High-tech Venture Capitalist' Investment Criteria for early- and late-stage ventures in the Origination Phase of the Investment Process

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Management Summary

Research goals

Venture capitalists (VCs) use investment criteria to evaluate and assess venture proposals received from a multitude of entrepreneurs who are looking for venture capital funding. This study focuses on the importance of the investment criteria that VCs use. The objective of this research is to get qualitative information about the way VCs evaluate venture proposals, what are the most commonly used investment criteria used in literature, how important these investment criteria are compared to one another, and the differences or similarities in the importance of investment criteria for ventures in the early-stages of their life-cycle as opposed to ventures in the late-stages. The primary differentiation between early- and late-stages is the presence of a market-tested product or service with a loyal customer base. In order to get concrete results, this research considers the following research variables:

- The industry focus of the VC fund
- The ownership of the VC fund
- The phase in the investment process
- The stage of the venture

This research focuses on high-tech VCs in the Netherlands that invest in both early-stage and late-stage-ventures. The ownerships of studied VCs are the independent funds, bank-affiliated funds and government-backed funds, as their main common goal is to get high returns on investment. Last but not least, this study focuses on the origination phase, which is the earliest one in the investment process.

Research design

The methodology was chosen to find the importance of the investment criteria and underlying characteristics in the form of rankings consisting of two key elements: (1) a questionnaire and (2) a semi-structured interview afterward. In the questionnaire, VCs are firstly asked to give some general information about their funds, such as the size of their fund, the size of their investment, or the number of venture proposals they receive monthly. This section of the questionnaire also contains the research variables to ensure the respondents were correctly classified as part of the target group. The second and third part of the questionnaire consists of the hierarchies for the investment criteria and underlying characteristics, once for early-stage ventures and once for late-stage ventures. The rankings are the primary indication of importance, followed by the weighted averages. Such criteria and underlying characteristics are classified as essential criteria with a weighted average of 3.0 or lower. The least important ones have a weighted average of between 3.0 and 4.0 and everything higher than 4.0 is considered as “secondary plan.”

Results

As a general consensus, high-tech VCs in the Netherlands find the Market Attractiveness of a venture the most crucial investment criterion, followed closely by the Product and Service Differentiation and Team Capabilities. The top three have been defined as a ‘trinity of investment criteria,’ and they find themselves under the 3.0 weighted average mark. The fourth and fifth places are occupied by the Environmental Threat Resistance and Cash Out Potential. They find themselves on the other side of

the weighted average spectrum, part of the secondary plan. This has proved to be the same for early- as well as late-stage ventures. An overview is provided in the table below.

Rank	Early-stage	Weighted average	Late-stage	Weighted average
1	Market attractiveness	2.2	Market attractiveness	1.8
2	Product and Service differentiation	2.4	Product and Service differentiation	2.1
3	Team Capabilities	2.5	Team Capabilities	2.5
4	Environmental threat resistance	3.7	Environmental threat resistance	4.1
5	Cash-out potential	4.2	Cash-out potential	4.5

Ranking of the investment criteria in early- and late-stage venture

Given that the primary goal of the responding VCs is to get returns on their investment, it is quite fascinating that the Cash-out potential is the lowest-ranked criterion. In addition, the general view about VCs criteria when evaluating venture proposals is that they value the team more than the product. This has proven only to be partially true, as respondents indicated during the interview that the team of a venture, or at least a proportion of it, is replaceable. At the same time, that is not the case about the product or the market. The Team Capabilities are still an essential investment criterion, but it is not as vital as initially considered. When the criteria are analyzed individually, there is no difference between early- and late-stage whatsoever, but when the underlying characteristics are taken into consideration, the balance tips off quite a bit. The underlying characteristics are presented in two separate tables for early- and late-stage ventures.

Rank	Market Attractiveness	Product and Service differentiation	Team Capabilities	Environmental Threat Resistance	Cash-out Potential
1	Market Size	Product is proprietary or can otherwise be protected	Leadership potential of the lead entrepreneur	Competitive threat	Return on investment
2	Likelihood of customer adoption	Product is scalable	Experience and background of the management team	Barriers to entry	Liquidity of investment
3	Market Growth	Uniqueness of product and technology	Knowledge of the market of the management team within the industry	Technology life-cycle	Size of investment
4	Market Penetration	Market acceptance	Ability to deal with risk	Resistance to economic cycles	Expected risk
5	Creation of a new market	Insulation from competition	Capacity of sustained effort		Time to return on investment
6					Exit method(IPO, acquisition, trade sale)

Ranking of the underlying characteristics for early-stage ventures

Rank	Market Attractiveness	Product and Service differentiation	Team Capabilities	Environmental Threat Resistance	Cash-out Potential
1	Market Size	Market acceptance	Leadership potential of the lead entrepreneur	Competitive threat	Return on investment
2	Likelihood of customer adoption	Product is proprietary or can otherwise be protected	Experience and background of the management team	Barriers to entry	Liquidity of investment
3	Market Growth	Product is scalable	Knowledge of the market of the management team within the industry	Technology life-cycle	Time to return on investment
4	Market Penetration	Uniqueness of product and technology	Capacity of sustained effort	Resistance to economic cycles	Expected risk
5	Creation of a new market	Insulation from competition	Ability to deal with risk		Size of investment
6					Exit method(IPO, acquisition, trade sale)

Ranking of the underlying characteristics for late-stage ventures

As previously mentioned, the overall picture stays mostly the same for the underlying characteristics of the Market Attractiveness, Team Capabilities and Environmental Threat Resistance. On the other hand, there are quite some interesting changes in the Product and Service Differentiation and Cash-out potential criteria. From the early to the late stages, the market acceptance switches from the fourth to the first place, and the scalability and ability to protect a product shift one place down. This category can be considered as the wildcard that best showcases the difference between the two stages. In the Cash-out potential criterion, the time to return on investment switches places with the size of the investment, from the third to the fifth place.

Conclusions

This research concludes that the investment criteria defined in previous literature are still valid to this day. The hierarchy of investment criteria from first until the last is the following: Market attractiveness, Product and Service differentiation, Team Capabilities, Environmental threat resistance and Cash-out potential. This is the case for both early- and late-stage ventures. The product and market criteria score the highest and are considered by most respondents as the base of the ventures supported by a capable and diverse team. The ability to resist the economic cycles falls short in the rankings because it primarily concerns a venture's long-term capabilities. Respondents mentioned that ventures first need to get themselves out there and penetrate the market with their product and, further down the lines, think about the long term, if that will ever be the case. Lastly, the general view that VC funds are primarily concerned with return on investment is also busted by the fact that the Cash-out potential is the lowest ranking criterion overall. The VCs studied in this research indeed have the sole purpose of getting profit, but that is not considered when investing. A good market, in an accessible market with a capable team, is the trinity of investment criteria that VCs take into consideration, which will guarantee them great returns.

The underlying characteristics find themselves in a similar spot, with a few minor switches in ranks in the Product and Service differentiation and Cash-out potential criteria. This research concludes that the decision process of investment criteria that VCs go through is almost the same for ventures in the early-stage and late-stage ventures, with few discrepancies at the lower layer of characteristics. In addition to those, there are a few outliers whose hierarchies are complete opposites from the norm, such as ranking Cash-out potential as the most crucial criterion.

Implications and future research

Three relevant parties have been identified that could benefit from this study: the research community, the entrepreneurial community and the venture capital community. For all of them, the implications and applications are presented. For the research community, this study aims to bring the public knowledge closer to reality by expanding the current knowledge of the decision process undergoing investments and bringing it up to the times. This research also contributes to the existing literature regarding VCs' investment due to its explicit focus set by the research variables. Entrepreneurs can use the results of this study to evaluate and adjust their ventures accordingly to the ranking of the investment criteria and underlying characteristics that VCs find necessary. Veteran VCs can use the findings as a benchmark to compare the importance they assign to each of the investment criteria and compare them to the ranking established in this research. Furthermore, this study only focuses on high-tech VCs, which offers an exclusive view of how those asses venture proposals instead of VCs with other industry focuses. Lastly, considering that the respondents of this research are all experienced general partners in VC funds, aspiring venture capitalist can also base their future investment criteria on the findings of this research.

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1. Introduction

This chapter presents the goal at the basis of this research. First of all, the venture capital ecosystem and the investment criteria VC funds use are introduced. The research's core problem is identified and viable solutions are brought to light by subtracting information from said VC funds through a questionnaire and an interview. Finally, the core problem brings up other questions that will explore different aspects of venture capital funds' investment criteria.

1.1 Introduction to venture capital

Venture capital refers to the professional asset management activity that invests capital raised from institutional or individual investors into promising ventures with high growth potential (Rin et al., 2013). Venture capital has made a name for itself as an essential source of capital for a variety of companies, ranging from startups to more established businesses (Vries et al., 2016). The percentage of people who, at a point in their career, are involved in a venture capital deal, either as an investor or investee, has been increasing in the past 20 years at a rapid pace. While in 1994, venture capitalists (VCs)[1] and private equity[2] (PE) funds managed $100 billion (Metrick and Yasuda 2011), in June 2015, their assets amounted to $2.4 trillion worldwide (Preqin 2016), thus making the whole ecosystem a solid choice for entrepreneurs looking for financing for their own business. Venture capital is only a subset of private equity, emphasizing equity investments made for the launch, early development, or expansion of a business (Rin et al., 2013).

Venture capital is the gateway for entrepreneurs looking for funding for their venture[3] proposal. They do so by presenting their idea to VCs – including information about their product, the company, the management team, financial predictions, and the market opportunities. In addition, VCs use specific criteria to evaluate those proposals and assess their potential.

Venture capital funds invest in companies with high growth prospects, with the end goal of earning their return upon an exit. This can be achieved by either selling the shares they hold in those ventures to another company while they are private, namely a trade sale[4], or to the public in the form of an initial public offering (IPO)[5]. The value proposition of VCs is not limited only to providing capital. They also offer support to venture in their portfolios such as managerial and technical expertise, access to networks for business contracts and recruitment of essential roles for the team (Hellmann & Puri, 2000; Davila, Foster & Gupta, 2003; Payne, Davis, Moore, & Bell, 2009).

This study focuses on the investment criteria that VCs use and their respective importance in the decision process. The results are beneficial for the following parties: the research community, the

[1] Venture Capitalists will be referred as VCs for the rest of this paper.
[2] Private equity is an alternative investment class and consists of capital that is not listed on a public exchange; is composed of funds and investors that directly invest in private companies, or that engage in buyouts of public companies, resulting in the delisting of public equity ((*Private Equity Definition*, 2020).
[3] A venture is a business enterprise or speculation in which something is risked in the hope of profit; a commercial or other speculation (*Definition of Venture | Dictionary.Com*, 2021).
[4] A trade sale is the sale of a company, or part of a company, to another business that will carry on the company's trade. (*Definition of a Trade Sale | Accounting Glossary*, 2021)
[5] An initial public offering (IPO) is the process of offering shares of a private venture to the public in a new stock issuance (*Initial Public Offering (IPO)*, 2021).

entrepreneurial community and the venture capital community. The conclusions might benefit those communities in different ways. The research community finds itself in the situations where old theory that resisted the passage of time will again be put to the test whether it is still reliable and if past results are different. In the best-case scenario, the conclusion can reinforce that Bruno and Tyebjee's (1984) criteria are still relevant and very much applicable nowadays, while their results prove outdated and will be updated accordingly. This research also aims to prove that the theory of those older studies is still valid up to this day. VCs have definitely changed in the past three decades since those studies have been conducted and this research is an excellent way to test whether the results have resisted the passage of time or not. There is an emphasis on the differences between the importance of those criteria depending on the venture's stage.

The venture capital community is always scouting for promising ventures that they can help grow, which will, in return, bring them vast amounts of profits and increase their reputation. By participating in this research, VCs can give insights into how they assess venture proposals, while entrepreneurs can use this to adjust their targets properly. This will not guarantee that entrepreneurs will receive investment but will most likely result in a win-win situation as it seeks to put both sides of a deal on the same wavelength. At the same time, both veteran and novice venture capitalists can use this study's conclusions to base their decision process while selecting venture proposals.

The last perspective is that of the entrepreneurial community which finds itself on the macro-level [6]as it influences society at large. Entrepreneurs, who are on a micro-level[7] and are looking to fund a company or already did, will always be looking for ways to get capital. They need to undergo procedures of creating an idea and scaling up to a successful business. Those can all be done with the help of venture capital funds, as they provide both capital and professional guidance. Thus, entrepreneurs will have a better chance to receive funding if they know what criteria venture capitalists use depending on the stage their ventures are in.

1.2 Problem identification

This study bases itself on the premise that more professions from different areas of expertise are involved in a VC fund's organization. Individuals with specific experiences, such as marketers, bankers, or lawyers, are key actors in the investment process. They can also be new to how the VC ecosystem functions and prone to make mistakes. It does not matter what specific sets of skills an individual in a VC fund might possess, but, first and foremost, everyone has the responsibilities of a venture capitalist. The fact that less than two percent of the deals that enter the decision process end up receiving funding from the VC (Fried & Hisrich, 1994) enforces the need for such general knowledge. There is a general lack of knowledge about the entrepreneurial and VC ecosystem. Although profit is their primary goal, they achieve it by providing valuable advice, networking opportunities and professional help to ventures they choose to invest in.

[6] Macro-level analyses generally trace the outcomes of interactions, such as economic or other resource transfer interactions over a large population. It is also referred to as the global level.

[7] The smallest unit of analysis in the social sciences is an individual in their social setting. At the micro level, also referred to as the local level, the research population typically is an individual in their social setting or a small group of individuals in a particular social context.

Those individuals who can be categorized as aspiring venture capitalists are the main research population of this study.

A financial analyst will use complex methods right away to decide whether a venture is worth investing in or not. In reality, those complex analyses are only conducted when a venture is in a developed stage of their life-cycle. The same applies to lawyers; although contracting is exclusive to the deal-making phase, their expertise is needed in specific cases, mostly in late-stage ventures. Their skills are valuable indeed, but a significant portion of VC investments go into not-so-developed ventures as well, where the risk is high, but so is the reward. For such ventures the financials or deal terms are not as important as the service's uniqueness or product and the team behind it. On top of specific knowledge and skills those individuals might possess, a foundation for evaluating startups from a VC perspective is needed. Also, being knowledgeable in the industry the VC fund is investing in, at least on a basic level, is an unwritten rule.

Furthermore, three other significant communities might be influenced by the results of the study, namely: (1) the research community, (2) the entrepreneurial community, and (3) the venture capital community. Entrepreneurs are constantly on the look for ways of getting capital. They need to undergo procedures of creating an idea and scaling up to a successful business. Those can all be done with the help of venture capital funds, as they provide both capital and professional guidance. Thus, entrepreneurs will have a better chance to receive funding if they know what criteria venture capitalists use depending on the stage their ventures are in.

The venture capital community is always scouting for promising ventures that they can help grow, which will, in return, bring them vast amounts of profits and increase their reputation. Furthermore, by participating in this research, they will share their vision and influence ventures to work on specific values that they are looking for. This will result in a win-win situation as it seeks to put both communities on the same wavelength. Finally, from the research community's perspective, this study will bring to light the criteria that venture capitalists in the high-tech industry use nowadays and pave the way for future research.

Proposals may look very attractive and offer lots of growth opportunities, but it is never good to judge a book by its cover. On paper, this might be different as ventures can have many holes in their business plan[8]. VC funds receive vast numbers of proposals in which they have to differentiate the good from the bad ones. The more time they spend on evaluating bad proposals before deciding, the less time they spend honing the good ones. Therefore, they must be quick and precise in their filtering system. The most common mistake that those new to the VC ecosystem make is to base their decision-making process on general studies tailored to the general public. Such sources are frequently published en masse on entrepreneurial websites which have no scientific backing behind them. Ultimately, said sources could sometimes prove

[8] The business plan is a written document that describes in detail how a business—usually a start-up —defines its objectives and how it is to go about achieving its goals; a written roadmap for the firm from marketing, financial, and operational standpoints (*Business Plans: The Ins and Outs*, 2021).

to be reliable but too general. The first step in solving the problem is understanding it, and without the correctness of this step, the whole decision process will crumble. The core of all those problems and obstacles is the general lack of knowledge for someone new to the VC ecosystem, making them prone to mistakes. Their first task as a venture capitalist is to properly analyze and assess whether a venture proposal is worth investing in or not. This is the basis of the whole VC investment process. Literature suggests that VCs' evaluation process is defined in a few categories (Tykvová, 2017), which will be one of the primary separators between this study and the previously mentioned ones. Those categories are the following:

- The industry focus of the VC fund
- The ownership of the VC fund
- The phase in the investment process
- The stage of the venture

They will be discussed in more detail in section '1.3.1 Research Scope'.

The findings of Carter & Van Auken (1994, pp. 66-70) indicate that project management control and exit procedures, as well as the importance of investment criteria, are different between early-stage and late-stage VCs. Products in the high-tech industry have a generally longer time-to-market or time-to-exit than other industries, which by default influences the investment criteria used. Upon conducting a comparative study, Zutshi et al. (1999) concluded that the countries the investments take place in play a role in the criteria. Due to this research's scope, all explored VCs invest mainly in the Netherlands.

In order to get concrete results, researchers should narrow their scope and focus on one industry, phase and stage. Regarding the variable 'stage', this study focuses on identifying the differences, if any, between investment criteria for early-stage and late-stage ventures. To reduce any unclarities that might arise from the definition of the variables, a distinction must be put in place between stages of the venture and phases in the investment process. The stages solely refer to the ventures, precisely how far they are with the development of their idea. While the phase solely concerns the time during the investment process of a VC fund in which a venture enters their deal flow. In the next section,'1.3 Research scope and objectives', an in-depth explanation will be given for the different stages a venture can be in and explain the phase this study is focused on.

In addition, any future frameworks that assess the VCs' evaluation of proposals should be targeted towards one specific criterion (Zacharakis & Meyer, 2000, p. 34). In order to identify possible differences between early- and late-stage ventures, this study will tackle more than one criterion.

1.3 Research scope and objectives

1.3.1 Research scope

The lack of general knowledge about the VC ecosystem for those new to it has too many factors for this research to cover. Entrepreneurs and aspiring or veteran venture capitalists need to differentiate between the ownerships of VC funds or phases in the investment process.

Approaching all those topics would be too time-demanding and costly, both in terms of time and money. It might also lead to a general conclusion that would make this research resemble one of those previously mentioned entrepreneurial blogs and websites.

As mentioned in the previous section, VCs' investment criteria are based on a multitude of variables (i.e. industry focus and ownership of VC fund, phase in the investment process and stage of the venture). Researchers are advised to study only one section per variable, but in this case, an exception will be made regarding the stage of the venture. The scope of the research is presented in Table 1.

Table 1: Scope of the research

Variables	**Research scope**
The industry focus of the VC fund	High-tech industry
The ownership of the VC fund	Independent, Institution-backed, Bank-affiliated, Government-backed
The phase in the investment process	Origination Phase
The stage of the venture	Early-stage vs Late-stage

First and foremost, this study is taking the industry focus of the VC funds into consideration, specifically the high-tech industry. 'High-tech' is a broad term and does not have a universal definition. This study applies the 'high-tech' concept to the product, either in the ways it is manufactured or the value it provides. For the sake of being as explicit as possible, the industries that are part of high-tech are the following: ICT manufacturing[9], software, internet and TLC services, R&D and engineering services, med-tech[10], agri-tech[11], sustainable energy, micro- and nano-technologies[12], semi-conductors & high precision engineering and other high-tech manufacturing[13]. High-tech ventures may be primarily characterized by uncertainty and complexity (Robbie et al., 2010). It is acknowledged that entrepreneurs need to have a biased approach in their decision-making to deal with these situations (Busenitz and Barney 1997). On the other hand, Lerner (1995) considers that VCs are biased towards high-tech industries. Such firms pursue technologies with superior value propositions and products with highly technological features (Miloud et al., 2012).

