Overcoming the financial chasm of new business ventures:

A conceptual model of venture capital ecosystems – comparative case study between Silicon Valley and the Netherlands

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"*Research is what I'm doing when I don't know what I'm doing.*"

– Wernher von Braun –

Acknowledgements

We live in an era where we have an abundance of study choices, which as many know is sometimes more a curse than a blessing (also known in the urban dictionary as the 'Netflix Syndrome'). I, therefore, feel genuinely grateful to have a found a study and thesis subject that has truly unleashed my intrinsic interest, curiosity and motivation. With great pleasure, I am presenting you my master thesis, which represents an important personal milestone – the end of my student career.

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Summary

Venture capital (VC) and startups are a natural duo. While startups create disruptive and incremental innovations with their technical and creative expertise, many lack the financial resources to grow their company. VC funds provide this needed finance – in addition to business acumen – in exchange for an equity share of their company, with the hope that this risky investment will produce a significant return.

Though the importance of adequate VC stimulation in the startup community is well discussed and agreed upon by many studies, as a theoretical concept, ecosystems of VC remain underdeveloped, making it difficult to comprehend how a VC ecosystem works, and more importantly, how to improve one. Nations hope to improve their VC activity and therefore their global competitiveness, by consulting the current VC literature and other comparative VC publications (scoreboards, case studies and regional benchmarks), but these do not approach VC from an ecosystem perspective, which might explain the discrepancy in their results and conclusions. The absence of an ecosystem perspective in VC literature, results in a lack of a holistic understanding of the mechanisms of a venture capital ecosystem (VCE). Consequently, this shortage of comprehension might explain why current studies do not provide the reasons for the shortcoming of the Dutch VCE. This is the first study to take the ecosystem perspective of the entrepreneurial ecosystem (EE) theory in the field of VC and seeks to answer the following main research question:

How can the Dutch venture capital be improved through a conceptual model, which explains the determinants influencing the development of a venture capital ecosystem?

The answer to this question results in two main deliverables, which are approached subsequently:

1) A conceptual venture capital ecosystem model

A theoretical framework – obtaining the VC determinants – is developed with the use of a literature review. This theoretical framework is viewed from the EE theory by Spigel (2017 & 2018), to develop a draft of the VCE model. The EE is chosen as a theory lens as this theory:

- provides a holistic perspective incorporating social, cultural and economic forces needed to explore the VC activity on a country level, which reduces complexity and brings more clarity by categorising VC determinants into cultural, social and material categories;
- highlights the uniqueness of the VC mechanisms by setting VC as the focal point in an ecosystem; thus, enabled a control of the observation of interest;
- provides insights into the nature of determinants (categories), thus providing the required 'levers' to give more concrete recommendations for decision makers.
- highlights possible VC determinants, which were not researched in the current literature of VC and could now be brought to light;
- takes the interrelationship between VC determinants into account resulting in an extra dimension of more insights (previously merely investigated in isolation).

The established draft model is validated by VC experts with use of a semi-structured interview approach, to enlighten missing and incorrect attributes. The main aim of this model is to understand which factors determine the development of venture capital within a region. The VCE model consists of three parties – *Limited Partners*, *Venture Capital* and *Startups* – that invest and re-invest in each other with their financial, human and social resources. Each (re)-investment cycle between these parties can result in a stronger ecosystem, which can eventually lead to a virtuous investment cycle. On the contrary, if this (re-)investment process is absent, this can result in the opposite: a weakening ecosystem, and thus a vicious investment cycle. It is, therefore, crucial to comprehend how these parties are influenced in their investment decisions between one and other. The conceptual VCE model gives exactly this influence insight through the 13 determinants – each functioning as a barrier or as an encourager in the investment process depending on its context. These attributes are divided in material, social and cultural barriers/encouragers: |Material – 1. *legislation, regulations & fiscal policies;* 2. *market (size of the market, absorption level);* 3. *mission-driven government (R&D, education, industries)*. |Social – 4. *social fabric/social network;* 5*. maturity & experience of the ecosystem;* 6. *talent & education;* 7*. success stories within the ecosystem*. |Cultural – 8. *risk perception;* 9. *tolerance of failure;* 10. *pay-it-forward mentality;* 11. *ambitious mentality;* 12. *language;* and 13. *work ethics*.

2) A recommendation – based on the VCE model – on how to improve VC activity in the Netherlands.

A recommendation for the Netherlands is drawn from a comparative case study with the best practice case of Silicon Valley, home to the most developed venture capital industry in the world. VC experts in both cases – the Netherlands & Silicon Valley – are consulted to develop a theoretical representation of both VCEs (distinctive weaknesses, strengths, interrelationships). The comparative case study gives the following insights:

- The performance of a VCE is the combination of many attributes, which come to exist as a result of the interrelationship between these factors. Due to the complex manifestation of a VCE, it is not as easy as one would think to push and pull some strings and receive the desired results (a strong VCE).
- The 13 developed attributes in the VCE conceptual model can be divided into groups that are categorised based on their influenceability (short-term, long-term, 'unaffected'). This categorisation insight is crucial as this provides decisions makers within the VCE to make more effective decisions, meaning it allows them to understand what they should try, but more importantly what they should not try to change.
- The Netherlands cannot replicate the success of Silicon Valley as the success is a product of 'unaffected' and long-term attributes: the maturity of the ecosystem (age-wise Silicon Valley has a head start on the Netherlands) and the market conditions of the region (United US market vs fragmented Europe market, due to language, culture, laws). Furthermore, the success of Silicon Valley is strongly linked to the attributes which are slow to adapt – the rich social fabric /network and entrepreneurial culture – meaning they evolve organically in the long term and are therefore only steered indirectly over a long period.
- The aim should not be to replicate Silicon Valley, considering that the success of Silicon Valley has brought downsides with it related to overconcentration, namely

low-quality living in the region, expensive housing, unselective investments, and high work pressure.

- With the correct mission-driven attitude of the Dutch government, there is a good chance the Netherlands can have a strong VCE on the long run and perhaps a stronger one than Silicon Valley. For this to happen, a focus should be placed on the short-term steerable attributes of the VCE model, which eventually affect the required long-term attributes such as a tightly knit social fabric and supportive entrepreneurial culture. This leads to the overall recommendation of this research.

This study concludes with seven recommendations, all with the shared goal to enlarge the number of success stories within the region (both the number of new firm formation [quantity] and the value-added innovation or productive entrepreneurship of these firms [quality]). This enlargement is achieved solely by actors in the Dutch government through policy adaptation, development and implementation: 1) remove policies that impede and introduce ones that stimulate (PPM-regeling, ERISA) entities to invest in VC funds; 2) introduce favourable bankruptcy laws, investigate the effects of higher capital gain tax rates, continue with enforcing non-competes laws; 3) increase R&D subsidies and only take a role in VC financing, by investing in ventures and industries that are unattractive for private VC; 4) promote and stimulate entrepreneurship in education at an early stage on every level; 5) do not copy other regions but focus on the unique Dutch industries instead; 6) focus on multiple unique industries to become more resilient to market shocks and prevent the downsides of overconcentration; and lastly 7) look into European Union policies that can enlarge the reachability of the Dutch local market (e.g. Small Business Act and the Single Market Act).

Future research should investigate whether the additional attributes, the layer of interrelationship (barrier/encourager) and ‘influenceability’ aspect, all found in this research, are applicable for the EE theory since these aspects affect the success of the entrepreneur. It would also be thought-provoking to provide more supporting quantitative data on the additional found VC determinants in this research, which are overlooked in the current literature. In addition, the VCE model can be strengthened through several study approaches, with a future aim that the model will be used as an economic development strategy or tool: adding quantitative evidence to each of the 13 attributes and developing metrics so that a score can be given to each attribute separately; adding case studies on different levels of geographical regions; and adding experts (not only VCs) from different fields related to the VCE (e.g. universities, policymakers, entrepreneurs, and incubators). Lastly, in addition to EE theory, it would give more valuable and intriguing insights if other theories are used to approach the topic of VCE (e.g. system thinking theory). These insights are crucial to strengthen the symbiosis between the natural duo – VC and startups – hence reduce the financial chasm of new business ventures, which in turn improves the national economy.

Chapter 1. Introduction

This chapter will, first of all, give some required background information about the issue this thesis is aiming to explore and solve (**1.1**). Followed by the problem statement (**1.2**), research objective (**1.3**), main & sub-questions (**1.4**), relevance (**1.5**) and lastly the thesis outline (**1.6**).

1.1. Background

1.1.1. The importance of startups

Nowadays, entrepreneurs are seen by some as the rockstars of today, with geeky types like Steve Jobs, Elon Musk and Mark Zuckerberg, idolised by many. Entrepreneurs are often credited with innovating new products and discovering new markets that play an important role in supply and demand. The rise in entrepreneurship is largely down to the fast growth potential of startups, and their high return on investment. Many studies (Schumpeter, 1934; Feldman, 2001; Audretsch et al., 2011; Glaeser & Kerr, 2009) have explored the benefits of this startup culture, which include improvements to social/human capital and regional economic activity. Innovation through entrepreneurship has long been recognised as an important factor for economic growth, dating back to Schumpeter's theory of 'creative destruction' (Schumpeter, 1934). Since then, many studies have been conducted to prove the determinants of successful entrepreneurship, often referred to as spin-off or startup. The latter will be used further on in this thesis. Examples of these determinants are: CEO characterises, product potential, IP position, industry experience, available financial capital, available human capital and many more (Gelderen, 2006; Steen, Ortt, Scholten, 2010).

When looked at the Dutch entrepreneurship scene, it is considered to be one of the leading, occupying the top spot in several comparative rankings (Acs et al., 2017; Osimo, 2016). In the Netherlands, there has been a noticeable increase in the number of newly founded companies. In the past year, nearly 163 thousand companies were founded, an increase of 2% on growth figures from the previous year (CBS, 2016). According to Egusa & Cohen (2015), cities like Delft and Eindhoven have played an important role in this growth, due to the cooperation of universities, the government and the public sector. Forbes (Pentland, 2013) declared Eindhoven in 2013, to be "hands-down the most inventive city in the world." Data compiled by the Organization for Economic Co-Operation and Development reported that Eindhoven produces 22.6 patents per 100,000 residents, making it the world's most inventive city. However, having a strong startup culture does not mean that all these startups directly benefit the national economy. To do this, it is important that startups mature. Studies of Gelderen, (2006) and Steen, Ortt, Scholten (2010) merely provide evidence for determinants in the early stage and do not determine the factors in the maturing later stage that really impact the economic growth, which is financial capital.

1.1.2. The importance of venture capital for startups

Startups can have a positive impact on the national economic growth provided that they mature. In order to grow and mature as a startup, it has been concluded that sufficient financial capital is indispensable (Gelderen, 2006; Balboa, Martí, Zieling, 2006). Tariq (2013) addresses the different types of financing options that are available for the startup firms. In his article, a clear divide is made between the startups that are yet to start their business operations (also known as the pre-startup stage), and the firms that are already in operating phases, but are considered to be still in the startup stage of the firm life cycle. Regarding the latter, venture capital has been studied over and over and deemed to be essential to startups at this stage of maturity (Barry et al., 1990; Christofidis & Debande, 2001; Davila et al., 2003). Venture capital (VC) can be described as a type of private equity, which invests in new profitable markets (startups) through funding and advice, with the goal of generating a return on the investment through a successful exit (Koëter, 2012). The most preferable type of exit is an Initial Public Offering (IPO), which is the first sale of stock issued by a company to the public. In line with Tariq's (2013) study, it is shown (Croce, Marti, Murtinu; 2013) that productivity growth is not significantly different between VC and non-VC-backed firms before the first round of VC financing, whereas significant differences are found in the first years after the investment event. For example, the success of Silicon Valley is linked to VC financing, and the economic upswing in Germany in the 1980s was essentially financed by this type of capital (Schefczyk, 2006). A comparative study (Rajchlova & Svatosova, 2016) between the Netherlands and the Czech Republic, even concluded that the Czech Republic reaches almost the same proportion of expenditure on R&D to GDP as the Netherlands, but does not exceed that of the Netherlands, due to the lack of adequate VC establishment. A comprehensive study by the European Union (Tykvová, Borell, Kroencke; 2012) also concluded that VC financing has a real positive impact on companies and the economy. In addition, they also acknowledged that there is a market failure in this segment that justifies government intervention. The next question that arises is how the Dutch venture capital functions in this startup playing field?

1.1.3. The Dutch venture capital ecosystem

Currently, the Netherlands is said to be one of the most entrepreneurial countries in Europe (Egusa & Cohen, 2015). However, what is the value of being an entrepreneurial country if most of the country's startups do not make it to a steady matured and well-developed firm (also known as a 'scale up')? The precise definition of a scale-up is a company that grows by at least 20% for sales or staff for three years, with at least ten employees counted at the start of the survey. Eventually, these are the startups that boost the economy (Schiffers, 2015; Coutu, 2014). The Dutch government stimulated the startup growth from 2000 till 2004, with programmes such as APLS, which had a total subsidy budget of €45 million. However, it has led to a large segment of small and vulnerable firms, many of them facing the danger of an equity gap in a climate that has remained unchanged (van Geenhuizen, 2009). This gap is also infamously known as the Valley of Death, which stands for the financial constraints entrepreneurs try to bridge before making their first commercial revenue (Ford, Koutsky, Spiwak, 2007). During the government stimulation with the APLS programme, the needed VC funding to fill up this equity gap was one of the lowest in the Netherlands in 2006 (see **Figure 1**).

Country	Venture capital investment (% of GDP)
US	0.031
Denmark	0.024
Norway	0.022
UK	0.016
Sweden	0.015
Switzerland	0.009
Finland	0.008
France	0.007
Germany	0.005
Belgium	0.005
Netherlands	0.003

Figure 1: Venture capital investment percentage of GDP, Source: van Geenhuizen (2009)

It also makes for unfortunate reading, that compared to other countries in Europe, the average initial return of IPO's in the Netherlands is one of the lowest (see **Figure 2**). Presumably, venture capitalists will turn to more developed venture capital markets (Koëter, 2012). As a result, startups are quickly forced to settle abroad because more capital is available.

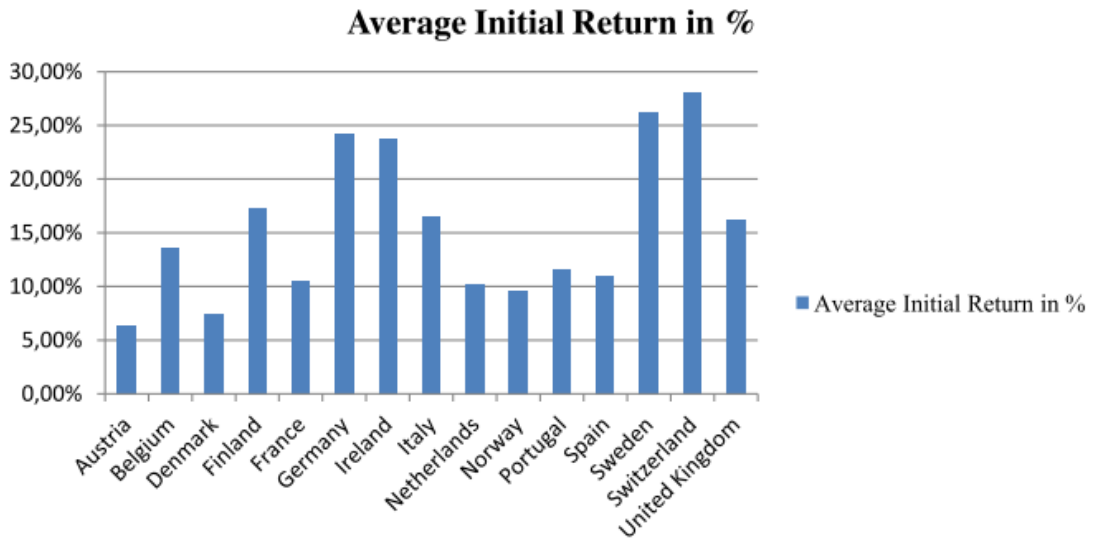

Figure 2: Average Initial Return in percentage, Source: Koëter (2012)

Several studies have been conducted to investigate the venture capital ecosystem of the Netherlands. Nonetheless, similar to the article by van Geenhuizen (2009), these articles have merely concluded that there is a shortcoming in the Dutch VC, but the reasons for it are scarcely or not investigated. For example, a paper by Mohnen (2008) used the Netherlands as a study case to conclude that financial constraints hamper

innovative activity. However, an explanation for these constraints is not stated. An international study (Harding, 2002) comparing the US, Germany, Singapore, France, Ireland, the Netherlands and the UK argues that policies stimulating the demand for venture capital are more effective in overcoming inherent information asymmetries in venture capital market. Simply stated, the author argues there is a gap between the amounts of money going into venture capital investments and the number of companies accessing it. Although this study does give a reason for the shortcoming in the Netherlands, which they state is the large amounts of bureaucracy and red-tape combined with high personal taxation makes it extremely difficult to set up a business, it only argues it from the startup founders' perspective. In addition, it does not go any deeper than this explanation. In a different case study (Tovstiga, Korat, Dana, 2003) with the Netherlands, Silicon Valley, Singapore and Israel the tight symbiosis is demonstrated between regional culture and infrastructure in the development of innovative, high technology, knowledge-driven organisations. Similarly, to the above-mentioned studies, in this study, the Netherlands appears to be weak in the availability of venture capital, but again the reasons are not discussed. The region which most clearly demonstrates this researched symbiosis is Silicon Valley.

1.1.4. Silicon Valley as a venture capital champion

Located in California, Silicon Valley is one of the world's most dynamic economic regions with its habitat for innovation and entrepreneurship. The mechanisms triggering the success of this region include the dense cluster of networks among entrepreneurs, universities, venture capitalist and others. (Wonglimpiyarat, 2005). Ferrary and Granovetter (2009) go even further by specifying that this clustering is a complex innovation network of nodes which are systematic interdependent. The absence or the presence of only one type of agent can weaken or reinforce the entire system. They argue that venture capitalists are a major (and underestimated) source of robustness of the innovative complex network of Silicon Valley. In fact, before the 1960s Silicon Valley was not as innovative partly because of its network incompleteness. In the mid-1960s, the high-tech endogenous growth in Silicon Valley and the development of the VC industry in this region coincided in time leads one to inquire about the contribution of VC firms to the innovative cluster. With the largest global concentration of venture capital whereby it receives the greatest amount of investments (see **Figure 3**), Silicon Valley represents the most developed venture capital industries model in the world (Wonglimpiyarat, 2005). Therefore, it thus appears that understanding Silicon Valley's complexity and the determinants of a successful VC environment can help policy-makers who try to create innovative clusters.

	Population	2005	1995–2005	$/hab 2005	$/hab 1995–2005
USA	295,160,302	2,276,7838,500	341,683,941,700	77	1158
Silicon Valley	*2,429,000*	*8,115,032,800*	*110,982,715,200*	*3341*	*45,691*
Europe	460,726,436	15,205,351,200	119,270,100,392	33	259
England	59,934,290	6,278,076,000	35,238,551,362	105	588
Germany	82,500,849	1,518,696,000	19,947,691,200	18	242
France	60,561,200	1,686,326,400	16,354,860,000	28	270
Belgium	10,445,852	136,015,200	3,178,764,000	13	304
Denmark	5,411,405	1,003,342,800	2,637,802,800	185	487
Finland	5,236,611	179,773,200	1,906,075,200	34	364
Italy	58,462,375	531,048,000	8,027,442,952	9	137
Netherlands	16,305,526	592,894,800	8,651,653,200	36	531
Portugal	10,529,255	234,854,400	1,122,337,200	22	107
Spain	43,038,035	922,562,400	7,818,085,519	21	182
Switzerland	7,415,102	379,682,400	2,189,430,000	51	295
Sweden	9,011,392	1,034,575,200	5,678,336,400	115	630
Norway	4,606,363	395,365,200	2,555,592,000	86	555

Figure 3: Venture capital investment, Source: Ferrary and Granovetter (2009)

1.1.5. Governments' involvement in venture capital

Governments are not fully blind to the importance of adequate financial stimulation in the startup ecosystem. Therefore, the EU established in 1994 the European Investment Fund, which is the leading public provider of risk capital, and in particular of VC, that in their turn invest in European startups. In their latest working paper, they published their positive impact in this equity concern (Kraemer-Eis, Signore, Prencipe, 2018). However, some argue that this involvement results in a so-called crowding out effect: an unwanted phenomenon that occurs when public involvement in an industry (in this particular case VC) pushes out private involvement. Many studies have been published on this topic, some concluding that public involvement results in 'crowding in' (Leleux & Surlemont, 2003; Xu & Yan, 2014; Berlinger, Lovas, Juhász, 2015; Brander, Du, Hellmann, 2015; Dahaj, Cozzarin, Talebi, 2018; and others in 'crowding out' (Engel & Heger, 2005; Cumming & MacIntosh, 2006; Armour & Cumming, 2006; Brander, Egan, Hellmann, 2008; Xu & Yan, 2014).

With €1.6B out of a total of €5.3B, state-sponsored funds were in 2015 the biggest investors in European venture capital. According to the European Digital Forum (Filippov & Hofheinz, 2016) this is justified during the economic slowdown but should, however, be reversed in an economic upswing. Another concern mentioned in the same paper is the fragmentation nature of funds in Europe. This fragmentation results in relatively small funds, which have less capital to support growing businesses. Compared to the U.S. the average European venture capital is half the size with around €60 million. This could mean that while entrepreneurs have the financial opportunity to start a venture, they have a smaller chance to grow this startup into a scale up, due to the small funds. Regarding the Netherlands, this can be confirmed by publicly available data of the Nederlandse

Vereniging van Participatiemaatschappijen (NVP) (NVP, 2018), who states that about 98% of all Dutch VC investments have an equity value of less than € 5 million.

The Dutch government has made efforts to improve the startup ecosystem through its 'Ambitious Entrepreneurship Action Plan' where the StartupDelta initiative was created beginning 2015 to strengthen the international position of startups, while also attracting foreign startups to the Netherlands (Rijksoverheid, 2017). Question is whether these efforts aid in the pursuit of a stronger VC ecosystem. So, how can you measure the performance of your venture capital as a region?

1.1.6. Challenges of measuring venture capitals

Nations hope to improve the competitiveness of their regions with the help of scoreboards, case studies and interregional benchmarks. However, when comparing VCs, there are unique challenges. Kaplan & Lerner (2016) highlights the challenges when comparing venture capitals. The following points are mentioned:

- Venture capitalists typically do not disclose much information to regulators.
- Studies in venture capital rely on proprietary datasets that are not shared more generally, and therefore studies are difficult to replicate or refute.
- Investments usually do not go public and are therefore more difficult to uncover.
- Data of one provider may be incomplete.
- There is a possibility of a backfill bias in that the databases report positive past returns for funds that are newly added to the database
- It is possible that poorly performing funds stop reporting or don't report at all.
- Different data definitions are used for example early, and late-stage investment is not standardly quantified.

The difference in data quality can be confirmed by looking at the data measured by two VC data providers: NVP and Dealroom. The Dutch VC investments from 2013 to 2017 is shown in **Figure 4**. According to a representative of NVP, the illustrated discrepancy is mainly due to the use of different data sources. VCs disclose their data directly with NVP, whereas Dealroom needs to extract this data mostly from public sources, which may be incomplete. An example is given that a VC could state through a press release that they will invest a second tranche in a venture provided that certain milestones are achieved. However, whether these milestones were achieved and thus if the VC actually invested is sometimes not the case, making the data incorrect. In addition, the NVP representative also mentioned that Dealroom takes informal investments, such as Angels investors, also into account. Both examples might explain the higher figures of Dealroom.

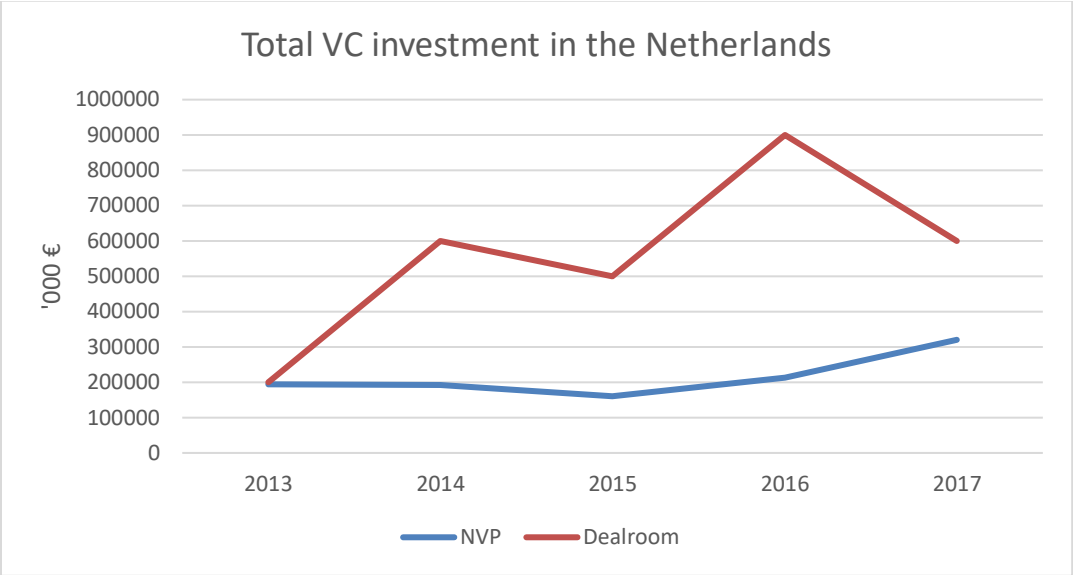

Figure 4: Data drawn from NVP and Dealroom reports: NVP (2018) & Dealroom (2018)

Furthermore, 'The Venture Capital and Private Equity Country Attractiveness Index' (Groh, Liechtenstein, Lieser, 2013), an annual benchmark study by the University of IESE Business School, takes a different approach for comparing regional venture capital ecosystems. It addresses the first level of investors' concerns from a top-down perspective and evaluates countries concerning socioeconomic criteria for international VC (and Private Equity allocation). According to this benchmark, the United States has been ranked first, several years in a row whereas the Netherlands has been ranked around no. 12 in the world. This index is based on six key drivers, which are not measurable but need to be estimated:

1. Economic Activity
2. The depth of Capital Market
3. Taxation
4. Investor Protection & Corporate Governance
5. Human & Social Environment
6. Entrepreneurial Culture & Deal Opportunities.

Although this approach is helpful for investors to compare ecosystems for VC allocation, these key drivers do not tell the reasons behind these estimations. Furthermore, it does also not tell how to improve these key drives, thus regional VC ecosystem. According to Félix, Pires & Gulamhussen (2013), relatively few articles investigate the determinants of venture capital, and the existing papers differ considerably regarding the specific factors included. On top of this, as a theoretical concept, VC ecosystems remain underdeveloped, making it difficult to understand their structure and influence on the venture capital process. This leads to the problem statement.

1.2. Problem statement

Although the Netherlands experiences a noticeable increase in the number of newly founded companies (CBS, 2016), this should not be seen as an increase in entrepreneurship per se. According to Stam (2014), this increase reveals to be predominantly solo self-employment, not a rise in growth-oriented and innovative entrepreneurship. Stam (2014) labels this phenomenon as the *Dutch Entrepreneurship Paradox*: the rise of self-employment and new firm formation and stagnation of innovation in the Netherlands. This stagnation could be due to the lack of available funding in the Netherlands needed to bridge the Valley of Death and further develop the innovations. As Geenhuizen (2009) argues, a large segment of new and vulnerable Dutch firms face the danger of an equity gap in a climate that has not fundamentally changed. The poor Dutch funding environment can be confirmed by a comparative report (Osimo, 2016) between European countries and their entrepreneurial ecosystems. The comparative report concludes that the Netherlands is ranked first place on several criteria (startup manifesto, institutional framework, thought leadership, access to talent), yet the weakest performance of the Netherlands is on better-access-to-capital-based measures, where it comes in at 8th place. Furthermore, the poor Dutch funding environment can be partly confirmed by a recent comparative research (Goudriaan, 2016), stating that the Netherlands has twice the number of startups (1049) than Sweden (551) at AngelList, but half as much in venture capital funding (€429 million and [equivalent to] €1 billion, respectively). This funding is crucial for the maturing of startups towards IPOs (Initial Public Offering), which is more common in Sweden.

The problem seems to lie in the VC ecosystem of the Netherlands. The current ecosystem provides a solid base for the first seed funding round but lacks in the early and late stages where VCs play an important role (Sprout, 2014; Hendriks, 2016). This could mean that innovative startups cannot continue to grow due to a lack of funding, which could result in a loss in innovation for society. Be that as it may, two other measuring studies counter this problematic observation of the Dutch VC ecosystem: The Venture Capital and Private Equity Country Attractiveness Index', as above mentioned, ranks the Netherlands 12th of the world and The Global Entrepreneurship and Development Institute ranks the Netherlands 11th of the world, measuring the overall entrepreneurship with 'Risk Capital' as one of the measurements (see for both metrics **Appendix A**). This means that according to these two studies, the Netherlands does not perform poorly (respectively to the rest of the world) in the VC ecosystem of entrepreneurship. However, the discrepancy between scoreboards and benchmarks is related to the challenges of comparing VCs (mentioned in **§1.1.7)** and only means how little is understood of the performance of venture capital in a region.

Summarising all of the above, the importance of VC is well discussed and agreed upon by many studies, however, an actual comprehension of how a VC ecosystem works and the steps required to foster a VC ecosystem is still underdeveloped in current research. The VC literature discusses the determinants (see **§3.3**) for stimulating VC development but does not approach it from an ecosystem perspective. Unfortunately, this lack of ecosystem perspective results in a lack of understanding of the mechanisms of a venture capital ecosystem (e.g. interactions), and more importantly, how to improve one. This lack might explain why current studies do not provide the reasons for the shortcoming

of the Dutch VC ecosystem (van Geenhuizen. 2009; Mohnen, 2008; Harding, 2002; Tovstiga, Korat, Dana, 2003). In short, the problem statement is stated as followed:

It is unclear how the Dutch venture capital ecosystem performs and how to improve it, as there is a lack of a concrete framework to understand a venture capital ecosystem.

