

Venture Capital Research—Investor Preferences and Success Factors for Startups

Bangshi Zeng

The Economics Department, Maxwell School of Citizenship & Public Affairs, Syracuse University, Syracuse, New York, USA
Email: ericzeng1017@outlook.com

How to cite this paper: Zeng, B. S. (2023). Venture Capital Research—Investor Preferences and Success Factors for Startups. *Open Journal of Business and Management*, 11, 2743-2762.
<https://doi.org/10.4236/ojbm.2023.116149>

Received: August 14, 2023

Accepted: October 13, 2023

Published: October 16, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc.
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Venture capital is an important source of funding for startups in the financial markets and is also critical to the success of startups. This paper aims to explore investor preferences in venture capital and the success factors of start-ups. First, I conducted a data distribution analysis of the investment situation of some investment companies around the world during the 70 years from 1950 to 2020. Secondly, I analyze the practical application of venture capital from the two aspects of start-up entrepreneurs and venture capital investors. It includes what kind of investors should be selected for startups, and the preferences of investors when choosing investment projects. Finally, I discuss the success requirements of startups and the help of venture capital for startups and use regression models to determine the relationship between startup success and venture capital activity.

Keywords

Venture Capital, Startups, Investor Preferences

1. Introduction

Since the 1980s, the venture capital industry has grown rapidly, from an initial \$600 million a year to the current \$50 billion a year, an 80-fold increase in funding. At the same time, the expansion of VC has also attracted investors from several countries, including Europe and Asia, to join the market and form a complete business system. The venture capital industry can not only bring huge benefits to entrepreneurs, but also make great contributions to social development and economic progress (Aizenman & Kendall, 2008). For entrepreneurs, joining venture capital provides access to expertise, networks and capital. Despite the high cost and reduced ownership and control, the strategic guidance, business expertise, and access to networks and resources beyond capital that

venture capital firms bring can bring significant benefits to entrepreneurs. Not only that, the deeper impact of venture capital activity is socio-economic growth, including entrepreneurship. Venture capital enables entrepreneurs to pursue high-growth opportunities while driving innovation and job creation. When investors make leveraged buyouts and private equity investments, the performance of enterprises will improve after receiving a large amount of capital injection, which will create job opportunities for the society and improve industry concentration.

Venture capitalists are more focused on short-term gains than on long-term value creation. While access to capital and expertise is important for entrepreneurs, tensions and conflicts arise between entrepreneurs and venture capital firms when the costs of venture capital alliances begin to outweigh the benefits. In addition, after the enterprise is invested by venture capital, the founder's enterprise status will be affected to a certain extent. Although in general, the enterprise has obtained funds to expand and increase value, the involvement of VC will cause the founder to lose part of the control of the enterprise. And whether it is installment financing or milestone financing, there are a series of restrictions on entrepreneurs. Therefore, the operation model of venture capital becomes very important.

The LP and GP systems generated in venture capital activities can balance investors and entrepreneurs well. LP gains profits by injecting capital but not interfering in the operation of enterprises, usually for institutions or wealthy individuals. The GP, on the other hand, is paid to oversee the operation of the business to a certain extent. And there is also a difference in the return on investment between LP and GP, in most VC, the return of LP is slightly higher than GP. The main reason for this is that LPS with larger private equity allocation will get more favorable conditions in investment, and LP is better at collecting and processing soft information. Meanwhile, LP pays more attention to building the relationship between GP and enterprises, and obtains greater convenience in negotiation, thus improving performance. The main way for GP to make profits is to supervise the growth of the company, provide backup funds when necessary, and finally obtain profits through IPO or acquisition after realizing capital increase for the company (Bottazzi et al., 2008).