According to the second row in Table 1: Scope of the research, VC investors are classified according to the ownership and governance of the management company. An investor who is owned by an independent management team such as pension funds is classified as an

[9] This category includes electronic components, computers, telecommunication equipment, medical and optical instruments (Bertoni et al., 2015).
[10] Med-tech is defined by the World Health Organization as the "application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems developed to solve a health problem and improve quality of lives."
[11] Agri-tech is the use of technology and technological innovation to improve the efficiency and output of agriculture. (Riddell, 2019).
[12] Micro and nano technologies include a wide range of advanced techniques used to fabricate and study artificial systems with dimensions ranging from several micrometers (one micrometer is one millionth of a meter) to a few nanometers (one nanometer is one billionth of a meter) (*Micro and Nano Technologies*, 2019).
[13] This category includes robotics and automation equipment, aerospace.

independent VC (Bertoni et al., 2015). An independent VC (IVC) is one in which capital is mainly sourced through third parties and none of the shareholders holds a majority stake (EVCA, 2007) and they are the most prevalent types of VC funds. In a bank-affiliated VC, the management team or parent company is a financial intermediary, whilst a government-backed fund is governed by a government agency or body. Last but not least, institution-backed VCs usually have at their core a university, college or agency that is using the fund as a money distribution channel for those that are part of it. All mentioned VCs have one characteristic in common; they usually do not have any strategic objectives in addition to the financial goals[14] of getting profit by investing in high-growth potential ventures. There are cases, especially for government-backed VCs, where they aim to enrich the entrepreneurial ecosystem in one region or specific industry, but the essence stays the same.

The other type of VC ownership left out is corporate VCs because their goals are entirely different. The primary objective of most corporate VCs is strategic, which means that capital gain is considered a minor goal compared to the potential for new business development within the corporate organization (Sykes, 1990). Corporate VCs use venture capital to boost the development of new business development activities within the company; thus, ownership plays a vital role in this case.

The process of VC investment consists of four phases: origination, investment process, investment management and exit. The focus of this study is on the origination phase because this phase is the earliest one in the investment process, where any venture capitalists, either new or veteran, are prone to make the most mistakes. Moreover, making mistakes in the first phase will negatively affect the whole process. Therefore, knowledge should be gained right from the root of the problems. During the origination phase, VCs juggle around with ventures and, depending on their potential, choose to keep in touch until the ventures reach certain milestones that VCs deem to be indicative of finally investing. They will also close deals and support their portfolio. VCs are actively looking for investment opportunities throughout their life-cycle (Gompers & Lerner, 1998). On top of investing, they offer professional support and access to networks to their ventures (Davila, Foster, & Gupta, 2003). VCs are constantly in touch with their companies and, depending on the relationship they formed; it can either be formal visits or informal calls over the phone. One very general practice of monitoring VCs use is participating in the venture's management board (Rosenstein, 1988). Finally, VCs often take an active role in guiding the exit decision, such as influencing a company's initial public

[14] Corporate VCs aim to tap new markets on any new promising technologies (Dushnitsky and Lenox, 2005), while other types such a bank-affiliated VCs aim to strengthen the demand for the commercial and investment services their parent company provides (Hellmann et al. 2008).

offering (Gompers & Lerner, 1998). The general investment process in a VC fund is described in Figure 1.

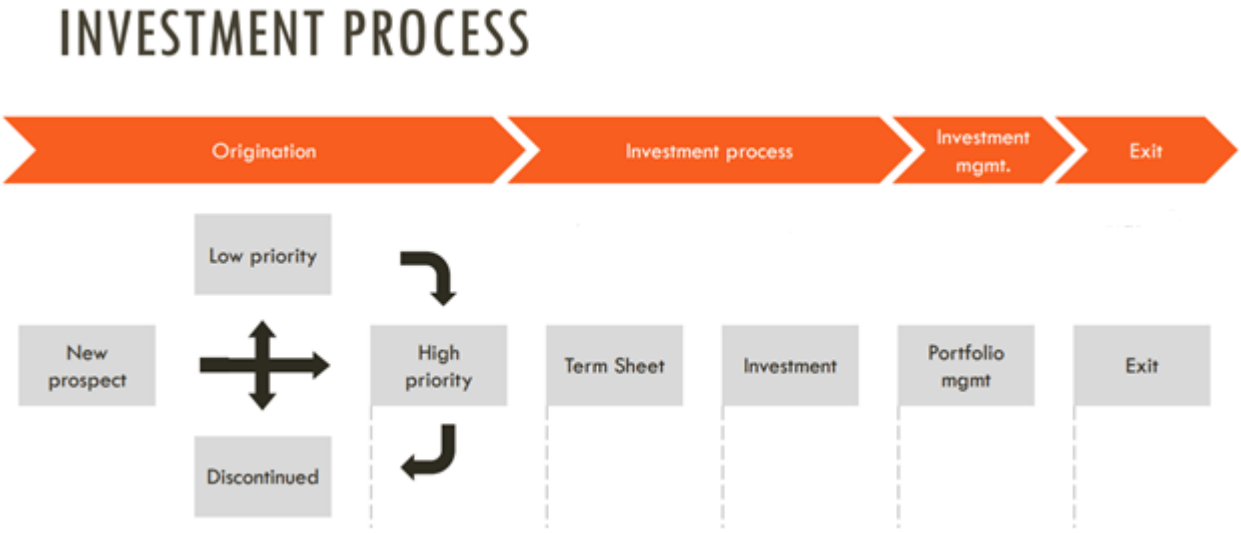


Figure 1: Venture capital fund investment process (Innovation Industries, 2020)

The last relevant and arguably most crucial variable for the research scope of this study is the stage of the venture. There are a few relevant classifications of the stages that ventures go through. Those studies range between five and eight stages. Both Bruno and Tyebjee (1984) and Ruhnka and Young (1987) use Stanley Pratt's system, publisher of Venture Capital Journal (1981). Pratt distinguishes six stages of venture capital funding: 1) "seed' financing, 2) "startup," 3)"first stage" financing, 4) "second stage" financing, 5) "third stage" financing, and 6) "bridge" financing. A more recent study, "Guide on Private Equity and Venture Capital for Entrepreneurs", an EVCA special paper published in 2007, only classified five stages: 1) "seed", 2) "startup", 3) "post-creation", 4) "expansion/development" and 5) "transfer/succession". To top it all off, Sahlman (1990) goes the extra mile and uses the eight stages defined by Plummer (1987), which are also the ones used in this study, namely: 1) "seed", 2) "startup", 3) "early development", 4) "expansion", 5) "profitable but cash poor", 6) "rapid growth toward liquidity point", 7) "bridge stage – mezzanine investment" and 8) "liquidity stage – cash-out or exit".

This study will divide all those stages into two big categories: early-stage and late-stage, implying the need for an extensive number of stages. On the one hand, choosing more stages leaves the VCs approached for this study with more freedom in selecting the stages of ventures they invest in, thus more conclusive results. On the other hand, more freedom might create more unclarities, which can be solved during the interview described in section '3.2 Data collection'. This being said, this study uses Sahlman's (1990) labels for each stage, but the definitions are adapted to the high-tech industry. According to this study's principal, VCs in the high-tech industry generally assess ventures differently from other VCs. They focus way more on the product and its uniqueness, such as a more developed MVP[15] or the presence of

[15] MPV = Minimum Viable Product

patents. Thus, adapting the definitions improves the quality of the collected data as it is more tailored to the research population. Before defining the early- and late-stage categories, it is important to mention their components first. The stage components are shortly defined as follows:

- "seed": ideation that might involve building a small prototype in order to determine whether the idea is feasible; this stage does not involve production for sale
- "startup": working minimum viable product with a management team that is actively testing a market and a customer base
- "early development": prototype with minimal technical risk; the product is market-tested and building a customer base
- "expansion": enough production to ensure a loyal customer base but still not enough to be profitable as ventures in this stage probably need capital to scale-up such as equipment purchases, inventory and receivable financing
- "profitable but cash poor": fast sales growth and past the break-even point, but still requires further investment to expand manufacturing facilities further, expanded marketing, or product enhancements.
- "rapid growth toward liquidity point": stable and successful ventures with reduced risk for outside investors, where they prefer the use of debt financing[16] to limit equity dilution[17]
- "bridge stage": ventures are already considering a form and time of exit but need more capital to sustain rapid growth in the interim
- "liquidity stage – cash-out or exit[18]": ventures either cash-out through a trade-sale or an IPO; sellers such as VCs take back debt in a leveraged buyout[19]

The primary differentiation between early- and late-stages is the presence of a market-tested product or service that has a loyal customer base. An early-stage venture is focused on getting their idea to work and off the ground while providing a minimum working product while looking for their fit in the market and a proper customer base. A late-stage venture is already operating and selling its service or product to a specific target audience. According to the definitions for the stages, such a venture begins from the fourth stage of the "expansion stage." Consequently, early-stage ventures will consist of the first three stages, while late-stage ventures will cover the rest. A higher risk is implied in early-stage ventures for a higher return potential when the venture is backed by a competent team and pertinent ideas (Tyebjee & Bruno, 1984). In contrast, there is already an existing inflow of cash in late-stage ventures, and the focus shifts on the feasibility of breaking even and scaling up (Fried & Hisrich, 1994).

[16] Debt financing occurs when a firm raises money for working capital or capital expenditures by selling debt instruments to individuals and/or institutional investors (*Debt Financing*, 2021).
[17] Equity dilution occurs when a company issues new shares that result in a decrease in existing stockholders' ownership percentage of that company (*Dilution Definition*, 2021).
[18] Very uncommon stage for VCs to invest in as it implies the smallest amount of risk as well as the smallest possible reward.
[19] A leveraged buyout (LBO) is the acquisition of another company using a significant amount of borrowed money to meet the cost of acquisition. (*Leveraged Buyout (LBO) Definition*, 2021).

Concluding, this research focuses on the investment criteria that VCs in the Netherlands, focusing on the high-tech industry, use when they invest in early-stage and late-stage ventures during the origination phase of the investment process. The research scope has been narrowed by having constant talks with an experienced general partner [20]in a high-tech venture capital fund with headquarters in Amsterdam and Eindhoven called Innovation Industries. The contribution of new information to previous literature is another practical argument for the scope of this research. The high-tech industry and the ownership of the VCs fund are chosen mainly because of the principal's nature supervising the research.

1.3.2 Research objectives

This research aims to get qualitative information about how VCs in the high-tech industry evaluate venture proposals, what criteria they base their assessment upon, and how important these criteria are compared to one another. A ranking of the importance of investment criteria and their underlying characteristics will be concluded from the collected data. This will be applied first to early-stage ventures, then to late-stage ventures, and a comparison will be conducted. It is assumed that there are specific differences between those two rankings, but not assumptions or hypotheses are made in order to ensure the conclusions are not biased.

In order to ensure the quality of the results, this research focuses only on the investment criteria that VCs in the Netherlands focused on the high-tech industry use during the origination phase when they invest in early- and late-stage ventures. Such criteria could prove very different for any other industries or phases of the investment process, thus making the results less conclusive. Nevertheless, a few relevant parties will benefit by achieving the objectives of this study: the entrepreneurial community, the venture capital community, and the research community. Moreover, this study aims to expand the knowledge of individuals who bring something new to the table in a VC fund but lack the general understanding of venture capitalists. This is the leading target group for this study and it will be classified as aspiring venture capitalists.

1.4 Problem statement and research questions

This section presents the problem at hand and the other research questions it brings along with it.

1.4.1 Problem statement

As previously mentioned in section ‘1.2 Problem Identification’, current literature is either generic, covering a multitude of industries, or contains outdated results regarding VCs’ investment criteria. In section ‘1.3.1 Research scope’, this research focuses on the investment criteria that VCs located in the Netherlands, focusing on the high-tech industry, use when they invest in both early-stage and late-stage ventures during the origination phase of the investment process.’ Thus, the problem statement is formulated as such:

[20] A general partner is one of two or more investors who jointly own a business and assume a day-to-day role in managing it. A general partner has the authority to act on behalf of the business without the knowledge or permission of the other partners. Unlike a limited or silent partner, the general partner may have unlimited liability for the debts of the business. *(“Understanding General Partners,” 2021).*

What investment criteria do VCs in the high-tech industry in the Netherlands use – and what is the hierarchy of importance– when they evaluate early-stage and late-stage venture proposals during the origination phase of the investment process?

The research will touch upon any investment criteria related to the investment process during the origination phase. Previous literature already identified and classified multiple categories of universally acknowledged criteria such as (1) Market Attractiveness (size, growth, and access to customers), (2) Product Differentiation (uniqueness, patents, technical edge), (3) Managerial Capabilities (skills in marketing, management, finance and the references of the entrepreneur), (4) Environmental Threat Resistance (technology life cycle, barriers to competitive entry, insensitivity to business cycles and down-side risk protection), (5) Cash-Out Potential (future opportunities to realize capital gains by merger, acquisition or public offering) (Tyebjee & Bruno, 1984). Other studies solely focus on one of the categories, such as management team composition and characteristics (Rosenstein, 1988; Rosenstein et al., 1993).

Most of those categories can be found in a large variety of studies on this topic in one way or another, and all of them have a particular influence on the VCs' proposal evaluation (MacMillan et al., 1985). This research aims to compare each investment-related criteria and find out which are more important from the point of view of a VC operating in the high-tech industry. Therefore, the emphasis is on VCs' specific investment criteria in the high-tech industry use and how those might differ or not between early-stage and late-stage ventures.

1.4.2 Research questions

In order to solve the problem at hand, several aspects should be tackled beforehand. These aspects can be solved by answering multiple research questions. The following research questions cover all aspects of the problem statement and follow through with the research goal:

a. What investment criteria and underlying characteristics do VCs in the high-tech industry in the Netherlands use when evaluating proposals during the origination phase of the investment process?
b. What is the hierarchy of importance of investment criteria and underlying characteristics that VCs use when evaluating proposals during the origination phase of the investment process?
c. What are the differences and similarities in the hierarchy of investment criteria and underlying characteristics for ventures in the early-stage compared to late-stage ventures?

The first two research questions aim to identify and classify criteria adapted to the high-tech industry and modern time and rank their importance in a definitive way. On the other hand, the last research question shifts its focus solely on the ventures' stage and how this variable affects the criteria.

Section '1.5 Deliverables' will shortly discuss the procedures of collecting the data and the form in which the results and conclusions will be delivered.

1.5 Deliverables

Chapter '2. Literature review' will dive deeper into investment criteria used in previous literature and stabilize on the set of criteria this study will use. It will be a combination of previous investment criteria defined according to Tyebjee & Bruno (1984) and adapted to modern times. This will answer the first research question. Furthermore, there are two key elements that together will eventually be able to answer the remaining two research questions and achieve the research objectives proposed for this research: a preliminary questionnaire and a semi-structured interview.

The questionnaire will contain a list of the types of criteria indicated in section '1.4.1 Problem Statement'. In addition to that, each criterion will consist of multiple quantifiable characteristics. Research subjects will be asked to rank those types and their respective characteristics, which will be further explained in section '3.2 Data collection'. The intended result will be analyzed and statistical analysis will be conducted accordingly. Results will show a hierarchy made between the five types of investment criteria. For each one of the categories, another ranking will be conducted with the underlying characteristics. Based on the overall ranks, we can identify a level of acceptance for VCs. On top of that, the rankings resulting for ventures in the early-stage will be compared to those in the late-stage to identify possible preferences VCs have.

In order to ensure the reliability of data or any possible misunderstandings the questionnaire might have caused for the VCs, a semi-structured interview will be conducted with each one of them. This will clarify any uncertainties VCs might have encountered while completing the questionnaire. The goal of the interview is to gain further insights on why VC funds might think a specific characteristic or category is more important than others since their reasoning cannot be deducted from the questionnaire alone. This paper does not distinguish between the type of companies that VCs invest in in terms of their product. They can either be tangible products (e.g., software or hardware) or services as long as they are part of the high-tech industry.

2. Literature review

This section will elaborate on previous studies by providing an overview of the 'universally' acclaimed investment criteria mentioned in section '1.4.1 Problem statement' and their corresponding sub-characteristics. Furthermore, gaps of this research and available literature are discussed.

2.1 Previous research

The most recent summarization of research in the field of venture capital and private equity financing as a whole has been done by Tykvová (2017). One section of her work indicates the existence of 43 papers examining the topic of selection and matching of VC funds.
In earlier works regarding VC research, Tyebjee and Bruno (1984) put the basis of venture evaluation criteria by conducting three studies consisting of multiple surveys, interviews and questionnaires. Their questionnaire measured the 'mechanism of initial contact between venture capitalists and entrepreneurs', or origination phase as defined by this research. In addition to the five criteria, their analysis covers 23 underlying characteristics, which have also been adapted to fit this research. Some characteristics have been divided, thus making the final number of 26.

The investment criteria and underlying characteristics used in this research are based upon those of Tyebjee & Bruno's (1984), namely:

- Market Attractiveness - depends upon the size, growth, accessibility of the market and on the existence of a market need:
    - Market size
    - Market growth
    - Market penetration
    - Likelihood of customer adoption
    - Creation of a new market
- Product Differentiation - the ability to apply technical skills in creating a product or service that is unique and can deter competition through patents:
    - Market acceptance
    - Product is proprietary or can otherwise be protected (hard to replicate, patents etc.)
    - Product is scalable
    - Uniqueness of product or technology
    - Insulation from competition
- Team Capabilities - skills in managing several business functional areas and is associated with favorable references given to the entrepreneurs:
    - Experience and background of the management team
    - Knowledge of the market of the management team within the industry
    - Capacity of sustained effort
    - Leadership potential of the lead entrepreneur
    - Ability to deal with risk

- Environmental Threat Resistance - the extent to which the venture is resistant to uncontrollable pressures from the environment such as obsolescence due to changing technology, sensitivity to economic conditions, low barriers to entry by competition etc.:
    - Competitive threat
    - Barriers to entry
    - Resistance to economic cycles
    - Technology life-cycle
- Cash-Out Potential - the extent to which the investment can be liquidated or "cashed out" at the appropriate time:
    - Liquidity of investment
    - Return on investment
    - Time to return of investment
    - Exit method
    - Expected risk
    - Size of investment

The names of the investment criteria have been kept the same except for the third category, "Team Capabilities." Tyebjee & Bruno (1984) have named it "Managerial Capabilities", because "managerial" is generally correlated with leading capabilities of the venture team, instead of the general knowledge they might have, such as marketing, financial, technical etc.

MacMillan et al. (1985) take a similar approach to Tyebjee & Bruno (1984) on investment criteria, but they focus more on the managerial team than the product. Their motto is that "above all, it is the entrepreneurs' quality that ultimately determines the funding decision." Their research takes an optimistic approach in the sense that an under-par product can be successful with an overly-qualified team, dedicating two out of five criteria entirely to the entrepreneurs, one about their personality and another about their experience.

Carter & Van Auken (1994) have yet another relevant take on the investment criteria. Their criteria and research methodology are highly similar to MacMillan et al. (1985), but they differentiate between ventures in the early and late stages. Therefore, their results were deemed similar to MacMillan's, yet again emphasizing the importance of the entrepreneur over that of the product.

A study conducted by Ruhnka & Young (1987) gives freedom to VCs to define their own general investment criteria. Their methodology defines five stages in a private firm's life-cycle that VCs might be interested in investing in, namely the earliest, second, third, fourth, and fifth stages. VCs were asked for the following information per stage: 1) the terminology used to describe companies in that stage, 2) characteristics of companies in that stage, 3) significant goals or developmental benchmarks typically sought to be accomplished in that stage, and 4) the significant risks associated with that stage of development. Their findings show that a feasible idea, a profitable market, and the management team are vital while in the earlier

stages. In contrast, in the later stages, those are significantly less important. Instead, the focus shifts on significant sales and orders, ramping up production and a working prototype.

Kaplan and Strömberg (2004) define only three criteria which are broader than previous literature: internal factors (management, previous performance, funds at risk, other investors), external factors (market size, competition, customers, financial markets and exit conditions) and difficulty of execution (product, technology or strategy). Because they are broader, they also cover more topics in their underlying characteristics, making some of them too specific. In section '3.1 Methodology framework' a two-step approach of collecting and modeling data is discussed, which Kaplan and Strömberg's (2004) approach differs too much from. The main concern of using the same approach is the effort to alter the questionnaire to fit the investment criteria and their underlying characteristics. Their approach does not allow the use of a questionnaire in the first place.

To summarize, most studies group their investment criteria into similar categories, on average developing five broad criteria and adding minor underlying characteristics. Others add an extra step based upon the stages in which the analyzed ventures are. An overview of studies and their respective methods are mentioned in Table 2.