1.3. Research objective

The objective of this research is to fill the gap mentioned in the problem statement by first of all developing a conceptual model that explains how a VC ecosystem works and what the determinants are that influence its development. The Entrepreneurial Ecosystem (EE) theory (Stam & Spigel, 2016; Spigel, 2017) will be used as a theoretical lens to establish this conceptual model (see **§3.1.** for the line of reasoning). Once this has been established the second part of the objective can be delivered. With the use of the developed conceptual model, both the VC ecosystems of the Netherlands and Silicon Valley are separately analysed and then compared, with Silicon Valley taken as a best practice (see **§1.1.5** for the line of reasoning). Based on this case study approach, the main objective of this thesis can be delivered: a recommendation on how to improve the VC ecosystem of the Netherlands. In short, the deliverable of this thesis is twofold:

1. *A model explaining the determinants influencing the development of a VC ecosystem.*
2. *Recommendation(s) on how to improve VC in the Netherlands.*

1.4. Main question and sub-questions

To accomplish the aforementioned research objective, what this thesis aims to address is the following main research question:

How can the Dutch venture capital be improved through a conceptual model, which explains the determinants influencing the development of a venture capital ecosystem?

Five guiding sub-questions are formulated to indicate the different components of which this research consists – eventually leading to answering the main research question. Each sub-question is followed by a short elaboration.

Substantiated with the following sub-questions, henceforward abbreviated as SQ:

1. ***Why is the EE theory chosen as a theoretical lens to develop the conceptual venture capital ecosystem model?***
    a. ***What is the EE theory?***
    b. ***What are the alternative theories?***
    c. ***What are the consequences of choosing the EE theory?***

The theoretical lens of this research determines the outcome of the conceptual model. In other words, the outcomes are influenced by this lens and should, therefore, be argued for applicability on VC. The objective of this SQ is to leave the reader with a well-argued reasoning of the theory choice.

2. ***How should the conceptual VC ecosystem model look like?***
    a. ***What are the determinants/attributes that influence the demand and the supply of venture capital in a region according to current literature?***
    b. ***How does the venture capital ecosystem relate to the EE theory?***
    c. ***Which determinants/attributes are missing or incorrect, according to the field research?***

The second SQ addresses the first main deliverable of this research (**§1.3**), which is a VCE conceptual model. The development of this deliverable is by means of a three-step process. First of all, the current literature is reviewed related to VC determinants. In this phase of this research, there would not be any new contribution to the current literature. Secondly, these VC determinants are linked to the EE theory with substantiated reasoning to develop the draft model. Thirdly, this draft model is validated by VC experts to develop the eventual VCE conceptual model. In this last step, incorrectness can be enlightened by adding new VC determinants and pointing out the wrongly stated ones.

3. ***How does the venture capital ecosystem model of the Netherlands and that of Silicon Valley look like?***
    a. ***What are the typical determinants (distinctive strengths and weaknesses) of the venture capital ecosystem of the Netherlands/Silicon Valley?***
    b. ***How does the venture capital ecosystem of the Netherlands/Silicon Valley perform, based on the chosen determinants?***
    c. ***Which interaction(s) between these determinants make the venture capital ecosystem of the Netherlands/Silicon Valley distinctive?***

With the use of the developed VCE conceptual model, the foundation of the second main deliverable of this research can be build, which is a recommendation on how to improve the Dutch VCE. To do this, it was chosen to give a recommendation based on a comparative study with the best-practice case: Silicon Valley. Therefore, the objective of this SQ is to leave the reader with a clear understanding of how both VCEs perform and look like, based on the developed conceptual model.

4. ***Which lessons can be drawn from the comparison between the two venture capital ecosystem models?***
    a. ***How do the two ecosystems differ in terms of the chosen determinants and their interactions?***
    b. ***Which determinants should be focussed on to foster a VC ecosystem?***

With the deliverable of the third SQ – a representation of how both VCEs perform and look like – the comparative study can be initiated. The objective of the fourth SQ is to extract the main lessons of the comparative study by looking at the differences in performance

based on the determinants of the VCE model and the interaction between these determinants. This way, an important lesson can be drawn, which is to comprehend the determinants needed for the Dutch VCE to foster.

5. ***What is needed for the Netherlands to replicate the success of the venture capital ecosystem of Silicon Valley?***
    a. **Which options (e.g., social, managerial, policy) are available in line with the study's findings?**
    b. **Based on these options what are the recommended changes?**

From the deliverable of the previous SQ, a sound argumentation can be given as to who is required to improve the Dutch VCE. Moreover, questions as to what is needed and how it should be executed should be answered. In other words, the objective of the last SQ is to provide a recommendation covering the 'who', 'what' and 'how' questions. This will lead to the answer of the main research question.

1.5. Relevance

Practical contribution: The VC ecosystem conceptual model, will provide insights for regions that want to analyse their VC ecosystem. With this analysis, regions can determine what their weaknesses and strengths are and make, when possible, the required adjustments to improve their VC ecosystem. Improving their VC ecosystem will result in fostering entrepreneurship, thus the regional prosperity. This study will take the Netherlands as a case study. The case of the Netherlands will be compared with the case study of Silicon Valley to determine how to improve the Dutch VC ecosystem.

Scientific contribution: This is the first study which constructs a theoretical understanding of the venture capital industry from the entrepreneurial ecosystem perspective.

1.6. Thesis outline

Hitherto, this thesis has introduced the needed background information and the problem it seeks to solve together with its objective, and relevance. Chapter 2 will present the research methodology followed during this research and the various methods of data collection applied. Followed with the literature review in chapter 3, where the choice of theory (EE) is argued and where the literature on VC determinants is explored. Chapter 4, will present the draft of the VCE model followed by the field research in chapter 5, where this draft will be validated. Chapter 6 will explain the eventually developed VCE conceptual model, which will be used in the comparative study of Chapter 7 to explore both case studies. Chapter 8 will then be dedicated to giving a recommendation on how to improve the Dutch VCE, which naturally leads to the main question of this research; thus the conclusions discussed in chapter 9. In this chapter, the limitations, main contributions and lastly areas for further research, will be discussed too.

Chapter 2. Methodology

The next step is to design the research in such a way that the necessary data can be gathered and analysed in order to arrive at a clear solution. This section will be dedicated to explaining the research execution methods, in order for the reader to understand what the researcher is attempting to do and judge the value of the research. A qualitative approach will be used with the objective of developing a theoretical conceptual model, since (as previously said) it lacks in the current literature. A qualitative approach allows for a nuanced understanding of how actors interact within their local venture capital ecosystem and is particularly useful in situations where there are yet few standardised metrics to analyse the structure or success of venture capital ecosystems (Spigel, 2017). The various aspects involved in the research design are shown comprehensively in the figure below (**Figure 5**) and a comprehensive discussion per part is followed.

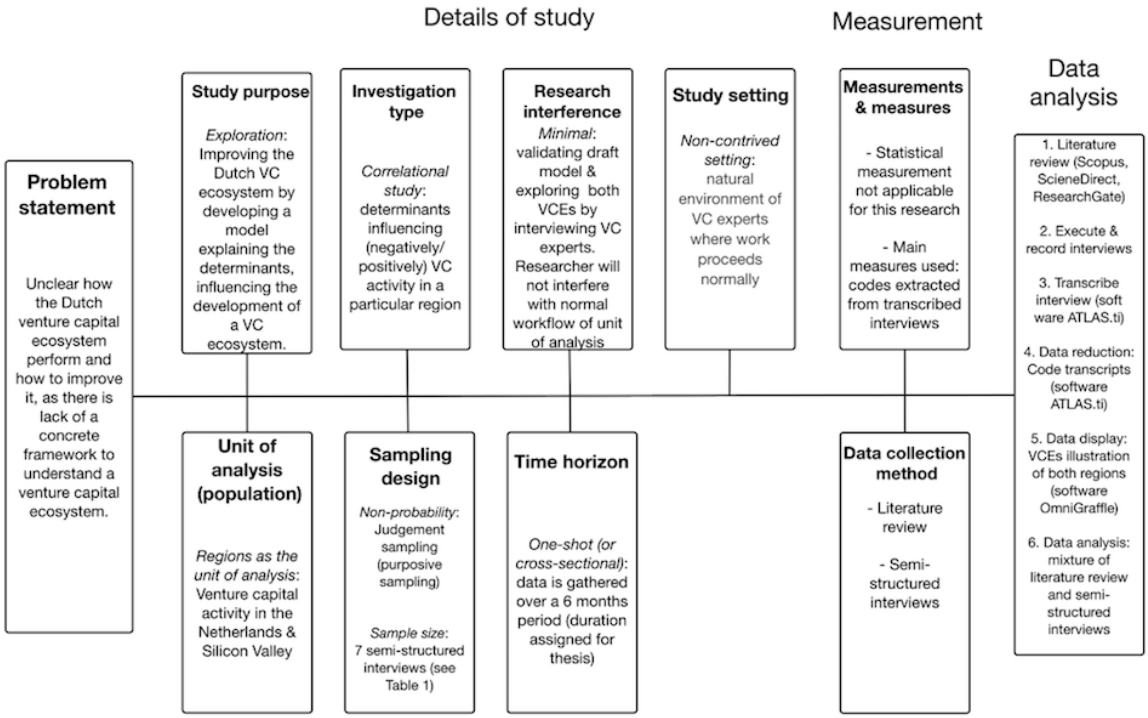

Figure 5: Research design (framework used from Sekaran, 2010)

- ## Problem statement

The simplified and shortened version of the problem statement discussed in **§1.2** reads as followed: “Unclear how the Dutch venture capital ecosystem perform and how to improve it, as there is lack of a concrete framework to understand a venture capital ecosystem.”.

- ## Study purpose

Although the determinants of VC activity have been studied before, a complete model of a VC ecosystem is still lacking. According to Sekaran (2010), this is in line with an 'exploratory study', stating that these kinds of studies are necessary when some facts are known, but more information is needed for developing a viable theoretical framework. In exploratory studies, preliminary work needs to be executed first to gain familiarity with the phenomena (VCE), and understand what is occurring, before a model is developed and a rigorous design for comprehensive investigation is set up. Related to this research, the preliminary work is the literature review conducted to collect all the VC determinants studied in the current literature. Summarising, an exploratory study is important for obtaining a good grasp of the phenomenon of interest and advancing knowledge through subsequent theory building. The phenomenon of interest and purpose of this research: "Improving the Dutch VC ecosystem by developing a model explaining the determinants, influencing the development of a VC ecosystem".

This exploratory study uses two cases for theory-building in the underdeveloped field of venture capital ecosystems. Building theory from case studies is a research strategy that involves using one or more cases to create theoretical constructs, propositions and/or midrange theory from case-based, empirical evidence (Eisenhardt & Graebner, 2007). For this particular study, the regions of Silicon Valley and the Netherlands are taken as case studies. However, the comparative case study used in this research should not be mistaken with the 'case study research' explained by Sekaran (2010) as that is an examination of studies done in other similar (organisational) situations, whereas in this research two completely different cases are compared.

- ## Type of investigation

Given the fact that this research seeks to find the multiple VC determinants influencing one another and the problem (low VC activity in a region) in a chain-like fashion, identification of these determinants associated with this problem is needed, rather than establishing a cause-and-effect relationship. Thus, making this research a correlational study. This is line with the example given by Sekaran (2010: "*if a researcher wants to study the factors influencing training effectiveness (a correlational study), all that the individual has to do is develop a theoretical framework, collect the relevant data, and analyse them to come up with the findings*".

- ## Research interference

Whether the study has a causal or correlational nature, determines the extent of the researcher's interference. As this research is a correlational study, it means it is conducted in the natural environment of the investigated actor with minimal interference by the researcher with the normal workflow of this actor. In this case, VC experts are the investigated actors, who do not (including the researcher) disrupt the normal 'workflow' of the unit of analysis, which is the two VCEs: the Netherlands and Silicon Valley (see next section). Compared to causal studies this interference is minimal (actually no interference at all).

- ## Study setting

Once again, the type of investigation (correlational vs causal) determines an element of the research design: the study setting. A non-contrived setting, which is research

conducted in the natural environment where work proceeds as normal, is directly related to a correlational study. A contrived setting, on the other hand, is conducted in an artificial environment (Sekaran, 2010). Therefore, the study setting of this research is a non-contrived setting, as the work of the VC experts in their natural environment proceeds as normal.

- **Unit of analysis (population)**

The unit of analyses can be, for example, individuals, dyads, groups, organisations or as in the case of this research regions: the Netherlands and Silicon Valley. In other words, the data has to be aggregated at these regional levels. However, the data collection and sampling processes can become more cumbersome at higher levels of units of analysis (industries, regions, countries, continents), which is one of the limitations of this research.

- **Time horizon**

The data collected during the study can be done once – called *one-shot* or *cross-sectional* – or at two or more points in time – called *longitudinal* (Sekaran, 2010). This research is the former, as data is collected once during the literature review and once during the interviews, over a period of approximatively six months (assigned duration for the thesis).

- **Measurements & measures**

The purpose of this research is to explore and seek the determinants that influence VC in an ecosystem. The determinants collected from the literature review will be validated for applicability during the interviews. In addition, more determinants are aimed to be found during these interviews that are not included in the literature review. The exploration nature of this qualitative study may provide in-depth insights that may be challenging to quantify. Therefore, this does mean that this research will not take a statistical significance approach as most of the determinants are still unknown.

- **Data collection method**

When trying to figure out how to improve a venture capital ecosystem, the first thing important thing is to start understanding what makes a good venture capital ecosystem and what is required for it to flourish. These factors have been researched over the years in different studies, and therefore a literature review will be the proper method to answer this question. The outcome of this literature review will result in a draft version of the conceptual model based on EE, which will be used as the theoretical framework. This draft of the model with the questions will be sent before the interviews and will be challenged during the interviews by the VC experts. Sending the draft version prior to the interviews will give the participants more time to prepare and chance to provide more input during the interviews. The interviews will have a semi-structured nature, which will be executed using several methods (face-to-face, telephone, video call), with a mixture of open & closed questions. It is semi-structured because, during the interviews, a lead from a respondent's answer can be taken, and countered with other relevant questions that are not on the interview protocol. With this process, new factors might be identified, resulting in a deeper understanding (Sekaran, 2010).

- **Sampling design**

The sample design used in this research is a *non-probability* one because the elements in the population do not have a specific probability attached to them to be

chosen. More specifically this research is based on *judgement sampling* (part of *purposive sampling*), as it is necessary to obtain information from a specific target group (VC experts). The sample pool used for this research will be exclusively experts who have a deep understanding of the VC industry in the Netherlands and Silicon Valley (e.g., VC managers/partners, VC data providers, advisors). The reason is because it is assumed that other actors in the VCE might not have the extensive and needed knowledge to comprehend the draft model and develop the final conceptual VCE model. Also, the reason for solely choosing VC experts is because the goal of this research is to take the investment perspective of VCs and not others such as entrepreneurs.

However, this sampling approach does curtail the generalisability of the outcomes, because we are using a sample of experts who are conveniently available to the researcher. According to Sekaran (2010), this nonprobability design is not generalizable at all, but it is used at times to obtain some information to get a "feel" for the phenomenon or variables of interest. It is also possible that limited available and reliable information is gathered due to respondents that do not want to share sensitive information, respondents that give incorrect information, or simply because there are not enough respondents (Tourangeau, Groves, Redline, 2010), which will be elaborated at the limitation section at the end of this research. However, according to Guest, Bunce, Johnson (2006), a sample of six interviews may be sufficient to enable the development of meaningful themes and useful interpretations. Thus the sample of this research (seven interviews) will suffice. The sample pool with the conversation setting is shown in **Table 1**. It is important to highlight that the interviewed experts will share their personal thoughts and opinions and not as an official capacity of their company.

Participant	Role & Company	Expertise	Conversation setting
Felix Zwart	Research, Tax and Regulatory Affairs – *Nederlandse Vereniging van Participatiemaatschappijen (NVP)*	NL	Face-2-face (location NVP office)
Olivier Binkhorst	Talent Partner & Advisor – *VentureMonks & DutchTechSF*	NL/SV	Telephone
Haje-Jan Kamps	Director of Portfolio – *Bolt (Hardware VC)*	SV	Video call
Thijs Gitmans	Fund manager – *NBI Investors (Mainport Innovation Fund II)*	NL	Face-2-face (location NBI office)
Frank Claassen	Managing Partner – *Newion Investments*	NL	Telephone
René Savelsberg	Managing Director & CEO – *SET Ventures*	NL/SV	Telephone
Christiaan Vorkink	Vice President – *True Ventures*	SV	Video Call

Table 1: Sampling design

- ## Data analysis

1. Prior to the interviews, a literature review will be executed to obtain the required VC determinants to develop the theoretical framework. This framework will be used to develop the draft model and formulate the right questionnaire for the interviews. The data sources for the literature review are scientific databases such as Scopus, ScienceDirect and ResearchGate. In this phase, there would not be any new contribution to the current literature. In addition, during this phase, the VC

determinants are linked to the EE theory with substantiated reasoning to develop the draft model.

2. The draft model is validated by interview participants to develop the eventual VCE conceptual model. During this phase, incorrectness can be enlightened by adding new VC determinants and pointing out the wrongly stated ones. Also, to comprehend both case studies, the VC experts will share their thoughts and opinions about the two regions.
3. The interview conversations are recorded, transcribed – with the use of the software ATLAS.ti – and added to the appendix of this research to strengthen the reliability.
4. According to Miles and Huberman (1994), qualitative data analysis generally has three steps: data reduction, data display, and the drawing of conclusions. The interviews with experts will provide vast amounts of data, which should be reduced. This will be done by coding and categorising. Codes are labels given to units of text (interview transcripts), which are later grouped and turned into categories. Categorising is the process of organising, arranging, and classifying coding units (Sekaran, 2010). These codes and categories will aid to develop a deductive derived theory from this data. The specifics of the coding method (development and assigning) used in this research can be read in **§5.1**.
5. Once the codes are analysed, a clear representation of these data can be given. For this research, this will be a clear illustration of how both VCEs (the Netherlands & Silicon Valley) look like, which make it possible to conduct the comparative study. The software used the make this illustration is OmniGraffle.
6. Lastly, both the literature related to VC determinants and the obtained data from the interview experts will be consulted to extract the lessons learned and develop the needed recommendations, thus the solution to the problem of this research: improvement of the Dutch VCE. The findings may not be generalizable to other regions because each region's ecosystem is the result of its unique historical and economic processes. However, this research will add theory to the current academia, where the goal of the research is not to explain any particular case but rather to generalise about individual case effects (Mahoney & Goerts, 2006). In other words, the research will build upon the first steps towards a generalised theory framework for venture capital ecosystems. It will also give insights on how the structure can differ between regions and the importance of understanding how the connections between their internal attributes help reproduce the overall ecosystem structure.

Now that is has become clear how this research is going to be executed and how all the items building towards the main conclusion are established (see research design in **Figure 5**), the implementation phase can be initiated. As previously stated, starting with the literature review.

Chapter 3. Literature Review

The purpose of the following section is to substantiate why the entrepreneurial ecosystem (EE) theory is used to explore the ecosystem of venture capital. This is done by first of all explaining the EE theory and considering alternative related theories (**3.1**). After the theory choice is reasoned, the venture capital ecosystem is then defined for this research to avoid ambiguous interpretations (**3.2**). This will make it possible to explore the literature concerning the attributes/determinants of VC (**3.3**).

3.1. Entrepreneurial Ecosystem theory

3.1.1. General Entrepreneurial Ecosystem theoretical perspective

Introduction to EE theory

The fundamental ideas behind entrepreneurial ecosystems started to develop in the '80s and '90s as part of a shift in focus in entrepreneurship studies from individualistic, personal-based research towards a broader holistic perspective that incorporated the role of social, cultural, and economic forces in the entrepreneurship process (Dodd & Anderson, 2007). The theory gained only recently popularity in the practitioner and policy communities, which is according to Spigel & Harrison (2018), due to two sources: Daniel Isenberg's (2010) work in the *Harvard Business Review* and Brad Feld's (2012) book *Startup Communities*. These authors emphasised the importance of support by various actors to entrepreneurs within a community in terms of emotional support, financial support, education, policy, and economic environments that provide resources for new ventures. This has led to that some groups (World Economic Forum [2013], the Kauffman Foundation [Motoyama, Konczal, Bell-Masterson, & Morelix, 2014], the OECD [Mason & Brown, 2014]) embraced this approach as a new economic development strategy, which in turn resulted in a spur of academic research to explore the attributes of successful ecosystems and the support of high-growth entrepreneurship (Cohen, 2006; Acs, Autio, & Szerb, 2014; Auerswald, 2015; Mack & Mayer, 2015; Stam & Spigel, 2016; Audretsch & Belitski, 2016; Sussan & Acs, 2017; Spigel, 2017; Alvedalen & Boschma, 2017; Spigel 2018). For instance, the aim of Audretsch's & Belitski's (2016) study is to develop a holistic model that captures both regional and local systemic factors to understand better and explain variations in entrepreneurial activity. Cohen's (2006) and Sussan & Acs (2017) studies also take a holistic approach but differ in that they take the entrepreneurial ecosystem theory to examine the applicability on that of a 'sustainable environmental ecosystem' and a 'digital entrepreneurial ecosystem', consecutively. However, why is the entrepreneurial ecosystem theory chosen for this particular VC research? This will be explained by first of all discussing the alternatives.

Alternatives to the Entrepreneurial Ecosystem

There are many allied concepts to that of the entrepreneurial ecosystem. In this research, three common concepts will be discussed to explain the reasoning of choice: *clusters*, *regional innovation system* and *industrial district*. While these concepts differ in their methodological and conceptual outlooks, they do share a common belief that certain attributes exist outside the boundaries of a firm but within a region that contributes to the competitiveness of a new venture. In other words, they all argue that a major part of firms' competitive advantage is related to the resources found within the region rather than residing solely within the firm. If this is the case, then what is the main difference with EE and why is this theory chosen for this research? In its core, EE focuses on the unique needs and trajectories of innovative high-growth ventures rather than of all firms in a particular region (Spigel, 2018). Stated differently, other theories have a broad look upon the region whereas the analysis approach of EE is to put the entrepreneur as the focal point. This differs from the other three concepts which all approach the overall region from a neutral perspective to examine the entrepreneurship:

1. The cluster approach sees the region as a group of interconnected firms, suppliers, related industries, and specialised institutions in particular fields that are present in particular locations. It focuses on geographic concentrations of this actors in particular fields that compete but also cooperate (Porter, 1990 & 1998). This differs with EE research as Spigel (2018) states it: '*The benefits of an ecosystem do not necessarily accrue to firms in the same market or supply chain, as they do in clusters. Instead, they are more likely to accrue to a broad array of high-growth ventures due to the importance of entrepreneurial rather than industry-specific knowledge and resources'.*
2. The regional innovation systems (Lundvall, 1992) approach focuses on the knowledge linked by networks and institutions, which produce hubs such as universities and public research labs within a region and innovative firms. The interaction between these networks allows knowledge to spill over between the different actors increasing a region's overall innovativeness (Cooke, Uranga & Etxebarria, 1997). From the EE perspective, it is, however, important to consider specifically the ability of entrepreneurs to access these networks and human capital. As one can imagine, entrepreneurs have a different (mostly lower) level of absorptive capacity and internal capabilities then established firms and other actors such as universities.
3. The industrial district approach mainly focuses on the local division of labour within a particular industry (Marshall, 1920), while taking into consideration the interaction between the community of people and a population of firms within a socio-territorial entity in order to be successful. EE research, however, has remained largely industry agnostic, which is also the case when looking at the VC industry.

Summarising, while the three above-mentioned concepts do include the role of entrepreneurs, the focus is not specifically on them but rather the role of entrepreneurs and startups within larger systems of value creation and innovation. This results in that startups' uniqueness in capabilities and resources are overlooked (Stam & Spigel, 2016). As previously said, it is exactly this reason why the entrepreneurial ecosystem is taken as a measure approach with venture capital acting as the centred agent (instead of the entrepreneur). However, this is one of several reasons for choosing the EE theory as a valid concept to explore the VC ecosystem. In the next section this validation is discussed.

Validation of theory choice

The concept of validity is used to answer why the EE theory is utilised as a measure to examine the VC environment. The literature denotes different terms for several types of validity tests used to test the goodness of a measure (Sekaran, 2010). Therefore, a clear explanation is given for each validity test of the chosen measure (EE theory).

Content validity – ensures that the measure, the EE theory, includes a suitable and representative set of items that tap the concept, which is in this case the VC ecosystem. Differently stated, it asks whether the measure sufficiently covers the area it should cover. The EE theory is useful to study the VC ecosystem since both the entrepreneur and the VC are highly interdepended of each other (innovation and capital respectively). One can imagine that, therefore, the attributes of the entrepreneur's ecosystem is similar to that of VC's ecosystem. The main reason for choosing the EE viewpoint for examining the VC environment is because the analysis approach of EE has a broad, holistic perspective which incorporates the role of social, cultural, and economic forces in a region, thus sufficiently covering the area it should cover. Moreover, this holistic view is important since this research explores the determinants on a country level (see main and sub-questions).

Control validity – ensures that the measure, the EE theory, provides items making it possible to investigate an observation of interest. Differently stated it asks whether the measure enables influence and control over a system of interest. The EE theory is particularly suitable – unlike other similar theories, which will be discussed in the next section (**§3.1.2**) – since the EE puts the entrepreneur as the focal point. This focal point position highlights the uniqueness in capabilities and resources of entrepreneurs. Similarly, for this research, we are interested in exploring the uniqueness in capabilities and resources for a particular actor/party: venture capital. Differently stated, VC will be acting as the centred agent – instead of the entrepreneur – which will make it possible to explore its determinants, thus the EE theory enables the bespoken control of the observation of interest.

Limitations of theory choice

We should consider that the choice of theory lens affects the outcomes of a research. This is also the case for choosing the EE theory:

- A holistic view can result in a not rigorous scientific testing and can become too vague and speculative, especially when the explanation list becomes larger and complex. In other words, a too holistic view with too many determinants should be avoided when possible in order for us to give more concrete recommendations.
- Placing venture capital as the focal point may result that this actor receives disproportional attention. Meaning that there might be other actors in the environment that do affect the ecosystem in a particular way, which might be overseen. For instance, with the alternative theories, this issue could be avoided.
- EE is industry agnostic, which means that the research outcomes do not take the industry differences into account. This implies that for instance, industry comparisons will not be possible with the results of this research.

- The EE does not provide a clear view of the geographical boundaries. For example, it could be a city, a region or a country. This lack of geographical clarification means that the model of this research quite possibly may only be applicable to a particular regional comparison and should be mindfully used when looking at other case studies.
- Lastly as Stam & Spigel (2016) rightfully state, the overall EE phenomenon can appear rather tautological: '*entrepreneurial ecosystems are systems that produce successful entrepreneurship, and where there is a lot of successful entrepreneurship there is apparently a good entrepreneurial ecosystem. Such tautological reasoning ultimately offers little insight for research or public policy.'*

The question that now rises is, why is specifically the EE theory chosen of Spigel (2017 & 2018) to examine the environment of VC?

3.1.2. Spigel's Entrepreneurial Ecosystem theoretical perspective

Introduction to Spigel's EE theory

Despite the popularity of entrepreneurial ecosystem theory, there is not yet a wide consensus about its definition amongst researchers or practitioners. Although currently there is not yet a single agreed-upon concept definition of ecosystems and although there may be disagreement about the exact mixture of elements embodying the EE, Spigel (2017 & 2018) suggest these elements can be broadly categorised in cultural, social or material. It is exactly this categorisation that makes it suitable for exploring of the venture capital ecosystem. Prior to reasoning this particular theory choice, explanation of Spigels' EE theory will be given.

In Spigel's (2017) article the most commonly cited attributes of entrepreneurial ecosystems are discussed. These attributes are gathered from previous academia and grouped into these three categories – cultural, social, and material – that explain the level of entrepreneurial activity as the output of entrepreneurial ecosystems. In **Table 2** the attributes and their categories can be seen. It is important to note that these categorical attributes are not isolated from one another, but they are created and reproduced through their interrelationships. An illustration of this interrelationship is seen in **Figure 6**. Let us take an example of this model related to the topic of venture capital. Physical infrastructure such as office space and communication platforms (a material attribute) used by startups is supported by investment capital (a social attribute) to create these facilities, which in turn requires the effort of risk-taking investors within the local culture (a cultural attribute). However, while this physical infrastructure depends on these social and cultural attributes, it also strengthens and reproduces (reinforces) them by attracting more investors who see a growth potential in that region.

Type of attribute	Attribute	Description
Cultural	Supportive culture	Cultural attitudes which support and normalize entrepreneurial activities, risk-taking, and innovation.
	Histories of entrepreneurship	Prominent local example of successful entrepreneurial ventures.
Social	Worker talent	Presence of skilled workers who are willing to work at startups.
	Investment capital	Availability of investment capital from family and friends, angel investors, and venture capitalists.
	Networks	Presence of social networks that connect entrepreneurs, advisors, investors, and workers and that allow the free flow of knowledge and skills.
	Mentors and role models	Local successful entrepreneurs and business people who provide advice for younger entrepreneurs
Material	Policy and governance	State-run programs or regulations that either support entrepreneurship through direct funding or remove barriers to new venture creation.
	Universities	Universities and other higher education institutions which both train new entrepreneurs and produce new knowledge spillovers.
	Support services	Firms and organizations that provide ancillary services to new ventures, for example, patent lawyers, incubators, or accountancies.
	Physical infrastructure	Availability of sufficient office space, telecommunication facilities, and transportation infrastructure to enable venture creation and growth.
	Open markets	Presence of sufficient local opportunities to enable venture creation and unimpeded access to global markets.