Venture capital activity also behaves differently in different countries. In developed countries such as the United States and the United Kingdom, high-tech companies are the typical "bread and butter" of the domestic venture capital community, while in developing countries and emerging market economies, many venture capital companies have lower technology content, and without capital and government help, many fields cannot develop and attract investors (Metrick & Yasuda, 2011). Moreover, investors are looking at different sectors in different ways. In the 21st century, with the advancement of technology, the high-tech industry and IT industry seem to have better prospects, so investors prefer these industries. On the other hand, venture capitalists also prefer to invest in industries in which they have extensive experience, which explains the

high concentration of investment in that industry and the “boom and bust” investment dynamics at the industry level. The root cause is the experience that venture capitalists accumulate from one investment to another, which is a function of learning by doing.

For these reasons, for the entrepreneurs of start-ups, they are more concerned about how to get the favor of investors to get investment. In previous studies, we can find that serial entrepreneurs have a higher probability of obtaining VC investment, but this does not mean that serial entrepreneurs have a higher probability of success, so there is no direct relationship between the ability to obtain funds and the success probability of enterprises, which depends on the tolerance of the market and the environment.

In order to explore investor preferences and the success factors of start-ups, that is, what factors investors will be attracted to, and what changes and efforts start-up entrepreneurs should make to have a better chance of getting investment, I will analyze from the two aspects of investors and entrepreneurs.

2. The Attitude of Start-Ups towards Venture Capital

For entrepreneurs, enterprises will face different financing needs at different stages. In the early days, entrepreneurs often rely on personal savings, friends and family, or angel investors to fund their business, and bringing in outside funding can be a great way to ease financing restrictions, allowing entrepreneurs and investors to renegotiate and negotiate prices. However, entrepreneurs cannot always rely on relationship financing. For example, when a project is stalled for a long time, relationship financing does not promise to stop at a given time. As a result, entrepreneurs will become increasingly active, information asymmetries will be weakened, and their funding sources will become more diversified, aiming to gradually reduce their dependence on relationship financing. As their companies grow, entrepreneurs become more desperate for financial support, turning to venture capitalists for help or going public through an initial public offering (IPO). Generally speaking, an enterprise from the start-up stage to success, and even after success, cannot be separated from the help of capital, so entrepreneurs are often faced with the stage of seeking investment.

When faced with financing, entrepreneurs need to choose the contracts and rules of venture capital activities, as well as the control and management of the business. In Bettignies' research on venture capital activities, the management and supervision of investors in high-growth enterprises should continue to receive attention, especially for high-growth risks, and entrepreneurial activities and risk performance should be monitored very closely (Bettignies, 2008). The reason for this is that high-growth entrepreneurs typically opt for equity contracts, while for lifestyle businesses, companies prefer debt financing. On the other hand, in high-growth venture firms, entrepreneurs should voluntarily relinquish supervisory rights as a means of promising to return profits to investors, while in debt-type contracts, entrepreneurs will always be bound by debt contracts.

VC's contract design to some extent represents the investment characteristics. Such as milestone investments or one-time capital injections, more experienced venture capital firms have greater advantages and opportunities to sit on the boards of their portfolio companies, and entrepreneurs pay less for high-quality venture capital firms. On the other hand, venture capital firms with stronger monitoring and value-added capabilities require less downside protection to incentivize entrepreneurs, and given risk sharing costs, venture capital firms may prefer to obtain weaker downside protection rather than use their bargaining power for other benefits (Bengtsson & Sensoy, 2011). Therefore, in this case, there is a negative correlation between VC capability and the use of downlink protection in the data, and VC experience and relationship networks can provide stronger value-added capabilities.

In addition to venture capital companies, the government and public policies will also provide some financial help to enterprises and play a role in corporate financing. For example, in government-funded programs, there are organizations that can provide loans or grants to start-ups. This kind of government support can help businesses through the most difficult times (Casamatta, 2003). On the other hand, public policies also provide protection for the growth of enterprises, often providing tax incentives and intellectual property protection.