Table 2: Methods of previous research

Study	**Methods**	**Focus**	**Extra steps**
Tyzoon T. Tyebjee and Albert V. Bruno (1984)	Conduct three studies consisting of multiple surveys, interviews and questionnaires	Venture capital investment criteria and underlying characteristics	Measure the 'mechanism of initial contact between venture capitalists and entrepreneurs'
MacMillan et al (1985)	Study consisting of surveys and interviews	Venture capital investment criteria	Focus on the managerial team
Carter & Van Auken (1994)	Study consisting of surveys and interviews	Venture capital investment criteria	Focus on the managerial team; differentiating between ventures in the early- and late-stage ventures
Ruhnka & Young (1987)	VCs define their investment criteria	The terminology used to describe companies; characteristics of companies; significant goals or developmental benchmarks typically sought to be accomplished; the major risks associated with the companies	Motivate based on five pre-defined five stages in a private firm's life-cycle that VCs might be interested in investing
Kaplan and Strömberg (2004)	Study consisting of surveys and interviews	Venture capital investment criteria	Less-but-broader criteria, allowing the

		and underlying characteristics	underlying characteristics to cover more details
Lupulescu (2021)	Study consisting of questionnaires and interviews	Venture capital investment criteria and underlying characteristics	Comparison between early- and late-stage ventures

2.2 Gaps of previous research

In section '1.2 Problem identification', it is brought up that the results of previous research are outdated. For example, more modern literature in VC and PE investing uses MacMillan et al.'s (1985) or Tyebjee & Bruno's (1984) results to base their assumptions or hypotheses. The theory they have developed their work upon is still standing up to this day in the venture capital research community. Venture capital funds have changed their goals and the way they operate, which is why MacMillan et al.'s (1985) or Tyebjee & Bruno's (1984) findings can be considered as not representative for current VCs. On top of that, the sample of venture capital funds approached in those studies is extensive in the sense that the variables defined in Table 1 are not taken too much into consideration.

This research aims to provide relevant parties and stakeholders with new and updated data while using specific filters in the four chosen focus areas. Generalization is both a blessing and a curse, which does not necessarily mean the investment criteria and underlying characteristics they use are incorrect. Given the broad research populations, it also implies that the criteria are indeed feasible as they were applicable to a large variety of VCs. All relevant research that covers fundamental concepts of this study presented in "Appendix 3: Systematic literature review protocol" and their respective shortcomings are presented in Table 3.

Table 3: Gaps present in relevant literature

Study	**Gaps**
Tyzoon T. Tyebjee and Albert V. Bruno (1984)	Industry focus, decision phase and venture stage
MacMillan et al (1985)	Industry focus, fund ownership, decision phase and venture stage
Ruhnka & Young (1987)	Industry focus and fund ownership
Carter & Van Auken (1994)	Industry focus and decision phase
Kaplan and Strömberg (2004)	Decision phase and venture stage
Lupulescu (2021)	Industry focus and venture stage

Previous studies tend to use all types of VCs as their research population. The terms Tyebjee & Bruno (1984) use for the criteria ("Market Attractiveness" and "Product Differentiation") are too vague, and the results regarding their importance can be considered obsolete without the underlying characteristics that aim to explain those further, thus making it essential that characteristics always accompany criteria.

Both MacMillan et al. (1985) or Tyebjee & Bruno (1984) ask VCs to rate the criteria on a scale. Considering that the criteria used are not focused on any specific type of VC or venture, the answers can be quite different. Simultaneously, because they are so general, anyone will identify those criteria as a must while building their company as attractive as possible for capital investments. In conclusion, VCs would tend to rate all of them relatively high, or at least none of them would be unimportant.

2.3 Contributions to the research question

This chapter has covered the results and findings of previous research that studied the investment criteria that VCs use when evaluating venture proposals. On top of that, any possible previous gaps that can be resolved in this study are discussed. As is the case with previous literature, this study has its specific trade-offs, such as generalizing an entire focus industry to a small number of VC funds. In order to compensate for it, this study also restricts the scope of the research as much as possible to avoid any negative impact on the results.

It is fascinating that most of the previous studies conducted upon this subject are quite old, which makes their conclusion outdated, but not so much their content. The content refers to the investment criteria and underlying characteristics. The conclusion is mainly concerned with the study results. The fact that their content is still used in more recent studies makes them incredibly reliable. However, the conclusions they came up with at that time are obsolete nowadays. VCs still look for the same qualities in ventures, but their selection process has changed in the last three decades. Thus, answering the first research question, “What investment criteria do VCs use when evaluating proposals during the origination phase of the investment process?”. This research will further develop the criteria and underlying characteristics to tailor them for the high-tech industry.

3. Research design

This chapter will illustrate the research design that is partially based on the findings identified in the previous chapter. First, an overall structure of the methodology framework will be discussed. Then, the two-step methodology will be presented in the data collection section and the results this research aims to use.

3.1 Methodology framework

The methodology framework consists of a two-step approach to answer the research questions and solve the study's research objectives. The two steps represent the data collection method's two key elements: a questionnaire and a semi-structured interview.

The objectives of this two-step methodology are:

- to filter VCs that fit in the research scope (identify industry focus and ownership of the fund by questionnaire)
- to 'force' VCs to establish a ranking between the main criteria of investing (by questionnaire)
- to 'force' VCs to establish a ranking between the respective underlying characteristics of the criteria (by questionnaire)
- to clarify any uncertainties or misunderstandings about the goals and research objectives (by interview)
- to gain further insights into the train of thought of VCs while completing the questionnaire (by interview)
- to gain further insights into the motivation of their ranking choices (by interview)
- to get more background information about VCs and their investments (by questionnaire and interview

The two-step approach is the most suitable to achieve the research as well as the methodology objectives. The reasoning for this approach is that both elements complement each other. It is also efficient to consider the timeline of this methodological framework. The first step is to send a general description of the study and the research objectives and ask the VC if they would be interested in completing the questionnaire. After receiving the completed questionnaires, there will be a certain period of 'cooldown' before conducting the interview. There is no standard duration, but this has two considerations: the answers should not bias the VCs' responses they have previously given in the questionnaire and, at the same time, not too much time should have passed so that they completely forget about the research. The aim is that respondents should give the same answers in the questionnaire as well as in the interview. Suppose the questionnaire is still recent in their mind. In that case, they will most likely answer from memory rather than thinking about it. There is indeed a fine line to be respected in these circumstances and, as a rule of thumb, this research will aim for a cooldown period of two weeks. It is essential to note that the questionnaire will take place before the interview to first rank the criteria as a whole and their underlying characteristics and then further clarify and gain insights.

The research population has been selected according to the recommendations of Nard Sintenie, the supervisor of this research and a general partner in an independent high-tech venture capital fund called Innovation Industries, with headquarters in Amsterdam and Eindhoven. This resulted in a total potential research population of (15) VCs from the Netherlands, with two exceptions from Belgium, which invest in the Benelux Union[21], but mainly in the Netherlands.

The questionnaire was pre-tested with the previously mentioned VC that the supervisor is working as a general partner. Given his experience and insights into the ecosystem, the questionnaire was adjusted correctly. Moreover, the interview was conducted in a very informal way throughout the meetings with the supervisor. Questions would be thrown around at him, and those that resulted in relevant and lengthy answers would be selected for the final version. The final version will be the one used in interviewing with any other VCs.

Tyebjee & Bruno (1984) experienced a lack of replies from respondents because of the sensitivity of the information requested. The same reason has been dominant during this research. In order to increase the chances of cooperation of the VCs and gain valuable insights, as per the advisor's advice, a confidentiality agreement was available upon request. The VCs are given two options. Either the answers in both the questionnaire and the interview will be public, but the source would be anonymous, or the answers in both the questionnaire and the interview will be confidential, but the name of the VCs and only the overall results will be mentioned.

3.2 Data collection

3.2.1 Step 1: Questionnaire

The questionnaire's goal is twofold: first, to ensure that the participating VCs correspond to the variables taken into consideration in section '1.3.1 Research Scope', such as the ownership and the industry focus of the VC fund. Also, more background information (investing capital, regular investing tickets etc.) about the VCs can be used to identify any misfits present in the research. With this information, the second and the third research questions can be partially solved.

The questionnaire's second goal is to generate a ranking between criteria in the investment criteria used in the origination phase. These criteria are extensive and cannot provide reliable results without the use of underlying characteristics. This being said, two hierarchies will be built, one for the overall criteria and one for all underlying characteristics per criterion.

The questionnaire will consist of five sections: (1) general information about the VC fund, (2) an overview of the VC and their portfolio, (3) a ranking for investment criteria, (4) a ranking for each criteria's underlying characteristics and (5) an end section where VCs can indicate whether they would like to keep themselves or their results anonymous.

[21] Benelux Union is a politico-economic union and formal international intergovernmental cooperation of three neighboring states in western Europe: Belgium, the Netherlands, and Luxembourg (Wikipedia contributors, 2021).

The first section will contain the name of the VC fund and general information about the person answering the questionnaire, such as their name, function and contact details. The second section contains more specific information about the variables mentioned in section '1.3 Research scope', such as the ownership of the VC and specific high-tech industry focus, the stages of ventures they invest in, and other targets they have as a fund. This section also plays a role in validating whether participating VCs are fit for this research's scope. The third section will present VCs with a list of investment criteria and kindly ask to rank them accordingly. The fourth section is a direct continuation of the previous one, where each investment criterion contains several underlying characteristics. Nevertheless, VCs are prompted to create a hierarchy inside each criterion.

The questionnaire was designed to compel VCs to choose from the most to the least important criteria. Each criterion contains, on average, five characteristics for which VCs have to make the same decisions. VCs will be asked to rank their general perception of the investment criteria presented and specific underlying characteristics. As those criteria are already established in the literature and universally acknowledged, VCs tend to rate all of them high on a scale without pointing out the most important one. By using a ranking instead of a scale, this will be avoided and, in return, the data will be more qualitative.

The reason behind copying parts of the criteria used by Tyebjee and Bruno (1984) combined with those of MacMillan et al. (1985) is that they withstood the passage of time. They are a staple in the venture capital investment criteria literature because their definitions regarding the stages of ventures and investment criteria that VCs use when evaluating venture proposals have been used in many subsequent studies. In addition, it avoids spending too much time and effort finding and defining new criteria that are not pre-tested or within the scope of this research. Besides this, many of their criteria are general enough so that other studies might have come up with brand new definitions themselves and reiterate upon them. Finally, it is concise, with the sole reason to increase the response rate and reduce the time needed for VCs to fill it in. In the unfortunate cases where questionnaires will be incomplete, the missing answers would be discussed during the interview, resulting in a partial one-step methodology. A total of (15) questionnaires will be sent out, 13 in the Netherlands and 2 in Belgium. The expected number of responses and the goal of this study is 10 VCs.

3.2.2 Step 2: Semi-structured interview

The second part of the two-step approach is a semi-structured interview to gain further insights into how VCs decided upon completing the questionnaire. The interview will introduce both parties, followed by presenting the research objectives and the interview's scope. VCs will be prompted with the answers they have provided in the questionnaire and asked to motivate their choices (i.e., why do they rank the entrepreneurs' capabilities higher than the market attractiveness).

Besides listening to their train of thought, VCs can comment on the research scope and any unclarities they might have had while completing the questionnaire. For example, there might be cases where the criteria were not clear enough, and they ended up ranking it last because they could not comprehend the topic in the first place. The goal of the introduction is to let VC

funds give their input anytime throughout the interview and that their feedback will only reinforce the validity of the data.

The interview is open-ended and straightforward, with the sole purpose of adding up to the information achieved by completing the questionnaire, which could not be transmitted through writing. This can only be achieved by having a face-to-face conversation. The structure of the interview will follow that of the questionnaire. After the introduction rounds, the first question will be focused on the stages of ventures that VCs invest in and their definition of early-stage and late-stage as opposed or compared to the one defined in the questionnaire, followed by the sector or sectors of the high-tech industry they invest in. Finally, they will be asked to elaborate on their choices while ranking the criteria and their respective underlying characteristics.

3.3 Data analysis

3.3.1 Importance of investment criteria and underlying characteristics

The VCs' responses in the questionnaire will be analyzed first per investment criteria, followed by their underlying characteristics. An overall ranking containing the five types of investment criteria will show the first and last quality VCs look for in venture proposals. Another ranking is built up, showing the same preferences for each criterion, just on a smaller scale. The same analysis will be done twice, once for early-stage ventures and once for late-stage ventures.

The investment criteria will be split into three categories: essential criteria, least essential and secondary plan. Upon receiving all answers to the questionnaire and taking the interview into consideration, a somewhat arbitrary division has been established. Respondents classified their favorite investment criteria and underlying characteristics as being a must. Those essential criteria were always between a weighted average lower than 3.0. They were followed by least important ones that were not necessarily mandatory for VCs but would significantly increase a venture's chance to receive investment. Those mostly had a weighted average between 3.0 and 4.0. Last but not least, some criteria and underlying characteristics were not really considered by VCs that often, but the presence of a few outliers highlighted they are not entirely “useless.” Those have a weighted average higher than 4.0.

The results are expected to share a general consensus on the hierarchy of the investment criteria and their underlying characteristics. Of course, not all VCs will have the exact hierarchy, but an average ranking for each one of them will be reached. Upon reaching the average hierarchy resulted from the questionnaire, the collected data from the interviews come into play. VC will explain their decision-making process when selecting one investment criterion or underlying characteristic over another and their train of thought will be put on paper. The end result will consist of motivating the ranking and discussing any VCs that differentiated too much from the norm. The results will also concern the different parties mentioned in section ‘1.5 Deliverables’ that might be affected by this study differently.

To test for consistency of responses of the VCs, each individual ranking will be compared to the average one of all criteria. Even though the contacted VCs are on the same level and approach the same industry, their filtering criteria and work ethics will differentiate their

choices. Thus, possible outliers might tip off the results as they can show that the data is somewhat inconclusive and that out-of-the-ordinary conclusions will result in further discussions and topics for future research.

3.3.2 Stage of the venture criteria

The second part of the data analysis assesses the differences and similarities between ventures in the early-stage and ventures in the late-stage of operating as a private company. By creating a hierarchy, the study can identify how VCs analyze venture capitals and how they differ in the different stages of their private equity cycle.

As opposed to Mac Millan et al. (1985), where the criteria were rated on a five-point Likert scale, where one meant relevant and five meant essential, this research forces its respondents to indicate their preferences.

Yet again, overall rankings will be provided to analyze the general consensus that VCs consider in the two stages, followed by comparing early- and late-stage criteria for each individual respondent. The same analysis can be done to combine two or more rankings between VCs for early-stage and late-stage ventures or a comparison between them. The two average hierarchies were analyzed in parallel and conclusions were made.

3.4 Limitations

Section '2.2 Shortcomings or previous research' explains what previous studies were lacking in and the general pitfalls of researching VC's investment criteria. This section describes how they apply to this research and the methods this study uses in order to reduce them.

3.4.1 Research specific limitations

Due to this research's time constraints, only a limited number of VC funds can be approached, with a goal of 10 respondents. This entails that the investment in the high-tech industry will be summarized only to those VCs. Generalization of the industry and ownership of the funds are possible pitfalls in this case. The sample size is relatively small, and the research scope of this study logically causes this. Whereas Tyebjee & Bruno (1984) had a sample size of 46 VCs, Poindexter (1976) had a sample size of 97 VCs, and MacMillan et al. topped the research population with a sample size of 102 VCs, this research covers merely 10 in total, all of them investing in the high-tech industry in the Netherlands. A small sample size might result in more significant variability and lower statistical power than a large sample size. According to Arrindell & Van der Ende (1985), a sample size of at least 100 makes the results statistically responsible.

On the other hand, the number of VC funds in the Netherlands that invest in high-tech ventures is not that large. It can be estimated that the maximum number is 20, while some of those do not solely invest in the high-tech sector, but their portfolio mainly focuses on that. Realistically speaking, at least half of those 20 VC funds should provide answers. This study does not consider VC funds that do not make their investment priorities in the high-tech sector.

This study is solely focused on the Netherlands region. However, many country-specific legislation might influence VC funds' criteria in filtering venture proposals, which this study does not consider. It also makes it considerably easier to make the first contact and ensure an answer as the principal of this research can provide personal contacts in targeted VCs. At the same time, it can be considered as another variable of the research scope, but it was left out by default as it was the only available option at the time.

Considering how old the used criteria are, it is also possible that they might change over time. Although it is shown that they resisted the passage of time, any events could add bias to the investment criteria used. For example, such an event might be the time it takes for a VC fund to achieve an exit, which had reduced from the time when criteria were established (Cumming and Johan, 2010). Another very pertinent and ongoing seemingly unrelated event is the Covid19 pandemic, a natural disaster that nobody would have considered when investing capital into ventures. Thus, this and other previous research into VCs investment criteria can be considered a static snapshot in a dynamic environment.

Some VCs could apply very unusual criteria to their decision-making process, which might not correspond to the ones established in previous literature and applied to the questionnaire. In those cases, VCs might not relate to the questionnaire's general criteria, which both parties can clarify during the interview. Therefore, even though data resulting from those exceptions might prove interesting, it will not be relevant for this study's results and conclusion. Finally, VCs might not have the same definitions of stages of ventures, but they differentiate between early and late-stage ventures.

3.4.2 Methods of avoiding pitfalls

In section '3.2.1 Step 1: Questionnaire', the questionnaire compels VCs to choose their favorites, thus avoiding the use of weights for the criteria. Assigning weights is totally up to the researcher, which might be biased in the same way that VCs might be. On top of that, the weights will be different if another individual would conduct this research or if the research will be conducted again at another point in time. In order to ensure validity, the weights need to be deduced by mathematical proof, which is why they are beyond the scope of this research. As previously discussed, while the criteria are quite old, they are still used in modern research. The difference is that this research does not consider the initial results as they can be regarded as outdated. This research's scope keeps the generic aspect of the results to a minimum by using VCs that focus their investments only on the high-tech industry during the origination phase of the investment process.

3.5 Contributions of this chapter to the research question

This chapter discussed the two-step methodology approach of this research: the questionnaire and the semi-structured interview. The questionnaire will collect some general details about the VC funds, such as the ownership and the industry focus. Also, more background information (investing capital, regular investing tickets etc.) about the VCs can be used to identify any misfits present in the research. With this information, the second and the third research questions can be partially solved. The main goal of the questionnaire is for VCs to

create a ranking between the investment criteria and their underlying characteristics, which will be done twice, once for early-stage ventures and once for late-stage ventures.

The semi-structured interview complements the questionnaire by gaining further insights into VCs' decision process when evaluating venture proposals. This will be achieved by prompting VCs to motivate their choices for the hierarchies they build in the questionnaire. Besides that, VCs will be asked whether the terms and definitions used in the questionnaire were clear and accurate. The resulting data from the questionnaire will be subjected and compared to the answers given during the interviews to reach a general consensus between the two steps. The results will assess the importance of investment criteria and underlying characteristics using the ranking systems followed by comparisons between them instead of the Likert scale approach similar studies used (Tyebjee & Bruno,1984; Carter & Van Auken, 1994; MacMillan et al., 1985). To test for consistency of responses of the VCs, each individual ranking will be compared to the average one of all criteria.

Like any other previous studies, this one also considers certain limitations. First of all, the restriction of the research scope to high-tech VCs in the Netherlands can be considered a limitation. However, because of this limitation, the number of such VC funds is quite limited to a maximum prospective number of twenty, intending to get half of them to respond. This being said, we can consider that only ten VC funds cannot describe the whole industry. Lastly, this section did not answer any of the research questions, but it shed light on the limitations of this research; it also provides the basis for discussing this study's findings in the next chapter.

4. Results

The previous chapter discussed the two-step approach used for data collection. This chapter will discuss the main findings from the analyzed data. First of all, the sample of VCs that participated in this study from the research population will be discussed in section 4.1. After this, the importance of the investment criteria and their underlying characteristics will be presented in section 4.2, followed by their specific hierarchies. This will be done for early-stage ventures, late-stage ventures and finalizing with a comparison between the two in section 4.3. Section 4.4 will dive deeper into the reason why the top three investment criteria are on a whole other level compared to the remaining ones. In section 4.5 the interview conclusions will be discussed in the form of "essential criteria" as defined by the respondents. Finally, both in the questionnaire and the interview, some outliers will be presented and their motivation will be brought to light.

4.1 Sample validation

In total, 15 VCs that fit with all variables of the research scope have been contacted, but only 10 of them participated in the research by completing the questionnaire, being interviewed, or both. All VCs have agreed to be reported in this paper, but their answers and identities remain anonymous. They are presented in Table 4, while the sample size is listed in Table 5.