Table 2: Type of attributes of the entrepreneurial ecosystem, Source: Spigel (2017)

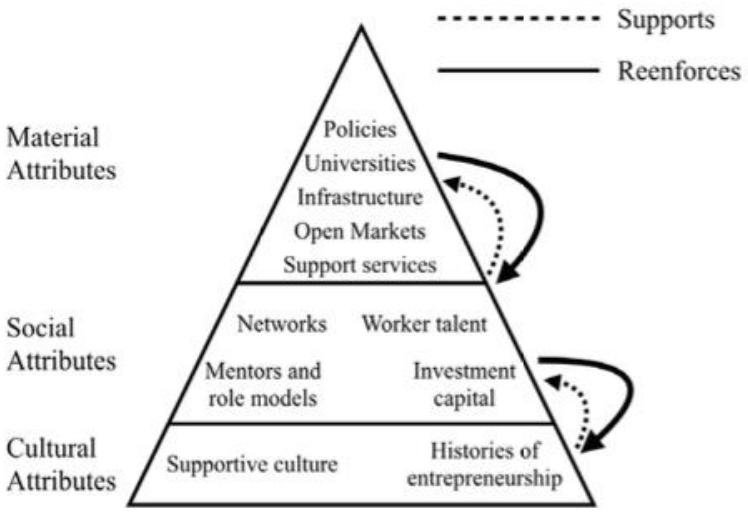

Figure 6: The entrepreneurial ecosystem model, Source: Spigel (2015)

Spigel (2018) continued on his previous work (Spigel, 2017) and developed a process-based perspective to create a framework to understand better how ecosystems develop, evolve, and deliver benefits to entrepreneurs. He shortly mentions that the three elements can function as barriers or encouragers. For instance, positive cultural outlooks can normalise the risks of entrepreneurship and encourage firm creation, while negative outlooks can create barriers to leave stable employment to become an entrepreneur. In addition, he argues in this study that the strength of the ecosystem depends on mainly two factors: the ability of entrepreneurs to access the *resources* within the ecosystem and the *network strength* within the ecosystem. Both can be linked back to the three discussed elements (cultural, social, material). Since successful entrepreneurs often remain in the ecosystem (as angel investors, serial entrepreneurs, dealmakers, or advisors) this results in a stronger ecosystem which can develop a virtuous cycle (*strengthening ecosystem*) or if that is not present it can result in the opposite: a vicious cycle (*nascent ecosystem*). This is illustrated in **Appendix B**. In **Figure 7** a schematic representation is illustrated of different ecosystems types. As can be seen, Silicon Valley is depicted as a *strong* ecosystem. However, this raises some questions related to this research: what are the specifics of these resources and network strength of Silicon Valley? Where can we place the Netherlands in this diagram and how can we change its position if it is not beneficial? These kinds of questions can be linked to the SQs of this thesis and will be discussed further on.

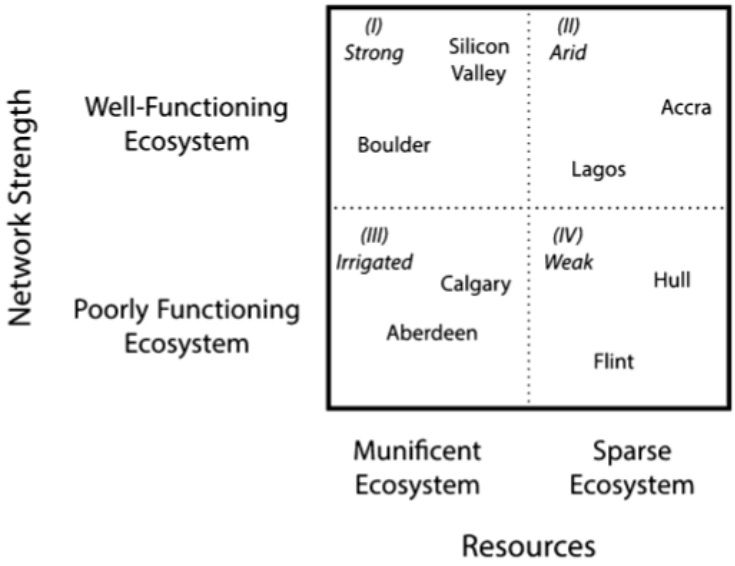

Figure 7: Schematic representation of ecosystem types (Spigel, 2018)

Digging a layer deeper in our theory lens, this research ends up using the EE perspective of these studies by Spigel (2017 & 2018). But why?

Validation of theory choice

As said, the recent popularity of EE has resulted in many academia writings. However, unlike other EE studies, Spigel's EE theory (2017 & 2018) has features that are particularly suitable to analyse the VC ecosystem, again substantiated with the concept of validity.

Content validity – as previously explained it ensures that the measure, in this case Spigel's EE theory, includes a suitable and representative set of items that tap the concept – the VC ecosystem. Spigel's categorisation into cultural, social and material elements does exactly that by ensuring that all these elements are taken into account when studying the VC ecosystem. Therefore, Spigel's categorisation is suitable for the VC ecosystem as it is assumed that the VC ecosystem holds determinants that can be categorised into these three elements as well.

Control validity – as previously explained it ensures that the measure, in this case Spigel's EE theory, provides items making it possible to investigate an observation of interest – the VC ecosystem. The categorisation of Spigel's EE theory is particularly suitable since the activity of VC is influenced by many factors (see **§1.1.7**). Because these factors are explored on a country level, this activity might become too complex to comprehend without this categorisation.

Moreover, the categorisation aids in providing more concrete recommendations by highlighting how the activity of VC is influenced based on the three categories. For instance, one can imagine that determinants having a cultural nature are hardly possible

to change but material ones, such as policies, are more 'controllable'. In other words, the categorisation provides insight into the nature of determinants, thus providing the required 'levers' to give more concrete recommendations at the end of this research for decision makers.

Systemic validity – ensuring that the measure, in this case Spigel's EE theory, explains more than directly can be measured. Differently put, it asks whether the measure enables the creation of whole new conceptual systems or the integration of previously disparate concepts. Starting with the former, Spigel's EE theory allows for an exploration of determinants that were previously not taken into account, as it takes the entrepreneur as perspective. In other words, quite possibly there are determinants that were not previously thought of in the current VC literature, as it merely took the perspective of the VC. In addition to exploration of the determinants of venture capital, this research is also interested in the interaction between these determinants since a comprehension of the differences between VC ecosystems is aspired, and more importantly, how to improve a particular VC ecosystem (see SQ 3). Spigel's (2017) model takes this interaction into account by highlighting the interrelationship between determinants, thus providing an integration of VC determinants that were previously studied in isolation. It is assumed that this integration will provide an extra dimension of understanding of VC ecosystems.

Limitations of theory choice

The outcomes are again affected by choosing this specific theory lens, which will need to be elaborated to present its limitations:

- The use of the categorisation in cultural, social and material factors, forces the results to be moulded into these three elements. This affects the outcomes in the following:
    - In addition to these three categories, it might be the case that a different category is overlooked.
    - A factor can be forced into one of the three categories without really belonging there. This can result in lumping factors together that are unrelated or inessential, which can develop wrong interpretations. For instance, Cohen's (2006) EE perspective mentions social networks as well but makes a distinction between formal and informal networks – avoiding lumping it together and resulting in quite possibly clearer results.
- As said, factors that are related to cultural and social determinants quite possibly will result in lessons learned instead of practical recommendations. For example, the process of changing a cultural element in a region such as the risk-taking attitude, cannot happen instantly and is difficult to steer.

3.2. Venture Capital Ecosystem

Previously, an explanation was given as to why the EE theory (more specifically that of Spigel) is chosen to research the ecosystem of venture capital. Before we can start

researching this phenomenon with this theory, it is important to delimit/define the concept of a venture capital ecosystem in this research, since this was not done before in the current literature. This will be done first by defining and scoping the concept of EE, since as previously said there is not yet a wide consensus about its definition amongst researchers or practitioners. The reason for this lack of consensus could be because both 'entrepreneurial' and 'ecosystem' are fairly nebulous terms. Due to this ambiguous interpretation, several definitions are given to the entrepreneurial ecosystem in different articles. Nevertheless, for this research definition of these terms are chosen as followed for clarity reasons:

1. Entrepreneurship: the process in which opportunities for creating new goods and services are explored, evaluated and exploited (Schumpeter, 1934).
2. Ecosystem: as stated by Acs et al. (2017) in its most abstract sense an ecosystem ('ecological system') is a biotic community, its physical environment, and all the interactions possible in the complex of living and non-living components.

Combining the above this matches the definition given to entrepreneurial ecosystem by Spigel (2017), which will be taken as leading for this research: *combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures.'*

In order for us to close the loop of defining the 'venture capital ecosystem', a definition of venture capital is required. For this, one of the first official documented definition of venture capital is chosen by the European Private Equity and Venture Capital Association in 1989 (Oogh, Manigart, Fassin, 1991): *"Venture capitalists are defined as organisational units or persons who can prove substantial activity in the management of equity or quasi-equity financing for the start-up and/or development of small and medium-sized unquoted enterprises that have significant growth potential in terms of products, technology, business concepts and services; whose main objective is long-term capital gains to remunerate risks; and who can provide active management support to investees."*

As stated in **§1.1.2**, venture capital fosters the process of entrepreneurship. Similarly to entrepreneurship, venture capital is also fuelled by a biotic community with living and non-living components (social, political, economic, cultural). Therefore, it is argued in this research that Spigel's (2017) definition can be combined with that of venture capital to define a venture capital ecosystem (VCE) as followed: *'Combinations of social, political, economic, and cultural elements within a region that foster the development of venture capital, which in turn support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures'*.

3.3. Venture capital determinants

Now that we have defined the concept of venture capital ecosystem we can start making our next steps towards answering the first of the SQ 2 of this research: What does influence the demand and the supply of venture capital in a region according to current literature? According to Felix (2013), the existing literature reveals there is no consensus on this issue. In his article, he gives the following example: '*the interest rate is included in the analysis of Gompers and Lerner (1998b) and Romain and La Potterie (2004) but ignored by Jeng and Wells (2000) and Schertler (2003)*'. Regardless of this lack in consensus, in this section, an effort is made to collect all the current literature that has contributed to discussing the drivers of venture capital. For which the reason is to develop a model with these attributes to be tested afterwards with the case studies. A tabular view of the most related papers can be found in **Table 3 (**placed after the conclusion of this chapter**)** with an explanation of the determinants according to the specific paper. Since a whole section **§1.1.6.** was already dedicated to the determinant 'Public versus private venture capital', this is left out of the table but is taken into consideration in developing the model.

3.4. Conclusion

Summarising the above, the EE theory of Spigel (2017 & 2018) will be used to explore the venture capital ecosystem. The EE theory is chosen due to its holistic perspective which is suitable to explore the venture capital ecosystem on a country level. In addition, the EE allows us to place venture capital as a centred agent, which is important to answer our thesis questions: exploring the determinants that make a successful venture capital ecosystem. However, this exploration can become rather complex, and therefore clarity is needed. Spigel's EE categorisation perspective (cultural, social, material) provides this needed clarity and is, therefore, chosen. In addition, his theoretical model takes the interrelationship between determinants into account, which is again needed for this research (see SQ 3c). However, this theory choice does have consequences on the outcomes of this research, which were discussed above. When possible, these consequences should be taken into account to provide the needed recommendations. Lastly, the literature about the determinants of venture capital was explored and discussed. This is the stepping stone towards the next chapter, where the conceptual model would be drafted by linking Spigel's entrepreneurial ecosystem theory to the venture capital ecosystem.

Author(s)	Title	Countries	Determinants	Explanation/argumentation of determinant
Porta et al. (1997) & La Porta et al. (2000)	Legal determinants of external finance	Global	Investor protection within the legal environment (common vs civil law)	The legal environment and its enforcement impact the size and extent of a country's capital market since a good environment protects the potential investors against expropriation by entrepreneurs. It raises investors willingness to exchange funds for securities (venture equity), thus expanding the VC market. Results show that civil law has both lowest investor protection laws and least developed capital markets (especially French civil law), while common law is exactly the positive opposite. English law is common law, which is made by judges and subsequently incorporated into the legislature. In contrast to French, German Scandinavian law (civil law), which is scholar and legislator made.
Black & Gilson (1998)	Venture capital and the structure of capital markets: banks versus stock markets	US, Germany & Japan	Bank- and stock market-centred capital markets	It is argued that a well-developed stock market that permits venture capitalists to exit through an initial public offering (IPO) is critical to the existence of a vibrant venture capital market, since it allows the venture capitalist and the entrepreneur to contract implicitly over control, in a manner that is not easily duplicable in a bank-centred capital market.
Gompers & Lerner (1998)	What drives venture capital fundraising?	US	1. Economic growth (GDP) 2. R&D expenditures 3. Capital gains tax rates 4. Pension regulations 5. Fund performance	Higher GDP growth and R&D expenditures lead to higher VC activity, while higher tax rates on capital gains lead to lower activity. Furthermore, evidence is provided that beneficial pension regulations such as the ERISA clarification stimulate the commitment to the VC industry. Lastly, better performance and reputation of funds results in a virtuous cycle for raising new capital for funds.

Jeng & Wells (2000)	The determinants of venture capital funding: evidence across countries	Global	1. IPO 2. Labour rigidities 3. Private pension fund levels	In this paper, evidence is found that IPOs are the main force behind the cyclical swings in VC. Their results indicate that the investment stage has different determinants. For instance, labour market rigidities (e.g., flexibility of firing employees, large benefits payments) negatively affect early-stage venture capital investments but have no impact on later stage venture capital investments. They also argue that private pension fund levels are a significant determinant over time but not across countries. Unlike the previous paper, they do not find statistical significance for GDP growth.
Romain & van Pottelsberghe de la Potterie (2004)	The Determinants of Venture Capital: A Panel Data Analysis of 16 OECD Countries	Organisation for Economic Co-operation and Development (OECD)	1. GDP growth 2. Interest rates 3. Corporate income tax rates 4. Technological opportunity: R&D expenditures, number of patents, stock of knowledge	In this paper, GDP growth appears to be significant for VC activity but this growth seems to reduce in markets that have high labor rigidities. Additionally, short-term interest rate has a positive effect on VC, which means that they affect more the demand side of VC (entrepreneurs) than the supply side. Corporate income tax has a negative effect on VC and lastly an increase in technological opportunity impacts VC activity positively. Overall, this paper concludes that the demand-side variables must be stimulated. Meaning that it is not by providing money for VC that VC will be stimulated, but by providing knowledge and improving the entrepreneurial environment.
Armour & Cumming (2006)	The legislative road to Silicon Valley	15 Western European and North American countries.	1. Capital gains tax 2. Liberal bankruptcy laws	Once again it is shown that capital gains tax negatively impacts VC activity. In addition, it is argued in this paper that countries with less liberal personal bankruptcy laws have significant negative impact on the demand for VC - measured by reference to the number of years before a bankrupt individual would obtain a 'fresh start' (meaning a discharge from pre-bankruptcy indebtedness) and controlling for countries in which no fresh start is available

Sørenson (2007)	How Smart Is Smart Money? A Two-Sided Matching Model of Venture Capital	US (California & Massachusetts)	Experience of the venture capital firms	In this paper, it is argued that ventures funded by more experienced VCs are more likely to go public. This, in turn, results in a more active VC environment. First of all, experienced VC investors can add value through their influence on the entrepreneurs (monitoring and managing; access to larger networks; and communicate unobserved qualities about the company increasing the market value of the company). Secondly, experienced investors are better at sorting companies that are inherently better and hence are associated with higher IPO rates. Both sorting and influence are shown to be significant in their results.
Cumming, Schmidt, Walz (2010)	Legality and venture capital governance around the world	Global	1. Legal origin/framework 2. Accounting standards	The authors of this paper demonstrated that more developed legal environments enable faster deal screening and thus foster VC investments. They were able show that better laws facilitate the deal origination process (a process by which VC's source investment prospects), increase the probability of syndication (a process of two VC firms co-investing) and mitigate the probability of (potentially harmful) co-investment (a process of co-investing by funds within the same VC firm). Laws were 'better' in terms of greater legality indices (which includes the efficiency of judicial system, rule of law, corruption, risk of expropriation, risk of contract repudiation, and shareholder rights), as well as English common law judicial systems, stronger accounting standards (curtailing earnings aggressiveness), and stronger creditor rights and anti-director rights. Summarising the above, a sound legal framework can be regarded as an important determinant for the development of sustained venture capital development in a country.
Cumming and Dai (2010)	Local bias in venture capital investments	US	The geographical proximity of venture capital firms	In this paper, it is shown that VC exhibit strong local bias in their investment decisions. Stronger bias is found when a VC firm acts as the lead VC and when it is investing alone, while the less local bias is exhibited by more reputable VC's (better capable of reducing information asymmetry associated with distance). To encourage the development of new ventures it is, therefore, suggested having some local VC's, which in turn result in a virtuous cycle of more local VC's and new ventures.

Zarutskie (2010)	The role of top management team human capital in venture capital markets: Evidence from first-time funds	US	The human capital of VC management team	Evidence is provided that the human capital (experience) of the fund managers play a role in explaining investment performance in venture capital markets – measured by both by the fraction of a fund's portfolio companies that exit via IPO or acquisition and by the ability of a fund management team to raise a follow-on fund. It is found that task-specific human capital (past experience as venture capitalists and/or executives at a startup) and industry-specific human capital (past experience in strategy and management consulting) are significant for the investment performance.
Bonini & Alkan (2012)	The Political and Legal Determinants of Venture Capital Investments around the World	Global	1. Political risk 2. Entrepreneurial environment (endogenous attitude towards risk) 3. Further confirmation of the pervious papers: IPO, interest rate, corporate income tax rates, R&D expenditures	An active VC investment industry is fostered through a stable social environment, where investors and entrepreneurs can deploy long-term commitments. In other words, the quality of the political conditions (e.g., level of corruption, internal conflicts) of a country heavily determine the development of VC activity. In addition, the author of this paper argues that the VC investments are strongly facilitated by a more favourable entrepreneurial environment (including taxes, norms and endogenous attitude towards risk-taking and risk-assessment), which in turn ignites a virtuous cycle for more entrepreneurship and VC activity.

Félix, Pires, Gulamhussen (2013)	The Determinants of Venture Capital in Europe — Evidence Across Countries	Europe	1. Size of merger and acquisition (M&A) market 2. Information asymmetry (Market-to-book ratio) 3. Unemployment rate	This paper examines the idiosyncrasies of the European VC market with supporting results to the idea that, in Europe, the size of the M&A market is relevant in explaining VC investment. This could suggest that the VC market may grow in countries with vibrant M&A markets even if their IPO market is not very developed. In addition, the authors find supporting evidence to the current literature that venture capital financing is relatively more attractive when there is a high degree of information asymmetry, measured by the market-to-book ratio, due to the monitoring role of venture capitalists. Lastly, it is shown that the unemployment rate negatively influences VC activity since it can affect market expectations and influences the decision to become an entrepreneur.
Groh & Wallmeroth (2016)	Determinants of venture capital investments in emerging markets	Global	1. M&A activity 2. Legal rights and investor protection 3. Innovation index 4. IP protection 5. Corruption 6. Corporate taxes 7. Unemployment	Extra evidence is found to support the previously discussed literature on the following determinants: M&A investment volume; legal rights and investor protection; corruption (previously 'political risk'); corporate taxes; and unemployment. In addition, this paper provides evidence that entrepreneurship and VC activity is positively determined with the innovation index (since innovation attracts VC's) and the level of IP protection (since VC's pursue to capitalise on the innovativeness of their portfolio firms, which ought to be protected through IP protection). In addition, this paper emphasises that VC investment drivers can be different for developed and developing countries.

Table 3: Determinants of venture capital

4. Drafting the conceptual model

As said this chapter will be dedicated to explaining the development of the VCE draft model by linking the previous collected VC determinants (see **Table 3**) to the theory of EE (**4.1**). Subsequently, the developed draft model will be explained (**4.2**).

4.1. Linking Entrepreneurial Ecosystem to Venture Capital Ecosystem

4.1.1. Method & consequences

Now that we have identified the concept of EE and VCE with their attributes/determinants, a theoretical linkage can be made between the two. Presented in this chapter is a discussion of the core attributes (cultural, social & material) of the ecosystem according to the theory of Spigel (2017), which as stated previously will be used to develop the VCE model. The method to establish the draft model is to first decide which determinants influencing VC activity are similar to that of the determinants found in Spigel's (2017) EE. Subsequently, argumentation is given as to why and how they can be linked to one another. However, it should be stated that the development of the draft model is affected by the following:

1. The draft model is isolated from other determinants not found in **Table 3**. Meaning that there might be other literature that discusses more determinants, which is overlooked. It could be the case that during the interviews these overlooked determinants are highlighted by the interviewed experts.
2. It could be the case that the linking of an EE determinant to that of VC determinants is correctly argued. Nonetheless, the linking could result in that the EE determinants are more applicable for defining a VCE than the VC determinants and as a result are overlooked in the draft model. This again could be highlighted by the interviewed experts.

By applying the elements identified in Spigel's (2017) study to the discussion of venture capital activity, this research seeks to develop an understanding of what determinants are necessary and what role they play in fostering a VCE similarly to that of Silicon Valley, which has become the most developed ventures capital industries in the world (Wonglimpiyarat, 2005). Stated differently, the goal is to find the rights determinants that regulators or entrepreneurs should focus on to improve the VCE.

4.1.2. Cultural attributes

In this research, cultural attributes are defined as: *all elements that are subjected to beliefs and outlooks about entrepreneurship and venture capital within the region*. In Spigel's (2017) study, two main attributes are mentioned in the cultural element:

supportive culture and *histories of entrepreneurship*. The former meaning, attitudes that support and normalise entrepreneurial activities, risk-taking, and innovation, while the latter being historical examples of local successful startup stories to inspire next generations of entrepreneurs.

In order for us to make the linkage with the VCE, the determinants of VC are used, covered in **§3.3.** Two VC determinants have similarities with the cultural element of entrepreneurship:

- First, the political conditions such as level of corruption and internal conflict within that region, since this can be seen as a cultural attitude (see **Table 3**: Bonini & Alkan 2012; Groh & Wallmeroth, 2016).
- Secondly, the overall entrepreneurial endogenous attitude towards risk-taking and risk-assessment (see **Table 3**: Bonini & Alkan 2012).

The second attribute of Spigel's (2017) cultural element, *histories of entrepreneurship,* is not mentioned in any of the current literature regarding the determinants of VC. However, since this attribute (*histories of entrepreneurship*) does have an impact on the overall entrepreneurship of the region, and therefore also the VC activity, this will be left as a plausible attribute in the model to be tested during the expert interviews.

4.1.3. Social attributes

In this research, the social attributes are defined exactly as that of Spigel's (2017), as it applies to that of VC activity: *the resources composed of or acquired through the social networks within a region*. The importance of social networks and human capital to the VC process is covered in the previous discussed determinants literature. If we look at Spigel's (2017) study, three out of his four attributes are chosen as applicable for the VCE model.

- First, is *Worker talent* ('Presence of skilled workers who are willing to work at startups'), which is similar to *human capital of VC management team* (see **Table 3**: Zarutskie, 2010). It is similar because it is 'skilled workers' but more concrete skilled workers at VC's.
- Second, is *Networks* ('Presence of social networks that connect entrepreneurs, advisors, investors, and workers and that allow the free flow of knowledge and skills') can be linked to *experience of the venture capital firms* since it includes:
  - the social network of the funds (see **Table 3**: Sørenson, 2007)
  - and funds' performance (see **Table 3**: Gompers & Lerner, 1998).
    Both the better performance and reputation of funds (experience) result in a virtuous cycle for raising new capital for funds.
- Lastly, is *Investment Capital* ('availability of investment capital from family and friends, angel investors, and venture capitalists'), which is less similar but does have some resemblance to that of *geographical proximity of venture capital firms* (see **Table 3**: Cumming and Dai, 2010), since it suggested to have some local VC's, which in turn result in a virtuous cycle of more local VC's (more capital) and new ventures.

The fourth attribute, *Mentors and role models*, is not chosen as applicable for the VCE model since this mentorship and role model aspect is an endogenous character already contained in the determinant *experience of venture capital firms* (see **Table 3**: Sørenson, 2007).

4.1.4. Material attributes

The last attribute is the material one, which is defined as that of Spigel's (2017) since again it applies to that of VC activity: *attributes with a tangible presence in the region*. In Spigel's (2017) five material attributes are used. However, three of them are not straightforwardly similar to the determinants of VC found in the discussed literature of **Table 3**. These are the presence of *universities*, *support services* (e.g., patent lawyers, incubators, or accountancies) and *physical infrastructure* (e.g., office space for ventures and telecommunication platforms). However, it is possible that these attributes might influence the VC activity, but have not been researched in the current literature. Therefore, these attributes will be questioned/tested during the expert interviews.

So, which attributes do resemble similarities with that of the literature in determinants of VC?

- First is *policy and governance,* which are regulations that either support entrepreneurship through direct funding, in this case, VC activity, or remove barriers to foster this activity (e.g., tax benefits, investment of public funds, or reductions in bureaucratic regulation).
- The second attribute is *open markets*, which in Spigel's (2017) study is defined as the availability of strong local markets providing opportunities within entrepreneurial ecosystems. In our case, these are strong local markets that foster VC activity. Markets in Spigel's study are defined as the presence of local customers within the marketplace, while in the VCE this is more the broader economic market (e.g., stock markets, M&A markets, GDP growth).

However, there are quite a few determinants in **Table 3** that show resemblance with the two above mentioned attributes. Therefore, unlike Spigel's model (2017) a division is made between policy/legal attributes and economical in the VCE draft model for clarity reasons:

Policy/legal attributes

As stated above these are determinants that are subjected to the concept of regulations (this can be policies or legal framework) that foster (or remove barriers) VC activity. Looking at the determinants discussed in **§3.3.**, these are the following attributes that will be taken into account in designing the VCE model:

1. Legal origin/framework – legal rights and investor protection (Porta et al. 1997; La Porta et al., 2000; Cumming, Schmidt, Walz, 2010; Groh & Wallmeroth, 2016).
2. Tax rates – capital gains & corporate income (Gompers & Lerner, 1998; Romain & van Pottelsberghe de la Potterie, 2004; Armour & Cumming, 2006; Bonini & Alkan, 2012; Groh & Wallmeroth, 2016).
3. Pension size and regulations (Gompers & Lerner, 1998; Jeng & Wells, 2000).

4. Labour rigidities (Jeng & Wells, 2000).
5. Liberal bankruptcy laws (Armour & Cumming, 2006).
6. Interest rates (Romain & van Pottelsberghe de la Potterie, 2004; Bonini & Alkan, 2012).
7. Public vs private funding of VC funds – discussed in **§1.1.6**. (Leleux & Surlemont, 2003; Xu & Yan, 2014; Berlinger, Lovas, Juhász, 2015; Brander, Du, Hellmann, 2015; Dahaj, Cozzarin, Talebi, 2018; Engel & Heger, 2005; Cumming & MacIntosh, 2006; Armour & Cumming, 2006; Brander, Egan, Hellmann, 2009; Xu & Yan, 2014).

Economic attributes

The following are attributes with characteristics that impact or are influenced by the forces of capital markets and the overall national economy:

1. Bank- vs stock market-centred capital markets – IPO (Black & Gilson, 1998; Jeng & Wells, 2000; Bonini & Alkan, 2012).
2. Economic growth – GDP (Gompers & Lerner, 1998; Romain & van Pottelsberghe de la Potterie, 2004).
3. Innovation: R&D expenditures, number of patents, stock of knowledge, innovation index (Gompers & Lerner, 1998; Romain & van Pottelsberghe de la Potterie, 2004; Bonini & Alkan, 2012; Groh & Wallmeroth, 2016)
4. Size of M&A market (Félix, Pires, Gulamhussen, 2013; Groh & Wallmeroth, 2016)
5. Information asymmetry – Market-to-book ratio (Félix, Pires, Gulamhussen, 2013)
6. Unemployment rate (Félix, Pires, Gulamhussen, 2013; Groh & Wallmeroth, 2016)

4.2. Draft of the Venture Capital Ecosystem model

In **Table 4** an overview can be found of the attributes of a VCE, with their categorical attribute and explanation. Similar to the EE model it is important to note that these categorical attributes are not isolated from one another, but they are created and reproduced through their interrelationships. An illustration of this interrelationship is seen in **Figure 8**. In addition, it should be noted that the list is not numerical ordered according to importance. The numbers are given to make the linking part between **Table 4** and **Figure 8** clearer. Nor does the total number of attributes within every category represent more importance of that category. Both the table and illustration will be used and tested during the interviews, which will be discussed in the next chapter. The following attributes are to be tested for plausibility: *histories of entrepreneurship*, presence of *universities*, *support services* (e.g., patent lawyers, incubators, or accountancies) and *physical infrastructure* (e.g., office space for ventures and telecommunication platforms).

Type of attribute	Attribute	Description
Cultural		
	(1) Political conditions	The decision to enter an investment market is motivated more by the stability of the country (corruption, disruptive events) which allows medium- to long-term planning of returns on investment.
	(2) Supportive entrepreneurial culture	The overall cultural attitude that supports and normalise entrepreneurial activities such as risk-taking and risk-assessment.
Social		
	(3) Experience and network of VC firms	Ventures funded by more experienced VC's (past experience of the team, human capital, network) are more likely to succeed, which in turn ignites a virtuous cycle of more entrepreneurship and VC activity.
	(4) Geographical proximity of VC firms	VC exhibit strong local bias in their investment decisions – meaning they invest predominantly in the new ventures that are located in their proximity.
Material		
Policy/legal	(5) Public vs private funding of VC funds	Financial stimulation of VC funds by governments can result in a crowding-out effect: an unwanted phenomenon that occurs when public involvement in an industry (in this particular case VC) pushes out private involvement. Some argue that this result in the exact opposite – crowding in.
	(6) Pension size & regulations	One of the sources to raise capital by VC funds are pension funds. The size of these funds is influenced by the supporting regulations for pensions to invest freely in the VC industry (e.g., Employment Retirement Income Security Act [ERISA]).
	(7) Liberal bankruptcy laws	Personal bankruptcy laws that treat entrepreneurs that have failed in the past more liberally, in the sense that they offer a fresh start quickly, will stimulate the VC activity.
	(8) Legal framework	The legal environment and its enforcement impact the size and extent of a country's capital market since a good environment (e.g., common law being a VC stimulator, strong accounting standards) protects the potential investors against expropriation by entrepreneurs.
	(9) Labour rigidities	Rigid labour laws make hiring employees difficult for companies since they deprive the company of the flexibility to let people go later on, should this become necessary. It is expected that this influences the entrepreneurial activity negatively, thus the VC activity.
	(10) Interest rates	Theoretically, if interest rates rise, the supply of VC should decrease, since a high level of real interest rates reduces the attractiveness of risky investment (taking bonds as an alternative). However, the opposite is noticed in contemporary literature by explaining that (short-term) interest rates also affect bank financing costs. In other words, when bank financing becomes costlier, VC may be a better and a more flexible alternative to raising funds for venture creation by entrepreneurs.
	(11) Tax rates	Lower tax rates (capital gains and corporate income) make it relatively more attractive for a manager or worker to start his or her own company, enhancing the relative level of VC activity, whereas higher taxation of income reduces this level due to an induced lower entrepreneurial will.
Economic	(12) Bank- vs stock market-centred capital markets (IPO)	A well-developed stock market permits VCs to exit through an IPO which allows VCs to enter into implicit contracts with entrepreneurs concerning future control of startup firms, in a way not available in a bank-centred capital market. An IPO exit allows VCs to liquidate their portfolio company

		faster and entrepreneurs to regain their company control through rebuying of shares.
	(13) Economic growth – GDP	Economic growth, measured by GDP, implies higher attractive opportunities for entrepreneurs, which lead to a higher need for VC funding.
	(14) Information asymmetry	VC financing is relatively more attractive when there is a high degree of information asymmetry (measured by market-to-book ratio), due to the monitoring role of venture capitalists.
	(15) Size of M&A market	M&A is a trade sale or secondary sale exit strategy. Vibrant M&A markets seem to stimulate the VC activity. Nowadays both in the US and Europe, M&A exits are more frequent and with higher total exit values than IPO.
	(16) Unemployment rate	The unemployment rate negatively influences VC activity, since it can affect market expectations and influences the decision to become an entrepreneur or to invest in a venture.
	(17) Innovation	VC fosters innovation and vice versa. Measuring the output of innovation can be done with: R&D expenditures; number of patents, stock of knowledge or innovation index.

