NTBF.	CrunchBase

Appendix B. Distribution of NTBFs within Tier 1 cities in the US and India

Tier 1 Cities	Number of NTBFs
San Francisco	53
New York	25
Chicago	2
Bangalore	63
Mumbai	14
Chennai	4

Appendix C. VIFs of all variables for NTBFs in the US

Variables	VIF	1/VIF
Education Degree		
Bachelor's degree	6.13	0.163
Master's degree	5.92	0.169
Doctorate degree	2.03	0.493
Number of Ventures founded	1.02	0.977
Number of Contacts	1.25	0.798
Gender	1.04	0.960
Geographic Location	1.02	0.979
Firm Age	1.23	0.815
Number of Founders	1.03	0.973

Appendix D. VIFs of all variables for NTBFs in India

Variables	VIF	1/VIF
Education degree		
Bachelor's degree	6.04	0.166
Master's degree	6.00	0.168
Doctorate degree	1.17	0.854
Number of Ventures founded	1.05	0.956
Number of Contacts	1.07	0.936
Gender	1.05	0.948
Geographic Location	1.03	0.968
Firm Age	1.07	0.931
Founding Team	1.06	0.947