Table 4: Participating VCs

Name	*Region*	*Ownership*
Cottonwood Technology Fund	Netherlands	Independent fund
KBC Focus Fund	Belgium	Bank-affiliated fund
BOM Brabant Ventures	Netherlands	Government-backed fund
Forward.one	Netherlands	Independent fund
Oost NL	Netherlands	Government-backed fund
ImecXpand	Belgium	Independent fund
Value Creation Capital	Netherlands	Independent fund
Shift Invest	Netherlands	Independent fund
Newion Partners	Netherlands	Independent fund
Innovation Industries	Netherlands	Independent fund

Table 5: Sample size and response rate

Total research population	**15**
Total number of unique VCs respondents	10 (66.6%)
Interview	6 (40%)
Questionnaire	10 (66.6%)

The participating companies are listed in Appendix 4: Participating VCs.

Most participating VCs have their headquarters in the Netherlands, except imecXPAND and KBC FocusFund, which are based in Belgium. All of them invest mainly in ventures located in the Netherlands. The response rate was quite successful, reaching an approximative of 70% of the total research population. Unfortunately, not all respondents of the questionnaire participated in the interview, ending up with only 6 VCs who did both.

This study aimed to approach experienced venture capitalists, and the most fitting ones are the general partners. Almost all respondents named their function as either "general partner", "managing partner", "investment manager" or "investment director", except for one "business developer." This indicates that the goal has been met and the quality of the responses can be considered as veteran or experienced as possible.

As mentioned previously in section '1.3.1 Research scope', this study covers independent, institution-backed, bank-affiliated and government-backed VCs as their main goal is to raise capital. The research population was adequately assessed as all respondents fit within this variable. Unfortunately, none of the respondents was an institution-backed fund. This does not affect the overall results, but it is to keep in mind that the conclusions of this study do not apply to institution-backed funds. Table 5 shows the ownership of the participating funds.

Table 6: Ownership of VC funds

Types of VC funds ownership	Percentage of VCs
Independent fund	7 (70%)
Institution-backed fund	0 (0%)
Bank-affiliated fund	1 (10%)
Government-backed fund	2 (20%)
Corporate fund	0 (0%)
Total population	**10**

Respondents were also prompted to indicate exactly in what specific high-tech industry do they invest. The following categories were defined: ICT manufacturing, software, internet and TLC services, R&D and engineering services, med-tech, agri-tech, sustainable energy, micro- and nano-technologies, semi-conductors & high precision engineering and other high-tech manufacturing. They were also given the option to choose an "Other" category and specify it. Although two respondents filled this category in, the categories were already present. However, they needed further explanation (e.g., "B2B software" which goes into the Software category). VCs can invest in multiple industries, so the number of responses is way higher than the number of respondents. Table 6 indicated the specific high-tech industries that the participating VCs invest in.

Table 7: High-tech industries of VC funds

High-tech industries of VC funds	**Number of VCs**
ICT manufacturing	3 (30%)
Software	3 (30%)
Internet and TLC services	2 (20%)
R&D and engineering services	2 (20%)
Med-tech	6 (60%)
Agri-tech	4 (40%)
Sustainable energy	6 (60%)
Micro- and Nano-technologies	8 (80%)

Semi-conductors & high precision engineering	8 (80%)
Others	2 (20%)
Total Responses	**44**

One of the challenges of this study was defining the stages of ventures in which VCs invest. Throughout the interviews, it became clear that the stages and their definitions are very subjective. For the sake of being precise, eight stages were subtracted from literature and defined accordingly. The first three stages were defined as early-stage, while the last five were defined as late-stage. The primary differentiation between early- and late-stages is the presence of a market-tested product or service with a loyal customer base. Respondents indicated that even though their definitions might differ, the questionnaire was clear enough so that they could correctly indicate the stages of ventures they invest and they agreed with the precise line set between early- and late-stages. It became quite clear that most of the VCs invest in early-stage ventures at first and make follow-up investments [22]if the ventures are promising. Yet again, VCs can invest in multiple stages of ventures, so the number of responses is high. Table 7 indicates the stages of ventures that VCs invest in.

Table 8: Stages of ventures that VCs invest in

Stage of venture	**Number of VCs**	
Seed	5 (50%)	Early-stage
Startup	9 (90%)	Early-stage
Early-development	10 (100%)	Early-stage
Expansion	7 (70%)	Late-stage
Profitable but cash-poor	3 (30%)	Late-stage
Rapid growth toward liquidity	3 (30%)	Late-stage
Bridge stage	1 (10%)	Late-stage
Liquidity stage	1 (10%)	Late-stage
Early-stage	**24**	
Late-stage	**15**	
Total responses	**39**	

The number of early-stage investments is considerably higher than late-stage investments, despite the fact that the number of late-stages (expansions, profitable but cash poor, rapid growth towards liquidity, bridge stage and liquidity stage) is higher than early-stages (seed, startup, early-development). The discrepancy of nine answers is good enough to show the particular interest of VCs to get into investments in the early-stages of a venture, but also not high enough to make the comparison between the two obsolete. This might be due to the fund size, their average investment

[22] **Follow-up Investment** means any Portfolio Investment in which on or prior to the end of the Investment Period the Fund (or the Adviser or one of its Affiliates, on behalf of the Fund) or any acquisition vehicle thereof has entered into a letter of intent (which may or may not be binding), written agreement in principle, definitive agreement to invest or has otherwise committed in writing thereto and any Portfolio Investment that the Fund (or the Adviser or one of its Affiliates, on behalf of the Fund) has committed to make pursuant to the terms of Portfolio Investments held by the Fund prior to the end of the Investment Period. (*Follow-up Investment Definition: 10 Samples*, 2021).

horizon[23], average investment ticket [24], or the average holding period[25]. A higher investment horizon implies the existence and working period of the funds for a more extended period. On top of that, a more capital-rich fund can partake in more capital intense rounds and follow-up investments. Therefore, a higher investment horizon implies the existence and working period of the funds for a more extended period. The more rounds they participate in, the bigger the investment ticket gets, and so does the holding period of the venture. The size of the fund also implies to be directly correlated with the number of monthly venture proposals they receive during the origination phase of the investment process. Nonetheless, the sad reality is that only a tiny percentage of around 2% of those get accepted. Those and other relevant characteristics of the sample are presented in Table 8: General fund information.

Table 9: General fund information

Variable	**Measurement**	**Average**
Fund size	Million euros	90
Investment horizon	Years	Between 9 and 13
Investment ticket	Million euros	Between 1 and 5
Holding period	Years	Between 5 and 9
Expected return on investment	Money multiple	5 times
Monthly number of received venture proposals		30
Accepted venture proposals	Percentage	1.8%
Total Population:10		

4.2 Importance of investment criteria and underlying characteristics

This section will present this study's main findings: the hierarchy of the investment criteria and their underlying characteristics. Recall that VCs ranked the five investment criteria from first until fifth place. Then, for each criterion, a set of around five characteristics was provided where they had to follow the same procedure. First of all, the hierarchy of criteria is present for early- and late-stage ventures—Idem for the underlying characteristics. Furthermore, respondents motivated their choices in rankings during the interviews.

4.2.1 Hierarchy of investment criteria

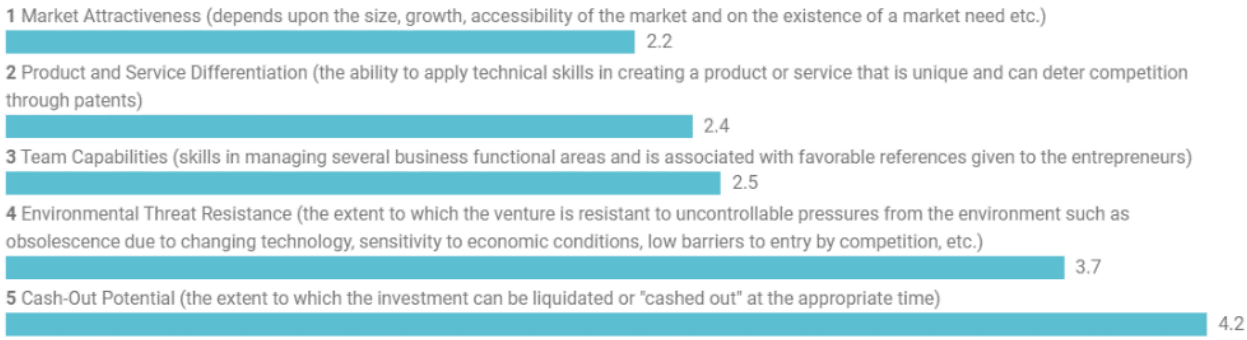
This sub-section establishes a hierarchy of the investment criteria VCs use when assessing venture proposals during the origination phase of the investment process. This is done once for early-stage ventures and once for late-stage ventures. Recall that the primary differentiation between early- and late-stages is the presence of a market-tested product or service that has a loyal customer base.

[23] Investment horizon is the term used to describe the total length of time that an investor expects to hold a security or a portfolio (*Investment Horizon Definition*, 2020).
[24] The amount of money that goes into an investment transaction (2020, C.E.).
[25] A holding period is the amount of time the investment is held by an investor, or the period between the purchase and sale of a security. In a long position, the holding period refers to the time between an asset's purchase and its sale. (*Holding Period Definition*, 2020).

What criteria and underlying characteristics contribute the most to the decision of a VC to invest in a venture? Such criteria and underlying characteristics are classified as essential criteria with a weighted average of 3.0 or lower. The least important ones have a weighted average of between 3.0 and 4.0 and everything higher than 4.0 are considered as "secondary plan". After analyzing the general rankings and taking the answers from the interviews into consideration, this somewhat arbitrary division has been established. The most highly praised investment criteria and underlying characteristics coincide with those with a weighted average of 3.0 or essential as previously defined. Those would more or less be a general consensus between all participants. They were followed by the least important category, which contains those that only some respondents found important or outliers ranking them relatively high. The last category contains the last things VCs consider when evaluating venture proposals. This does not mean they are not essential but fall short of the rest on the secondary plan.

i. Early-stage ventures

According to the definitions for the stages mentioned in section '1.3.1 Research scope', early-stage ventures will consist of the first three stages: Seed, Startup and Early-development. The hierarchy is presented in Figure 2: Hierarchy of investment criteria for early-stage ventures.



	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Market Attractiveness (depends upon the size, growth, accessibility of the market and on the existence of a market need etc.)	**3 (30%)**	3 (30%)	3 (30%)	1 (10%)	0 (0%)	1.26	10	2.2 / 5
Product and Service Differentiation (the ability to apply technical skills in creating a product or service that is unique and can deter competition through patents)	1 (10%)	**5 (50%)**	3 (30%)	1 (10%)	0 (0%)	1.79	10	2.4 / 5
Team Capabilities (skills in managing several business functional areas and is associated with favorable references given to the entrepreneurs)	**4 (40%)**	1 (10%)	2 (20%)	2 (20%)	1 (10%)	1.1	10	2.5 / 5
Environmental Threat Resistance (the extent to which the venture is resistant to uncontrollable pressures from the environment such as obsolescence due to changing technology, sensitivity to economic conditions, low barriers to entry by competition, etc.)	1 (10%)	1 (10%)	1 (10%)	**4 (40%)**	3 (30%)	1.26	10	3.7 / 5
Cash-Out Potential (the extent to which the investment can be liquidated or "cashed out" at the appropriate time)	1 (10%)	0 (0%)	1 (10%)	2 (20%)	**6 (60%)**	2.1	10	4.2 / 5
								3 / 5

Figure 2: Hierarchy of investment criteria for early-stage ventures.

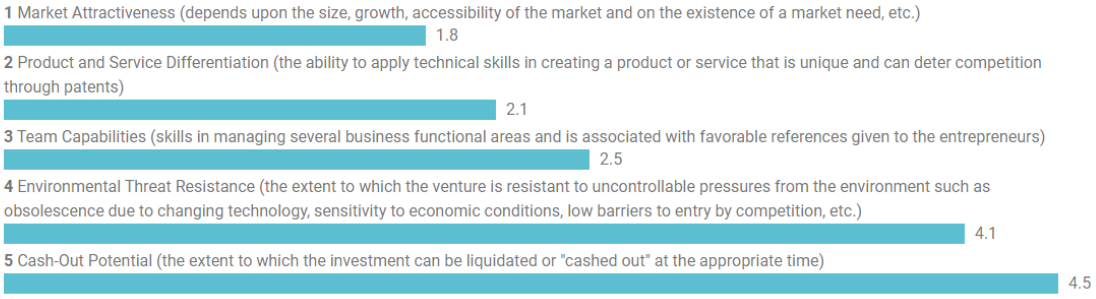
From Figure 2 it is visible that the top three investment criteria are at a higher level of importance than the remaining two. Although *Team capabilities* was the most common criterion to be ranked 1st place by respondents, Market attractiveness was more consistent in being voted in the top three, with only one vote for the fourth place and none for the 5th pace. Thus, market attractiveness occupies the first place. The second place is occupied by Product and Service differentiation without any doubt as half of the respondents ranked it as the second. Respondents indicated that when analyzing ventures in the early-stages the focus stays on their *idea* and whether it has any place in the market. While the idea can be good, if there is no market to tap into, then the idea is as good as obsolete. All of those are put together by a team of entrepreneurs, which is why Team capabilities occupies the third place. This also has to do with the fact that in high-tech ventures, the idea itself and its fit are what VCs mostly care about because of the harsh truth that the team is replaceable or interchangeable. The weighted averages indicate that the top three criteria are quite close to each other, implying that a higher number of respondents could have changed the outcome.

This being said, Environmental Threat Resistance and Cash-out potential are a clear 4th and 5th place, respectively. VCs are not even considering the Cash-out potential at this stage of a venture, as this can only be predicted and it is very improbable that the predictions hold by the time of a cash-out. Lastly,

the Environmental threat resistance is concerned with the idea's life cycle. The idea needs to be reliable and enter a market before resisting in the market in the first place.

ii. Late-stage ventures

According to the definitions for the stages mentioned in section '1.3.1 Research scope', late-stage ventures will cover the last five stages: Expansion, Profitable but cash-poor, Rapid growth toward liquidity point, Bridge stage and Liquidity stage.



	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Market Attractiveness (depends upon the size, growth, accessibility of the market and on the existence of a market need, etc.)	**4 (40%)**	4 (40%)	2 (20%)	0 (0%)	0 (0%)	1.79	10	1.8 / 5
Product and Service Differentiation (the ability to apply technical skills in creating a product or service that is unique and can deter competition through patents)	2 (20%)	**5 (50%)**	3 (30%)	0 (0%)	0 (0%)	1.9	10	2.1 / 5
Team Capabilities (skills in managing several business functional areas and is associated with favorable references given to the entrepreneurs)	**4 (40%)**	1 (10%)	2 (20%)	2 (20%)	1 (10%)	1.1	10	2.5 / 5
Environmental Threat Resistance (the extent to which the venture is resistant to uncontrollable pressures from the environment such as obsolescence due to changing technology, sensitivity to economic conditions, low barriers to entry by competition, etc.)	0 (0%)	0 (0%)	2 (20%)	**5 (50%)**	3 (30%)	1.9	10	4.1 / 5
Cash-Out Potential (the extent to which the investment can be liquidated or "cashed out" at the appropriate time)	0 (0%)	0 (0%)	1 (10%)	3 (30%)	**6 (60%)**	2.28	10	4.5 / 5
								3 / 5

Figure 3: Hierarchy of investment criteria for late-stage ventures.

Figure 3 indicates the presence of the top three to be as prominent as in the early-stages. However, this time around, the difference between them is more apparent, which is indicated by the weighted average. Market attractiveness retakes the first spot, by having 80% of the respondents rank it their favorite or second favorite. The Product and service differentiation criterion was also named the "structure" that stands on the Market attractiveness, which serves as the "base." Yet again, Team capabilities comes into the third spot completing the trinity of essential criteria. Although, the difference between the second and third places is more visible this time around. The more developed companies will already have a capable team behind them. Even though it is still an essential factor in making decisions for VCs, their focus is still mainly on the idea and its fit.

The more surprising results come for the last two places, Environmental threat resistance and Cash-out potential, respectively. There are not outliers indicating them to be first or second place, which raises both weighted averages over a 4. The absence of such outliers dictates that VCs do not focus as much

on profit as the general public might think. Also, respondents indicated that ventures getting into later-stages already have the life-cycle of their idea figured out since they would not have got to that point in development otherwise.

4.2.2 Hierarchy of underlying characteristics

This section prompted respondents to establish a hierarchy of the underlying characteristics for each investment criteria. They did so once for early-stage ventures and once for late-stage ventures.

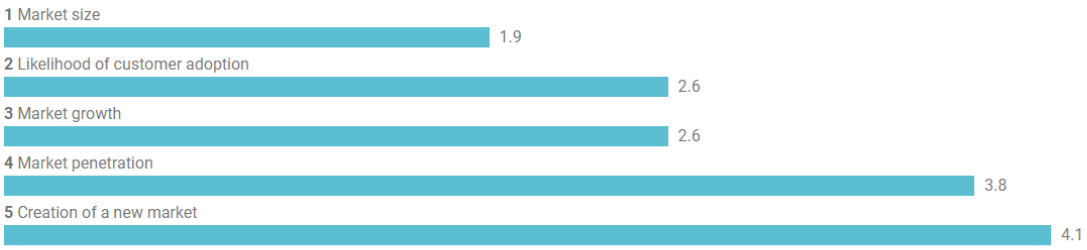
i. Early-stage ventures

a. Market Attractiveness

The market size has been a clear winner for the respondents. They indicated that the bigger the market size, the bigger the potential of the venture to grow. On top of that, the market also has the potential to grow; it can either be a brand-new market or an already existing one that recently became more popular because of specific circumstances in the real world (e.g., Covid-19 pandemic). Although those two go hand in hand, they will not be possible if no customers adopt the idea, so the likelihood of customer adoption and Market growth is tied up. Interestingly enough, 40% of the respondents ranked market penetrations as first place, but none of them as second place, which is why it did not take the lead.

There is quite an apparent discrepancy for the last two places. Market penetration is considered not as important as the size or growth and the creation of a new market is very unlikely. It was mentioned that if a venture creates a new market and the market ends up being successful, that is an indicator of a unicorn[26], but most of the time, it is improbable it will happen and implies too high of a risk for VCs to invest in.

[26] In business, a unicorn is a privately held startup company valued at over $1 billion. The term was coined in 2013 by venture capitalist Aileen Lee, choosing the mythical animal to represent the statistical rarity of such successful ventures (Wikipedia contributors, 2021).

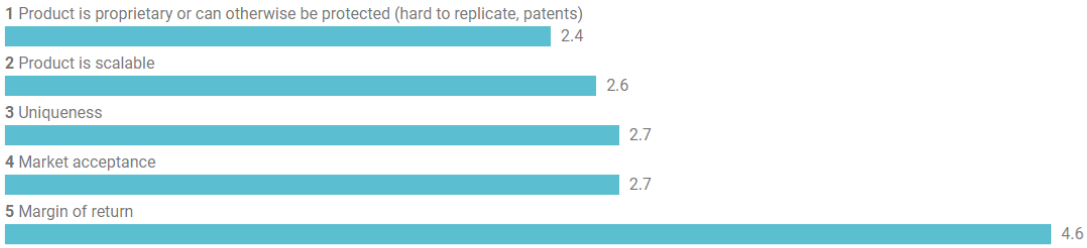


	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Market size	4 (40%)	**5 (50%)**	0 (0%)	0 (0%)	1 (10%)	2.1	10	1.9 / 5
Market growth	1 (10%)	**5 (50%)**	2 (20%)	1 (10%)	1 (10%)	1.55	10	2.6 / 5
Market penetration	0 (0%)	0 (0%)	3 (30%)	**6 (60%)**	1 (10%)	2.28	10	3.8 / 5
Likelihood of customer adoption	**4 (40%)**	0 (0%)	3 (30%)	2 (20%)	1 (10%)	1.41	10	2.6 / 5
Creation of a new market	1 (10%)	0 (0%)	2 (20%)	1 (10%)	**6 (60%)**	2.1	10	4.1 / 5
								3 / 5

Figure 4: Hierarchy of Market Attractiveness

b. Product or Service Differentiation

This category is inconclusive in its results as the first four places are quite close to each other. The first place is occupied by the capability to protect the product. As the supervisor of this thesis indicated, high-tech VCs tend to look for patents when investing. Due to the nature of the product, someone with enough knowledge should be able to replicate it, so it is essential to avoid this by enforcing patents. The product needs to grow, both from a technical and financial perspective, getting the product's scalability in the second place. Followed quite closely by the uniqueness of the product, which is considered another measure to avoid replicas of the product, and the fit or acceptance it has to the market. Lastly, the margin of return was ranked last or second to last by 90% of the respondents, enforcing the previously mentioned argument that VCs do not focus that much on profit.