Table 4: Attributes of the venture capital ecosystem

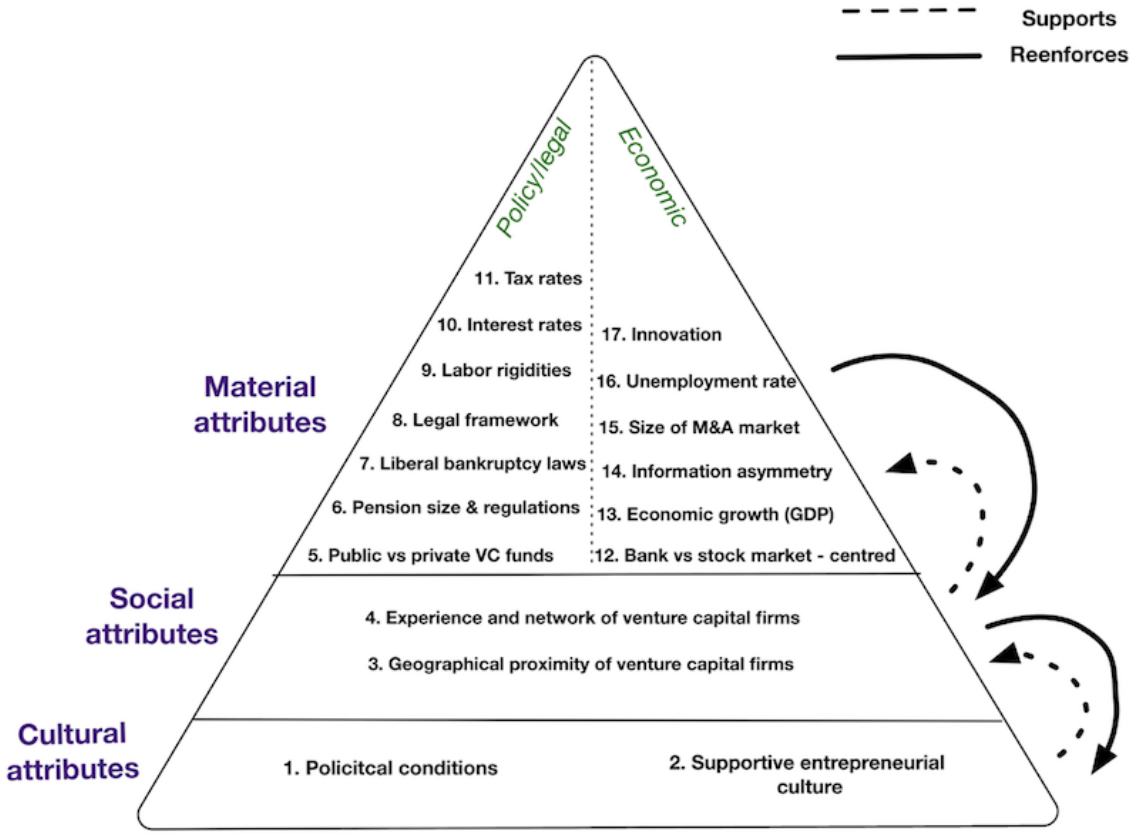

Figure 8: Draft of the venture capital ecosystem model

4.3. Conclusion

In this chapter, a possible theoretical representation of a VCE was drafted, which is needed to achieve the first deliverable of this research. The draft was established by taking Spigel's (2017) EE model as the base and first of all analysing how the contained attributes of this model show resemblance with that of the VC determinants in the developed theoretical framework from the literature review (**Table 3**). Thereafter, the VC determinants of the theoretical framework that did not show resemblance were placed into one of the three categories that fit the scoped definition of that category (material, social, cultural).

The EE theory has aided to enrich the insight of the current understanding of VC ecosystems in several manners, which confirms the validation concept discussed in section **§3.1**. Firstly, as previously said, the total number of VC determinants has become fairly large and complex. By using Spigel's (2017) EE categorisation, the complexity has been reduced and brought more clarity. Secondly, the EE theory has also shed light on to a possible interaction between VC determinants through the holistic perspective, which till now VC determinants were merely investigated in isolation. In other words, the theory has allowed to illustrate a possible interrelationship between VC determinants resulting in an extra dimension of more insights. Thirdly, the EE theory enabled this research to place VC as the centred agent (instead of the entrepreneur) resulting in insights of the uniqueness in capabilities and resources of VCs, thus enabled a control of the observation of interest. Fourthly, the categorisation provides insights into the nature of determinants, thus providing the required 'levers' to give more concrete recommendations at the end of this research for decision makers. Lastly, the EE theory has given possible VC determinants, which were not researched in the current literature of VC and could now be brought to light. The next step is to validate whether this draft model is correct and applicable for the VC ecosystem by interviewing VC experts. This will be discussed in the next chapter.

5. Field research

The purpose of this chapter is to give the reader a clear understanding of how the interviews were executed to validate the draft model developed in the previous chapter. Prior to the interviews, participants received a document (see **Appendix C**) containing: the draft model; explanation of the model; and some high-level questions. As said in **chapter 2**, a semi-structured interview approach is chosen which means that during the interviews, a lead from a respondent's answer can be taken, and other relevant questions that are not on the interview protocol can be asked. This section will start by substantiating the coding method of the interviews conversations (**5.1**). Subsequently, the results of these coding are illustrated (**5.2**), followed by a discussion on how this affects the final VCE model (**5.3**).

5.1. Coding method

5.1.1. Development of the codes

In this section, the method is explained of how the qualitative data is analysed. All seven interviews were recorded and transcribed using ATLAS.ti – a qualitative data analysis & research software. The transcriptions of the interviews can be found in **Appendix D**. It is important to highlight that the interviewed experts shared their personal thoughts and opinions and not as an official capacity of their company. In **Table 5** an overview can be found of the participants with their role, company and their given research codes.

Participant	Role & Company	Code
Felix Zwart	Research, Tax and Regulatory Affairs – *Nederlandse Vereniging van Participatiemaatschappijen (NVP)*	FZ
Olivier Binkhorst	Talent Partner & Advisor – *VentureMonks & DutchTechSF*	OB
Haje-Jan Kamps	Director of Portofolio – *Bolt (Hardware VC)*	HJK
Thijs Gitmans	Fund manager – *NBI Investors (Mainport Innovation Fund II)*	TG
Frank Claassen	Managing Partner – *Newion Investments*	FC
René Savelsberg	Managing Director & CEO – *SET Ventures*	RS
Christiaan Vorkink	Vice President – *True Ventures*	CV
David Dwek	MSc student – *Delft University of Technology*	DD

Table 5: Interview participants' codes

The analysis aims to produce a detailed and systematic recording of the themes and issues shared in the interviews and to link themes and interviews under a reasonably exhaustive category system (Burnard, 1991). A coding system is developed to avoid as much as possible unbiased judgement of the data and to ensure the replicability. The process of developing the coding system was executed by first of all quick reading all the

transcripts, while simultaneously 'pre-coding', which is the process of circling, highlighting, bolding, underlining, or colouring rich or significant participant quotes or passages worthy of attention (Strauss, 1987). Thereafter, each interview transcript was read carefully while simultaneously assigning codes by labelling words phrases sentences and/or sections according to relevance and pattern recognition. The judgement of relevance was based on whether the labels were repeated in several interviews, mentioned as important, or were surprising. Pattern recognition was done by looking at (Strauss, 1987):

- similarity (things happen the same way)
- difference (they happen in predictably different ways)
- frequency (they happen often or seldom)
- sequence (they happen in a certain order)
- correspondence (they happen in relation to other activities or events)
- causation (one appears to cause another)

However, rarely is the first cycle of coding data perfectly executed. Therefore, a second, third, fourth cycle – and so on – was needed by altering or removing codes until a saturated coding scheme was achieved. This iterative process is depicted in **Figure 9**.

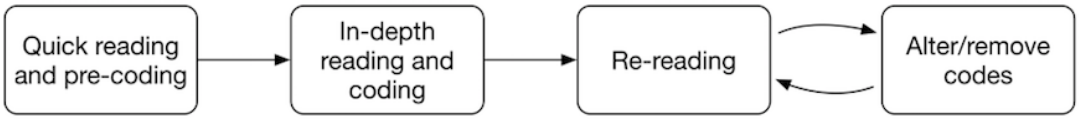

Figure 9: Process of assigning codes to interview transcripts

The codes are divided into four categories with each having their own subcategories. The codebook with categories, subcategories, codes and description is illustrated in **Table 6**. The first category is *Spigel's EE theory*. This category is chosen since the EE is the leading theory of this research which demands attributes to be moulded in one of these categories (material [MAT], social [SO], cultural [CU]). The second category is *Validation of the model*, as this is one of the demands of the interview goals. The validation process was executed by asking whether there is something missing or incorrect about the draft model and if the plausible attributes discussed in **chapter 3** could be added (MA, IA, TA – related to SQ 2 of this research). The case study approach of this research demanded to create the third category: *Region analysis*. The region analysis of the Netherlands and Silicon Valley – which was the second goal of these interviews – allows for insights and exploration of the different types of relationships (with the help of the EE theory) between attributes in both VC ecosystems in order for us to draw lessons on how to create a successful VC ecosystem (NLS, NLW, SVS, SVW, CSE – related to SQ 3, 4 & 5 of this research). Lastly, there are codes which required separation from the above as they did not belong to these categories but had characteristics of the abovementioned relevance and pattern recognition, thus demanded subcategories due to clarity reasons. These are placed into the *General* category (VCM, LP, MAR, GOV).

Categories	Code	Description
Spigel's EE theory		
Material	MAT	Attributes/aspects or issues with a tangible presence in the ecosystem
Social	SO	The resources composed of or acquired through the social networks within the ecosystem
Cultural	CU	All elements that are subjected to beliefs and outlooks within the ecosystem
Validation of the model		
Missing attributes	MA	Contains attributes which were stated to be missing
Incorrect attributes	IA	Attributes said to be incorrect or ones that could be altered
Tested attributes • Histories of entrepreneurship • Presence of universities • Supportive services • Physical infrastructure	TA HE PU SS PI	Attributes tested for plausibility: *histories of entrepreneurship*, the *presence of universities*, *support services* and *physical infrastructure* (for more details about these attributes see **chapter 3**)
Region analysis		
NL strengths	NLS	Thoughts and opinions related to the strengths or unique aspects of the Netherlands
NL weaknesses	NLW	Thoughts and opinions related to the weaknesses of the Netherlands
Silicon Valley strengths	SVS	Thoughts and opinions related to the strengths or unique aspects of Silicon Valley
Silicon Valley weaknesses	SVW	Thoughts and opinions related to the weaknesses of Silicon Valley
Creating a successful ecosystem	CSE	Aspects related to the issue of creating a successful VC ecosystem or aspects related to replicating Silicon Valley's success.
General		
Venture capital model	VCM	Issues related to how the venture capital model works
Limited partners	LP	Contains thoughts and opinions about investors in venture capital (also known as the limited partners)
Market	MAR	Issues related to the overall market within an ecosystem
Government	GOV	Issues that are related to the government

Table 6: Codebook

5.1.2. Assigning codes

Importance of a code is given based on whether it was mentioned per interview over the total of seven interviews and not based on the total times it was mentioned over

all the seven interviews. In other words, this means that a code is assigned not more than once within the same interview. For example, '*CU_risk perception*' is whenever an issue is mentioned regarding the risk perception within the ecosystem (part of the 'Cultural' category). This code was mentioned at participant RS a total of three times, once at participant HJK and zero times at participant FZ. Suppose we are looking at only these three interviews, that would give us a total of four times when in fact it was mentioned only at two interviews. The choice of assigning a code once per interview affects the results:

- First of all, the results exclude the possibility of giving importance based on individual judgement but more based on the collective.
- Secondly, an issue is weighted evenly per participant, which makes it possible to give somewhat of a comparative judgement between the codes.

5.2. Results & Discussion

This section will illustrate the results and discuss how this affects the conceptual VCE model. A total of 97 different codes were created, and a total of 235 codes were assigned. The results are viewed in the following tables which are divided according to the categories mentioned in **Table 6**. The results within a category are sorted from largest to lowest score with 0 being the lowest mentioning of a particular code and 7 being the highest mentioned code. The latter is because a code is not assigned more than once per interview, as stated in **§5.1.2**.

5.2.1. Incorrectness in the model

The following conclusions are drawn from the results in **Table 7**:

- There is no unanimous shared opinion (or one that sticks out) between the participants about a particular matter that is incorrect in the model. However, by combining several codes (referring to the ones starting with IA_generic), a conclusion can be drawn that the model is quite possibly too broad or all-encompassing, since it takes many microeconomic determinants (interest rates, tax rates) into account, making the purpose of the model unclear. This means that the model needs to be simplified.
- Therefore, a decision is made that the conceptual model will only take the attributes into account that were stated as important in the interviews.
- It is mentioned that the model lacks an important factor, which is the dimension of showing how the game of VC works: (1) limited partners invest in (2) VC which in their turn invest in (3) startups. Without the limited partners and the startups, the VC sector would not exist. Therefore, the conceptual model should illustrate this dimension with VC as a party between limited partners and the startups, at which some attributes touch upon all three parties (e.g., education).
- Other detailed adjustments:
    - *(4) Geographical proximity of VC firms & (16) Unemployment rate* are taken out since this is explicitly mentioned to be incorrect.
    - *(5) Public vs private VC funds, (6) Pension size & regulations, (7) Liberal bankruptcy laws, (8) Legal framework*, *(9) Labor rigidities, (10) Interest rates,*

(11) Tax rates are merged into one attribute *Legislation, regulations & fiscal policies.* The reason for this merging is twofold. First of all, for the simplification reason mentioned above and secondly because it was mentioned during the interviews that regulations are not exclusively for pensions (attribute 6) but also for other entities, e.g. banks, insurance companies (*IA_'pension sizes and regulations' falls under government regulations).*

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
IA_'geographical proximity' is incorrect or not necessary	0	1	0	0	0	1	1	3
IA_'pension sizes and regulations' falls under government regulations	0	0	0	0	1	1	0	2
IA_'public VC funds have a negative effect	0	1	0	1	0	0	0	2
IA_'unemployment rate': not important or said to be positive aswell for entrepreneurship	0	1	0	0	0	1	0	2
IA_education should be at all layers, not only universities	0	0	1	0	1	0	0	2
IA_generic_model is fairly broad, all-encompassing	1	0	0	0	0	0	1	2
IA_generic_venture capital is an in-between party	0	0	0	0	1	0	1	2
IA_'economic growth': economic downturn can have a positive influence	0	1	0	0	0	0	0	1
IA_'labour regidties' can have a positive influence	1	0	0	0	0	0	0	1
IA_generic_attributes are plausible but the model can be simplified	0	0	0	0	0	1	0	1
IA_generic_lacks the dimension 'LP, VC, startups', where for example education is at all three levels	0	0	0	0	1	0	0	1
IA_generic_purpose of the model is unclear	0	0	0	1	0	0	0	1
IA_generic_some determinants are micro-economic: interest rates, tax rates	0	0	1	0	0	0	0	1
TOTALS:	2	4	2	2	4	4	3	21

Table 7: Results incorrectness in the drafted model

5.2.2. Missing attributes

Overall there is a consensus between the participants on a few missing attributes:

- *MA_SO_maturity and experience of the ecosystem*: The age and experience of the ecosystem determine the successfulness. This has to do with the code: *CSE_TA_HE_successful entrepreneurs and stories re-invest and strengthen the ecosystem* (**Table 8**), which can be linked to the virtuous cycle concept mentioned in the current literature by Gompers & Lerner (1998), Cumming & Dai (2010), Bonini & Alkan (2012) and Spigel (2018)
- It is said that the presence of universities is important (see the code: *TA_PU_important* in **Table 9**). However, participants state that it is the overall talent and education present in the ecosystem, which is not only at universities but at different levels of educations. Spigel's (2017) model mentioned part of this in *Worker Talent* (see **Table 2**: 'Presence of skilled workers who are willing to work at startups'). However, he merely focusses on the talent of workers and not of the overall ecosystem. Therefore, the attribute 'Talent & education' will be added, which will contain the presence of universities.
- *MA_LP_insurance companies, banks, pensions funds, individuals, corporates, government, endowment funds*: limited partners as said in **§5.2.1**.

- *MA_MAT_MAR_size of the market*: The overall characteristics of the market within the ecosystem impacts how successful startups can sell their technology/innovations. Examples are the size of the market (the United States has a big home market in comparison to the Netherlands) and the overall absorption level by corporates in the market (*MA_MAT_MAR_absorption level*). This shows more resemblance with the determinant of Spigel (2017): *Open markets* – 'Presence of sufficient local opportunities to enable venture creation and unimpeded access to global markets'. That Spigel's determinants could be more applicable to the VCE was correctly hypothesised in **§4.1.1.**
- *MA_SO_social networks/social fabric* was touched upon in the draft model with *(3) Experience and network of VC firms.* However, it is broader than only the network of VCs alone. It is the overall network between entrepreneurs, VCs and other entrepreneurial services that can foster warm introductions and speed up the investing process. A determinant by Spigel's (2017) was again more correctly for the VCE model: *Networks* ('Presence of social networks that connect entrepreneurs, advisors, investors, and workers and that allow the free flow of knowledge and skills').
- *MA_MAT_intrapreneurship* is the entrepreneurship developed within corporates that eventually can stay in the corporate or lead into spinoffs. It can be seen as a competitor of VC funding since the more intrapreneurship (own corporate funding) an ecosystem has; the less VC funding is required to develop an innovation.
- *MA__MAT_mission driven government* is the role of the government in stimulating fundamental research to boost innovation in a particular field. For example, the Space Race to the moon during the 1960s by the United States and the security issue of the Israel Defence Forces. Both resulted in numerous innovations and startups in their ecosystems. According to Mariana Mazzucato (2013), an expert in the economics of government-led innovation, the basic research behind every innovation within a smartphone (GPS, microchips, touchscreens and the Internet itself) was funded by the US government. Moreover, as Kate Raworth wrote in her book *Doughnut Economics* (2017): "*the state may also step centre stage, taking entrepreneurial risks where the market and commons can't or won't reach*".

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
MA_SO_maturity and experience of the ecosystem	1	1	1	1	1	0	1	6
MA_SO_ecosystem of talent & education	0	1	1	1	1	0	0	4
MA_LP_insurance companies, banks, pensions funds, individuals, corporates, government, endowment funds	1	0	0	0	1	1	1	4
MA_MAT_MAR_size of the market	1	0	1	1	1	0	0	4
MA_SO_social networks/social fabric	0	1	1	1	0	0	1	4
MA_MAT_intrapreneurship	1	0	0	0	0	0	0	1
MA_MAT_MAR_absorption level of the market: acquisition of startups by corporates	0	0	0	0	0	0	1	1
MA_MAR_absorption level of the market: technology, innovation, developments	0	0	0	0	0	1	0	1
MA_MAT_mission driven government	1	0	0	0	0	0	0	1
TOTALS:	5	3	4	4	4	2	4	26

Table 8: Results of missing attributes

5.2.3. Tested attributes

A binary system was used to determine whether a participant found the tested attributes to be important or not. Reason for this decision is to avoid a Likert scale on importance, thus a grey zone. The following is the binary system:

Important	Not important
Participant states clearly that the attribute is important.	Participant states that the attribute is: not important; less important; not a requirement; secondary; supportive; or inferior.

In addition, the inclusion of the tested attribute in the model is based on whether the majority of the participants thinks it is important. In other words, four or more participants should state that the attribute is important to include it. Following **Table 9** this results in:

- Model inclusion:
  - *Histories of entrepreneurship* [7 out of 7]
  - *Presence of universities* [7 out of 7] (will be changed into Talent & education, see **§5.2.2**)
- Model exclusion:
  - *Physical infrastructure* [1 out of 7]
  - *Supportive services* [3 out of 7]

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
TA_HE_important	1	1	1	1	1	1	1	7
TA_HE_not important	0	0	0	0	0	0	0	0
TA_PI_important	0	0	1	0	0	0	0	1
TA_PI_not important	1	1	0	1	1	1	1	6
TA_PU_important	1	1	1	1	1	1	1	7
TA_PU_not important	0	0	0	0	0	0	0	0
TA_SS_important	1	1	1	0	0	0	0	3
TA_SS_not important	0	0	0	1	1	1	1	4
TOTALS:	4	4	4	4	4	4	4	28

Table 9: Results tested attributes

5.2.4. The regions: the Netherlands & Silicon Valley

The codes found in the **Tables 10, 11, 12,** and **13**, can be divided into material (MAT), social (SO) and cultural (CU) elements. It is important to notice that all these elements can be seen as a **barrier** or as an **encourager** in the context of fostering an ecosystem. This aspect was also touched upon by Spigel (2018) and was shortly mentioned in section **§3.1.3**. For example, *NLW_MAT_MAR_fragmented market due to geography; language, borders, culture*, is a material barrier, because the fragmentation of the European market (different languages, cultures, and laws) acts as an impediment for the Dutch VC ecosystem to grow. Another example is *SVS_SO_success stories,* a social element. Successful entrepreneurial stories within the ecosystem assist other attributes in the ecosystem, such as cultural ones – resulting in the discussed virtuous cycle aspect. A cultural element example is *NLW_CU_risk taking mentality (risk averse)*: a risk-averse

mentality in contrast to the risk-taking mentality of Silicon Valley (*SVS_CU_risk-taking mentality (risk taking)*), can act as a barrier for the overall Dutch ecosystem to foster.

After developing the conceptual VCE model in the next chapter, the results of both regions will be used to compare the regions.

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
NLS_SO_NL lags behind but is making successful entrepreneurial steps	1	0	1	0	1	1	0	4
NLS_MAT_unique industry examples: agriculture, biotech, energy transition, FinTech, logistics, watermanagement	1	0	0	0	1	1	0	3
NLS_CU_culturally sensitive	0	1	0	0	0	0	0	1
NLS_MAT_geographical proximity	1	0	0	0	0	0	0	1
NLS_MAT_geographical proximity NOT CONFIRMED	0	1	0	0	0	0	0	1
NLS_MAT_GOV_stability in government vision	0	1	0	0	0	0	0	1
NLS_MAT_PU_accessibility of top education	0	1	0	0	0	0	0	1
TOTALS:	3	4	1	0	2	2	0	12

Table 10: Results of strengths of the Netherlands

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
NLW_CU_think less big/ humble mentality/ less ambitious	0	0	1	1	1	1	0	4
NLW_MAT_MAR_fragmented market due to geography; language, borders, culture, laws	1	0	2	0	1	0	0	4
NLW_CU_risk-taking mentality (risk averse)	0	1	1	0	0	1	0	3
NLW_MAT_maturity & experience	1	1	1	0	0	0	0	3
NLW_MAT_GOV_government should remove barriers for institutions to invest in VC	1	0	0	0	0	1	0	2
NLW_MAT_LP_investors in VC are not banks, insurance, pensions	1	0	0	0	0	1	0	2
NLW_MAT_seed-to-growth phase	0	0	1	0	0	1	0	2
NLW_SO_social networks/ social fabric	0	1	1	0	0	0	0	2
NLW_CU_European VCs tend to exit much faster because they never seen a big exit before	0	0	0	1	0	0	0	1
NLW_CU_no pay-it-I mentality	0	1	0	0	0	0	0	1
NLW_MAT_late stage funding	1	0	0	0	0	0	0	1
NLW_MAT_legislation – labour rigidities	0	1	0	0	0	0	0	1
NLW_MAT_small money / small funds	0	0	0	0	0	1	0	1
NLW_MAT_PU_entrepreneurial universities	0	0	0	0	0	1	0	1
NLW_VCM_derivative of the original VC model	0	0	0	0	0	1	0	1
TOTALS:	5	5	7	2	2	8	0	29

Table 11: Results of weaknesses of the Netherlands

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
SVS_SO_maturity & experience	1	1	1	1	1	0	1	6
SVS_CU_risk-taking mentality (risk taking)	0	1	1	1	0	1	1	5
SVS_CU_big thinking mentality	0	0	1	1	1	1	0	4
SVS_CU_failing is accepted	0	0	1	1	1	0	1	4
SVS_MAT_size of the market	1	0	1	1	1	0	0	4
SVS_SO_success stories	1	0	0	1	1	1	0	4
SVS_MAT_a lot of money available/ big funds	0	0	1	0	1	1	0	3
SVS_MAT_legislation, regulations and fiscal policies; employment at will, bankruptcy laws, pension law, tax laws	1	1	0	0	1	0	0	3

SVS_SO_social networks/ social fabric	0	1	1	1	0	0	0	3
SVS_CU_pay-it-forward mentality	0	1	0	0	0	0	1	2
SVS_MAT_abosorption level of the marketplace	0	0	0	0	0	1	0	1
SVS_SO_world class universities	1	0	0	0	0	0	0	1
SVS_SO_talent exodus	0	0	0	1	0	0	0	1
TOTALS:	5	5	7	8	7	5	4	41

Table 12: Results of strengths of Silicon Valley

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
SVW_SO_expensive talent, not-loyal talent, expensive housing	0	0	1	0	1	1	1	4
SVW_CU_working pressure is too high	0	0	0	1	0	1	0	2
SVW_MAT_infrastructure	0	1	0	0	0	1	0	2
SVW_CU_no selective money	0	0	1	0	1	0	0	2
SVW_MAT_labour regidities laws	1	0	0	0	0	0	0	1
SVW_MAT_one-industry-town – technology	0	0	0	0	0	0	1	1
SVW_govermental vision changes (democratic & republic cycle)	0	1	0	0	0	0	0	1
TOTALS:	1	2	2	1	2	3	2	13

Table 13: Results of weaknesses of Silicon Valley

5.2.5. Creating a successful ecosystem

The results in **Table 14** have less of an impact on developing the conceptual VCE model since they possess more of a recommended nature within particular attributes. However, they should be taken into account when developing the model in such a way that these results can be linked to attributes. One aspect does need special notice, which is *CSE_TA_HE_successful entrepreneurs and stories re-invest and strengthen the ecosystem.* This code was time after time mentioned as the core for developing a vivid ecosystem. It means the following: (1) create successful stories that in their turn (2) act as an example (role model) for others within the ecosystem to do the same (3) attract other successful stories outside of the ecosystem to settle and strengthen the ecosystem and lastly (4) invest their time, money, knowledge in for instance their new successful story or in that of other promising stories as experts, business angels, or venture capitalists.

In addition, results from **Table 14** show that the participants do not recommend to copy Silicon Valley to other regions since the differences are irreproducible due to cultural; geographical; experience and maturity differences. Instead, it is recommended to focus on the unique strong industries of a region while avoiding being a one-industry-town (*SVW_MAT_one-industry-town – technology*). For example, for the Netherlands, the following industries were mentioned as strong and promising: agriculture, biotech, energy transition, FinTech, logistics, water management. This reasoning is in line with the analysis of Hospers (2006) which recommends policymakers to develop economic development strategies that are based on an assessment of the region's specific characteristics instead of copying successful regional ones from abroad.

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
CSE_TA_HE_successful entrepreneurs and stories re-invest and strengthen the ecosystem	1	1	1	1	1	1	1	7
CSE_GOV_government should focus on their strong industries instead of copy other successful regions	1	0	0	0	1	1	1	4
CSE_GOV_government should stimulate entrepreneurship at universities but also very early and at all levels of education	1	0	0	0	2	1	0	4
CSE_create successes	0	0	1	0	0	1	1	3
CSE_GOV_government incentive not in line with that of startups: short term focussed, job creation and tax income	0	1	0	1	0	1	0	3
CSE_do not copy paste Silicon Valley – focus on the unique national industries	0	0	0	0	1	1	0	2
CSE_do not copy paste Silicon Valley – process of 60 years.	0	0	0	0	0	1	1	2
CSE_do not copy paste Silicon Valley – cultural, geographical & experience differences	0	0	0	1	0	0	0	1
CSE_do not copy paste Silicon Valley – quality of life is not optimal	0	0	0	0	0	1	0	1
CSE_GOV_government should focus on several strong and unique industries to avoid being a one-industry-town	0	0	0	0	0	0	1	1
CSE_GOV_government should have a long-term perspective	1	0	0	0	0	0	0	1
CSE_GOV_government should not cuddle entrepreneurs but should remove barriers	0	0	1	0	0	0	0	1
CSE_GOV_government should remove barriers for financial and institutional money to invest in VC	0	0	0	0	0	1	0	1
TOTALS:	4	2	3	3	5	9	5	31

Table 14: Results on how to create a successful venture capital ecosystem

5.2.6. Additional

Cultural attributes

Unlike the social and material attributes, the cultural attributes were discussed more comprehensively. It is therefore that these attributes are placed in a table separately (**Table 15**). Although the codes are self-explanatory, there is something to be said about these codes:

- *CU_risk perception* (5 out of 7) is for instance in line with the studies of Bonini & Alkan (2012) and Spigel (2017) who both state that risk mentality fosters the VC and entrepreneurial ecosystem.
- *CU_tolerance of failure* (4 out of 7) means the perspective within a region regarding the failure of an entrepreneur or a venture. For instance, it is said that Silicon Valley has a high tolerance for failure resulting that people within that region dare to take risk.
- *CU_ambitious mentality* (3 out of 7) is subjected to the mindset of setting the bar high when it comes to the beliefs and outlooks within the ecosystem. Participant Haje Jan Kamps shared the following opinion about this aspect: "*I feel like a 4x return is rated a lot more in Europe because it is a return. In our fund model, it doesn't move the needle. If 4 or 5x return is good, you can't be sad about that since you make more money than you put in but at the same time, if you are looking at the bigger picture and how the venture capital model works, a 4 to 5x return is not good enough. And I think that is where the mindset needs to change in Holland*

for example (…) But to do that, you need to have founders who have the faith in themselves, and who have the experience".