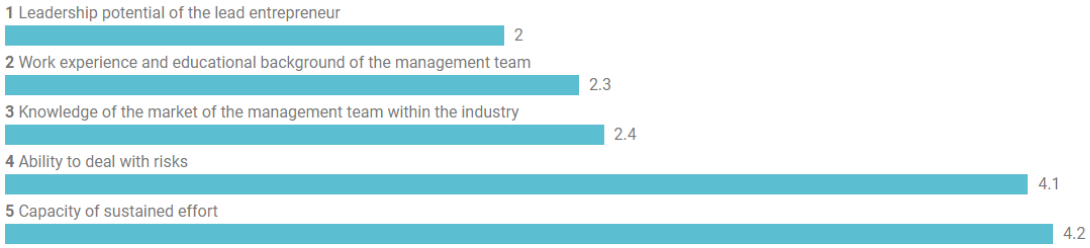


	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Market acceptance	3 (30%)	1 (10%)	2 (20%)	**4 (40%)**	0 (0%)	1.41	10	2.7 / 5
Product is proprietary or can otherwise be protected (hard to replicate, patents)	**3 (30%)**	3 (30%)	2 (20%)	1 (10%)	1 (10%)	0.89	10	2.4 / 5
Product is scalable	0 (0%)	**5 (50%)**	4 (40%)	1 (10%)	0 (0%)	2.1	10	2.6 / 5
Uniqueness	**4 (40%)**	1 (10%)	1 (10%)	2 (20%)	2 (20%)	1.1	10	2.7 / 5
Margin of return	0 (0%)	0 (0%)	1 (10%)	2 (20%)	**7 (70%)**	2.61	10	4.6 / 5
								3 / 5

Figure 5: Hierarchy of Product or Service Differentiation

c. Team Capabilities

It has been a clear denominator that a great idea or a venture will not be able to operate without a competent team at its core. Over half of the respondents indicated that negotiations and business are more accessible and better conducted if the lead entrepreneur of the venture is a clear leader. Moreover, the captain also needs a crew. In this case, the management team of the ventures should have decent work experience in the field and general knowledge from their educational background. Furthermore, it is a massive advantage if the management team knows the market and industry since nothing trumps hands-on experience. There are also some clear cuts for the last two places, which have almost identical weighted averages (4.1 and 4.2, respectively). Finally, respondents indicated that the ability of a team to deal with risk or sustain effort and most likely pivot their idea is a given for ventures; otherwise, they would not invest in them in the first place. It can be concluded that the last two characteristics are essential, but they are self-implied.



	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Work experience and educational background of the management team	2 (20%)	**4 (40%)**	3 (30%)	1 (10%)	0 (0%)	1.41	10	2.3 / 5
Knowledge of the market of the management team within the industry	2 (20%)	**4 (40%)**	3 (30%)	0 (0%)	1 (10%)	1.41	10	2.4 / 5
Capacity of sustained effort	0 (0%)	1 (10%)	1 (10%)	3 (30%)	**5 (50%)**	1.79	10	4.2 / 5
Leadership potential of the lead entrepreneur	**6 (60%)**	0 (0%)	3 (30%)	0 (0%)	1 (10%)	2.28	10	2 / 5
Ability to deal with risks	0 (0%)	1 (10%)	0 (0%)	**6 (60%)**	3 (30%)	2.28	10	4.1 / 5
								3 / 5

Figure 6: Hierarchy of Team Capabilities

d. Environmental Threat Resistance

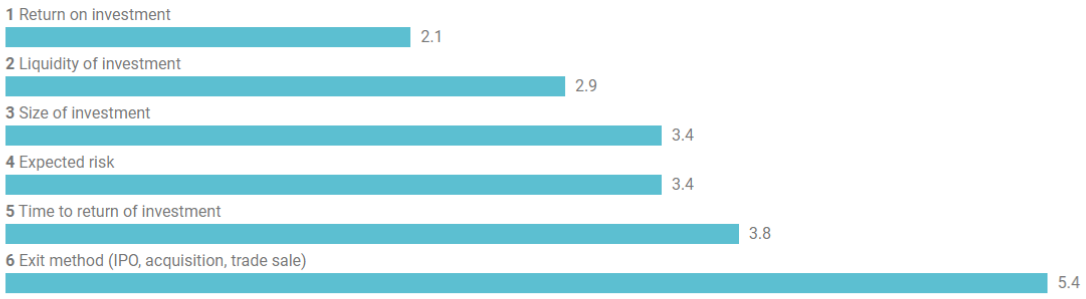
No matter how great the concept or product a venture would bring to the table, they will always have competitors. It is not necessarily bad because it stimulates the ecosystem and ventures to grow and reinvent themselves. This being said, it is essential to consider whether the existing competition is too much of a threat or if the risk associated with it is considered too high for VCs. As the threat of competition plays the most crucial role in this decision, it is followed by the barriers a venture will encounter when entering a market. Respondents have indicated that there have been cases where the market was there and the idea was good. However, the market was oversaturated where only a few big players were technically holding an oligopoly on it. The Technology life-cycle and Resistance to economic cycles were considered less important on the lower end of the hierarchy. They were indicated to be quite interrelated, given their almost identical weighted averages (2.9 and 3, respectively). Ventures in the early-stages are more focused on making the idea feasible rather than sustainable.

	1	2	3	4	Standard Deviation	Responses	Weighted Average
Competitive threat	**4 (40%)**	4 (40%)	2 (20%)	0 (0%)	1.66	10	1.8 / 4
Barriers to entry	**3 (30%)**	3 (30%)	2 (20%)	2 (20%)	0.5	10	2.3 / 4
Resistance to economic cycles	1 (10%)	1 (10%)	**5 (50%)**	3 (30%)	1.66	10	3 / 4
Technology life-cycle	2 (20%)	2 (20%)	1 (10%)	**5 (50%)**	1.5	10	2.9 / 4
							2.5 / 4

Figure 7: Hierarchy of Environmental Threat Resistance

e. Hierarchy of Cash-out Potential

VCs' main concerns in this category are how much profit they will make on their investment, followed by the difficulty of getting it. The third and fourth places are very interchangeable, both because of their equal-weighted average and because respondents indicated that they are essential and very different to compare them to each other. The difference is that there were outliers who ranked both of those characteristics as their first place instead of the last two. The time to return of investment was mentioned not to be as important as long as the return is high enough. Lastly, VCs did not give any importance to the method they would get their return on investment as long as it happened.



	1	2	3	4	5	6	Standard Deviation	Responses	Weighted Average
Liquidity of investment	2 (20%)	**3 (30%)**	1 (10%)	2 (20%)	2 (20%)	0 (0%)	0.94	10	2.9 / 6
Return on investment	**5 (50%)**	2 (20%)	1 (10%)	1 (10%)	1 (10%)	0 (0%)	1.6	10	2.1 / 6
Time to return of investment	0 (0%)	2 (20%)	**3 (30%)**	1 (10%)	3 (30%)	1 (10%)	1.11	10	3.8 / 6
Exit method (IPO, acquisition, trade sale)	0 (0%)	0 (0%)	0 (0%)	2 (20%)	2 (20%)	**6 (60%)**	2.13	10	5.4 / 6
Expected risk	1 (10%)	2 (20%)	**3 (30%)**	1 (10%)	2 (20%)	1 (10%)	0.75	10	3.4 / 6
Size of investment	2 (20%)	1 (10%)	2 (20%)	**3 (30%)**	0 (0%)	2 (20%)	0.94	10	3.4 / 6
									3.5 / 6

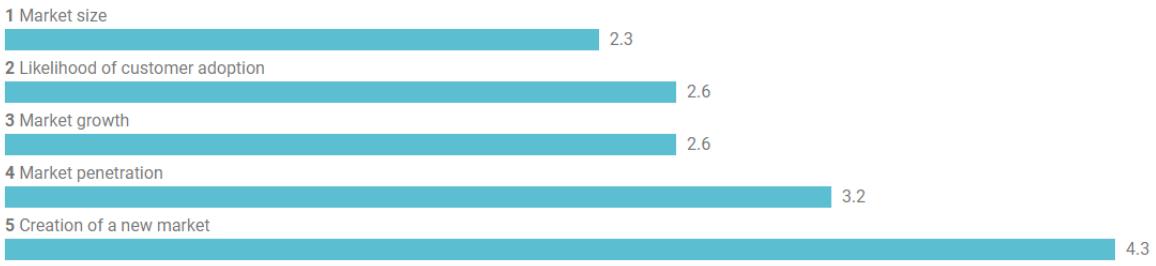
Figure 8: Hierarchy of Cash-out Potential

ii. Late-stage ventures

a. Market Attractiveness

Market size proves to be the favorite choice for respondents, with 60% of them ranking it as either first or second. The market size is followed by the growth potential it can imply and how likely it is for customers to adopt it. Although the weighted average of those two is equal (2.6), tying for second place, it is quite clear that some respondents preferred the Likelihood of customer adoption. Moreover, 40% of them ranked it first, and only one of them as second, which is why it did not manage to occupy the first stop. On the other hand, Market Growth is quite clearly a better option for second place as almost half of the respondents ranked it as such.

Market penetration follows closely on the fourth place. Even though 40% of respondents ranked it precisely as such, some others ranked it second or even first. This also indicated that the market penetration is still not the first thought for VCs. However, it becomes more important for some in the later-stages. The creation of a new market is a clear last place, with a difference of over 1.0 of the weighted average apart from the fourth place. Over half of the respondents ranked it as their least favorite and none ranked it as their first or even second place.



	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Market size	**3 (30%)**	3 (30%)	2 (20%)	2 (20%)	0 (0%)	1.1	10	2.3 / 5
Market growth	2 (20%)	**4 (40%)**	2 (20%)	0 (0%)	2 (20%)	1.26	10	2.6 / 5
Market penetration	1 (10%)	2 (20%)	2 (20%)	**4 (40%)**	1 (10%)	1.1	10	3.2 / 5
Likelihood of customer adoption	**4 (40%)**	1 (10%)	1 (10%)	3 (30%)	1 (10%)	1.26	10	2.6 / 5
Creation of a new market	0 (0%)	0 (0%)	3 (30%)	1 (10%)	**6 (60%)**	2.28	10	4.3 / 5
								3 / 5

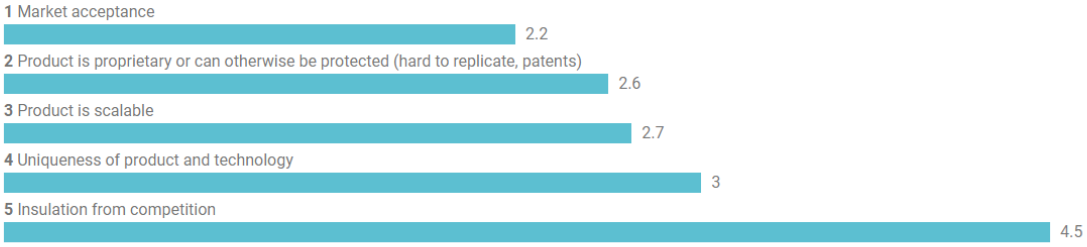
Figure 9: Hierarchy of Market Attractiveness

b. Product or Service Differentiation

This time around, the characteristics can be differentiated a bit more. Market acceptance takes a clear lead in this case. Respondents indicated that products in late-stage ventures already have a more developed product, making it more critical for them to be accepted into the market. This being said, the ability to protect the product follows close by. The hierarchy is almost the same; the only difference between those two is that one outlier ranked it as their least instead of their most favorite. The scalability of the products follows close by, with a 0.1 difference in the weighted average. However, it is pretty clear third place as 60% of respondents ranked it as such. The ranking for the uniqueness of the product seems very split between respondents, with half of them ranking it as the

last two and the other half ranking it as the first two. The main reason is that the scalability was a more prominent third place.

The first four places are pretty dependent and close to each other. The insulation from the competition was the last place according to 70% of the respondents, 20% of them ranked it fourth and only one outlier as the second place. It was mentioned that late-stage ventures are already aware of their competition and have a more stable position in the product's ecosystem, thus being way less critical for VCs.



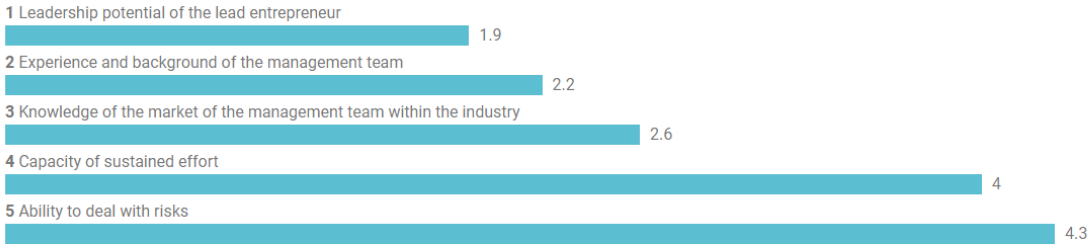
	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Market acceptance	**4 (40%)**	2 (20%)	2 (20%)	2 (20%)	0 (0%)	1.26	10	2.2 / 5
Product is proprietary or can otherwise be protected (hard to replicate, patents)	**3 (30%)**	2 (20%)	2 (20%)	2 (20%)	1 (10%)	0.63	10	2.6 / 5
Product is scalable	1 (10%)	2 (20%)	**6 (60%)**	1 (10%)	0 (0%)	2.1	10	2.7 / 5
Uniqueness of product and technology	2 (20%)	**3 (30%)**	0 (0%)	3 (30%)	2 (20%)	1.1	10	3 / 5
Insulation from competition	0 (0%)	1 (10%)	0 (0%)	2 (20%)	**7 (70%)**	2.61	10	4.5 / 5
								3 / 5

Figure 10: Hierarchy of Product or Service Differentiation

c. Team Capabilities

The lead entrepreneur is still the person mainly in contact with the VCs, so it is the first place in more than half of the respondents. Some indicated that sometimes the venture has very high potential, but conducting business with them might be incredibly hard or uncomfortable if the lead entrepreneur is a complicated person. This time around, the characteristics can be a bit more differentiated, even if the hierarchy is pretty much the same. The work experience and background of the management team come in second, followed by the knowledge of the market of the management team within the industry. Work experience and background are a clear second place as 70% of respondents ranked it as such. The knowledge of the market of the management team within the industry would have been a decent contestant even for the first place, as 30% of the respondents ranked it as such. The fact that way more of them preferred the leadership potential of the lead entrepreneurs as their clear first place and experience and background of the management team as their clear second place, respectively.

On the other end of the hierarchy, the capacity of sustained effort and ability to deal with risks are pretty distant, both with weighted averages of over 4, while the others score under 3. Yet again, it can be concluded that the last two characteristics are not to be ignored, but they are self-implied.

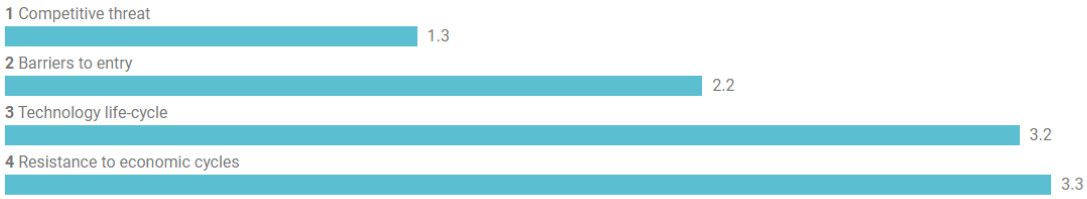


	1	2	3	4	5	Standard Deviation	Responses	Weighted Average
Experience and background of the management team	1 (10%)	**7 (70%)**	1 (10%)	1 (10%)	0 (0%)	2.53	10	2.2 / 5
Knowledge of the market of the management team within the industry	**3 (30%)**	2 (20%)	2 (20%)	2 (20%)	1 (10%)	0.63	10	2.6 / 5
Capacity of sustained effort	0 (0%)	0 (0%)	**4 (40%)**	2 (20%)	4 (40%)	1.79	10	4 / 5
Leadership potential of the lead entrepreneur	**6 (60%)**	0 (0%)	3 (30%)	1 (10%)	0 (0%)	2.28	10	1.9 / 5
Ability to deal with risks	0 (0%)	1 (10%)	0 (0%)	4 (40%)	**5 (50%)**	2.1	10	4.3 / 5
								3 / 5

Figure 11: Hierarchy of Team Capabilities

d. Environmental Threat Resistance

Respondents described this category as something they look more for in late-stage ventures. Although it is a criterion they use in general, they look more into later stages. The hierarchy stays the same, but the differences in weighted averages are pretty high. The competitive threat is the main thing to consider when assessing the risk imposed by a venture, which is 70% of respondents ranked it first and the remaining second. The ranking is also quite clear. All characteristics had at least half of the population ranking them as their final ranks. Barriers to entry takes the second spot at almost a 1.0 difference in weighted average this time. The interrelation of technology life cycle and resistance to the economic cycle is way more visible this time around in their weighted averages (3.2 and 3.3, respectively). The main difference is the existence of outliers, two outliers ranking it as their second place. Interestingly, quite some outliers ranked the resistance to economic cycles as their first or second choices. We can conclude that it is something VCs consider more in the late-stage ventures. However, it is not important enough to take over the competitive threat.

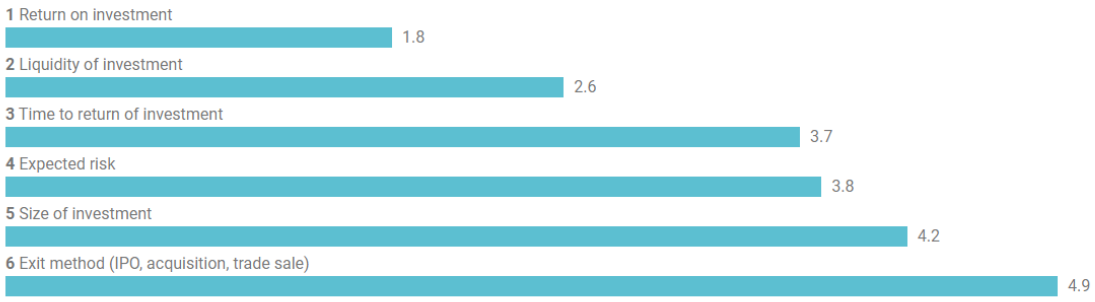


	1	2	3	4	Standard Deviation	Responses	Weighted Average
Competitive threat	**7 (70%)**	3 (30%)	0 (0%)	0 (0%)	2.87	10	1.3 / 4
Barriers to entry	2 (20%)	**5 (50%)**	2 (20%)	1 (10%)	1.5	10	2.2 / 4
Resistance to economic cycles	0 (0%)	0 (0%)	**7 (70%)**	3 (30%)	2.87	10	3.3 / 4
Technology life-cycle	1 (10%)	2 (20%)	1 (10%)	**6 (60%)**	2.06	10	3.2 / 4
							2.5 / 4

Figure 12: Hierarchy of Environmental Threat Resistance

e. Cash-out Potential

VCs are always looking for profit at the end of the day and liquidating it, which can be seen in the first and second place characteristics. The difference in weighted averages still stays the same (0.8), but the overall responses coincide more with the final hierarchy. In late-stage ventures, the time to get a return of investment gets close and thus becomes more important. Time to return on investment takes the third spot now, but the spike in weighted average is way higher, at a 3.7. The Expected Risk still stands at fourth place at almost a tie, considering all VCs endorse it. The size of the investment is not as important anymore, falling in fifth place. Almost all respondents ranked it at least a third place because investments in late-stage ventures tend always to be larger as the capital needs will always be more significant. The size will be bigger by default which is why it is not considered as necessary. Furthermore, the exit method is considered the last place by half of the population, with only one outlier as the second place.



	1	2	3	4	5	6	Standard Deviation	Responses	Weighted Average
Liquidity of investment	**4 (40%)**	1 (10%)	2 (20%)	1 (10%)	2 (20%)	0 (0%)	1.25	10	2.6 / 6
Return on investment	**6 (60%)**	2 (20%)	1 (10%)	0 (0%)	1 (10%)	0 (0%)	2.05	10	1.8 / 6
Time to return of investment	0 (0%)	2 (20%)	2 (20%)	**3 (30%)**	3 (30%)	0 (0%)	1.25	10	3.7 / 6
Exit method (IPO, acquisition, trade sale)	0 (0%)	1 (10%)	0 (0%)	3 (30%)	1 (10%)	**5 (50%)**	1.8	10	4.9 / 6
Expected risk	0 (0%)	**3 (30%)**	2 (20%)	1 (10%)	2 (20%)	2 (20%)	0.94	10	3.8 / 6
Size of investment	0 (0%)	1 (10%)	**3 (30%)**	2 (20%)	1 (10%)	3 (30%)	1.11	10	4.2 / 6
									3.5 / 6

Figure 13: Hierarchy of Cash-out Potential

4.3 Comparison

4.3.1 Investment criteria

During the interview, respondents indicated that almost all their first investments are in early-stage ventures and rarely in late-stage ventures if they have a high potential to become a unicorn. Whether they make follow-up investments is totally up to the potential of the venture at the time. The responding VCs invest in both stages; however, their focus lies on early-stage ventures and their priorities are mostly the same for the overall picture.

The hierarchy is precisely the same for both early- and late-stage ventures, with a few differences in the weighted averages. None of the investment criteria differ more than 0.5 in the weighted averages between stages, implying that most respondents are on the same wavelength. The hierarchy is the following (from first until fifth place): Market Attractiveness, Product and Service Differentiation, Team Capabilities, Environmental Threat Resistance and Cash-out Potential.

Market Attractiveness has been, in both cases, the clear winner. It is not the case that over half of them ranked it as their first, but it has always been a top three and almost never a fourth or fifth place. In early-stages the votes were a bit more split between the first three places (3 votes for first place, three votes for second place and three votes for third place) and one outlier for the 4th place, while in late-stages the differentiation was more evident (4 votes for first place, four votes for second place and two votes for third place).

In both venture stages, 50% of respondents ranked Product and Service Differentiation as their second place. The ranking is pretty much the same, with the only difference that in early-stages one outlier ranked it as their 4th, but as their 1st in late-stages.

Team Capabilities was the most fascinating criterion, both in the questionnaire and during the interview. The priorities are different from VC to VC in this case. Some indicated that the team is replaceable, so they emphasize the market and product. In contrast, some of them who stated this indicated that this is not the case in reality. Replacing one or more team members is possible, but it might not prove feasible in the long term. The votes are precisely the same for both stages, with 40% of participants ranking it first. What made it place the third is the scarcity of the remaining 60%, with three votes ranking it lower than its final standing.

Moving on to the Environmental Threat Resistance, in both stages, half of the respondents ranked it as their fourth which fits with its overall ranking. This being said, there is a difference of 0.4 in the weighted average. For early-stage ventures, one VC ranked it as their 1st and another as their second. In this case, calling them outliers is statistically correct, but not according to their motivation. They indicated that although the Environmental Threat Resistance is more critical in late-stage ventures, that is already developed and well-thought as ventures would not get to such a stage if that was not the case. Although VCs deem it essential, their selection is not as thorough. In early-stages, they tend to focus on it since ventures need to think about this aspect to grow, which is what VCs are looking for.

Cash-out potential occupied the last place for 60% of the respondents in both stages. The only difference is the presence of an outlier ranking it as their first in early-stage ventures. The motivation was that in late-stage ventures, VCs are looking forwards to exiting and getting a return on their investment, which is essential. However, they will not focus that much on this criterion as it is more and more implied in the later stages. On top of that, they mentioned that they need to judge an early-stage investment based on the return as that is what the limited partners are asking for. Suppose an early-stage venture has a promising return. In that case, they are also more likely to make follow-up investments when the venture is in its later-stages of life.

4.3.2 Underlying characteristics

a. Market Attractiveness

The hierarchy of the underlying characteristics of the Market Attractiveness category is the same, with only one discrepancy more significant than 0.5 in the weighted averages. Again, the market size has been the favorite of respondents, with a particular preference for it in the early-stage ventures as 90% of them indicated it as their first or second place. In contrast, in late-stages a decent percentage indicated third or even fourth places.

The likelihood of customer adoption and market growth have equal-weighted averages (2.6) in both stages, while the answers are a bit more scattered in late-stage ventures as opposed to their final ranking. The discrepancy, in this case, is the market penetration. It was considered more important in late-stage ventures because, during those stages, ventures are actively trying to penetrate the market. Lastly, in the early stages, creating a new market might signalize the potential of a unicorn, which is quite rare and VCs do not specifically look for that. While they are already part of the market in late-stages and trying to penetrate it even more, creating a new one is not an option.

b. Product or Service Differentiation

This criterion has the most discrepancies in the hierarchy. The ability to protect the product or service is essential in both early- and late-stage ventures, taking first place and second place, respectively. VCs in the high-tech industry consider the presence of patents a must in order to invest in a start-up. They will always look for it, but it is way more common for them to be present in late-stages, which is implied.

The scalability of the product is almost equally important in both stages, according to the weighted average. Yet again, scalability is implied when a venture managed to get to the late-stages of its life cycle, which is why it occupies third place, while in early-stages it occupies the second one. The uniqueness of the product is also offset by one rank, taking third place in early-stage and the fourth one in late-stages. VC indicated that in both stages, the uniqueness of the product is what makes it worth investing in the first place. Although, in early-stages it might indicate the possibility of a unicorn implying huge returns on investment as it can be considered the first place by 40% of respondents. It was a contestant for the first place, but the remaining 60% considered it less important than the ability to get defend or scale the product. The hierarchy is quite tight in the early-stages so that an additional few answers could have entirely tipped it off. In the late-stage hierarchy, there is more "air to breathe." VCs were relatively split on the uniqueness of the product in this case, but it is pretty clear that it is less of a focus.

The most exciting difference in the hierarchy is the market acceptance. In the early-stage, it occupies the fourth place, while taking the first one in late-stages. This is because in the early-stages the product or service needs to be developed and anything relating to penetrating the market or being accepted by it is in the prototyping or assumption phase. When it is more about taking action in the late-stages, ventures are actively pushing forward to get accepted by the market. Lastly, the insulation from the competition is a definitive fifth place in both stages, with an almost equal-weighted average (4.6 and 4.5), with 70% of the respondents ranking it as such. They indicated that the insulation comes from the other previous characteristics, such as patents, the ability to scale the product and get it into the market.

c. Team Capabilities

The leadership potential of the lead entrepreneur is the essential characteristic of the Team Capabilities criterion. It dictates the relationship between the VCs and the venture, which is why 60% of respondents ranked it as their first. The ranking is almost the same, with a slight difference from an outlier, ranking it fourth in early-stages and fifth and late-stages. The experience and educational background of the management team and the Knowledge of the market of the management team within the industry are taking second and third place in early-stages, and switching places in late-stages. They are pretty interrelated, which is also why their weighted averages are similar in both cases. Both of them are supporting factors to make the team succeed with the lead entrepreneur as its backbone.

The ability to deal with risk and capacity of sustained effort are in the same situation for the fourth and fifth place, respectively. Their weighted averages are higher than a four and more than 1.0 away from third place. It is pretty clear that they are not crucial for most VCs with the occasion of one or two outliers.

d. Environmental Threat Resistance

The hierarchies are identical, and almost the same can be said for the weighted averages. Although it is quite more pronounced in late-stages, the competitive threat takes the lead because it is more about action than predictions and ventures will actively try to be one step ahead of their competition. Two outliers also ranked it as their third option in early-stages, while in the late-stages all votes were either for the first or second place. Barriers to entry follows quite close, while the technology-life cycle and resistance to economic cycles take the third and fourth place at quite a difference. They are considered less important by most VCs. At the same time, the presence of a few outliers does not allow their weighted averages to pass the 4.0 bar. The technology life-cycle is seen by those outliers, in both stages, as a factor for a long-term investment that also mediates follow-up investments. The same cannot be said about the resistance to economic cycles in late-stages as that is already implied if the ventures lasted for that long.

e. Cash-out potential

No matter the stage a venture is in, VC must focus on getting a return on their investment, which takes the first spot in the Cash-out potential criterion. At a difference of almost 1.0 in weighted averages, liquidity on investment takes second place. The discrepancies come from the size of the investment and the time to return on investment. In the early-stages they occupy third and fifth place and switch places in late-stages. When VCs invest in a late-stage venture, the time until the cash-out happens is shorter by default, which is why they focus more on it. VCs indicated that they only make follow-up investments in early-stage ventures, so the investment size is more critical since it dictates any other future investments in the same venture.

The expected risk occupies fourth place in both stages. VCs consider any risks before making an investment, making the votes quite scattered. It is quite clear that it is not a priority for most. The exit method is the least important, with a high weighted average of around 5.0 in both stages. As long as an exit takes place, it is only a means to an end.

4.4 Trinity of criteria

As mentioned in section ‘4.3 Comparison’, the hierarchies of the investment criteria are identical in early- and late-stage ventures, with minor differences in the weighted averages, not enough to change in the case of having a few more respondents. Such essential criteria separate themselves at over 1.0 in the weighted average. This section details their role in the decision process or VCs and their interdependence.

The supervisor of this research and all interviewed respondents enforced the fact that the decision process of VCs in the high-tech industry is quite different from the general one. In the high-tech industry, the main focus is on the market. The following example was brought up during an interview: if one venture comes with a revolutionary phone as their product, logically, they will need to get into the phone market. The market is enormous, and it can be scaled up even more. At first, the investment can be seen as a money-maker that will bring something new to the market and bring down the competition because of their unique proposition value. The phone market contains a few big players, such as Samsung, Apple, Huawei etc.. However, in reality, they hold an oligopoly on the market and penetrating it will be neigh to impossible. Thus, the idea can be revolutionary, but VCs will not pursue investment as long as the market is not attractive enough.

The product is essential, but there will be no product without a market. There can be cases where the product or service itself has the potential to create a new market, which is quite indicative of a unicorn, but it is improbable. In typical and such cases, the product needs to be supported by a team with different backgrounds and expertise. The public view about VC investments is that the team is the first and foremost vital criterion to make everything work. According to the hierarchy, this is quite untrue, taking the last place in the trinity investment criteria. Respondents mentioned that the harsh reality is that the team is replaceable or interchangeable most of the time. This can happen at any stage of a venture. They mentioned quite a few cases where the initial CEO/founder of a venture was not the best leader and had to step down from that management role. Of course, they kept their shares in the company and were still active, just not as the CEO. While scaling up, employees will be brought it. In other cases, the venture needed specific expertise in areas that none of their team was knowledgeable about, such as marketeer or lawyers. VCs would use their network and contact the right people or provide such professionals themselves.

As mentioned in previous sections, the public view of VCs is that they are always looking for profit. That is one of their long-term goals, as without getting a return on their investments, they will not be able to operate. The hierarchy indicates quite the opposite. The cash-out potential is the least essential investment criterion in both early- and late-stage ventures.

4.5 Outliers

This section discusses any deviations from the average answers that affect the weighted average and ultimately change the hierarchy. Outliers are considered extreme cases that deviate from the norm, such as ranking a criterion or underlying characteristic first when most respondents ranked it as their last.

4.5.1 Investment Criteria

Outliers are only present in the fourth and fifth places, which indicates that the trinity of criteria is a common understanding between all respondents. Those outliers are also only present in the hierarchy of early-stage ventures.

One outlier ranked Environmental Threat Resistance as their first option, while another as their second option. It is pretty important to mention that both outliers are part of a government-backed VC fund. One of their main long-term goals is still making a profit and returning it to the limited partners. However, they also look for ways to improve the entrepreneurial ecosystem in the area they operate. Both government-backed VC respondents indicated that if a venture does not return their desired minimum return on investment (e.g., x3 instead of x7), but it will empower or generally have a positive impact on the entrepreneurial ecosystem (e.g., creating work-places, attracting more entrepreneurs to the region, bring a new niche to the region) they will not hesitate to invest in it.

As indicated in section ‘4.1 Sample’, most respondents of this research are classified as general partners in their respective VC funds. Their role is to manage the fund and make the final decisions of investment. On top of that, it is their responsibility to make sure the funds' limited partners get their profit shares. One outlier ranked Cash-out potential as their first choice with the motivation that he ultimately has to make sure all stakeholders of the funds reach their profit goals, which results in more money invested in future iterations of the fund.

4.5.2 Underlying Characteristics

a. Market Attractiveness

The size and growth of the market are accompanied by the likelihood of customer adoption for the definitive top three. The less critical category goes to the market penetration as it is considered to be implied by the top three. The potential to create a new market is quite rare, although if it becomes true, it can be considered a jackpot for VCs, which is why it goes on the secondary plan. This is true for both early-stage and late-stage ventures.

b. Product or Service Differentiation

The Product or Service Differentiation criterion can be considered the wildcard of this study. In the early-stages, the protection, scalability and uniqueness of the product take the top three, followed by the market acceptance with the same weighted averaged as its previous spot. All four are part of the essential category. In late-stages, the market acceptance takes the first spot by far, followed by the protection and uniqueness of the product, all of them categorized as essential. The fourth place is taken by the uniqueness of the product and far behind, essentially switching the first and fourth places this time around. In both stages, the insulation from competition takes the last spot and the secondary plan.

c. Team Capabilities

This Team Capabilities criterion is inherently identical, with the top three being occupied by the leadership potential of the lead entrepreneur, the work experience and education background of the management team and the knowledge of the market of the management team within the industry. They are classified as essential, while the last two, the ability to deal with risk and capacity of sustained effort take the second plan, are not. The ranking is interchanged in late-stages, but the difference in weighted average is not significant.

d. Environmental Threat Resistance

The Environmental Threat Resistance hierarchies are identical for early- and late-stage ventures. The ranking is the following: competitive threat, barriers to entry, technology life-cycle and resistance to economic cycles. While in the early-stages, all of them are essential, even though the last one is on edge, the last two are classified as least significant in late-stages.

e. Cash-out potential

This is yet another wildcard, although not as extreme as the Product or Service Differentiation. The first two spots are occupied by the return on investment and liquidity of investment, both of them being essential. The difference stems from the fact that the third and fifth place in early-stages are switched in late-stages. Those are the size of investment and time to return on investment, respectively. In both cases, the expected risk is between them and the exit method occupies the last position. Considering this is the only criterion with more than five characteristics, the rules are slightly changed. Meaning that the least important category has a weighted average of less than five and the secondary plan category has a weighted average of more than five. This being said, in the early-stages, the size of the investment, the expected risk and the time to return on investment are least important, followed by the exit method on the secondary plan. In the late-stages, the difference is that the size of investment goes on the secondary plan along with the exit method.

4.6 Contributions of this chapter to the research questions

This section has covered the findings regarding the rankings of investment criteria and their underlying characteristics and answered the last two research questions. The hierarchies have been conducted twice, once for early-stage ventures and once for late-stage ventures, followed by a comparison between the two. The results indicated that the hierarchies for the investment criteria are identical for both stages, with small enough differences in the weighted averages as not to raise any remarks. The hierarchy is the following: Market Attractiveness, Product and Service Differentiation, Team Capabilities, Environmental Threat Resistance and Cash-out Potential. The top three criteria proved to be essential and are characterized as an interdependent trinity. This does not necessarily mean that the remaining two criteria are unnecessary, but they are not the first concern VCs have when evaluating venture proposals. Due to the hierarchies being identical, we can conclude that the stages of the ventures do not influence the bigger picture of the decision process, thus indicating that VCs' priorities are consistent regardless.

Looking at the underlying characteristics, there are a few noticeable differences in the hierarchies between early and late-stage ventures. Before going into that, it is essential to mention that the underlying characteristics for the Market Attractiveness and Environmental Threat Resistance criteria are identical; thus it can be concluded that for them, the stages of the ventures do not play a role. In addition, the Team Capabilities underlying characteristics only "suffer" a minor change, where the last two in early-stage ventures – the capacity of sustained effort & the ability to deal with risk – switch places. Both the almost equally weighted averages for early- and late-stage ventures and the respondents' answers indicated that one is not necessarily more important than the other. Due to using a ranking system, VCs need to choose one over the other and in this case, their choice was mainly in the moment rather than based on facts and logic

Going back to the relevant differences, they can be considered quite common sense, according to respondents. The Product and Service Differentiation characteristics switch between the first and last place, meaning that getting market acceptance is more critical in late-stages when ventures have an established project and are trying to secure the spot in the market, while in early-stages it is way more important to protect the product so that other possible competitors with more capital power copy it. For the Cash-out Potential characteristics, the third and fifth place switch places. The size of the investment is vital in the early-stages, where getting as much equity as possible for lower levels of capital is the primary goal, while in late-stages, where ventures get close to an exit, the time it takes for VCs to get a return takes priority. In other cases, the categories are pretty much the same, with slight changes that cannot be considered conclusive enough or do not have any proper explanations attached to them.

When the decision process goes to a higher level of detail containing the underlying characteristics, a few differences indicate a change in VCs' priorities regarding the assessment of venture proposals. Thus, we can conclude that the stage of the ventures plays a vital role on a micro-level.

5. Conclusion

The objective of this research is to get qualitative information about the way VCs evaluate venture proposals, the investment criteria they use, what underlying characteristics they use for each criterion, what is the ranking of importance for both the criteria and underlying characteristics and what are the differences or similarities between early-stage and late-stage ventures. The primary differentiation between early- and late-stages is the presence of a market-tested product or service that has a loyal customer base. An early-stage venture is focused on getting their idea to work and off the ground while providing a minimum working product while looking for their fit in the market and a proper customer base. A late-stage venture is already operating and selling its service or product to a specific target audience. According to the definitions for the stages, such a venture begins from the fourth stage of the "expansion stage." Consequently, early-stage ventures will consist of the first three stages, while late-stage ventures will cover the rest. This section will answer each research question, followed by the problem statement that this research aimed to solve: "What investment criteria do VCs in the high-tech industry in the Netherlands use – and what is the hierarchy of importance– when they evaluate early-stage and late-stage venture proposals during the origination phase of the investment process?"

5.1 Findings

First and foremost, this research answers the question: "What investment criteria and underlying characteristics do VCs in the high-tech industry in the Netherlands use when evaluating proposals during the origination phase of the investment process?" The investment criteria and underlying characteristics defined in this study have been identified in previous literature and similar studies. Some of the final criteria have been used in all previous studies, while others were present only in some. The final list of criteria and underlying characteristics is most commonly met in previous studies and literature. The questionnaire contained the final lists constructed as hierarchies that VCs had to fill in. The questionnaire served to clarify any misunderstanding or misuse of terms that the VCs might have encountered.

Upon conducting the interviews, the responding VCs defined the investment criteria and underlying characteristics as reliable and conclusive for their investment process. On top of that, VCs were asked to motivate the options they made in their hierarchies and, in cases, they have been deemed outliers, further motivate their choices. The criteria are ordered by the final rankings, which are the same for both early- and late-stage ventures, while for the underlying characteristics where there are changes in rankings, it is mentioned in parentheses.

1. Market Attractiveness
    a. Market size
    b. Likelihood of customer adoption
    c. Market growth
    d. Market penetration
    e. Creation of a new market
2. Product Differentiation
    a. Market acceptance (4^{th} place for early-stage & 1^{st} place for late-stage)

   b. Product is proprietary or can otherwise be protected (1st place for early-stage & 2nd place for late-stage)
   c. Product is scalable (2nd place for early-stage & 3rd place for late-stage)
   d. Uniqueness of product or technology (3rd place for early-stage & 4th place for late-stage)
   e. Insulation from competition
3. Team Capabilities
   a. Leadership potential of the lead entrepreneur
   b. Experience and background of the management team
   c. Knowledge of the market of the management team within the industry
   d. Capacity of sustained effort (5th place for early-stage 4th place for late-stage)
   e. Ability to deal with risk (4th place for early-stage & 5th place for late-stage)
4. Environmental Threat Resistance
   a. Competitive threat
   b. Barriers to entry
   c. Resistance to economic cycles
   d. Technology life-cycle
5. Cash-Out Potential
   a. Return on investment
   b. Liquidity of investment
   c. Size of investment (3rd in early-stage & 5th in late-stage)
   d. Expected risk
   e. Time to return of investment (5th in late-stage & 3rd in late-stage)
   f. Exit method

The questionnaire contained the finals lists constructed as hierarchies that VCs had to fill in. The questionnaire served to clarify any misunderstanding or misuse of terms that the VCs might have encountered. On top of that, VCs were asked to motivate the options they made in their hierarchies and, in cases, they have been deemed outliers, further motivate their choices. This being said, the second research question is answered: "What is the hierarchy of importance of investment criteria and underlying characteristics that VCs use when evaluating proposals during the origination phase of the investment process?" The following research question builds upon this one and serves to interpret the list of investment criteria and underlying characteristics.