- *CU_language* (3 out of 7): it has been said that the spoken language within a region can function as a barrier. For example, Europe is more fragmented language-wise, and this can result that for instance, a Dutch startup has more difficulties penetrating different markets in European countries (multiple languages) than a Silicon Valley-based startup which has the United States (English speaking) as the penetrating market.
- *CU_pay-it-forward mentality* (3 out of 7) meaning the willingness of previous entrepreneurs and experts to return their resources (knowledge, finance, network) into the ecosystem. This cultural mindset (pointed out by Spigel [2017]) was not chosen as applicable for the VCE model during the drafting section in **§4.1.2** since the mentorship and role model aspect was reasoned as an endogenous character already contained in the determinant *experience of venture capital firms.* However, three participants highlighted this element as important, and therefore this will be more stressed out in the VCE model.
- *CU_work ethics* (2 out of 7): the willingness of employees to work hard and longer hours within the ecosystem.

Lastly, the code *CU_change happens organically* needs special notice. All the above are cultural and important factors that a region needs in order for it to thrive. However, if looked closely all of these factors are more or less interrelated in a way that if there is an overall thriving ecosystem, the factors strengthen each other. This makes it a typical chicken and egg situation: you need this culture for the ecosystem to thrive but you need a thriving ecosystem to create this culture. Whichever way you look at it, the fact of the matter is that a culture cannot be steered on the short-term, but it is something that happens in the long-term organically. Therefore, a focus should be set on how to create a successful ecosystem, discussed previously in **§5.2.5**. This will be more emphasised in **chapter 8**.

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
CU_risk perception	0	1	1	1	0	1	1	5
CU_tolerance of failure	0	0	1	1	1	0	1	4
CU_amibitious mentality	0	0	0	1	1	1	0	3
CU_language	1	0	1	0	1	0	0	3
CU_pay-it-forward mentality	0	1	0	1	0	0	1	3
CU_work ethics	0	0	0	1	0	1	0	2
CU_change happens organically	0	1	0	0	0	1	0	2
TOTALS:	1	3	3	5	3	4	3	22

Table 15: Results on cultural attributes

VC model mechanisms

In addition, participants also shared their opinions and thoughts about the mechanisms of the VC model. Although questions were not asked specifically about this matter, this came about as important since it influences the VCE in the following (see **Table 16** for the frequency of the related codes):

1) The original VC model:
    a. was invented by the financial sector who were seeking a way to benefit from investment revenues in ventures before these ventures went public.

b. is a long-term game.

2) Current VC model is a derivative of the original one:
   a. Currently in Europe, and especially in the Netherlands, big money is not invested in VC by entities as the financial sector. Why? According to participant René Savelsberg, this has to do with too much legislation (see **Table 14**: *CSE_GOV_government should remove barriers for financial and institutional money to invest in VC*.
   b. This void resulted in the involvement of the government and corporates in the VC sector. However, both parties changed VC into a short-term game since both have a different interest than maximising the ROI, which is not in line with the original VC model:
      i. Corporate ventures have a strategic interest (innovations) in the deal flow (business proposals/investment pitches by new ventures).
      ii. The government has a strategic interest in maximisation of job creation and taxes.
      iii. In other words, the interest of both investor entities results that startups exit too fast resulting in lower returns and less growth of the VCE.

This matter will be taken into consideration in **chapter 8,** where SQ 5 of this research will be discussed.

	P 1: FZ	P 2: OB	P 3: TG	P 4: HJK	P 5: FC	P 6: RS	P 7: CV	TOTALS:
VCM_VC is a long-term game	1	1	0	1	1	0	1	5
VCM_comparing the venture capital data of the two regions is hardly possible	1	0	1	1	0	0	0	3
VCM_LP_corporate ventures not in line with original VC model since not ROI driven; more short term vision; more a strategic interest in dealflow	0	0	0	0	1	1	0	2
VCM_original VC model was by financial sector.	0	0	0	1	0	0	0	1
VCM_original VC model was by financial sector. Now more by corporates and governments with short term vision	0	0	0	0	0	1	0	1
TOTALS:	2	1	1	3	2	2	1	12

Table 16: Results regarding the mechanisms of the VC model

5.3. Conclusion: improving the draft model

The field research has provided extensive data that might result in losing sight of the matter at hand. It is, therefore, a good moment to reflect to the goal of this field research, which is validating the drafted VCE model (see also SQ 2). The following points are a summarisation of the required changes to the drafted VCE model (see **Figure 8**) according to the collected data:

1. **Simplification:**
   a. Draft model: takes too many microeconomic determinants into account, which results in an unclear purpose of the model, unclear interrelationship between the attributes and lack of understanding of how the model functions.
   b. Final model:

i. The VCE model will, therefore, be simplified by placing solely the determinants which were mentioned in the interviews as important.
ii. As said attributes (5) to (11) (see **Table 4**) will be merged into one: *Legislation, regulations & fiscal policies*

2. **Adding a dimension:**
   a. Draft model: lacks the parties who directly influence the dynamics of VC investments – limited partners (investors in VC) and startups.
   b. Final model: limited partners invest in VC which in their turn invest in new ventures/startups. From the interviews (*CSE_TA_HE_successful entrepreneurs and stories re-invest and strengthen the ecosystem*) and literature (Gompers & Lerner, 1998; Cumming & Dai, 2010; Bonini & Alkan, 2012; Spigel, 2018), it has become clear that the latter party (founders of the startups) can become investors themselves in startups as business angels or even starting their own venture capital firm. This (re-)investment dynamic/cycle will be included in the model.
3. **Attributes functioning as a barrier/encourager:**
   a. Draft model: describes that the three categories can *support* or *re-enforce* each other. Although this is not falsely stated, it does lacks the fact that an element can function as a barrier as well.
   b. Final model: the categorical attributes (cultural, social, material) will be depicted between the three parties (limited partners [investment capital], VC, startups – see previous point), since all of the researched attributes can act as a barrier or as an encourager which affects the (re-)investment behaviour of these parties in the ecosystem.
4. **Material barriers/encouragers:**
   a. Draft model: contains attributes that were described by the participants as macro-economic, making it quite broad and all-encompassing. Reflecting on the point made in **§3.1.1**, a too holistic view with too many attributes should be avoided when possible for the sake of more concrete recommendations.
   b. Final model: will contain the micro-economic attributes but these will be merged into an overarching attribute to avoid a too holistic view. From the interviews three tangible attributes, which can function as a barrier or as an encourager within the ecosystem, are extracted:
      i. Legislation, regulations & fiscal policies (see previous made point 1.b.II)
      ii. Market (size of the market, absorption level), substantiated with the codes: (*MA_MAT_MAR_size of the market, MA_MAT_MAR_absorption level of the market: acquisition of startups by corporates, MA_MAR_absorption level of the market: technology, innovation, developments*)
      iii. Mission-driven government (R&D, education, unique industries), substantiated with the codes: *MA_MAT_mission driven government; CSE_GOV_government should stimulate entrepreneurship at universities but also very early and at all levels of education; CSE_GOV_government should focus on their strong industries instead of copying other successful regions*.
5. **Social barriers/encouragers:**
   a. Draft model: attribute (4) was stated to be incorrect (*IA_'geographical proximity' is incorrect or not necessary*). Whereas attribute (3) was touched upon in the draft model but according to the participants it is broader than

only the network of VCs alone. It is the overall network between entrepreneurs, VCs and other entrepreneurial services that can foster warm introductions and speed up the investing process.

b. Final model: from the interviews four social attributes, which can function as a barrier or as an encourager within the ecosystem, are extracted:
   i. Social fabric/ social network
   ii. Maturity & experience of the ecosystem
   iii. Talent & education (includes *Presence of universities* – tested attribute [*TA_PU_important*]*)*
   iv. Success stories within the ecosystem (includes *Histories of entrepreneurship* – tested attribute [*TA_HE_important*])

6. Cultural barriers/encouragers:

a. Draft model: attribute (1) was not mentioned over all the interviews. As said, if an attribute was not mentioned it will be left out of the final model for simplification reasons. Attribute (2) is correct but the specification of what exactly 'supportive' means was not touched upon. This was extensively shared by the participants (see **Table 15**).

b. Final model: participants shared multiple cultural attributes that can function as a barrier or an encourager to thrive the VCE ecosystem (cultural change happens organically in the long-term):
   i. Risk perception
   ii. Tolerance of failure
   iii. Ambitious mentality
   iv. Language
   v. Pay-it-forward mentality
   vi. Work ethics

The following step is to develop the final conceptual VCE model according to these adjustments. This will be done in the next chapter with a more elaborative explanation of how the model works and how this can be used to understand the VCE of a region, and more importantly, how to improve the VCE of a region.

6. The conceptual Venture Capital Ecosystem model

This chapter will be solely dedicated to explaining how the developed conceptual VCE model works starting with a high-level explanation (**6.1**) and followed by diving deeper into each main category (demanded by Spigel's EE theory): material (**6.2**), social (**6.3**), and cultural (**6.4**) attributes.

6.1. High-level explanation

Figure 9 is an illustration of the conceptual model for a venture capital ecosystem. This is based on the drafted VCE model (**Figure 4**) and the required adjustments according to the collected field research data (see summarisation in **§5.3**). The main aim of this model is to understand, which factors determine the development of venture capital within a region. However, in order for us to understand this development, a comprehension is needed of how the VC mechanisms work and which parties are involved:

1. Without capital VC funds cannot exist. This needed capital can come from different investing sources that are, technically, partners in the VC fund with limited rights and obligations, hence the generic term **Limited Partners**. Examples of these so-called limited partners are:
    a. Insurance companies
    b. Banks
    c. Pension funds
    d. Corporates
    e. Government
    f. Endowment funds
    g. (Wealthy) Individuals
2. **Venture capital** in their turn, invest that capital in promising startups with a long-term perspective to maximise their return on investment. Without these startups, VC funds again cannot exist.
3. Founders of those **Startups**, if exited successfully (usually through an IPO or acquisition), can decide to continue this investment cycle by turning their profit into a re-investment capital in the ecosystem, by becoming business angels or starting their own VC. This re-investment cycle strengthens and reinforces the overall VCE ecosystem (in addition to financial capital also human and social capital).

Special note: *for the sake of illustration clarity**,** 'Startups' in the model is linked with arrows to the 'Limited Partners' to show the re-investment cycle of capital. In practice, this is not the case since founders of startups do not (always) invest as limited partners in VCs, but they can invest directly in other startups as business angels or start a VC fund themselves. Nevertheless, the core idea of the model is that the capital (being financial, human or social) is (re-)invested in the ecosystem between these parties.*

From here naturally, the question arises as to how this (re-)investment process between these parties is influenced. In the model, this influence is depicted as the arrows.

These arrows can represent barriers (negative relationship) and encouragers (positive relationship) between two connected parties depending on the context. As seen in the figure there are three different influencing categorical determinants (material, social and cultural).

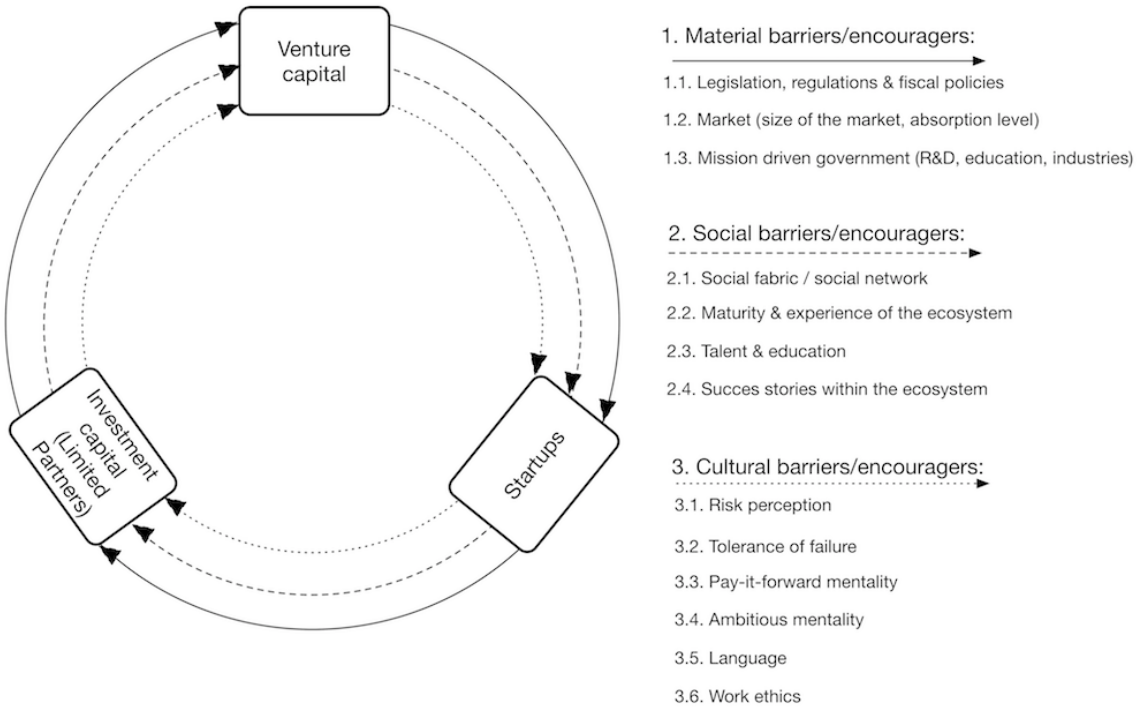

Figure 10: The conceptual model for a venture capital ecosystem

6.2. Material attributes

Material attributes (see solid arrow in **Figure 10**) are determinants with a tangible presence in the region that can function as barriers or encouragers – influencing the development of the venture capital ecosystem.

6.2.1. Legislation, regulations & fiscal policies

The governmental framework of a region with its legislation, regulations and fiscal can act as a barrier or on the contrary foster the development of VC activity. As said the attributes – (5) *Legal framework;* (6) *Tax rates;* (7) *Pension size & regulations;* (8) *Labor rigidities;* (9) *Liberal bankruptcy laws;* (10) *Interest rates;* (11) *Public vs private funding of VC funds* – are contained in this overarching attribute. For a full explanation of each attribute see **Table 3**. To link the VCE model an example is given of how this can influence the investment activity between each party:

- **Limited Partners → Venture capital**: legislation can remove barriers for limited partners with large capital (not only pension funds but also insurance companies, banks) to invest in VC or even stimulate these limited partners towards investing in VC – for example, the already discussed ERISA clarification in 1974 in the United States.
- **Venture capital → Startups**: the previous point has an indirect effect on the investment of VC in startups as well since larger investments in VC funds can result in larger investment tickets in startups, which could mean a higher return on investment due to higher growth of startups. A different example on how to improve/reduce VC investment in startups is to reduce/increase capital gains taxes or cultivate/neglect legal rights and protection laws for investors.
- **Startups → Limited Partners**: whether the founders of startups re-invest in the ecosystem can depend on several material attributes:
    - Once again due to the first made point. Larger tickets sizes can result in larger exits and more willingness to re-invest that capital in the ecosystem.
    - Rigid labour laws can make hiring employees difficult for startups since they deprive the company of the flexibility to dismiss employees, later on, should this become necessary.
    - Liberal bankruptcy laws: next to successful entrepreneurs there are also ones that can fail. Liberal bankruptcy laws can offer the latter a fresh start to retry.

6.2.2. Market

As said, the prosperity of the VCE relies on the success of startups who in their turn depend on the opportunities provided by the local market. There are mainly two market attributes influencing the overall investment process between all the parties:

Size of the market

The size of the local market can become a barrier or an encourager since the magnitude influences the market penetration of the startups. A small local market is more challenging (barrier) for startups since it means that they need to focus on other (less familiar) markets as soon as they have outgrown their local market. It is more difficult because each market has its own culture, language, laws and other characteristics. A big local market is 'easier' (encourager) since the penetration strategy does not need to change considerably due to similar market characteristics.

Absorption level

In addition to the size of the market, the VCE is affected by the local market's absorption level:

- of startups' technology/innovation/developments.
- of local corporates acquiring the startups or their core technology.

For more specification on what characterises the absorption level, a link can be made to the determinants in the draft model: (12) *Bank- vs stock market-centred capital markets*

(IPO); (13) *Economic growth – GDP*; (14) *Innovation*; (15) *Size of M&A market;* (16) *Information asymmetry;* (17) *Unemployment rate*.

6.2.3. Mission-driven government (R&D, education, industries)

From the interviews, it has become clear that the government can have a leading role in fostering entrepreneurship, ergo the VCE, within a region on three levels:

- Stimulating innovation in a particular field through R&D financing. Historical examples: Space Race to the moon during the 1960s by the United States, the security issue of the Israel Defence Forces, and the development of the smartphone (Mazzucato, 2013).
- Entrepreneurship can be cultivated in the region by encouraging an entrepreneurial mindset on an early stage at all levels of education.
- Governments can strengthen their VCE by focussing on prompting their unique industries instead of trying to copy other successful industries in other regions.

6.3. Social attributes

Social attributes (see dashed arrow in **Figure 10**) are resources composed of or acquired through the social networks within the region that can function as barriers or encouragers – influencing the development of the venture capital ecosystem.

6.3.1. Social fabric / social network

The investment interaction between *Limited Partners* → *Venture capital* → *Startups* and back again to *Limited Partners*, highly depends on the overall network strength between every actor in the ecosystem. It is the overall social network between entrepreneurs, VCs and other entrepreneurial services that can foster warm introductions and allow for free flow of knowledge and skills, which eventually speeds up (encourages) the investing process. A lack or poor quality of this social fabric (or social capital) has on the contrary impeding effects thus functioning as a barrier.

6.3.2. Maturity & experience of the ecosystem

According to the field research participants, the maturity and experience of the overall ecosystem is an important deterministic factor of how the VCE functions. This has to do with the already discussed re-investment (financial, human and/or social capital) process of actors in the ecosystem. The older the ecosystem, the more re-investment cycles have occurred. The VCE strengthens with each cycle, resulting in a more positive encouraging relationship between the three parties (*Limited Partners*, *Venture Capital*, *Startups*).

6.3.3. Talent & education

The amount of talent and education in a region determines the success of the VCE in that region. But why? During the interviews, several reasons were given. These reasons are linked to the influence process between each party:

- **Venture capital → Startups:** simply stated VCs search and invest based on the team and innovation of a startup. The presence of universities is important for VCs since it is a breeding ground for talented teams and innovations. When the field research participants were asked if they found the presence of universities in a region to be important for the VCE, all of them approved.
- **Startups → Limited partners:** however, from the interviews, it became clear that a VCE should have talent and education on all levels, not only universities. The talent and education needed to start a company is different from the talent which is needed for startups to become a success, which is employee talent and education.
- **Limited partners → Venture capital:** lastly, the investors in VCs (limited partners) also make their investment decision based on the qualities of the people managing the VC fund, hence talent and education.

As can be seen, the presence of talent and education in a region can be an encouraging deterministic between every party of the VCE.

6.3.4. Success stories within the ecosystem

The last social determinant might be the most important that can act as an encourager or as a barrier: success stories. The presence of success stories is defined both by the quantity and the quality. The quantity is defined as the number of new firm formation. The quality is defined as the value-adding strength (innovation) of these new firms or as Stam (2014) explains: productive entrepreneurship. Success stories are the ones that ignite the overall entrepreneurship but most importantly they function as an inspiration for next generations entrepreneurs to do the same, e.g. Apple, Google, Booking.com, and Adyen, This was tested (*Histories of entrepreneurship*) during the interviews, and all the participants said it was a crucial factor for fostering the VCE. But more importantly, in addition to setting an example, success stories can (re-)invest their financial, human and social capital in the VCE, thus strengthening the ecosystem with each investment cycle.

6.4. Cultural attributes

Cultural attributes (see dotted arrow in **Figure 10**) are determinants within a region, containing elements that are subjected to beliefs and outlooks about entrepreneurship and venture capital, which can function as barriers or encouragers – influencing the development of the venture capital ecosystem.

Before we dive deeper into the specifics of these determinants, it is important to mention that the cultural determinants cannot be steered/changed on the short-term, but it is something that changes organically in the long-term. Regions, therefore, end up with a typical chicken and egg situation: they need the entrepreneurial culture for the ecosystem to thrive but they need a thriving ecosystem to create this entrepreneurial culture. However, from the interviews, it has become clear that the most important thing to solve this dilemma, is to focus on creating successful ventures in the ecosystem and from there on the needed culture will follow. But this will be discussed in **chapter 8**. For now, let us dive into the main six cultural determinants of a VCE.

6.4.1. Risk perception

Whichever way you look at it, the VC game is a risky game. Each party, be it the limited partners, the VCs or the startups, are faced with the aspect of risk-taking. *Limited Partners* invest money in a *Venture Capital* that could have a portfolio with a negative ROI, VCs might lose their track record due to poor investments in startups, and founders of *Startups* risk their time, money and much more in a business that might not thrive. The overall perception of risk in a VCE, which is the intrinsic willingness or courage to invest, can, therefore, act as a barrier if it lacks or if it is sufficiently present can act as an encourager to take even more risk to invest. And as stated, it is a risky game where risk-taking is crucial.

6.4.2. Tolerance of failure

Tolerance of failure is linked with the perception of risk, since taking risk can result in failure – as mentioned a negative ROI, poor track record or a failed venture. However, what is more, meant by *Tolerance of Failure*, is the outlooks and beliefs within the ecosystem whenever something has failed. Is a particular failure for instance punished or praised? The latter could be since a failure results in many lessons learned through experience. When there is a high tolerance for failure in an ecosystem, actors are willing to take more risk, which can result in a more vivid VCE.

6.4.3. Pay-it-forward mentality

The decision of the parties to return their gained resources back into the VCE, be it their financial, human or social capital resources (money, knowledge, network), depends on their intrinsic willingness to pay-it-forward as investors, mentors or knowledge brokers.

6.4.4. Ambitious mentality

Ambitious mentality is subjected to the mindset of setting the bar high when it comes to the beliefs and outlooks within the ecosystem. Setting the bar high can influence how much is invested between each party. If, for instance, *Startups* do not aim high for a big exit, because they never experienced a big exit in their ecosystem, then the ecosystem

will not get familiar with big exits, and this will influence how the parties *Limited Partners* and *Venture Capital* make their future investment decisions. The more ambitious the VCE is, the more this will encourage investments and vice versa becoming a barrier.

6.4.5. Language

A different language usually means a different culture. The more languages are spoken in a region; the more cultural differences will present itself. The more cultural differences there are, the harder it is for a limited partner, venture capitalist or a startup to create trust and invest in that region. In other words, a region that is more fragmented language-wise and culturally can, therefore, act as a barrier. On the contrary, a united region language-wise and culturally creates trust between parties and the local market which advances (encourages) the investment process.

6.4.6. Work ethics

Last cultural determinant that was extracted from the interviews is work ethics. Work ethics is a nebulous term, but for the VCE model, the definition is defined as the intrinsic motivation to work or differently stated how much effort someone performs in a task he/she is responsible for. As one can imagine the more effort and time each party invest in the investment process the more, an ecosystem can thrive. If for instance, a venture capitalist sees that founders of startups have a low intrinsic motivation to work/perform, it will affect his/her perception to invest in that ecosystem and therefore, acting as a barrier in the development of the VCE. However, an encouraging effect can be observed if there is high intrinsic motivation to work/perform.

6.5. Conclusion

As can be seen, the VCE model consists of three parties – *Limited Partners*, *Venture Capital* and *Startups* – that invest and re-invest in each other with their financial, human and social resources. Each (re)-investment cycle between these parties can result in a stronger ecosystem, which can eventually lead to a virtuous investment cycle. On the contrary, if this (re-)investment process lacks this can result in the opposite, a weakening ecosystem, thus a vicious investment cycle. The virtuous and vicious cycle of the entrepreneurial ecosystem has been studied by Spigel (2018) (see **Appendix B**) and has been discussed in the literature review section. The (re-)investment process between each party is influenced by three categorical attributes, material, social and cultural, which can act as a barrier or as an encourager. Now that the VCE model is set up, the case study section can be commenced where the model will be plotted over the two regions: the Netherlands and Silicon Valley.

7. Comparative study

In this chapter, the case study is conducted wherein the previously developed VCE model will be plotted over two regions the Netherlands and Silicon Valley (**7.2**). Prior to this, some general information will be given to get a feeling about the two regions (**7.1**). Once it is clear how both case studies perform, a comparison can be made between the two VCEs (**7.3**) so that the lessons learned can be extracted from the differences (**7.4**).

7.1. General information

Though the area of the Netherlands is fairly concrete, as it is a country, this is not the case for Silicon Valley. Originally Silicon Valley's boundaries were from Palo Alto down to San Jose, but the exact region keeps on expanding, making the borders of the region capricious and the region of Silicon Valley more of a 'state of mind'. The Joint Venture Silicon Valley Institute for Regional Studies (Massaro, 2017) has been keeping track of this expansion since 1995 by publishing a yearly report containing some indicators about the region. See **Appendix E** for their latest definition of the region with its cities. Prior to comparing the VCE of both regions a short general comparison is shown in **Table 17,** which is purely to give a feeling about the magnitude of the regions.

Indicator	Netherlands	Silicon Valley
Population (millions) in 2016	16.98 *	3.05 **
Geographical area (km²) in 2016	33 680 *	4802 **
Average annual income ($) in 2016 (converted from euro to dollar based on the 31-12-2016 currency)	32520 *	125580**
Unemployment rate (%) in 2016	5.4 *	3.1 **
Capital gains tax rates (%) between 2004 - 2010	25 ***	15 ***
VC investment ($) per habitant between 1995 - 2005	531 ****	45691 ****

Table 17: * StatLine CBS (2018) ** The Joint Venture Silicon Valley Institute for Regional Studies (Massaro, 2017) * Achleitner, Bock & Watzinger (2011) **** Ferarry & Granovetter (2009)**

7.2. Case studies

Before a comparison can be made between the VCEs of both regions, a separate analysis of both VCEs is needed. Interview participants were asked to share their thoughts and opinions about the distinctive weaknesses and strengths of the Dutch VCE and the Silicon Valley VCE. These results, previously shown in **Table 10, 11, 12 & 13**, are moulded into the barriers/encouragers of the VCE model seen in the tables below (**Table 17 & 18**), with weakness being a barrier (categorical codes *NLW & SVW*) and strength being an encourager (categorical codes *NLS & SVS*). This partly answers SQ 3. To fully answer this sub-question, which is by fully comprehending the VC ecosystems of both regions, exploration of the interaction between these determinants is also required as they are not isolated from one another. Next is the explanation of this interaction of both case studies.

7.2.1. Case study: the Netherlands

Table 18 gives some important insights into what makes the VCE of the Netherlands strong or weak. However, it does not directly give a clear answer as to what the reasons are for the Dutch VCE to perform as perceived. An effort is made to do exactly that by analysing the interaction between the barriers and encouragers. This interaction is illustrated in **Figure 11**. As stated in the figure, a solid arrow means a negative influence and a dashed arrow means a positive influence. This will become clearer with the step-for-step explanation.

1. Material	**Barrier**	**Encourager**
1.1. Legislation, regulations & fiscal policies	- *NLW_MAT_GOV_government should remove barriers for institutions to invest in VC* - *NLW_MAT_LP_investors in VC are not banks, insurance, pensions* - *NLW_MAT_seed-to-growth phase* - *NLW_MAT_late stage funding* - *NLW_MAT_legislation - labour rigidities* - *NLW_MAT_small money / small funds* - *NLW_VCM_derivative of the original VC model*	
1.2. Market (size of the market, absorption level)	- *NLW_MAT_MAR_fragmented market due to geography; language, borders, culture, laws*	
1.3. Mission-driven government (R&D, education, industries)	- *NLW_MAT_PU_entrepreneurial universities*	- *NLS_MAT_unique industry examples: agriculture, biotech, energy transition, FinTech, logistics, water management* - *NLS_MAT_GOV_stability in government vision*
2. Social	**Barrier**	**Encourager**
2.1. Social fabric / social network	- *NLW_SO_social networks/ social fabric*	
2.2. Maturity & experience of the ecosystem	- *NLW_MAT_maturity & experience*	- *NLS_SO_NL lags behind but is making successful entrepreneurial steps*
2.3. Talent & education		- *NLS_MAT_PU_accessibility of top education*
2.4. Success stories within the ecosystem		
3. Cultural	**Barrier**	**Encourager**
3.1. Risk perception	- *NLW_CU_risk-taking mentality (risk averse)*	
3.2. Tolerance of failure		
3.3. Pay-it-forward mentality	- *NLW_CU_no pay-it-foward mentality*	

3.4. Ambitious mentality	- *NLW_CU_think less big/ humble mentality/ less ambitious* - *NLW_CU_European VCs tend to exit much faster because they never seen a big exit before*	
3.5. Language		- *NLS_CU_culturally sensitive*
3.6. Work ethics		

Table 18: Barriers and encouragers within the VCE of the Netherlands

The VCE of the Netherlands lacks an entrepreneurial culture (10), which, as discussed previously, is an important attribute to possess as a region in order for it to thrive. But why? As illustrated in **Figure 11**, this has to with the fact that there is a lack of a social fabric/network in the Netherlands, which negatively influences the entrepreneurial culture (8). The 'why' question rises again. Why is there a lack of social fabric/network in the Netherlands? This has mainly to do with the low number of success stories experienced (7) in the Netherlands, yet this is one of the most crucial determinants influencing a VCE, as extracted from the field research (see **§6.3.4**). Although the Netherlands has seen a rise in the new firm formation (quantity), it has remained low in productive entrepreneurship (quality: value adding) – coined by Stam (2014) as the *Dutch Entrepreneurial Paradox*. According to the field research of this study, the reason for having a low number of success stories has to do with:

- The matureness & experience of the Dutch VCE (6), started in the early 1980s with Holland Venture being one of the first to operate in the Netherlands in a VC manner (information gained from interview participant working for NVP). This 'immaturity', which does show some recent development according to the participants, has a negative influence on the social fabric due to the still immature re-investment process (financial, human and/or social capital). As depicted, the lack of social fabric has a negative feedback loop back to (6), since it influences how experienced the VCE is. This negative re-enforcing cycle between (6), (7) and (8) can be linked to the vicious cycle explained by Spigel (2018) (see **Appendix B**).
- The unfavourable legislation & policies in the Netherlands (A) which negatively influence:
    - The size of the VC funds & investment attitude of these funds (1). These unfavourable legal and policy conditions result in the presence of small funds which lack the financial power to bring portfolio companies into large exits, that could have led to founders' higher willingness to re-invest their earned resources back into the ecosystem (see **§6.2.1.**). The lack of big funds has to do with the unfavourable legislation impeding entities with large capital (insurances, pensions, banks) to invest in VC, which led to a derivative VC model: involvement by the government and corporates in VC whose interest is not in line with the original VC model mechanisms (see **§5.2.6.2**). A negative feedback loop is depicted from the 'matureness & experience of the ecosystem' (6) back to 'size of VC funds & investment attitude (1), because a relative 'immature' ecosystem has not experienced many big exits, and this lack of experience impedes VC funds to raise and invest big sums of capital.
    - The Netherlands has legislation (2) that impede the flow of talent due to rigid labour conditions (non-competes). There is a lack of liberal bankruptcy

laws that offer failed ventures a fresh start. Lastly, according to the field research, there are unfavourable tax conditions in the Netherlands. However, this could not be factually substantiated during the field research but will be done in the case study comparison section (**§7.3**).