Last but not least, we will answer the third and last research question of this research: "What are the differences and similarities in the hierarchy of investment criteria and underlying characteristics for ventures in the early-stage compared to late-stage ventures?" Before doing so, it is necessary to offer further information about the respondents. The total research population located in the Netherlands that could satisfy all research scope variables mentioned in section '1.3.1 Research scope' was as much as 15 VCs. Only ten of those managed to participate in the research, either by completing the questionnaire, participating in the interview, or both. Approximately 67% of the total possible research population has participated in the research, which can be considered an adequate and representative number. Therefore, the answers of this study contribute to the existing knowledge about investment criteria of high-tech VCs.

During the interview, another important fact was brought to light. What are the most and least essential investment criteria that VCs use when investing in ventures? The top three, or defined as the trinity of criteria, are Market Attractiveness, Product or Service Differentiation and Team Capabilities. Striking is that the general view is that the team is the most essential factor in a venture, which is quite different for the high-tech industry. The harsh reality is that the team is replaceable, but the product backed by patents and its uniqueness that is supported by the market it appeals to are the real key to success. The trinity of criteria remains consistent no matter what stage a venture is in. This signalizes that high-tech VC funds stick to the same pattern of priorities while analyzing any possible venture proposals they receive.

Besides the top three, the Environmental Threat Resistance and Cash-out potential take a step back in the decision process of VCs for both stages. Surprisingly enough, the world of VCs is seen as a shark tank, where they look for ways of making a profit, but the hierarchies show quite the opposite. Of course, VCs care about getting a decent return on their investments which ensures their operation and possibility to create new iterations of the fund, but that is the least of their concerns when looking into ventures. To top it all off, it would have been expected that the Cash-out Potential would be more important in later stages as the time-to-exit of ventures is getting closer, but it is not the case. Those results apply to both early-stage and late-stage ventures without too many fluctuations to reconsider the results.

As for the underlying characteristics, there are some slight differences in the hierarchies between early- and late-stages. The Product and Service Differentiation characteristics switch between the first and last place, meaning that getting market acceptance is more critical in late-stages when ventures have an established project and are trying to secure the spot in the market, while in early-stages it is way more important to protect the product so that other possible competitors with more capital power copy it. For the Cash-out Potential characteristics, the third and fifth place switch places (size of investment and time to return on investment, respectively). Respondents called this “the way things go” because the size of the investment is vital in the early-stages, where getting as much equity as possible for lower levels of capital is the primary goal, while in late-stages, where ventures get close to an exit, the time it takes for VCs to get a return takes priority. It can be considered as putting a needle in a haystack, where deals might be good, but they need very little investment and that is not worth the time and effort for VCs. Vice-versa, if the deal is too large, it might happen that in the next couple of years, VCs might get diluted and marginalized as a stakeholder.

In other cases, the categories are pretty much the same, with slight changes that can not be considered conclusive enough or do not have any proper explanations attached to them. The other three investment criteria have remarkably similar hierarchies, at least in the essential category, which is the most important. Those differences are quite common sense, such as the time.

Regarding the investment criteria, the hierarchies are identical for both stages. We can conclude that the big picture of the investment process does not change for VCs and that the stage of the venture does not influence their decision process. The underlying characteristics mostly find themselves in the same situations, with slight exceptions. Due to this fact, specific points of interest shift in the decision process, but not quite enough to influence the big picture. Most of those points of interest do change because of the stage of the venture. Early-stage ventures focus on making a viable product, protect it

by using patents and getting a proof of concept, without the need to give too much importance to resist in the market or an exit method. Those facts are more concerning for late-stage ventures that need to penetrate the market, scale their product and give VCs a realistic time to return on investment.

These facts reduce the discrepancy between public knowledge and reality by expanding the current knowledge about the decision process high-tech VC funds undergo when evaluating venture proposals. It does so by providing a benchmark of the investment process for the two parties involved in an investment deal; the VC fund and the venture. On one side, entrepreneurs can follow investment criteria and underlying characteristics to enhance their venture and raise their chances of successfully receiving an investment. On the other side, high-tech VCs can follow the same pattern in their decision process and see how they differ from other industries. Not only does it adds knowledge, but it serves its purpose as an "update" of Tyebjee & Bruno's (1984) works which it is based upon. This "update" proves that the theory Tyebjee & Bruno's (1984) devised around three decades ago still holds up to this day. The investment criteria and their underlying characteristics have resonated with the participating VCs of this study. Furthermore, this research focuses only on high-tech VCs in the Netherlands, while Tyebjee & Bruno's (1984) research focused on any type of VC in the US. This fact further reinforces that their theory applies not only to VCs as a whole but also VCs that focus on a specific industry and are based in a different operational region.

Lastly, the results of Tyebjee & Bruno's (1984) research show that VCs as a whole find the team behind a venture more critical than the product or service itself, while Carter & Van Auken (1994) or MacMillan et al. (1985) focus on the team right from the start. On the other hand, this research shows that although the team is essential, it is also replaceable, making it fall short of the Product or Service differentiation and Market Attractiveness. This might also be because high-tech VCs assess ventures differently than other industry-focused VCs or VCs as a whole. This comparison is out of the scope of this research, but it does highlight the fact that the industry is a factor that impacts the decision-making progress. It is unsure whether this is the only factor, but this does coincide with the principal's opinion that high-tech VCs care less about the team behind the venture.

To conclude, high-tech VCs' investment criteria when evaluating venture proposals are identical for ventures in the early- and late-stages. Of course, this is true only when concerned with the bigger picture of the criteria. However, internally the underlying characteristics showcase specific shifts in interest for VC funds that prove the stage of ventures looking for investment influences their decision process. Furthermore, outliers are present in both the investment criteria and their underlying characteristics, although more distinguishable in the latter. Those outliers are another reason why rankings switch between stages.

5.2 Other findings

The study contains four research variables: the industry focus of the VC fund, the ownership of the VC fund, the phase in the investment process and the stage of the venture. The ownerships of VC funds present in this research are independent funds, bank-affiliated funds and government-backed funds. All mentioned VCs have one characteristic in common; they usually do not have any strategic objectives in addition to the financial goals of getting profit by investing in high-growth potential ventures. This is only partially true for government-backed VCs, as they also aim to enrich the entrepreneurial ecosystem in one region or specific industry on top of the financial perspective.

Nonetheless, they are still looking for high returns on investment, but they are willing to trade a lower return for a venture that can create jobs, create a new market or create healthy competition in the market they are trying to penetrate.

5.3 Implications and future research

This study has identified the importance of investment criteria that VCs in the high-tech industry use when evaluating venture proposals. The implications and possible applications of the findings will be discussed in this section. Three 'stakeholders' that could benefit from the results of this study have been identified: the research community, the entrepreneurial community and the venture capital community. The implications and applications will be presented in this order.

5.3.1 Research community

The first stakeholder is the research community. Because of the gaps in previous research, one could see that the literature regarding VCs' investment criteria was not sufficient to answer the research question of this research. Thus, there is a discrepancy between (1) the public knowledge about VCs' investment criteria and the decision process they undergo and (2) what the scientific literature presents. This study aims to bring the general knowledge closer to reality by expanding the current knowledge of the decision process undergoing investments and bringing it up to the times.

This research also contributes to the existing literature regarding VCs' investment due to its explicit focus set by the research variables defined in section '1.3.1 Research scope'. The variables are the industry focus of the VC fund, the ownership of the VC fund, the phase in the investment process, and the stage of the venture. In addition, the geographic perspective is taken into consideration. However, due to the limitations of the study, it is not considered a decisive variable, thus, bridging the gaps in previous literature about investment criteria.

This study aims to explore the total research population of high-tech VCs in the Netherlands, which was concluded to be 15, making the scope deliberately narrow. The same applies to the stages of the ventures defined only in two categories; early-stage and late-stage. Although eight stages are defined, the research aims to only differentiate between early- and late-stages. The difference between the two is defined as the presence of a market-tested product and a loyal customer base, which the participants agreed to. Future research could expand the literature about the investment of VCs by using the methodology of this research to find criteria in other industries (e.g., deep-tech, industrial manufacturing, space exploration) or in specific investment stages (i.e., seed, start-up, expansion). In addition, the investment criteria in different phases of the decision process (e.g., due diligence, contracting) could be studied to capture the complete picture of the investment process or a different type of fund (e.g., corporate).

Whatever scope future researchers use, they can use this study as an example that they should choose a well-defined research population by focusing on the research variables:

- The industry focus of the VC fund
- The ownership of the VC fund
- The phase in the investment process
- The stage of the venture

Although this study does not consider the size of the fund, future research is to investigate if this can also influence VCs' decision process. The size of the VC fund can be introduced as another variable, and it could be measured by the number of received venture proposals, the investment capital of the fund, or the average investment ticket. The questionnaire of this research covered this information, but it did not consider the results; thus, it is unclear whether the responses of large VCs differ from the small VCs.

A follow-up study could also allow VCs to define and choose their investment criteria instead of the pre-defined ones of this research. However, it can use the investment criteria defined from this study as all interviewed participants agreed with them.

Having more insights into VCs' investment criteria can improve a venture's chances of receiving venture capital funds, but does that guarantee it. This study and its results show that all the pre-defined criteria focus on VC's investment criteria. However, it does not address whether the criteria are defining a successful venture.

Finally, it would be interesting to research the importance of investment criteria in more countries and compare the results between each other. Perhaps future research can find clusters of countries where the VCs respond similarly concerning the importance of investment criteria.

5.3.2 Entrepreneurial community

The second stakeholder is the entrepreneurial community in the Netherlands. This research has practical relevance for many organizations involved with VC funds, business and financial developers, limited partners, co-investors, and start-up ventures looking for funding through VCs because it gives transparency to how VCs act. Therefore, the findings of this research can help ventures get a better understanding of what VCs take into consideration when conducting an investment.

The industry focus of this research is high-tech, thus targeting high-tech entrepreneurs. This research provides relevant information to them because it provides concrete insights into the investment criteria VCs use. As previously mentioned, knowing the investment criteria does not guarantee an investment. However, if entrepreneurs better know what VCs find important when receiving venture proposals, they can adjust their ventures accordingly. In this way, entrepreneurs can favorably position their ventures and are more likely to receive funding (Carter & Van Auken, 1994).

The results of this research can be treated by entrepreneurs as a benchmark for improvement and getting their priorities straight for their ventures. This will not guarantee receiving investment, but can definitely raise their chances, so entrepreneurs should be aware before making any changes to their ventures. The results will only be helpful if the ventures use them wisely as scientific advice.

It is essential to realize that every VC has its own investment criteria used when evaluating venture proposals. This study has curated investment criteria used in literature and previous similar studies, of which respondents agreed to a certain extent. Criteria and underlying characteristics that scored very high (part of the essential category) indicate a high level of agreement between VCs. On the other hand, those ranked relatively low (part of the secondary plan) may seem less important but should not be neglected by the entrepreneurs. Even the 'unimportant' criteria are considered very important by at least one VC with the presence of outliers.

Also, some VCs mentioned during the interview that they do not find the lead entrepreneur very important because they can find a CEO that is a better fit for the company. In other words, VCs might consider specific criteria critical or not according to their personal experience, but not for the ecosystem as a whole. Thus, the results might be slightly biased.

5.3.3 Venture capital community

The third and last stakeholder is the venture capital community, as it can benefit from this study in several ways. Two parties of the VC community are also involved; veteran and aspiring venture capitalist. Some VCs have indicated their preferences when it comes to investment criteria they use in the decision process. It is not expected that they will adjust their decision process due to this research's findings, but they can learn from it and be more aware of their use or application.

Veteran venture capitalists can use the findings to enhance further and test the investment criteria they use in their decision process. By contrast, aspiring venture capitalists can use the findings to base their decision process upon it and use it as a framework that will guide them through the selection of ventures and differentiate between the successful and unsuccessful ones.

The findings could also be used as a point of reference for VCs to compare the importance they assign to the pre-defined investment criteria compared to other VCs' overall hierarchies and weighted averages in the high-tech industry. This knowledge can be used to determine differing positions in the VC community towards entrepreneurs looking for VC funding.

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Appendices

Appendix 1: Background to selected venture capital funds

Introduction to venture capital and private equity

Venture capital has been the go-to for companies who want to scale up fast. It is an express method of getting capital, with the added benefit of receiving professional help and coaching from experienced entrepreneurs. Private equity is the provision of equity capital by financial investors – over the medium or long term – to non-quoted companies with high growth potential (EVCA, 2007).

Venture capital aims to help more businesses achieve their ambitions for growth and provide them with finance, strategic advice, and information at critical stages of their development (EVCA, 2007), which in return will provide them with a high return on investments and raise their reputation. VC investments are generally made in the form of exchanging cash for shares in the company. From the venture capital side, an investment of a few thousand in an early-stage firm can transform into millions in a few years. The most concise description of venture capital investing is high-risk investments, high reward returns (Tyebjee & Bruno, 1984).

Introduction to VCs

VC funds are financial intermediaries organized in small partnerships of up to a dozen individual partners – institutional investors such a pension funds or insurance companies (Rin et al., 2013). Partners are not limited to institutions, as corporate or private investors and even banks can contribute, which will most likely change the way VCs assess venture proposals (Mayer et al., 2005).

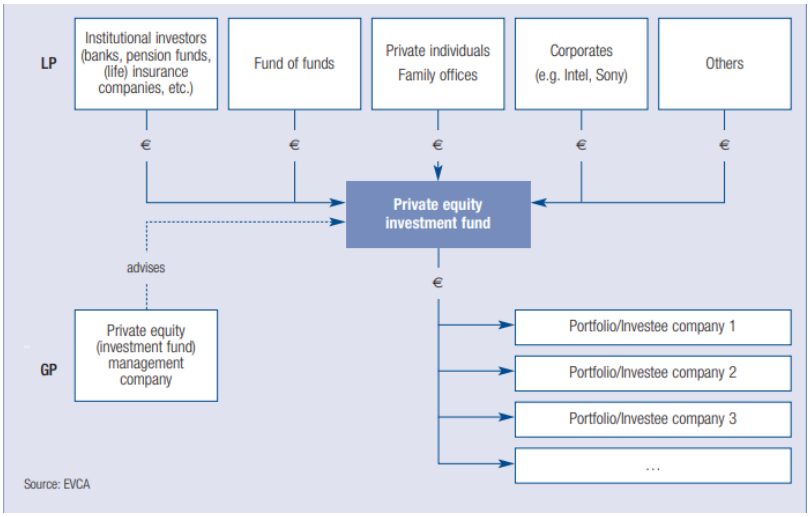


Figure 14: Venture capital cash-flow (EVCA, 2007)

In order to create a fund, two separate entities are needed: general partners (GPs) and capital investors known as limited partners (LPs). The GPs collect funds from the LPs and establish the investment fund. LPs are not involved in day-to-day tasks, but they might have a say in investments, depending on their nature. The typical cash flow at the basis of funding a venture capital fund appears in Figure 3. Upon reaching a target amount of capital, the fund-raising is closed, and the GPs are ready to seek high-growth companies to invest in (EVCA, 2007). The GPs are tasked with running necessary investment operations for the fund and prepare exit strategies for ventures in their deal flow according

to market conditions. Investments are generally long term and GPs offer their help to the ventures. The last step of pursuing a venture is exiting the investment. The capital recovered from the investment is then redistributed to the original investors, which in return redistribute it to their limited partners (EVCA,2007).

Venture capital funds have a standard lifetime of around ten years, with the possibility of extensions to allow for private companies still seeking liquidity (Gompers & Lerner, 1998). The division of time of a typical VC fund is divided into the first and last five years. In the first period, VCs are mainly concerned with sourcing and evaluating their deals. Their scouting process aims to quickly filter obsolete venture proposals and differentiate unicorns from the masses. The second period of their life cycle is all about supporting ventures in their portfolio in order to mediate exit deals that will facilitate cash returns. Any new promising companies might come at any time during the second period and exceptions might happen depending on the propositions the ventures will bring (OXVC, 2020).

At the end of the life cycle, VCs can choose to follow the same steps in renewing the fund. Suppose the fund was successful enough in its previous iteration. In that case, it is very likely that the same LPs and new ones will invest in the new iteration and raise the amounts of capital invested. The venture capital life cycle is represented in Figure 15.

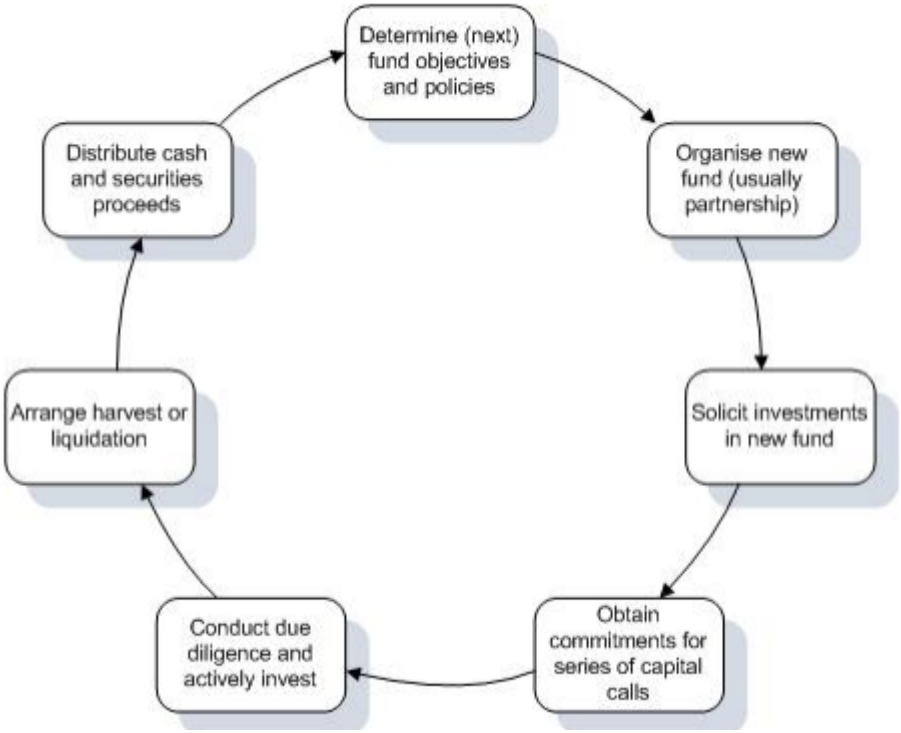


Figure 15: Professional venture capital investing cycles (Leach & Melicher, 2009)

Appendix 2: Research scope (extensive version)

Section '1.3 Research scope and objectives' is a summary of this appendix. This appendix describes in more detail the scope of this research. It is necessary to have these specific variables to reduce the study's scope and make it feasible. As explained in section '2.2 Gaps of previous research', the main gaps present in previous research are not discriminating between VCs' industry focus and the stages in the investment process. Generalizing the scope of this research would entail too many resources such as time and money. It would lead the conclusions to be too generic and useless for the relevant stakeholder mentioned in section '6. Implications and future research'.

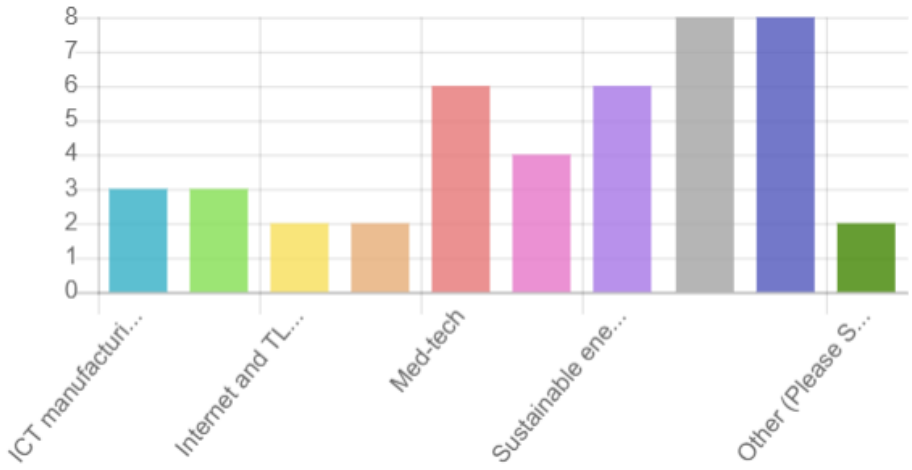
This research aims to restrict the scope to provide entrepreneurs and venture capitalists alike with concrete instead of a general conclusion. In order to be able to draw such a conclusion, this further appendix details the research scope. The research scope includes the following variables: the industry perspective of the VC funds, the ownership perspective of the VC fund, the stage in a venture's life-cycle, the phase during the investment process and, last but not least, the geographical perspective of such investments.