- The fragmented market (3): a startup in the Netherlands has a small local market, and in order for its business to grow, it needs to penetrate other European markets. However, the culture, language, laws and other differences between these European countries, impede the success of this penetration thus its own success.
- The lack of a governmental mission (B) towards educating entrepreneurship at universities and other levels of education, since this is required to create success stories (5). Although there is a lack of entrepreneurship at universities, the Netherlands has good quality education, (9) which is accessible for most citizens. However, as can be seen, there are also encouragers related to the Dutch mission-driven government which positively influence the success stories (4):
    - There is a presence of a stable governmental vision meaning that the Dutch government does not change their short-term vision for example in R&D subsidies.
    - The Netherlands has strong and unique industries that are starting to get off, which if received enough attention, will foster the number of success stories: *agriculture, biotech, energy transition, FinTech, logistics, water management.*

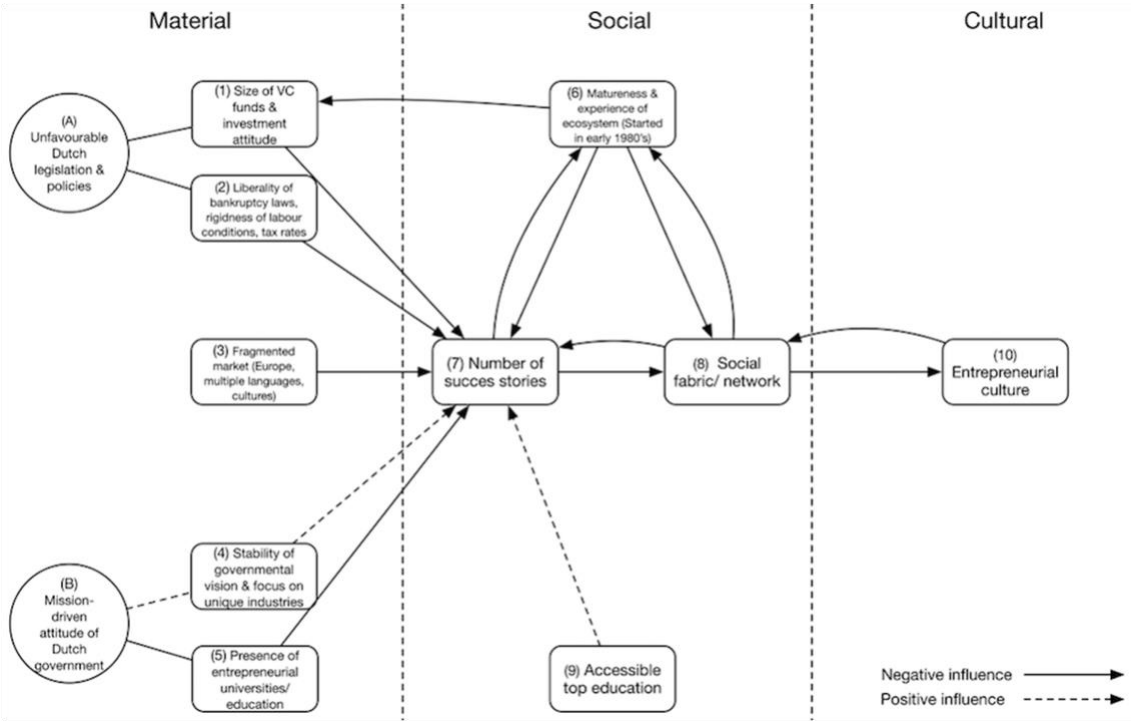

Figure 11: The VCE of the Netherlands

7.2.2. Case study: Silicon Valley

The case of Silicon Valley is approached similarly to that of the Netherlands. In **Table 19** the results of the interviews regarding Silicon Valley's strengths and weaknesses are moulded into barriers and encouragers. Once again it does not directly give a clear answer as to what the reasons are for the Silicon Valley VCE to perform as perceived. An effort is therefore made to do exactly that by analysing the interaction between the barriers and encouragers. This interaction is illustrated in **Figure 12**. The poor infrastructure (see barrier section) is left out of the figure since this attribute was tested as unimportant during the interviews.

1. Material	**Barrier**	**Encourager**
Legislation, regulations & fiscal policies	- *SVW_MAT_labour rigidities laws*	- *SVS_MAT_legislation, regulations and fiscal policies; employment at will, bankruptcy laws, pension law, tax laws* - *SVS_MAT_a lot of money available/ big funds*
1.1. Market (size of the market, absorption level)	- *SVW_MAT_infrastructure*	- *SVS_MAT_size of the market* - *SVS_MAT_abosorption level of the marketplace*
1.2. Mission driven government (R&D, education, industries)	- *SVW_MAT_one-industry-town - technology*	- *SVW_govermental vision changes (democratic & republic cycle)*
2. Social	**Barrier**	**Encourager**
2.1. Social fabric / social network		- *SVS_SO_social networks/ social fabric*
2.2. Maturity & experience of the ecosystem		- *SVS_SO_maturity & experience*
2.3. Talent & education	- *SVW_SO_expensive talent, not-loyal talent, expensive housing*	- *SVS_SO_world class universities* - *SVS_SO_talent exodus*
2.4. Success stories within the ecosystem		- *SVS_SO_success stories*
3. Cultural	**Barrier**	**Encourager**
3.1. Risk perception		- *SVS_CU_risk-taking mentality (risk taking)*
3.2. Tolerance of failure		- *SVS_CU_failing is accepted*
3.3. Pay-it-forward mentality		- *SVS_CU_pay-it-forward mentality*
3.4. Ambitious mentality	- *SVW_CU_no selective money*	- *SVS_CU_big thinking mentality*
3.5. Language		
3.6. Work ethics	- *SVW_CU_working pressure is too high*	

Table 19: Barriers and encouragers within the VCE of Silicon Valley

Silicon Valley possesses a strong supportive entrepreneurial culture (13). Before we dive deeper into the reasons why this is the case, it is important to note that it does bring some downsides with it:

- Being an entrepreneur means you need to put many hours into your idea in order for it to succeed. A strong entrepreneurial culture, therefore, means that people within the ecosystem expect a hardworking ethos. Depending on the personal perspective, this could mean that the work pressure is perceived as too high 14).
- There exists an ambitious mentality, which results in an overheated situation where VC funds tend to invest large sums of capital in promising startups due to this mentality. This overheated situation results in that VCs do not invest selectively because they do not want to miss a good investment such as a potential unicorn (a startup company with a value of over $1 billion), which as can be seen in the figure negatively influences the investment attitude of VC funds. However, it is important to note that 'no-selective money' was shared by Dutch participants only (12).

The supportive entrepreneurial culture (13) is a result of the rich social fabric/network (9) of the ecosystem, which as can be seen has a positive re-enforcing feedback loop because an entrepreneurial culture positively influences thus re-enforces the social fabric/network. The rich social fabric has to do with the matured & experienced ecosystem (7), which started roughly in the 1960s (see **§1.1.5**). The large number of success stories (8) is a result of this matureness as well. Unlike the Netherlands, there is a positive re-enforcing cycle between (7), (8) and (9), which can be linked to the virtuous cycle explained by Spigel (2018) (see also **Appendix B**). In addition to the maturity and experience of the ecosystem, the large number of success stories in Silicon Valley is a result of:

- The favourable legislation and policies in the United States (A) divided in:
    - The size of the VC funds & investment attitude of these funds (1). These favourable legal and policy conditions result in the presence of VC funds with large capital that have the financial power to bring portfolio companies into large exits, which in turn leads to a higher willingness by the founders to re-invest their earned resources back into the ecosystem (see **§6.2.1**). In addition to the university endowment funds, this presence of big funds is the result of favourable legislation such as the several times discussed ERISA law (1).
    - Silicon Valley has non-competes written in the law, but they are not enforced which stimulate the flow of talent. This, however, results in an ecosystem with disloyal talent. In addition, there are liberal bankruptcy laws that offer failed entrepreneurs the opportunity to start a new venture (also related to the cultural determinant: high tolerance of failure). Lastly, according to the field research, there are favourable tax conditions for investors in Silicon Valley (2).
- Favourable market conditions (B), which can be explained as followed:
    - Startups in Silicon Valley have the benefit of having a large and united local market which is the United States. What is meant by a united market is that there are no (large) differences in culture, language (mostly English

speaking), and laws. This large and united characteristic makes it fairly easy for Silicon Valley startups to grow as a business (3).
    - Due to the matureness of the ecosystem, the market has a large number of big successful corporates (Intel, Oracle, Google, Apple, Hewlett-Packard, Dell and many more examples) who can acquire startups and their innovations, thus having a high absorption level (4).
- Mission-driven attitude of the US government (C): The US goes through their democratic and republic cycle, negatively influencing the stability of the governmental vision (5), which can have a negative impact on the investment decisions, for instance in R&D.
- Large presence of talent & education (D) in Silicon Valley, which can be divided in a positive and a negative influence on the number of success stories:
    - Silicon Valley is home for world-class universities with its vast talent exodus such as Stanford and Berkley, where companies such as Google were born. During the interviews, it was even said that Silicon Valley started because of the presence of these universities (9).
    - The downside of having such a vast talent exodus, which does attract more talent from all over the world, is that the talent in Silicon Valley has become too expensive due to overconcentration and low unemployment rates. Moreover, as previously said due to not enforcing the non-competes, talent has become disloyal. This has a negative influence on the successfulness of startups (10).

Lastly, special notice should be placed on a matter shared by one of the interview participants: Silicon Valley is a 'one-industry-town' with the industry being technology (5). When talking about a risk-taking mentality, this one of the riskiest gambles Silicon Valley takes. This is best said by the participant Christiaan Vorkink himself: "*When you think about risk, it happens here on many levels. It happens on an individual level; it happens on a company level, and it is also happening on a regional level here. If technology bottoms out, if something changes in the technology market... this whole region has assumed a tremendous amount of risk. Because technology is what makes this region go. We have put all of our eggs into one basket, and that basket is technology."* Stated in the view of the VCE model, if technology stops being the driver of our society, there will not be success stories in Silicon Valley, and the ecosystem from rich social fabric to supportive entrepreneurial culture will cease to exists.

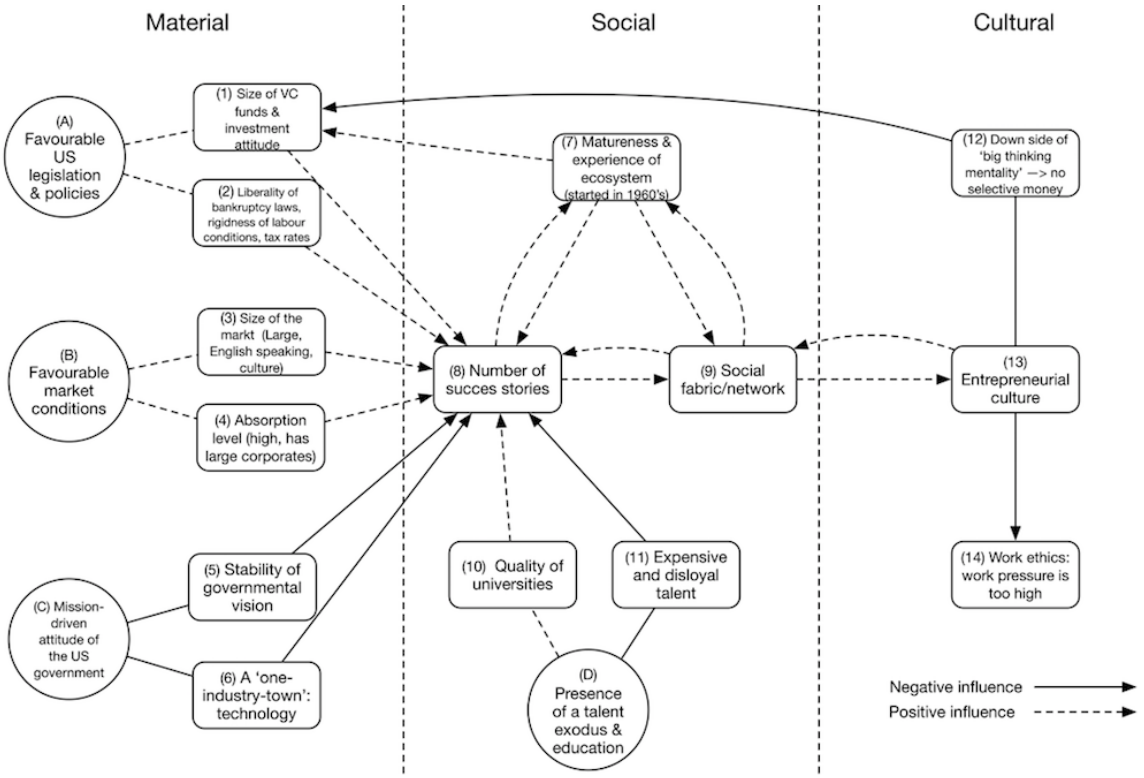

Figure 12: The VCE of Silicon Valley

7.3. Venture capital ecosystem comparison

Now that SQ 3 is covered we can move on to SQ 4, for which the goal is to extract the main lessons from the VCE comparison of both regions. The first part of this section will cover SQ 4a, by analysing the differences through the use of the previously depicted case studies with their categorical determinants (barriers and encouragers) and lastly by using the quadrant of Spigel (2018) (see **Figure 7**). The conclusion part of this chapter will then cover SQ 4b.

7.3.1. Material determinants comparison

Starting with the *legislation, regulations & fiscal policies,* Silicon Valley performs better than the Netherlands, as the US government has stimulated large funds, such as pension funds, insurance companies, endowment funds and banks, to act as limited partners of VC through policies (ERISA). The result of this governmental stimulation is the current presence of VC funds with large capital power. Outside of the interview research, literature has been consulted, and evidence is found that favourable legislation such as the Small Business Investment Act (SBA) of 1958 (Martin Jr. & Moore Jr., 1959) has also fostered the VC early on. The Netherlands, on the other hand, has smaller funds due to the unfavourable legislation, which have led to the involvement of public and corporate capital in VC, whose interest is not in line with the VC mechanisms (maximisation of ROI),

hence a derivative of the original VC model. However, outside of the interview conversation (thus not contained in the previous results), a participant has shared that at the birth of VC in the Netherlands in the 1980s, there was a favourable Dutch legislation named the 'Particuliere Participatiemaatschappij-regeling' (*PPM-regeling*). The PPM-regeling stimulated VC activity by compensating (governmental guarantee) a VC-investment loss with 50% 10 years after the initial investment. All in all, according to an evaluation report by the Dutch Ministry of Economic Affairs and Finance, the PPM legislation has made a clear contribution to the stimulation of SMEs in the Netherlands over the period 1981-1993. However, following the end of the crisis in the 1980s, it was decided in 1990 to gradually phase out the PPM-regeling (Duffhues, 2009). It is, therefore, recommend to re-introduce a similar legislation but this will be discussed in **chapter 8**.

In addition, compared to Silicon Valley, the Dutch bankruptcy laws are less liberal (negatively affecting the tolerance of failure); the labour laws are more rigid in terms of free flow of talent (non-competes), and tax rates are less favourable for investors. Capital gains tax rates are indeed lower in Silicon Valley than in the Netherlands, respectively being steadily 15% and 25% between 2004 and 2010 (Achleitner, Bock & Watzinger, 2011) This all encourages an entrepreneur, VC manager or limited partner, in Silicon Valley to invest more in the local VCE than one in the Dutch VCE. However, there is something to be said about the favourable capital gain tax rates. A recent study (Bock & Watzinger, 2017) analysed the investment and tax data of 32 countries from 2000 to 2012 and concluded that higher capital gains tax rates are indeed associated with a lower number of successful companies but increases the success probability of financed companies. An argument given for this phenomenon is that the underlying firm population is heterogeneous and higher taxes affect those companies with the lowest expected value the most. In other words, according to this study higher taxes are harmful, but not as harmful as basic estimates would suggest.

Looking at the second material determinant, conditions of the *market (size of the market, absorption level)*, Silicon Valley performs better than the Netherlands. First of all, Silicon Valley has a larger and more united, in terms of culture, language, and laws, local market. Whereas the Netherlands has the fragmented Europe, with its diverse countries, as the local market, making it more difficult to successfully penetrate other markets and grow as a business. Secondly, the absorption level of the market in Silicon Valley is higher than that of the Netherlands due to the presence of large renowned companies in the local market (e.g., Intel, Oracle, Google, Apple, Hewlett-Packard, Dell). The presence of these companies resulted in a higher chance of acquisition of startups/innovations thus a higher chance of success of the VCE.

Lastly, the mission-driven attitude of the government (R&D, education, industries) in both regions is examined in contrast. In comparison, the Netherlands seems to perform better based on two results: First of all, the Netherlands has a more stable governmental vision compared to the US. The US goes through their democratic and republic cycle, which can have a negative impact on the investment decisions, for instance in R&D. Secondly, Silicon Valley seems to be driven by one thing, and that is technology. In comparison, the Netherlands is more diverse in their unique and strong industries (agriculture, biotech, energy transition, FinTech, logistics, water management). This lack of diversification in Silicon Valley could mean it is less agile thus vulnerable for possible shocks in the field of technology. However, Silicon Valley does perform better in their

governmental mission-driven attitude in terms of entrepreneurial universities compared to the Netherlands. Whereby, these entrepreneurial universities in Silicon Valley have the endowment funds as a unique strength, which invest in VC.

7.3.2. Social determinants comparison

The previously mentioned material determinants all influence the number of success stories both regions: both the number of new firm formation and the value-adding strength or productive entrepreneurship of these firms. Silicon Valley has in contrast to the Netherlands more success stories due to the favourable material conditions. The higher number of success stories also has to do with the more matured VCE of Silicon Valley than that of the Dutch VCE, 1960s and 1980s respectively. Due to this head start, Silicon Valley has a more experienced VCE. However, although the Dutch VCE lags behind it is starting to make progress in many entrepreneurial areas, e.g. more success stories such as booking.com, Adyen & Mendix; more internal entrepreneurial drive of the Dutch student, and more VC capital.

Education-wise, Silicon Valley performs better than the Netherlands in terms of entrepreneurial attitude, but in contrast, the Netherlands does provide accessible, high-quality education, which is not the case in the US. Talent-wise, both regions perform well, and it cannot be stated whether the Netherlands lags behind Silicon Valley. As the Netherlands has top quality universities and compared to other European countries, it is top-ranked according to a comparative study by Osimo (2016). Nevertheless, Silicon Valley has globally one of the highest entrepreneurial ethos, which attracts the best talent from all corners of the world. However, this does not come without its downsides. The unemployment rate is at a historic low: 2.5% (Massaro, 2018), which results in expensive talent and expensive living due to the overconcentration. In addition, the talent flows more freely in Silicon Valley due to the disregarded non-competes, but the talent is, therefore, more disloyal than in the Netherlands. Ultimately, the question is whether the disloyal aspect in combination with the overconcentration impacts the fostering of success stories more negatively than the positive impact of the free flow of talent. This will be discussed in **chapter 8**.

The higher number of success stories, by cause of the matureness and the favourable material conditions, has resulted in a richer social fabric/network in Silicon Valley compared to the Netherlands. The poorer social fabric/network in the Netherlands impedes the chance of warm introductions and flow of knowledge and skills, which should eventually speed up the investing process between entrepreneurs, VCs and other entrepreneurial services.

7.3.3. Cultural determinants comparison

Silicon Valley clearly performs better than the Netherlands regarding the supportive culture towards entrepreneurship. The Silicon Valley VCE dares to take more risk, has a higher tolerance for failure, has a bigger thinking mentality and has a larger pay-it-forward mentality. All of this fosters the development of the VCE. The humble mentality of the Dutch VCE towards entrepreneurship has to do with the fact that there is

a poor social fabric/network, which as previously explained has to do with the lower number of success stories experienced in the VCE due to the unfavourable material conditions. However, the consequence of this rich entrepreneurial culture is that Silicon Valley has a higher working pressure ethic than the Netherlands, which negatively influence the living conditions. Moreover, the ambitious mentality in Silicon Valley results in an overheated situation where VCs in Silicon Valley invest less selectivity than VCs in the Netherlands.

7.3.4. Spigel's quadrant comparison

This research has confirmed the work of Spigel (2018) and has even added more theory to it. In **§3.1.3** his study on how ecosystems develop, evolve, and deliver benefits to entrepreneurs was represented by a framework shown in **Figure 8**. Spigel (2018) argues that the strength of the ecosystem depends on mainly two factors: the ability of entrepreneurs to access the *resources* within the ecosystem and the *network strength* within the ecosystem. According to Spigel (2018), an ecosystem is 'munificent' when it has resources such as financing, entrepreneurial knowledge, skilled workers and experienced mentors. This can be linked back to the three discussed elements (material, social, cultural). An ecosystem is 'well-functioning' when it has a dense network between entrepreneurs, investors, advisors and other key actors that are based on long-term trust and a localised culture that encourages networking and connecting. A 'well-functioning' ecosystem can be mainly linked to the social category of the VCE. This research has confirmed both factors (*resources* and *network strength*) but has gone a layer deeper by adding more specifications to these two factors and adding the categorical dimension and type of influence (barrier/encourager).

Starting with the Silicon Valley case study, it can be confirmed that according to the quadrant framework of Spigel (2018) it can be illustrated as a '*strong' (I)* ecosystem, as it has a (see **Figure 13**):

- Munificent ecosystem: substantiated with results such as the availability of large VC funds (*financing*). The entrepreneurial universities and vast talent exodus (*entrepreneurial knowledge*). The matureness and overall experience of the VCE (*skilled workers and experienced mentors*). This research has added to these resources the fact that Silicon Valley has favourable legislation, regulation & policies and market conditions.
- Well-functioning ecosystem: substantiated with mainly the social fabric/network and the supportive entrepreneurial culture (*network strength*). This research has added to the argumentation of Spigel (2018) more specifications as to what makes a culture supportive towards entrepreneurship (*risk perception, tolerance of failure, pay-it-forward mentality, ambitious mentality, language, work ethics*). In addition, this research adds to the theory that the magnitude of success stories within the ecosystem is an important fostering factor on the network strength.

Once questioned at the end of **§3.1.3.,** it is now time to answer where we should place the case study of the Netherlands on the quadrant framework. From this research results, it can be said that the Dutch ecosystem is '*irrigated'* (III), since it is munificent in

terms of the available resources but has poorly functioning networks that impede the entrepreneurial culture of learning, sharing and cooperation that occur within ecosystems (see **Figure 13**):

- Munificent ecosystem: according to Spigel (2018) an ecosystem is sparse when it lacks these entrepreneurial resources, either because they have not yet been created or attracted through previous rounds of successful entrepreneurship or because the resources that were once present have leaked out after protracted shocks. This is not the case for the Netherlands as it has become clear from this research. The Netherlands does have VC funds (*financing*) – although it might be relatively small compared to Silicon Valley. Moreover, it does have the needed talent – top ranked according to a Euporean comparative study by Osimo (2016) (*entrepreneurial knowledge*). In addition, the matureness and overall experience of the VCE is relatively young but seems to show some serious recent development (*skilled workers and experienced mentors*). A point of critique for not having a munificent ecosystem would be the unfavourable legislation, regulation & policies and market conditions. However, discounting this fact, the Netherlands has the resource foundation for entrepreneurship.
- Poorly functioning ecosystem: substantiated with the results of this research showing that the Netherlands lack dense social networks (or in this research also called 'social fabric') that allow entrepreneurs to access these critical entrepreneurial resources. This is tight to the already heavily discussed lack of a supportive culture for entrepreneurship. In addition, as said previously the magnitude of success stories within the ecosystem is an important fostering factor for the network strength. The success stories seem to evolve in the Netherlands with the already mentioned examples, but the impact on the network strength is still in its infancy phase.

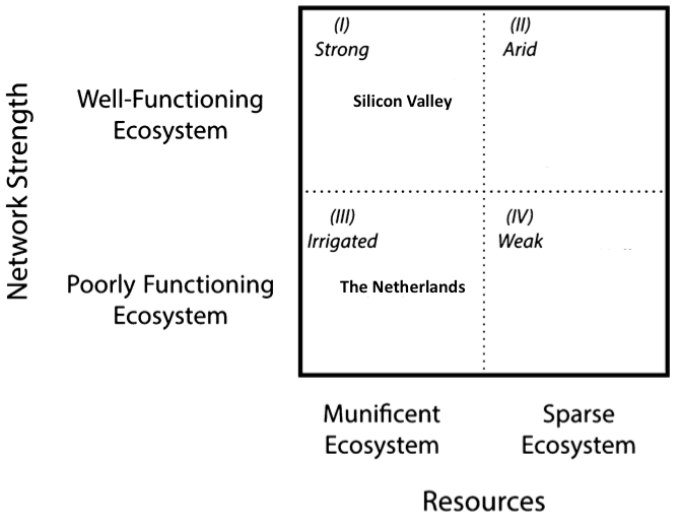

Figure 13: Schematic comparison of the case studies according to Spigel's (2018) framework

7.4. Conclusion

It does not come as a surprise that the VCE of Silicon Valley performs better than that of the Netherlands. Moreover, it was exactly the reason why Silicon Valley was chosen as a best practice case study (see **§1.1.5**) to compare and learn from the differences between the two VCEs. Now that we understand how the two VCEs perform and differ, other questions naturally arise. For instance, what do these differences mean? Which determinants should be focussed on to foster a VCE ecosystem? (**SQ 4b**) Moreover, with more specific interest for this research, how can we change the position of the Netherlands on the quadrant framework of Spigel (2018) from an 'irrigated' towards a 'strong' ecosystem?

However, the answering of this kind of questions results in a tipping point from a descriptive science to a normative science of this research. With the former meaning that the results have been objective and fact-based (a judgment that describes what is, was, or will be the case) and the latter are results/statements that are subjective and value-based (a judgment about whether something is good vs bad, desirable vs undesirable, right vs wrong) (Van de Poel & Royakkers, 2011). Nevertheless, these normative statements/recommendations are built upon the descriptive statements.

First of all, the differences mean that the performance of a VCE, is the combination of many attributes, which come to exist as a result of the interrelationship between these factors. Secondly, it means that due to this complex manifestation of a VCE, it is not as easy as one would think to push and pull some strings and receive the desired results (a strong VCE). Having said that, the given difference comparison does give some meaningful insights – there are attributes that can be influenced/steered on a short-term base, on a long-term base and lastly some attributes that cannot be influenced/steered at all. Starting with the latter group, this is first of all the *maturity & experience of the ecosystem* (2.2 of **Figure 10**) as the age of an ecosystem is a given – one cannot simply change the age or experience of an ecosystem. Secondly, the same goes for the *market conditions (size of the market, absorption level)* (1.2 of **Figure 10**). For instance, the magnitude of the Dutch local market is not determined by the government itself unless a country's government such as of Belgium promptly decides to become part of the Netherlands or vice versa. However, according to a recent paper studying the investment patterns of different VC types in Europe (Bertoni, Massimo, Colombo, Quas, 2015), the fragmentation of the European Union, thus the local markets size of European countries, can be influenced by European policymakers. In this paper, examples are given such as the Small Business Act and the Single Market Act, whereby the European Commission has committed itself to promote cross-border VC investment by adopting new rules ensuring that VC funds established in any member state can be invested freely throughout the EU (the so-called pan-European passport for VC investors). These kinds of acts do not make the local market larger but do have a positive influence on the reachability to other markets.

Continuing with the group of attributes that are influenced in the long-term, these are: *social fabric/network*, *success stories within the ecosystem* and *the entrepreneurial culture* (2.2, 2,4 and 3. respectively of **Figure 10**). These attributes can be influenced but evolve organically, meaning that it takes time and are indirectly achieved if steered with

the right long-term vision. For instance, trust between the actors and success stories within the VCE takes time. This organic development can be achieved if the government stimulate and remove barriers that influence the success rate of these success stories, which in turn creates more trust and entrepreneurial culture between and within actors.

Lastly, there is the group of attributes that can be influenced on the short-term*: legislation, regulation & policies*, *mission-driven government (R&D, education, industries)* and *talent & education* (2.2, 2,4 and 3. respectively of **Figure 10**). These attributes can be steered relatively 'fast' through a governmental decision such as a policy adaptation (tax relief of capital gains and corporate income; removal of policy barriers or introduction of policy encouragers such as the PPM-regeling of 1981 so that large financial and institutional money can invest in VC) or a mission-driven act towards entrepreneurship (stimulate entrepreneurship at universities but also very early and at all levels of education; focus on the unique national industries).

A summary can be found of the key differences between the VCEs of the Netherlands and Silicon Valley in **Table 20**, listed according to the level of influenceability per attribute (short-term, long-term, 'unaffected'). The insight on the level of influenceability per attribute leads to the question as to which determinant should be focussed on to foster a VCE. The elaboration of the specific determinants will be left to the next chapter as this is more in line with **SQ 5**. However, from this chapter, it can be concluded that a focus should be placed on the determinants that are possible to change on the short-term first since these are the attributes that lay the needed foundation for the long-term attributes. The long-term attributes should always be kept in mind when deciding within the VCE, as these can only be influenced indirectly since these attributes evolve organically such as social fabric/network, entrepreneurial culture and development of success stories. Lastly, the 'unaffected' attributes such as the maturity and market conditions of the VCE, should have a low priority because as said these cannot be influenced or hardly possible to influence. Although the previous example was given of enlarging the reachability to other markets through policy adaptation, the reality is that differences of different markets/countries impede the process. Nevertheless, the 'unaffected' group of attributes does give insights as to why a VCE performs in a certain way (e.g.: infant = undeveloped VCE vs. a matured = developed VCE), which aids policymakers to make more laser focussed and effective decisions, meaning it explains what they should try but moreover what they should not try to change/adapt.