Industry perspective

This research aimed to cover VCs that typically invest in the high-tech industry and cover as many sub-fields as possible. This was done with the help of previous literature and the fields that the VC supervising this research invests in. Some participating VCs also invest in other industries (e.g., deep-tech, industrial manufacturing, space exploration), but their main focus remains on the high-tech industry. Therefore, this research is of interest to entrepreneurs and VCs that are active in this industry.

The high-tech sub-fields defined by this research are the following: ICT manufacturing, software, internet and TLC services, R&D engineering services, med-tech, agri-tech, sustainable energy, macro- and nano-technologies, semi-conductors & high precision engineering. In addition, respondents were given a choice to mention any other fields they invest in that were not mentioned in the questionnaire. Only two 'Other' answers were received; "Only B2B Software" and "Technologies that can positively impact the environment and fight climate change." Given the nature of those answers, they can be grouped along with the Software and Sustainable energy fields.

At the time of this research, the market can be considered relatively small for VCs that focus their investment on the high-tech industry, as only 15 were identified in the Netherlands. As a result, it is assumed to be easier for those VCs to take their time in achieving a concrete exit strategy. Furthermore, given the fact that those VCs can have an extended investment horizon, it can be presumed that the investment criteria they use are more concrete and measurable than criteria used to evaluate venture proposals in other industries with a longer time to market.



30% (3)
ICT manufacturing

30% (3)
Software

20% (2)
Internet and TLC services

20% (2)
R&D and engineering services

60% (6)
Med-tech

40% (4)
Agri-tech

60% (6)
Sustainable energy

80% (8)
Micro- and Nano-technologies

80% (8)
Semi-conductors & high precision engineering

20% (2)
Other (Please Specify)

44
Responses

Figure 16: Fields of the high-tech industry that VCs invest in

Ownership perspective

This research aims to restrict its research scope as much as possible in order to avoid generalizations. VC funds are classified according to the ownership and governance of the management company. Five ownerships of funds have been identified and this research covers four of them, which can be considered too broad. Independent funds, government-backed funds, bank-affiliated funds and institution-backed funds have been defined in section '1.3 Research scope'. This being said, the reasoning behind this is that those types of VCs have pretty much the same goal in mind, which is that of making a profit. Government-backed funds prove to be quite a wildcard because, in some instances,

they would invest in a venture with a less promising return if it would help the region's entrepreneurial ecosystem.

Nevertheless, all of those need profits in order to operate and iterate their funds, but government-backed funds would accept a lower return of investment more often than the other funds. Unfortunately, no participating VCs have identified themselves as institution-backed funds. The most common occurrence of such funds is those backed by education institutions like universities (e.g., Dutch Student Investment Fund[27]).

To conclude, most participating VCs have their primary focus on getting as much of a return on investment as possible, which ensures the validity of results and matches the proposed variables of this research.

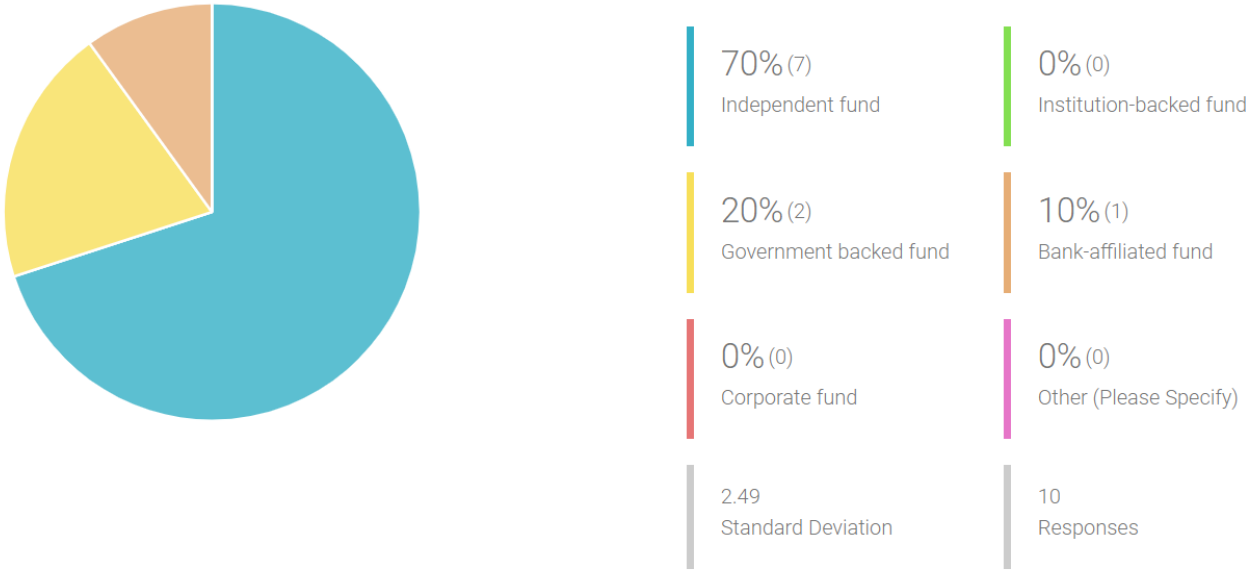


Figure 17: Ownerships of VC funds

Venture stage

High-tech ventures, like any other ventures, go through several stages of development. Literature suggests different stages that are the same. At the same time, each interviewed VC has a slightly different definition compared to both the literature and other respondents. The supervisor of this research defines the following four major stages: (pre)seed, early-stage, start-up and growth/expansion stage.

This research has used some pre-defined terms without allowing participants to use their definitions for the sake of being exact. This is because no two different respondents had the exact definition of the venture stages. This research has curated eight stages from literature and adapted their definitions to current times. Furthermore, a division has been made to classify the venture stages in two large categories to compare them. The categories are generally defined as early-stage, containing the first

[27] Dutch Student Investment Fund (DSIF) is a venture capital fund managed by students from the University of Twente and Saxion University of Applied Sciences. It was established in 2016 as the first student-run European venture capital fund. DSIF invests from 5.000€ to 50.000€ into innovative start-ups created by bachelor and master students, PhDs and recent graduates.

three stages, and late-stage, containing the last five stages. The differentiation between early- and late-stages is the presence of a market-tested product and a loyal customer base.

The stages are shortly defined as follows:

- "seed": ideation that might involve building a small prototype in order to determine whether the idea is feasible; this stage does not involve production for sale
- "startup": working minimum viable product with a management team that is actively testing a market and a customer base
- "early development": prototype with minimal technical risk; the product is market-tested and building a customer base
- "expansion": enough production to ensure a loyal customer base but still not enough to be profitable as ventures in this stage probably need capital to scale-up such as equipment purchases, inventory and receivable financing
- "profitable but cash poor": fast sales growth and past the break-even point, but still requires further investment to expand manufacturing facilities further, expanded marketing, or product enhancements.
- "rapid growth toward liquidity point": stable and successful ventures with reduced risk for outside investors, where they prefer the use of debt financing to limit equity dilution
- "bridge stage": ventures are already considering a form and time of exit but need more capital to sustain rapid growth in the interim
- "liquidity stage – cash-out or exit[28]": ventures either cash-out through a trade-sale or an IPO; sellers such as VCs take back debt in a leveraged buyout[29]

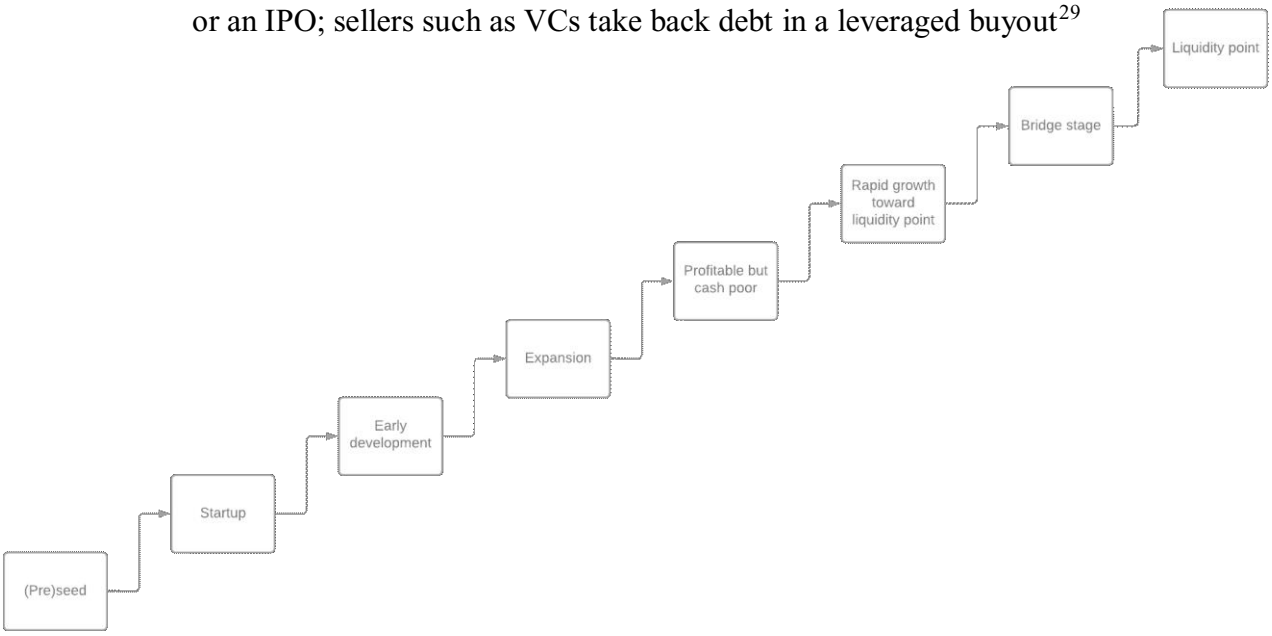


Figure 18: Stages of ventures.

[28] Very uncommon stage for VCs to invest in as it implies the smallest amount of risk as well as the smallest possible reward.

[29] A leveraged buyout (LBO) is the acquisition of another company using a significant amount of borrowed money to meet the cost of acquisition. (*Leveraged Buyout (LBO) Definition*, 2021).

Phase of the investment process

Before a VC decides to invest, the proposal has to through multiple phases. The origination phase is the first phase of the first phase where the VCs first see a proposal, which is why it is the focus of this study. As mentioned in section '4. Findings', follow-up investments are also considered and, in those cases, ventures can be considered to skip the origination phase. While VCs keep track of ventures in their portfolio, whenever ventures are looking for a follow-up investment, they go through the same process over again but faster as they are aware of the procedures.

The proposal is screened on several essential criteria like the location of the venture and the industry (the Netherlands and high-tech). According to the VCs, ventures undergo a cycle that revolves around their progress and potential during the origination phase. Ventures are considered low or high priority, depending on how promising they are compared to the current ventures in the dealflow and the portfolio at that point in time. In a few cases, the ventures can be considered not worth pursuing anymore and are deemed 'discontinued'. The general cycle of a venture goes as follows: a venture becomes a new prospect and enters the dealflow with low priority. Depending on their progress, a venture can be moved up as a high priority in a matter of days. Until the moment a deal is made, they alternate between priorities. In a worst-case scenario, they get discontinued and exit the cycle. A venture does not need to go from a low-priority to discontinued, as they can fall from high-priority to discontinued if the VC decides so. Ventures can also be discontinued from the start if the VCs do not find a fit in their dealflow. Upon reaching some sort of agreement, ventures go into the investment process phase where VCs conduct further research about the venture, market, team, cash-out potential and so on before putting up a term-sheet or contract for the deal. Upon both parties agreeing with this term sheet, the deal is done and the investment takes place. Ventures enter the investment management phase, where they further develop their business under the wings of the VCs with the sole purpose of growing and receive an exit, which is the last phase of the investment process that VCs are involved in.

This research aims to cut the 'problem' from its roots, meaning that mistakes are more likely to happen in the first stage of the investment process. There are four possible scenarios; a venture can be good and the investment to get the green light, which is the best-case scenario; a venture can be good, but the investment does not go through, which means missing a great opportunity but ultimately not losing any money; an investment is terrible and the investment does not go through which means that nothing was lost in the process; an investment is terrible and the investment goes through which means losing money and ending up in the worst-case scenario. The goal is to avoid the last scenario by properly weeding out the bad from the good and investing only in the latter. The criteria are also assumed to be more interesting for entrepreneurs in this phase because the current knowledge is considered too generic and thus not relevant to the entrepreneurs. The same applies to ventures; if they cut adjust themselves accordingly while in the first phase of the investment, they will save time, money and energy.

Last but not least, VCs need to assess ventures and properly curate them quickly. They receive many proposals, and spending the same amount of time on all of them is pretty inefficient. Concluding, we can consider that gaining knowledge and applying it during the origination phase instead of any other phase in the investment process is more practical and beneficial from both parties involved in a deal.

Geographics perspective

The majority of studies involving investment criteria of VCs are done for the U.S. This is because capital markets are considered more mature and dominant (Manigart et al., 2002). The estimated capital market of the U.S. amounts to a total amounted to a total of 130 billion U.S. $ dollars in 2020 (Statista, 2021). This research, however, is focused on Europe, specifically in the Netherlands. Two participating VCs of this study are located in Belgium, but they mainly invest in the Netherlands. The Netherlands has considerable potential in the high-tech industry. According to the Global Information Technology Report in 2009-2010 (World Economic Forum, 2010) that provides of picture of the level of high-tech development of an economy, the Netherlands ranks fifth. The same reports rank the Netherlands as the fifth in venture capital availability as well. Also, the Digital Economy Rankings 2010 [30]ranks the Netherlands in the same spot (Economist Intelligence Unit, 2010). Finally, practical reasons were of influence as connections with VCs in the Netherlands were available and most likely to come to fruition for this research.

[30] Digital economy rankings 2010 from IBM Institute for Business Value. London: Economist Intelligence Unit.

Appendix 3: Questionnaire

General information

This section contains general information about the respondents of the questionnaire. All information will remain confidential. If you do not wish to fill it in with the exact information, please write "1" in the mandatory spaces.

1* Name

2 Title

☐ Mr. ☐ Ms.

☐ Mrs.

3* Function

Email address

Phone number

6* Company name

7 Website

Company and portfolio

This section contains general information about the fund to classify the respondents for the sake of this study. If you do not wish to fill it in with the exact information, please write "1" in the mandatory spaces.

The main differentiation between early- and late-stages is the presence of a market-tested product or service with a loyal customer base.

8* What is the ownership of your fund?

- [ ] Independent fund
- [ ] Institution-backed fund
- [ ] Government backed fund
- [ ] Bank-affiliated fund
- [ ] Corporate fund
- [ ] Other (Please Specify)

9* What is your fund's high-tech industry focus?

- [ ] ICT manufacturing
- [ ] Software
- [ ] Internet and TLC services
- [ ] R&D and engineering services
- [ ] Med-tech
- [ ] Agri-tech
- [ ] Sustainable energy
- [ ] Micro- and Nano-technologies
- [ ] Semi-conductors & high precision engineering
- [ ] Other (Please Specify)

10* In which stages of ventures does your fund invest in?

☐ Seed: ideation that might involve building a small prototype in order to determine whether the idea is feasible

☐ Startup: working minimum viable product with a management team that is actively testing a market and a customer base

☐ Early-development: prototype with minimal technical risk; the product is market-tested and building a customer base

☐ Expansion: enough production to ensure a loyal customer base but still not enough to be profitable as ventures in this stage probably need capital to scale-up

☐ Profitable but cash-poor: fast sales growth and past the break-even point, but still requires further investment to expand further

☐ Rapid growth toward liquidity point: stable and successful ventures with reduced risk for outside investors

☐ Bridge stage: consider a form and time of exit but need more capital to sustain rapid growth in the interim

☐ Liquidity stage: cash-out

11* What is the size of your fund as of 1st of January 2021? (in euros)

What is the average investment horizon of your fund? (in years)

Between

and

What is the average investment ticket of your fund's portfolio of ventures? (in euros)

Between

and

What is the average holding period of a venture in your fund's portfolio?

Between

and

15* What is your fund's expected return of investment on venture proposals? (in money multiple)

16* What is the average number of new venture proposals your fund receives per month during the origination phase of your investment process?

17* What is the approximate percentage of the new venture proposals that are accepted?

Ranking of investment criteria for early- stage ventures

This section aims for respondents to establish a hierarchy of investment criteria and their underlying characteristics. This will be first done for early-stage ventures, which are the first three stages defined in Question 10 on the "Company and portfolio" page: Seed, Startup and Early-development.

18* What is the hierarchy of the investment criteria you use out of the following pre-defined criteria?

Market Attractiveness (depends upon the size, growth, accessibility of the market and on the existence of a market need etc.)

Product and Service Differentiation (the ability to apply technical skills in creating a product or service that is unique and can deter competition through patents)

Team Capabilities (skills in managing several business functional areas and is associated with favorable references given to the entrepreneurs)

Environmental Threat Resistance (the extent to which the venture is resistant to uncontrollable pressures from the environment such as obsolescence due to changing technology, sensitivity to economic conditions, low barriers to entry by competition, etc.)

Cash-Out Potential (the extent to which the investment can be liquidated or "cashed out" at the appropriate time)

19* What is the hierarchy of the underlying characteristics for the "Market Attractiveness" criterion?

Market size

Market growth

Market penetration

Likelihood of customer adoption

Creation of a new market

20* What is the hierarchy of the underlying characteristics for the "Product or Service Differentiation" criterion?

Market acceptance

Product is proprietary or can otherwise be protected (hard to replicate, patents)

Product is scalable

Uniqueness

Margin of return

21* What is the hierarchy of the underlying characteristics for the "Team Capabilities" criterion?

Work experience and educational background of the management team

Knowledge of the market of the management team within the industry

Capacity of sustained effort

Leadership potential of the lead entrepreneur

Ability to deal with risks

22* What is the hierarchy of the underlying characteristics for the "Environmental Threat Resistance" criterion?

Competitive threat

Barriers to entry

Resistance to economic cycles

Technology life-cycle

23* What is the hierarchy of the underlying characteristics for the "Cash-Out Potential" criterion?

Liquidity of investment

Return on investment

Time to return of investment

Exit method (IPO, acquisition, trade sale)

Expected risk

Size of investment

Ranking of investment criteria for late- stage ventures

This section aims for respondents to establish a hierarchy of investment criteria and their underlying characteristics. This time around for late-stage ventures, which are the last five stages defined in Question 10 on the "Company and portfolio" page: Expansion, Profitable but cash-poor, Rapid growth toward liquidity point, Bridge stage and Liquidity stage.

24* What is the hierarchy of the investment criteria you use out of the following pre-defined criteria?

Market Attractiveness (depends upon the size, growth, accessibility of the market and on the existence of a market need, etc.)

Product and Service Differentiation (the ability to apply technical skills in creating a product or service that is unique and can deter competition through patents)

Team Capabilities (skills in managing several business functional areas and is associated with favorable references given to the entrepreneurs)

Environmental Threat Resistance (the extent to which the venture is resistant to uncontrollable pressures from the environment such as obsolescence due to changing technology, sensitivity to economic conditions, low barriers to entry by competition, etc.)

Cash-Out Potential (the extent to which the investment can be liquidated or "cashed out" at the appropriate time)

25* What is the hierarchy of the underlying characteristics for the "Market Attractiveness" criterion?

Market size

Market growth

Market penetration

Likelihood of customer adoption

Creation of a new market

26* What is the hierarchy of the underlying characteristics for the "Product and Service Differentiation" criterion?

Market acceptance

Product is proprietary or can otherwise be protected (hard to replicate, patents)

Product is scalable

Uniqueness of product and technology

Insulation from competition

27* What is the hierarchy of the underlying characteristics for the "Team Capabilities" criterion?

Experience and background of the management team

Knowledge of the market of the management team within the industry

Capacity of sustained effort

Leadership potential of the lead entrepreneur

Ability to deal with risks

28* What is the hierarchy of the underlying characteristics for the "Environmental Threat Resistance" criterion?

Competitive threat

Barriers to entry

Resistance to economic cycles

Technology life-cycle

29* What is the hierarchy of the underlying characteristics for the "Cash-Out Potential" criterion?

Liquidity of investment

Return on investment

Time to return of investment

Exit method (IPO, acquisition, trade sale)

Expected risk

Size of investment