As said the next chapter will discuss the specific determinants needed to foster a VCE ecosystem thus bringing us a step closer to answering the main research question, which is how to improve the Dutch VCE.

Influenceability of the attributes	**The Netherlands ('irrigated' ecosystem)**	**Silicon Valley ('strong' ecosystem**
Short-term (direct):		
Legislation, regulation & policies	Unfavourable Dutch legislation & policies leading to: - Small funds and derivative of the original VC model: involvement of	Favourable US legislation & policies leading to: - Big funds due to endowment funds, ERISA, SBA

	public and corporate capital in VC (not ROI driven). - No liberal bankruptcy laws, rigid labour, capital gains tax rate of 25%	- Liberal bankruptcy laws, not rigid labour conditions, a capital gains tax rate of 15%
Mission-driven government (R&D, education, industries)	- Stable governmental vision - Diverse and unique industries: agriculture, biotech, energy transition, FinTech, logistics, water management - Lack of entrepreneurial universities	- Not a stable governmental vision due to the democratic and republic cycle affecting subsidies expenditures (R&D) - Lack of diversification: mostly driven by technology - Strong entrepreneurial universities
Talent & education	High-quality education which: - is accessible for most citizens - lacks entrepreneurship	- Globally one of the highest entrepreneurial ethos, which attracts the best talent from all corners of the world - Expensive and disloyal talent (unemployment rate is at a historic low: 2.5%)
Long-term (indirect):		
Social fabric/network	Poor	Rich
Success stories within the ecosystem	Low but rising (e.g., Booking.com, Adyen, Mendix)	High (e.g., Intel, Oracle, Google, Apple, Hewlett-Packard, Dell)
The entrepreneurial culture	Risk-averse, low tolerance for failure, humble, no pay-it-forward mentality	Risk-taking, high tolerance for failure, big thinking mentality, pay-it-forward mentality, work pressure too high
'Unaffected':		
Maturity & experience of the ecosystem	Immature & unexperienced VCE but it is developing (started in early 1980's)	Matured & experienced VCE (started in the 1960's)
Market conditions (size of the market, absorption level)	- Fragmented market (Europe, multiple languages, cultures, laws)	- Large & united market (US, English speaking, cultures, laws) - Presence of large renowned companies in the local market (e.g., Intel, Oracle, Google, Apple, Hewlett-Packard, Dell) impacting the absorption level positively thus the VCE.

Table 20: Summary of key differences between the VCEs of the Netherlands and Silicon Valley

8. Improving the Dutch venture capital ecosystem

This chapter will be dedicated to answering the last SQ of this research, which is how the Netherlands can replicate the success of Silicon Valley's VCE (**8.1**). This will be done by using the results of the interviews and the regional difference analysis (discussed in the previous chapter) and substantiate what options are available to give the needed recommendations (**8.2**). In other words, based on the descriptive results, recommendations of a normative nature are given (Van de Poel & Royakkers, 2011). The distinction between the two – descriptive and normative – is aspired to be highlighted by linking back to the descriptive results mentioned in the case studies in **§7.2**.

8.1. Benchmarking with Silicon Valley

It may not sound as a surprise after reading this research so far, but the success of Silicon Valley's VCE cannot be replicated – at least not on the short-term. This research has shown hitherto that the success of Silicon Valley's VCE is strongly linked to the maturity (age) of the ecosystem (positive influence 7 → 8 in **Figure 12**) and the market conditions of the region – size & absorption level of the local market (positive influence B3 & B4 → 8 in **Figure 12**). Unfortunately, these (material) attributes are not possible to steer – it is a given. In addition to this, the success has to do with the rich social fabric/network and the strong entrepreneurial culture living within the ecosystem (positive influence 13 → 9 → 8 in **Figure 12**). Again, this makes for unfortunate reading because as previously discussed, both attributes are part of the attribute group which is slow in to adapt, meaning it evolves organically in the long-term. However, although Silicon Valley cannot be replicated, it does not mean the Netherlands cannot evolve from an 'irrigated' to a 'strong' ecosystem. It merely means it takes time and a long-term vision. Fortunately, it is exactly this long-term vision, which is a strength of the Netherlands with its fairly stable governmental vision (positive influence B4 → 7 in **Figure 11**). With the correct mission-driven attitude of the government, there is a good chance the Netherlands can become a strong VCE in the long-term. For this to happen, the group of attributes of the VCE conceptual model that can be influenced on the short-term should be tackled, which are solely policy driven. As a by-product, the needed social and cultural attributes will then foster, which cannot be steered directly as they change organically. The exact improvement steps will be discussed in the next section.

Prior to this, there is, however, something to be said about the 'success' of Silicon Valley. When the participants were asked, what is needed for the Netherlands to replicate Silicon Valley, it was often countered with: *a better question to ask is* "*Should you want to replicate Silicon Valley?*". What followed were arguments as to what the downsides are for this success. Examples were given such as the low-quality of living in the region, the expensive housing, unselective investments, and the high work pressure – all due to the overconcentration as a result of the mentioned success. In other words, this research has defined 'a successful VCE' based on the overall activity of VC but has discounted the fact that this is not always the desired result of/for a region. This is in line with Spigel (2018) who touched upon this issue as well by recognising that improvement of the entrepreneurial capacity in a region does not necessarily increase the overall prosperity

or quality of life. Or as he states the 'dark side' of a strong EE growth may decrease the quality of life of those unconnected with the startup economy by sparking gentrification, increasing the cost of living, or driving other types of employment. Therefore, Spigel (2018) rightfully states that: "*Entrepreneurial ecosystem policies are not ends in themselves; they must be designed with an eye toward increasing the overall prosperity of a place rather than furthering regional inequality*". This will be taken into consideration when drafting the recommendation of this research.

8.2. The required steps

The research results have shown thus far that it is *not possible* to copy the success of Silicon Valley to the Netherlands, as the differences are irreproducible due to cultural; geographical; experience; and maturity differences (B3, B4, 7, 9, 13 in **Figure 12**). Moreover, it is even *not recommended* to replicate Silicon Valley due to the downsides included with its success. Ironically, the immatureness and relatively underdeveloped VCE of the Netherlands compared to that of Silicon Valley should, therefore, be seen as an opportunity. Differently stated, the over-concentration of Silicon Valley has its 'dark sides' that can be avoided by the Netherlands as it is still in its growing phase, meaning that if correctly steered it can avoid these unwanted results of success. As previously stated, the main actors to do this are the Dutch policymakers, since they are the ones that can control the short-term attributes which eventually affect the needed long-term attributes such as the social fabric and entrepreneurial culture. These attributes are extremely difficult to build through outside intervention. Policymakers should cultivate the entrepreneurial culture that will eventually help produce, strengthen and re-strengthen the overall VCE by focussing on supporting the creation process of success stories (both the number of new firm formation and the value-adding strength or productive entrepreneurship of these firms) rather than trying to create them from scratch.

Liu & Hanaur (2011) personify in their book the government and policymakers as gardeners in a garden, they write: '*Gardeners don't make plants grow, but they do create conditions where plants can thrive, and they do make judgements about what should and shouldn't be in the garden*'. This metaphorical quotation is relevant for this research case on many levels. The policymakers should, indeed, be seen as the gardeners, the garden as the VCE (or region/country) and the different plants in the garden as the different main actors in the VCE – limited partners, VCs and startups. The policymakers do not and should not try to grow these main actors directly but should create conditions through their judgements where they can thrive. A direct involvement of growing these actors can be seen as the previously discussed involvement of public VC funds (in addition to corporate funds), resulting in the so-called derivative VC model, which is not in line with original model: maximisation of ROI (see results in **§5.2.6.2.**). In other words, policymakers should not directly try and grow these actors by 'randomly' pumping capital (spraying water on the plants), or taking the role of VCs.

So how should policymakers use their metaphorical green fingers to grow/foster their VCE garden? The one and only goal should be to create success stories within the VCE as this appeared to be the most important aspect to create a successful VCE (See **Table 14**: *CSE_TA_HE_successful entrepreneurs and stories re-invest and strengthen*

the ecosystem). To do this, each negative influence on the number of success stories in the Dutch VCE – shown in **Figure 11** – is tackled. Except for the negative influence 6, 8 & 10 in **Figure 11**, as these are unaffected attributes or because these attributes solely grow organically as a result of the short-term attributes. In addition, the negative influence within the best practice Silicon Valley – shown in **Figure 12** – is also taken as a lesson for the recommendation. Followed are the required steps for this to happen and the Netherlands to evolve from an 'irrigated' ecosystem into a 'strong' ecosystem. As previously said, these 'normative' recommendations are based on the 'descriptive' results of the case studies:

1. **Remove the weeds in the garden (A1 → 7 in Figure 11):**

The Netherlands should remove policy/legal barriers (the weeds) that impede large financial and institutional entities to invest in VC funds while introducing ones that stimulate and encourage this investment such as the PPM-regeling of 1981 (or US examples SBA & ERISA). This will enlarge the size of VC funds thus larger investment tickets in startups, which could mean a higher return on investment due to higher growth and exits of startups. The institutional involvement would also mean that the involvement of public funds and corporate funds is less needed, thus returning back to the original mechanisms of the VC model.

2. **Fertilise the soil (A2 → 7 in Figure 11):**

Failed founders of startups – metaphorically seen as the dead or dying plants in the garden – who cannot meet their financial obligations can be excused from repaying some or all of their debt through favourable bankruptcy laws. This will provide a stimulus for entrepreneurs to take the needed risk, as they are not punished for their failing (tolerance of failure) and stimulate the needed risk-taking cultural attribute. In addition, Dutch policymakers should look into the effects of reducing the capital gain tax rates. As previously stated, higher tax rates result in lower rates of successful stories but once a startup receives an initial funding, despite a higher tax burden, its probability of success increases, thus tax rates have a selection effect (Bock & Watzinger, 2017). Lastly, this research has shown that Silicon Valley success is related to not enforcing the non-competes resulting in the free flow of talent. However, it has also resulted in an ecosystem with disloyal talent (D11 → 8 in **Figure 12**). Although there are benefits for not enforcing the non-competes, it is not recommended for the Netherlands to do the same, as it might result in the aforementioned downsides of a successful ecosystem, which still can be avoided.

3. **Irrigate but do it targeted (A1 → 7 in Figure 11):**

As said policymakers should not directly try and grow the actors of a VCE by 'randomly' pumping capital (spraying water on the plants), or taking the role of VCs. This will only result in the highly-debated crowding-out effect topic (flooding of the garden). Instead, policymakers should mainly function as a supporter in the innovation development through subsidies of R&D. In addition, policymakers should only take a role in VC, by investing in ventures and industries that are unattractive for private VC. Bertoni, Colomb & Quas (2017) have shown that this strategic investment by public funds attracts the private funds to these otherwise difficult to financially grow ventures (young, small, located competitive regions). This targeted investment strategy increases the number of success stories as the neglected ventures now receive the opportunity to grow and because it results in a more selective investment procedure.

4. Increase your garden knowledge through education (B5 → 7 in Figure 11):

Although an entrepreneurial culture cannot be built in the Netherlands from scratch, it can be cultivated with the right steering. The results of the interviews have shown that entrepreneurship should be promoted and stimulated at an early stage in the education phase. Policy makers, can and should play an important role in showing young scholars and students (at every education level) that the entrepreneurial road is a possibility and not only the standard corporate road. This can be done through: giving seminars by successful entrepreneurs (inspirational effect), designing entrepreneurial events, organising company visits to startups instead of only big corporates, teaming up with entrepreneurs or encouraging students to visit or organise network events. Even though entrepreneurship in education is seen as an important economic aspect, ways and measures to promote youth entrepreneurship are often still to be searched (Čapienė & Ragauskaitė, 2017). However, globally, there are many exemplary programs to use as a benchmark, just to name one of many: the Canadian program *La grande journée des petits entrepreneurs* (2018) which is a one-day entrepreneurial experience targeted at children ages 5 to 12. The case study has illustrated that the Netherlands is home for a vast talent pool (9 → 7 in **Figure 11** & comparative report of Osimo, [2016]). With the right steering, this talent can grow into the needed future entrepreneurs, building success stories (in terms of the already discussed quantity and quality) within the VCE.

5. Focus on your strong plants (B4 → 7 in Figure 11):

From the interview results, it has become clear that Dutch policymakers should not try to copy paste Silicon Valley (see **Table 14**) as the differences are irreproducible – metaphorically speaking every garden is different in its climate and biodiversity. Or as one of the participant put it: "*a copycat can never be as successful as the one being copied"*. Instead, it is recommended to focus on the unique industries (plants) of the Netherlands by stimulating it locally and promoting it globally. The following industries were mentioned as strong and promising in the Netherlands: agriculture, biotech, energy transition, FinTech, logistics, water management. Policymakers should remove barriers for these industries and fill the financial gaps if needed. In addition, these industries should be prompted to other countries as a strong export product of the Netherlands, in order for it to attract global attention and for these industries to thrive. Hospers (2006) affirms this by recommending policymakers to develop economic development strategies that are based on an assessment of the region's specific characteristics instead of copying successful regional ones from abroad.

6. Diversify your garden to avoid crop failure (C6 → 8 in Figure 12):

The beneficial by-product of focussing on several strong industries and not only one industry is diversification, which makes the VCE resilient for market shocks. A region should, therefore, not be depended on one industry – metaphorically a garden with one crop is not resilient if that specific crop is vulnerable for a particular disease/pest. Moreover, if the Dutch policymakers successfully foster and strengthen the different aforementioned unique industries, the overconcentration downside of Silicon Valley can be prevented. The reason for this is the combination of the larger geographical area of the Netherlands, 33680 km^2 compared to 4802 km^2 in Silicon Valley (see **Table 17**), and the spread of these different unique industries (expertise) along this larger area. For instance, Delft & Eindhoven are specialised in high-tech, Wageningen & Leiden in biotech, Rotterdam in logistics & water management, Amsterdam in finance, and Groningen in the internet economy/ ICT. The spread of this expertise is strongly recommended since on the

one hand, it fosters the number of success stories over the whole national region thus the overall economy, and on the other, it prevents the downsides of overconcentration in one region resulting in gentrification and decrease of overall quality of life.

7. **Team up with other gardeners (3 → 7 in Figure 11):**

Lastly, it would be wise to look into policies outside the region of the Netherlands, particularly more high-level on the European Union agenda. As previously said the fragmentation of Europe, can be influenced by acts such as the Small Business Act (SBA) and the Single Market Act (SMA). These acts can aid with the goal to enlarge the Dutch local market. The aim of SBA is: to improve the approach to entrepreneurship within Europe, simplify the regulatory and policy environment for SMEs, and remove the remaining barriers to their development**.** However, a recent evaluation of the SBA by the Dutch Senate (*Eerste Kamer*) states that although most of the initiatives announced in the SBA have been completed, a mid-term evaluation of implementation shows that more needs to be done to help SMEs (Eerste Kamer, 2018). The goal of the SMA, on the other hand, is to put an end to the European market fragmentation and eliminate barriers and obstacles to the movement of services, innovation and creativity (European Commission, 2011). However, this research casts doubt on the goal of solidarizing the EU, since there is a limit as to how much the cultural and other differences between each country can be influenced. Nevertheless, to enlarge the Dutch policymakers' gardener toolkit, it is recommended to look into this kind of acts, followed by effectiveness measurements of these acts.

8.3. Conclusion

Summarizing the above, the Netherlands cannot and should not try to replicate Silicon Valley as the success of this region is a product of irreproducible differences in terms of culture; geographic; experience; and maturity. The Netherlands should not try to replicate Silicon Valley due to the downsides included with its success, but at the same time, it should see its 'behind-lagging' as an opportunity to avoid these downsides by learning from the 'mistakes' of Silicon Valley. To do this, seven recommendations were set out for Dutch policymakers that are needed to foster the creation of success stories within the VCE, as this appeared to be the most important aspect of creating a successful VCE. This chapter aimed to answer the last sub-question of this research, which was required to derive to the answer of the main research question. In the following chapter, the main conclusions of this research are discussed together with the contributions it has brought, followed by the limitations and the areas for future research.

9. Conclusions & discussion

"I'd agree with you but then we'd both be wrong."

– Russel Lynes –

9.1. Conclusions

Having read this research hitherto, it might be a good moment to reflect on the problem this research sought to solve as this quite possibly have sunken away. Although many studies discussed VC and have agreed upon its importance, an actual comprehension of how a VC ecosystem works lack and the steps required to foster a VC ecosystem is still underdeveloped in current research. The current VC literature and other comparative VC publications (scoreboards, case studies and regional benchmarks) do not approach VC from an ecosystem perspective, which might explain the discrepancy in their results and conclusions. The absence of an ecosystem perspective in VC literature results in a lack of a holistic understanding of the mechanisms of a VCE and moreover how to improve such an ecosystem. Consequently, this shortage of comprehension might explain why current studies do not provide the reasons for the shortcoming of the Dutch VCE. Summarising, this research sought to solve the following problem statement:

It is unclear how the Dutch venture capital ecosystem performs and how to improve it, as there is a lack of a concrete framework to understand a venture capital ecosystem.

This problem statement was tackled by first of all developing a conceptual model that explains how a VC ecosystem works and what the determinants are that influence its development. This conceptual model was then used to compare the VCE of the Netherlands with that of a best practice case: Silicon Valley. Based on this comparative case study approach, the main objective of this thesis could be delivered: a recommendation on how to improve the VC ecosystem of the Netherlands – formulated with the main research question:

How can the Dutch venture capital be improved through a conceptual model, which explains the determinants influencing the development of a venture capital ecosystem?

To answer this main research question successfully, various sub-questions were composed. The answers to these sub-questions are presented first, followed by the answer to the main research question.

9.1.1. Sub-question 1

Why is the EE theory chosen as a theoretical lens to develop the conceptual venture capital ecosystem model?

a) *What is the EE theory?*
b) *What are the alternative theories?*
c) *What are the consequences of choosing the EE theory?*

The EE theory was chosen to examine the VC environment because it provides a broad, holistic approach (social, cultural and economic forces), which is crucial to explore determinants on a country level. Moreover, what made the EE theory particularly suitable - unlike other similar theories (in this research three alternative theories were discussed: *clusters*, *regional innovation system* and *industrial district*) – is that the EE theory explores the uniqueness in capabilities and resources of the entrepreneur by setting it as focal point, whereas in this research this exploration was sought for VC. Therefore, the entrepreneur was replaced with VC; thus, the theory enabled a control of the observation of interest. More specifically, this research ended up using the EE studies of Spigel (2017 & 2018) as theory lens, for the reason that Spigel takes categorisation into account. This is particularly suitable for the exploration of a VCE since a large number of VC determinants became too complex to comprehend without a categorisation. The categorisation also provided insights into the nature of determinants (cultural, social or material), thus providing the required 'levers' to give more concrete recommendations at the end of this research for decision makers (e.g. short-term, long-term and unaffected attributes). Furthermore, Spigel's EE theory (2017) also shed light on to a possible interaction between VC determinants through the holistic perspective, which till now VC determinants were merely investigated in isolation. Differently put, the theory has allowed to illustrate a possible interrelationship between VC determinants resulting in an extra dimension of more insights. Moreover, the exploration of the interrelationship between determinants has especially aided in comprehending the differences between ecosystems – making it possible to make improvement judgements. Lastly, the EE theory has given possible VC determinants, which were not researched in the current literature of VC and are now brought to light. However, the lens through which we look determines our view on the matter. Possible consequences were, therefore, set out to be taken into account (**§3.1.1** & **§3.1.2.**), which will be left to the 'Discussion' section of this research (**§9.2**).

9.1.2. Sub-question 2

How should the conceptual VC ecosystem model look like?

a) *What are the determinants/attributes that influence the demand and the supply of venture capital in a region according to current literature?*
b) *How does the venture capital ecosystem relate to the EE theory?*
c) *Which determinants/attributes are missing or incorrect, according to the field research?*

The second question was tackled by first of all drafting a conceptual, theoretical model, by means of a literature review, exploring the determinants that influence the

activity of VC – presented in **Table 3**. These determinants were then 'moulded' into the EE theory model of Spigel (2017). The method used to do this was by deciding which of these VC determinants – found during the literature review – are similar to the attributes found in Spigel's (2017) EE and whether these determinants fall into a cultural, social or material category. Following this, argumentation was given as to why and how the EE could be linked to the VCE. This has resulted in the draft model found in **Figure 8** with the specifics of the contained determinants/attributes found in **Table 4**. However, this choice of method meant that the draft model was as strong as the conducted literature review (which might have overseen a determinant) and the linkage process. Therefore, validation of the draft model was essential. Once the draft of the conceptual model was developed, the validation process was commenced by interviewing seven experts in the field of VC by testing whether a determinant/attribute was missing or thought to be incorrect. Furthermore, four attributes of the EE were tested for validity, since these were hypothesized to be applicable as influencers of VC activity but were not found in the VC literature review. The interviews were recorded and transcribed using ATLAS.ti – a qualitative data analysis & research software – and eventually coded into several categories (see codebook – **Table 6**). The coded results, such as the categories 'missing attributes' and 'incorrect attributes', were examined to adapt the draft model, which resulted in the conceptual model for VCE found in **Figure 10**.

Summarising, the aim of the VCE conceptual model is to understand, which factors influence the development/activity of VC within a region and how. This activity is influenced by three main parties: the *limited partners* who invest in *VC funds* who in their turn invest in *startups*. Once these latter party – startups – exit successfully they can decide to re-ignite the investment cycle again by becoming investors themselves (as, e.g. business angels, venture capitalists, limited partners). In addition, to financial capital, a re-investment can be human capital (entrepreneurial knowledge shared with the ecosystem through mentoring) or social capital (developed networks shared with the ecosystem through warm introductions). The more re-investment cycles occur between these parties, the stronger the ecosystem becomes, which can eventually lead to a virtuous investment cycle. On the contrary, if this (re-)investment process lacks this can result in the opposite, a weakening ecosystem, thus a vicious investment cycle. It is, therefore, crucial to comprehend how these parties are influenced in their investment decisions between one and other. The conceptual VCE model gives exactly this influence insight (depicted as the arrows in the model) through the 13 determinants/attributes functioning as a barrier or as an encourager in the investment process depending on its context. Divided in material, social and cultural barriers/encouragers these are: |Material – *legislation, regulations & fiscal policies; market (size of the market, absorption level); mission-driven government (R&D, education, industries)*. |Social – *social fabric/social network; maturity & experience of the ecosystem; talent & education; success stories within the ecosystem*. |Cultural – *risk perception; tolerance of failure; pay-it-forward mentality; ambitious mentality; language; work ethics*.

9.1.3. Sub-question 3

Sub-question 3. How does the venture capital ecosystem model of the Netherlands and that of Silicon Valley look like?

a) *What are the typical determinants (distinctive strengths and weaknesses) of the venture capital ecosystem of the Netherlands/Silicon Valley?*
b) *How does the venture capital ecosystem of the Netherlands/Silicon Valley perform, based on the chosen determinants?*
c) *Which interaction(s) between these determinants make the venture capital ecosystem of the Netherlands/Silicon Valley distinctive?*

After that the first main deliverable – the VCE conceptual model – of this research was developed, the second main deliverable could be established, which is improving the Dutch VCE. This was done through a comparative study between the Netherlands and Silicon Valley by first of all plotting the VCE model over the two regions. The method used to explore the distinctive strengths and weaknesses of both VCEs was the semi-structured interviews. Interview participants were asked to share their opinions about this matter. These results are shown in **Table 10, 11, 12 & 13**. In the VCE model, a weakness was seen as a barrier and a strength as an encourager. The typical determinants (distinctive barriers and encouragers) of the Netherlands are seen in **Table 18** and of Silicon Valley in **Table 19**. However, this exploration did not give a clear answer as to what the reasons are for both VCEs to perform as perceived, which is essential for the second main deliverable of this research. Therefore, the interactions between the attributes were analysed, which gave the answer to this third sub-question. The interaction between these attributes – with the negative and positive influence relationship (barrier/encourager) – of the Netherlands is illustrated in **Figure 11** and of Silicon Valley in **Figure 12**.

9.1.4. Sub-question 4

Which lessons can be drawn from the comparison between the two venture capital ecosystem models?

a) *How do the two ecosystems differ in terms of the chosen determinants and their interactions?*
b) *Which determinants should be focussed on to foster a VC ecosystem?*

From the developed VCEs it can be concluded that based on schematic ecosystem framework of Spigel's (2018) Silicon Valley's VCE can be viewed as 'strong' whereas the Dutch VCE can be viewed as 'irrigated' (see **Figure 13**). Both VCEs have the entrepreneurial resources (x-axis of the framework) such as the availability of VC funds, talent and skilled workers and experienced mentors. However, Silicon Valley performs relatively much better in terms of these resources. From all the resources required, it is the number of 'success stories' – meaning both the number of new firm formation (quantity) and the value-adding strength or productive entrepreneurship of these firms (quality) – within the ecosystem that has the strongest influence on the performance of the VCE, which is highly present in Silicon Valley. The success stories are important because: they function as an inspiration for others; profit of successful startups exits can be reinvested back into the ecosystem; entrepreneurial knowledge can be shared with the ecosystem through mentoring, and developed networks can be shared with the ecosystem through warm introductions. Summarising it fosters the (re-)investment of financial, human and social capital in the VCE. The strengthening effect of the social fabric/network and entrepreneurial culture, has, in turn, a positive feedback loop to the number of success

stories, leading to the before mentioned virtuous cycle. On the contrary, a lack of this (re-)investment process can result in the opposite – a vicious investment cycle. The VCE model of the Netherlands (**Figure 11**) illustrates which attributes have a negative influence on the success stories within the ecosystem: unfavourable Dutch legislation & policies, fragmented market (Europe, multiple languages, cultures), lack of entrepreneurial universities and immaturity & lack of experience of the ecosystem. The relatively inferior performance of the Netherlands in these mentioned resources, thus the success stories, is the reason why the network strength (y-axis of the framework) is poorly functioning and as a result also the entrepreneurial culture. Compared to the Netherlands, Silicon Valley has a vivid entrepreneurial culture, which in turn, as said, strengthens these entrepreneurial resources in the ecosystem.

The comparative case study has given an important insight as to which attributes should be focussed on to improve the Dutch VCE: the 13 developed attributes in the VCE conceptual model can be divided into groups that are categorised based on their influenceability (short-term, long-term, 'unaffected'). This categorisation insight is crucial as this provides decisions makers within the VCE to make more effective decisions, meaning it allows them to understand what they should try, and more importantly, what they should not try to change. The complete list of these three groups with the key differences between the Dutch VCE and that of Silicon Valley is illustrated in **Table 20**. Summarising the 'unaffected' attributes should be left aside since these, as said, are not possible to affect: the *maturity & experience of the ecosystem* and *market conditions (size of the market, absorption level).* The long-term attributes, on the other hand, are the ones that can be influenced but only indirectly as they evolve slowly and 'organically': *social fabric/network*, *success stories within the ecosystem* and *the entrepreneurial culture.* Fortunately, these long-term attributes can be achieved by focussing on the short-term attributes, which can be influenced directly and fairly 'fast' – if steered correctly – through a governmental decision such as a policy adaptation or development: *legislation, regulation & policies*, *mission-driven government (R&D, education, industries)* and *talent & education.* It is exactly this latter group – short-term attributes – that would need focused attention since these are the attributes that lay the foundation for the needed long-term attributes (social fabric and entrepreneurial culture) to turn the Dutch VCE from an 'irrigated' ecosystem into a 'strong' one.

9.1.5. Sub-question 5

What is needed for the Netherlands to replicate the success of the venture capital ecosystem of Silicon Valley?

a) *Which options (e.g., social, managerial, policy) are available in line with the study's findings?*
b) *Based on these options what are the recommended changes?*

The blunt answer to the last drafted sub-question is: the Netherlands cannot replicate Silicon Valley – at least not on the short-term. The reason is that the success of Silicon Valley is a result of the 'unaffected' attributes: maturity of the ecosystem (age-wise Silicon Valley has a head start on the Netherlands) and the market conditions of the region (United US market vs fragmented Europe market – language, culture, laws).

Unfortunately, these (material) attributes are not possible to steer – it is a given. On top of this, the success of Silicon Valley is strongly linked to the attributes which are slow in adaptation – the rich social fabric/network and entrepreneurial culture – meaning they evolve organically in the long-term and are therefore only steered indirectly over a long period.

However, apart from the fact that is *not possible* to replicate Silicon Valley, it is also *not recommended* to replicate it, considering that the success of Silicon Valley has brought downsides with it related to the overconcentration: low-quality living in the region, expensive housing, unselective investments, and high work pressure. In this research, a 'successful' VCE was based on the overall activity of VC but has discounted the fact that this is not always the desired result of/for a region. Ironically, the immatureness and relatively underdeveloped VCE of the Netherlands compared to that of Silicon Valley should, therefore, be seen as an opportunity to avoid these unwanted results of success by correctly steering the growth phase of the Dutch VCE. From sub-question 4 it was concluded that the only available attributes to steer this development are the short-term ones, which eventually affect the needed long-term attributes such as the social fabric and entrepreneurial culture. As concluded from the same analysis, the main and only actors that can steer these short-term attributes are the Dutch policymakers.

Summarising, although Silicon Valley cannot be replicated it does not mean the Netherlands cannot rise from an 'irrigated' towards a 'strong' ecosystem. It merely means it takes patience and a long-term vision. Fortunately, it is exactly this long-term vision, which is a strength of the Netherlands with its fairly stable governmental vision. With the correct mission-driven attitude of the government, there is a good chance the Netherlands can become a 'strong' VCE in the long-term and perhaps a stronger one than Silicon Valley. For this to happen, Dutch policymakers should cultivate the entrepreneurial culture that will eventually help produce, strengthen and re-strengthen the overall VCE by focussing on supporting the creation process of success stories rather than trying to create them from scratch. But how? The specific required steps/changes lead us to the main research question of this research.

9.1.6. Main research question

How can the Dutch venture capital be improved through a conceptual model, which explains the determinants influencing the development of a venture capital ecosystem?

The actors leading the improvement of VC in the Netherlands are policymakers. The way they should do this is through policy adaptation, development and implementation. Similarly to entrepreneurial ecosystem policies, venture capital ecosystem policies are not ends in themselves; they must be designed with an eye towards increasing the overall prosperity of a region rather than furthering regional inequality. To do this for the Netherlands, this research has set up seven high-level policy recommendations for Dutch policy makers, based on the developed VCE conceptual model. To understand these recommendations, a metaphorical personification is used: the policymakers are gardeners, a VCE is the garden, and the main actors in that VCE are the plants (limited partners, VCs and startups). Similarly to gardeners treating the plants in a garden, policymakers do not and should not try to grow the main actors in a

VCE directly but should create conditions through their judgements where they can thrive. The one and only goal of these conditions should be to create success stories within the VCE. In short, these are the metaphorical recommendations to create these conditions:

1. *Remove the weeds in the garden:* remove policy/legal barriers (the weeds) that impede large financial and institutional entities (pension funds, insurance companies, banks) to invest in VC funds while introducing ones that stimulate and encourage this investment, so that the sizes of the funds can grow resulting in larger exits and lowering the need of public and corporate funds (which are less ROI driven). Re-introduction of a similar act as the PPM-regeling of 1981 is recommended or looking at exemplary acts of the US (SBA & ERISA).
2. *Fertilise the soil*: favourable bankruptcy laws should be introduced so that failed entrepreneurs are not punished for their failing (tolerance of failure) and as a result stimulate the needed risk-taking cultural attribute as they dare to take risk a second time. In addition, the effects of higher capital gains tax rates should be investigated as it has a negative effect on the number of success stories but on the other hand once a startup receives an initial funding, despite a higher tax burden, its probability of success increases. Thus tax rates have a selection effect. Lastly, continue with enforcing non-competes laws, avoiding the aforementioned downsides of a successful ecosystem (disloyal and expensive talent).
3. *Irrigate but do it targeted (do not flood the garden)*: function as a supporter in the innovation development through subsidies of R&D instead of 'randomly' pumping capital into VCs. Only take a role in VC, by investing in ventures and industries that are unattractive for private VC. This target investment strategy increases the number of success stories as the neglected ventures now receive the opportunity to grow and because it results in a more selective investment procedure.
4. *Increase your garden knowledge through education*: entrepreneurship should be promoted and stimulated at an early stage in the education phase. Policy makers, can and should play an important role in showing young scholars and students (at every education level) that the entrepreneurial road is a possibility and not only the standard corporate road. Some methods were discussed in this research such as organizing seminars given by successful entrepreneurs, designing entrepreneurial events, organizing company visits to startups instead of only big corporates, and teaming up with entrepreneurs or encouraging students to visit or organize network events. The Netherlands is home for a vast talent pool. With the right steering, this talent can grow into the needed future entrepreneurs, building success stories within the VCE.
5. *Focus on your strong plants*: instead of copying other regions (such as Silicon Valley) a focus should be placed on the unique Dutch industries (plants) by stimulating it locally through the removal of barriers for these industries. In addition, they should be prompted globally as a strong export product of the Netherlands, in order for it to attract global attention so that they can thrive. Examples of such unique Dutch industries are agriculture, biotech, energy transition, FinTech, logistics, water management.
6. *Diversify your garden to avoid crop failure*: focus on multiple industries instead of one to become more resilient to market shocks. The second benefit for this diversification is that the downsides of overconcentration is prevented such as gentrification and decrease of overall quality of life. The characteristic spread of industry expertise over several cities in the Netherlands is benefiting this diversification (Delft & Eindhoven are specialised in high-tech, Wageningen &

Leiden in biotech, Rotterdam in logistics & water management, Amsterdam in finance, and Groningen in the internet economy/ ICT).

7. *Team up with other gardeners*: the fragmented Europe, as previously mentioned, impedes the growth of the Dutch VCE. This research casts doubt on the goal of the European Union to solidarize the European countries since there is a limit as to how much the cultural and other differences between each country can be influenced. Nevertheless, it is recommended to look into policies adaptations at the level of the European Union, which could enlarge the Dutch local market, or better said enlarge the reachability to other markets, through acts such as the Small Business Act and the Single Market Act.

These seven strategic recommendation insights are needed to be taken by the Dutch policymakers to improve the Dutch VCE. The opportunities resulting from it, depend upon state-led reforms and have to be seen as part of a long-term process of change. As the famous economist, John Maynard Keynes said for the 'master-economist' also holds for the master-policy maker: "*He must study the present in the light of the past for the purposes of the future*."

9.2. Discussion

This section will be dedicated to discussing what these conclusions and recommendations mean by first of all diving into the scientific and practical contribution it has made. However, like all studies, this research does have its limitations. These limitations will be presented so that the reader can properly estimate the value of this research. This will provide room for further research, which will be discussed as well.

9.2.1. Research contribution

Scientific contribution

The scientific contribution is represented by several factors:

- **First study to develop a conceptual model of a venture capital ecosystem.**

Although much has been written about what determines the activity of VC, the current literature lacks a complete model showing how VC activity is influenced. This research has developed the first theoretical model by spectating VC from an ecosystem perspective. By viewing VC from an ecosystem perspective, it has allowed to see – in addition to the determinants of VC – how the determinants themselves are influenced by each other. In other words, this research has illustrated the interrelationship of VC determinants and thus has given a better understanding of how VC ecosystems work.

- **This research has added more theoretical content to the theory of EE and more specifically to the EE perspective of Spigel (2017 & 2018).**

This research has confirmed that all of Spigel's (2017) attributes, excluding *support services* and *infrastructure*, are also applicable for the VC ecosystem, which might not sound as a surprise since VC depends on the success of the entrepreneur.

In addition, theory is added in several manners. First of all, it has added new attributes that most likely influence the entrepreneurial ecosystem as they affect the success of the entrepreneur, these are *mission-driven government (R&D, education, industries)* and *maturity & experience of the ecosystem.* Secondly, this research has given more specification to the attribute *supportive culture*. In Spigel's (2017) it is (too) broadly stated: "*cultural attitudes which support and normalise entrepreneurial activities, risk-taking, and innovation*". This research argues that this 'supportive' attitude is influenced by the following: *risk perception, tolerance of failure, pay-it-forward mentality, ambitious mentality, language & work ethics.* Thirdly, Spigel (2017) wrongly discounts the fact that cultural and material can have a direct effect on each other in his EE model (see **Figure 6**). This research has shown that a cultural attribute can and does have an impact on a material attribute (*ambitious mentality* on *size of VC funds & investment attitude*). One can imagine that this is also the case within the EE, as the development of *policies*, *open markets & support services* are influenced by the (entrepreneurial) culture. Fourthly, although Spigel (2018) mentions the barrier and encourager aspect of some attributes, he does this too modestly. This research has put more importance on this matter by emphasising it in the VCE conceptual model since this gives more insight as to how and why an ecosystem behaves in a certain way. Fifthly, this research has added a layer to the attributes of Spigel by showing that each attribute has its own level of influenceability (short-term, long-term, 'unaffected). This again gives more insight as to how and why an ecosystem behaves in a certain way. Lastly, this research has enriched the framework of Spigel (2018), which shows the different types of ecosystems, by adding another country: the Netherlands.

- **Provided more theoretical content to the literature of VC.**

As said this research, first of all, has added more theory to the VC literature by exploring the VC industry from an ecosystem perspective. In addition, this research has confirmed most of the literature exploring the determinants of VC. However, it did not find supporting results for the determinant *Geographical proximity of venture capital firms* (Cumming and Dai, 2010). Furthermore, this research has added more theory to the heavily debated topic of whether public funding results in crowding-in or crowding-out effects. The results show that public funding should be kept to a minimum as this type of VC is not in line with the interest of the original VC model (private VC) – this also holds for corporate VC funds. However, this research does recommend public VC to co-exist with other VC types but by having a specific goal, which is to invest strategically in otherwise unattractive startups (but with growth potential) so that private VCs will eventually be attracted to invest in them as well (in line with Bertoni, Colomb & Quas 2017). Finally and most importantly, this research has provided a number of determinants that might be overlooked in the current literature as important influencers of VC activity in a region: magnitude of success stories, talent pools (e.g. universities), mission-driven government (R&D, education, industries), in addition to risk-taking more content to what makes a culture supportive to entrepreneurship, in addition to the experience also the maturity (age) of a region/ecosystem, and lastly size of the local market.

Practical contribution

The main deliverable of this research has been the most important practical contribution of this research, which is a recommendation on how to improve VC activity in the Netherlands. The 'how' question was thoroughly discussed in the main conclusion of this research with the seven recommendations for Dutch policymakers.

In addition, the conceptual model for venture capital ecosystems can be used by different nations, countries, regions to explore how their own ecosystem performs. Based on this performance insights, they can make effective adaptation decisions to improve their VC ecosystems. Moreover, the main future aim – or better said aspiration – of this research is that this ecosystem approach and VCE model will be embraced as a new economic development strategy/tool, similarly to what groups such as World Economic Forum (2013), the Kauffman Foundation (Motoyama, Konczal, Bell-Masterson, & Morelix, 2014, and the OECD (Mason & Brown, 2014) have done for the entrepreneurial ecosystem theory. This research has laid the foundation for this aspiration, but more academic exploration on this matter is required to strengthen the model and recommendations, which will be discussed in the future research section.

9.2.2. Limitations

The limitations that are worth mentioning in a research are the ones that influence the outcomes the most. These limitations can mostly be found during the decisive moments of the research:

Choice of theory

The choice of theory lens has affected the outcomes and recommendations of this research in several manners. In **§3.1.1** & **§3.1.2.** the possible consequences were discussed of choosing the general EE theory and more specifically the EE view by Spigel (2017 & 2018). This was done to put the development of a concrete recommendation more on guard. Reflecting back on this research these consequences still hold and are therefore needed to be reminded so that the reader of this research can estimate the value of its outcomes properly.

Entrepreneurial ecosystem theory

- The holistic view of EE has resulted in a not rigorous scientific testing and, therefore, may have become too vague and speculative. The VCE contains a total of 13 determinants with numerous interrelationships thus making it a rather complex model to explain, comprehend and therefore make it eventually harder to pinpoint the needed recommendations.
- Venture capital was placed as a focal point, which has resulted that this party may have received disproportional attention. In addition, to limited partners and startups, there might be other parties in the environment that do affect the VCE in a particular way, which might have been overseen. With the alternative theories (*clusters*, *regional innovation system* and *industrial district*) this issue could have been avoided.

- As said EE is industry agnostic, which means that the research outcomes did not take the industry differences into account. This implies that industry comparisons will not be possible with the results of this research but only comparisons of VC ecosystems as a whole.
- Lastly, EE theory does not provide a clear view on the geographical boundaries. For example, it could be a city, a region or a country. This lack of geographical clarification also holds true for the developed VCE model, which was developed based on a comparison of a country (Netherlands) and a region (Silicon Valley). This means that this model quite possibly may only be applicable for a particular regional comparison and should be mindfully used when looking at other case studies such as cities.

Spigel's entrepreneurial ecosystem theory

- The use of the categorisation in cultural, social and material factors, has forced the field research results to be moulded into solely these three elements. In addition to these three categories, there might be a different category which has been overlooked. Moreover, this setup of three categories may have forced a factor into one these categories resulting in lumping determinants together that are unrelated or inessential, which could have developed wrong interpretations. Cohen's (2006) EE perspective, for instance, mentions social networks as well but makes a distinction between formal and informal networks – avoiding lumping it together and resulting in quite possibly clearer results.
- Due to the cultural and social determinants, it was inevitable that part of the recommendations would have a long-term nature, as these determinants are hardly possible to alter. For example, the process of changing a cultural element in a region such as the risk-taking attitude, cannot happen instantly and is difficult to steer since it happens organically. Having said that, the question remains whether a culture is possible to change at all (so not only in the long-term). The Netherlands, for instance, is known for having a 'Calvinistic' and down-to-earth mentality/attitude, which can be dated back centuries. In other words, recommendations in this research related to cultural and social elements might be more taken as 'lessons-learned' than as 'recommendations'.

Development of the model

The development of the draft VCE model was based solely on the literature review conducted in this research. In other words, the model is isolated from other determinants not found during the literature review, meaning that quite possibly there might be other literature that discusses VC determinants, which are overlooked. Furthermore, the linkage and moulding part between the founded VC determinants and the EE to develop the draft model remains subjectively argued. Both pitfalls were aimed to be avoided as much as possible with the validation part of the conducted interviews. Nevertheless, the validation could have been better executed by consulting the interview participants a second time after adjusting the draft VCE model. In other words, a second validation iteration would have aided to strengthen the VCE model. However, this was not possible due to the time constraints of this research.

Sampling

The sample pool used for this research were exclusively experts who have a deep understanding of the VC industry (e.g., VC managers/partners, VC data providers, advisors). It was assumed that entrepreneurs, policymakers and other actors in the VCE might not have the needed knowledge to comprehend the model and, therefore, are not applicable to the validation part. In addition, the reason for solely choosing VC experts was because the goal was to take the investment perspective of VCs and not others such as entrepreneurs. However, both reasons limit the VCE model as one that is developed by the view of only one party: VC experts. Including parties such as incubators, policy makers, and founders of startups might have enriched the VCE model in still unknown manners. In addition, data was obtained from a relatively small number (of candidates), which raises issues of representatively and specificity. To balance this, literature could have been reviewed in this manner using mixed-method research, which is the act of combining several research methods to study one topic. This allows researchers to capture a more complete, holistic, and contextual portrayal of the unit(s) under study (Jick, 1979), assuring more validated research, and a (hopefully) truer account.

Interpretation of the results

The VCE model was developed based on qualitative data (interviews). In other words, the VCE model is as strong as the opinion and thoughts shared by the interview participants. Quantitative data was provided where possible, but this could be enriched more (discussed in the section for further research). Lastly, although the research was kept as rigorous as possible – by recording the interviews, transcribing the conversations, and adding the transcripts to the appendix of this research – the interpretation of these conversations and coding part of them remains a subjective reasoning of the researcher.

9.2.3. Areas for further research

First of all, the EE theory can be enriched in several manners. It would be recommended to investigate the attributes - *mission-driven government (R&D, education, industries)* and *maturity & experience of the ecosystem* – for applicability in the theory of entrepreneurial ecosystem as these attributes affect the success of the entrepreneur. In addition, related to the EE theory, it would give more insights if the layer of interrelationships between attributes – barriers and encouragers – are investigated. Furthermore, more insights will also be gained by investigating the influenceability level of each studied attribute – discussed in this research as short-term, long-term and 'unaffected' – but then for the EE, which was not found in the literature of EE.

Secondly, related to the academia in VC determinants, further research could be executed on the determinants that were found in this research and that might have been overlooked in the current VC literature. These determinants are: the magnitude of success stories, talent pools (e.g. universities), mission-driven government (R&D, education, industries), in addition to the experience also the maturity (age) of a region/ecosystem, and lastly size of the local market. This research has argued that these determinants

influence the VC activity based on qualitative data. Therefore, more research is needed provided with quantitative evidence to gain more insights if this is truly the case.

Thirdly, this research has merely set the foundation of the first conceptual model of venture capital ecosystems. As previously said in the limitations section, the model is not airtight. To strengthen the VCE conceptual model – in order for it to be used as an economic development strategy/tool – more research is needed. Starting with the most important, this can be done by adding quantitative evidence to each of the 13 attributes and developing metrics so that a score can be given to each attribute separately. This way, comparison of VCEs can be executed in a more standardised manner. Besides more quantitative data, more case studies should be researched on different levels of geographical regions (cities, metropoles, provinces, countries). In addition, the model was developed, as previously said, solely based on the perspective of VC experts. Therefore, in order for the VCE to gain more robustness, other experts should be included that are related to the activity of VC such as: universities, policymakers, entrepreneurs, and incubators. By interviewing experts from different fields a more reliable sampling is pursued since different perspectives included (Eisenhardt & Graebner, 2007). For example, as can be seen in the study of (Fritjofsson & Deshays, 2018), VCs and founders perceive the added value of VC differently.

Lastly, a totally different theory approach to research VC activity would be advised as this would result in an even better comprehension of this topic. After the main results have been collected, it has occurred that the mechanisms of the VCE model resemble features of system thinking theory. There are many studies in system thinking, and Arnold & Wade (2015) have put the effort in their study to collect all the different definitions. System thinking in its core recognises that there are things that are interconnected in ways that produce distinct patterns of behaviours and it is the interrelationship between these individual parts that give rise to their emergent behaviours. These interrelationships are shaped by their so-called stocks and flows, feedback loops and delays. The stocks and flows can be seen as the core elements of the system which can be related to the determinants of VC. Feedback loops are their interconnections, and in every system, there are two kinds: reinforcing and balancing with the former resulting in virtuous cycles and the latter vicious cycles (also seen in VCEs). These feedback loops can be related to the barriers and encouragers of the developed VCE model. These feedback loops result in delays of the stock and flows, which can be related to the short-term, long-term and ‘unaffected’ matter discussed in this research. More research would be needed to investigate whether the theory of system thinking is suitable to study the activity of VC, but this research argues that this is recommended as it would give more insights into the matter of VC environments and…

the better we understand VC environments; the better we can close the financial chasm of new business ventures, hence improve the national economy.

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Appendix A: Studies measuring Netherlands' risk capital performance

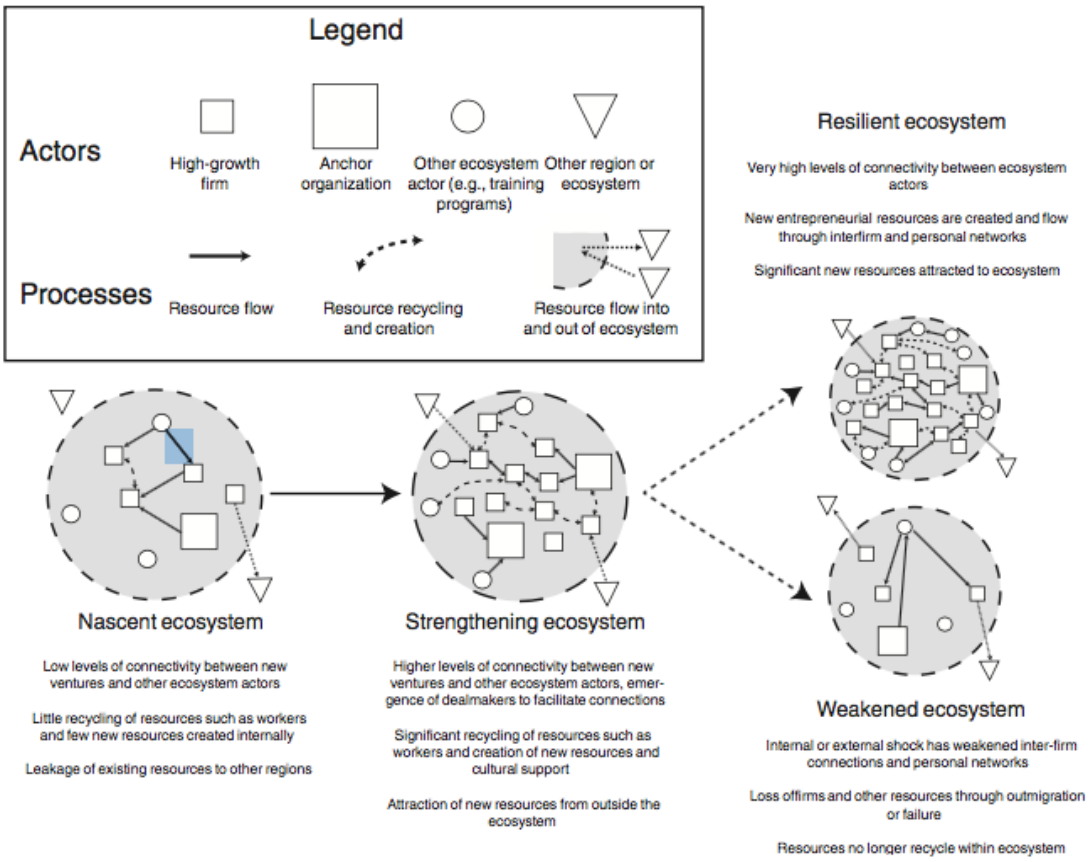
Figure 14: The Global Entrepreneurship and Development Institute (2018)

Performance Overview

Indicator	Rank / 125	Rank Trend	Score
VCPE Country Attractiveness Index	**12**		**83.3**
1 Economic Activity	20		88.3
2 Depth of Capital Market	15		79.2
3 Taxation	7		116.5
4 Investor Protection and Corporate Governance	22		83.4
5 Human and Social Environment	21		69.9
6 Entrepreneurial Opportunities	5		89.6

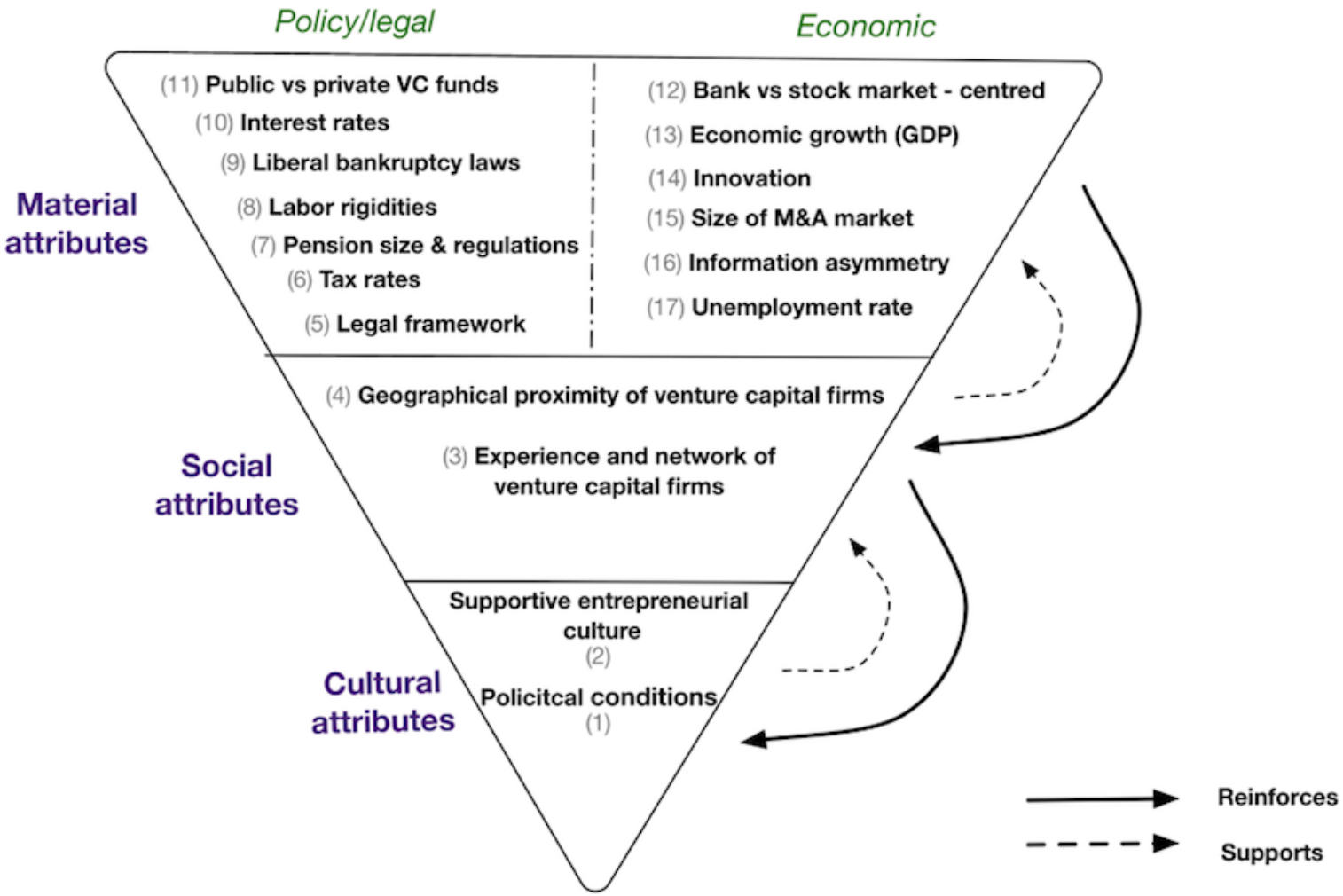
Figure 15: The Venture Capital & Private Equity Country Attractiveness Index (2018)

Appendix B: Transformation of entrepreneurial ecosystem (Spigel, 2018)



Appendix C: Sent out material for interviews

The venture capital ecosystem model



Type of attribute	Attribute	Description
Cultural	(1) Political conditions	The decision to enter an investment market is motivated more by the stability of the country (corruption, disruptive events) which allows medium- to long-term planning of returns on investment.
	(2) Supportive entrepreneurial culture	The overall cultural attitude that support and normalize entrepreneurial activities such as risk-taking and risk-assessment.
Social	(3) Experience and network of VC firms	Ventures funded by more experienced VC's (past experience of team, human capital, network) are more likely to succeed, which in turn ignites a virtuous cycle of more entrepreneurship and VC activity.
	(4) Geographical proximity of VC firms	VC exhibit strong local bias in their investment decisions – meaning they invest predominantly in the new ventures that are located in their proximity.
Material		
Policy/legal	(5) Legal framework	The legal environment and its enforcement impacts the size and extent of a country's capital market, since a good environment (e.g.: common law being a VC stimulator, strong accounting standards) protects the potential investors against expropriation by entrepreneurs.
	(6) Tax rates	Lower tax rates (capital gains and corporate income) make it relatively more attractive for a manager or worker to start his or her own company, enhancing the relative level of VC activity, whereas a higher taxation of income reduces this level due to an induced lower entrepreneurial will.
	(7) Pension size & regulations	One of the sources to raise capital by VC funds are pension funds. The size of these funds is influenced by the supporting regulations for pensions to invest freely in the VC industry (e.g.: Employment Retirement Income Security Act [ERISA]).
	(8) Labor rigidities	Rigid labor laws make hiring employees difficult for companies, since they deprive the company of the flexibility to let people go later on, should this become necessary. It is expected that this influences the entrepreneurial activity negatively, thus the VC activity.
	(9) Liberal bankruptcy laws	Personal bankruptcy laws that treat entrepreneurs that have failed in the past more liberally, in the sense that they offer a fresh start quickly, will stimulate the VC activity.
	(10) Interest rates	Theoretically, if interest rates rise, supply of VC should decrease, since a high level of real interest rates reduces the attractiveness of risky investment (taking bonds as alternative). However, the opposite is noticed in contemporary literature by explaining that (short-term) interest rates also affect bank financing costs. In other words, when bank financing becomes costlier, VC may be a better and a more flexible alternative to raising funds for venture creation by entrepreneurs.
	(11) Public vs private funding of VC funds	Financial stimulation of VC funds by governments can result in a crowding out effect: an unwanted phenomenon that occurs when public involvement in an industry (in this particular case VC) pushes out private involvement. Some argue that this result in the exact opposite – crowding in.
Economic	(12) Bank- vs stock market-centred capital markets (IPO)	A well-developed stock market permits VCs to exit through an IPO which allows VCs to enter into implicit contracts with entrepreneurs concerning future control of startup firms, in a way not available in a bank-centered capital market. An IPO exit allows VCs to liquidate their portfolio company faster and entrepreneurs to regain their company control through rebuying of shares.
	(13) Economic growth – GDP	Economic growth, measured by GDP, implies higher attractive opportunities for entrepreneurs, which lead to a higher need for VC funding.
	(14) Innovation	VC fosters innovation and vice versa. Measuring the output of innovation can be done with: R&D expenditures; number of patents, stock of knowledge or innovation index.
	(15) Size of M&A market	M&A is a trade sale or secondary sale exit strategy. Vibrant M&A markets seem to stimulate the VC activity. Nowadays both in the US and Europe, M&A exits are more frequent and with higher total exit values than IPO.
	(16) Information asymmetry	VC financing is relatively more attractive when there is a high degree of information asymmetry (measured by market-to-book ratio), due to the monitoring role of venture capitalists.
	(17) Unemployment rate	The unemployment rate negatively influences VC activity, since it can affect market expectations and influences the decision to become an entrepreneur or to invest in a venture.

Explanation of the VCE model
A theoretical representation of the social, political, economic, and cultural elements within a region that foster the development of venture capital, which in turn support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures.

'Cultural attributes': all elements that are subjected to beliefs and outlooks about entrepreneurship and venture capital within region
'Social attributes': the resources composed of or acquired through the social networks within a region.
'Material attributes': attributes with a tangible presence in the region. For clarity reasons a division is made between policy/legal and economic attributes.

Explanation of the model through the following example:
'(14) Innovation' (a material attribute) used by startups is, in addition to capital, supported by the '(3) experience and network of venture capital firms' (a social attribute) to foster this innovation process, which in turn requires the effort of risk taking investors ('(2) supportive entrepreneurial culture') within the local culture (a cultural attribute). But while this innovation depends on these social and cultural attributes, this innovation also strengthens and reproduces (reinforces) them by attracting more investors who see a growth potential in that region, which in turn reinforces the risk-taking attitude (cultural).
Note: This is one example. Many other combinations can be made.

Interview questions
General questions (Main goal: to validate the drafted venture capital ecosystem model depicted on the first page):

- Is there in your view an attribute missing in the model or one that is in-correct?
- What is your opinion about the following attributes? Are they plausible factors that influence the venture capital activity in a region? Please explain why or why not?
    - Histories of entrepreneurship (=historical examples of local successful startup stories to inspire next generations of entrepreneurs)
    - Presence of universities
    - Presence of support services (e.g.: patent lawyers, incubators, or accountancies)
    - Presence of physical infrastructure (e.g.: office space for ventures and telecommunication platforms).

Regional questions (main goal: to draw the specific VC ecosystem of both regions. This will aid in the process of understanding and exploring the different types of relationships between attributes within the two ecosystems and how the specific structure affects the activity of the venture capital industry):

- On page one, a model is Illustrated of all the attributes within a general VC ecosystem. If you could make a VC ecosystem model of the Netherlands, how would that look like? In other words, which interaction between which attributes are typical for the Netherlands VC ecosystem? Can you elaborate on the weaknesses and strengthens of these attributes and interaction between them?

- Same goes for the region of Silicon Valley. If you could make a VC ecosystem model of the Silicon Valley, how would that look like? In other words, which interaction between which attributes are typical for the Silicon Valley VC ecosystem? Can you elaborate on the weaknesses and strengthens of these attributes and interaction between them?

- Looking at the drafted VC ecosystem model, what is in your opinion needed for the Netherlands to replicate the success of Silicon Valley's VC ecosystem? (E.g.: cultural, managerial, social, policy changes etc.)

Appendix D: Interview transcripts

HIDDEN

Appendix E: Geographical area of Silicon Valley

Figure 16: The Joint Venture Silicon Valley Institute for Regional Studies (Massaro, 2018)