2.1. Venture Capital Distribution

To study investors' investment thinking, behavior and investment preferences, in order to help start-up gain investors' favor. In R Studio, the data distribution analysis is conducted on the investment situation of some investment companies around the world during the 70 years from 1950 to 2020. The distribution results are as follows: Investment obtained in the first round, second round, third round, fourth round and after. The results of the distribution show that for start-ups, the average value of the first investment they receive is \$6.5 million. It is worth noting that the variance reached \$96.97 million. A large std means that the intensity of investor investment in different startups varies greatly. The reason for this difference can be explained by studying the investment thinking of investors. Entrepreneurs have all sorts of strange reasons and different motivations for starting a business. However, for investors in venture capital activities, they mostly adhere to one core idea: asset realization. In this case, the risk of investing in a startup is huge for investors, because it is the first financing of a startup, and it is difficult for investors to see the future value and potential benefits of the enterprise. On the other hand, there are huge differences between startups, such as whether they have achieved success (market share, whether they have repaid the start-up capital, rate of return), whether they have patents, and their future business plans. Under the influence of these factors, investors will be more cautious about the first investment in a startup, so there can be extreme situations in the investment, which may also explain why there is a huge std in the results (Table 1).

Table 1. The distribution of each round fund size.

Round_USD_million	mean	std	min	max	median
1st	6.50	96.97	0	17600.00	0.40
2nd	7.42	51.91	0	5000.00	1.50
3rd	10.14	54.66	0	3835.05	2.54
4th	13.96	66.58	0	3822.52	3.68
>4th	23.54	274.71	0	21271.94	4.71

Source: Author, 2023.

After a startup receives its first round of funding, the average amount of investment the startup receives in each subsequent round gradually increases. On average, companies will raise twice as much in their fourth round of funding as they did in their first round, reaching \$13.96 million. The dollar figures don't tell the whole story, but the number of companies that received a fourth round of funding has decreased significantly, while the average amount has increased. This result means that the amount of capital needed to support a company at the start-up stage is quite different from that required after it has achieved some success. In this case, for investors, most people will choose large-scale, large-scale investment in start-ups, less capital investment in the early stage can be exchanged for priority and more opportunities in the later stage (**Figure 1**).

It's worth noting that one interesting thing that happened in the study was that the number of funding rounds for startups was much less than the average expected number of funding rounds. The statistical distribution of the number of investment rounds received by all companies shows that companies in the middle received an average round of funding, meaning that 50% of companies are less likely to receive a second round of funding. The outline also caught my attention. Of the 66,368 startups surveyed, only 3198 received 5 or more investments (greater than 3 square standard deviations), and only 198 received more than 10 investments. The company that received the most investment was Solar-flare Communications, with 19. Outliner, on the other hand, was more interesting than most companies that received fewer than four investments, so the follow-up survey will focus on analyzing what led to this investor preference and why 198 startups received more than 10 investments (**Table 2** and **Figure 2**).

2.2. Enterprise Exit Income

The returns of venture capital funds can be judged by analyzing the cash flow of private equity. Generally, people can judge the returns of venture capital funds in three ways. The first model is the cash flow model, through divestment, return of funds to investors and capital gains; The second method is to determine, through speculation, the time required to reach the full investment with the availability of investment opportunities, competition for investment opportuni-

ties, and changes in investment costs; The last way is to measure the life cycle return of the fund, which is the internal rate of return on invested capital. In his research, Ljungqvist offers two ways to measure the success of private equity funds: the difference between a fund's IRR and its return on the public stock market. Another approach is to calculate the net present value of investments in the fund, using realized cash flow outflows and the cost of capital inflows discounted at a risk-free rate. Ljungqvist argues that for riskier private equity funds, the debt-to-income ratio that qualifies for outsized returns is higher if the debt is not risk-free. At the same time, the more money a fund raises in one year, the poorer the fund's subsequent performance (Ljungqvist & Richardson, 2003).

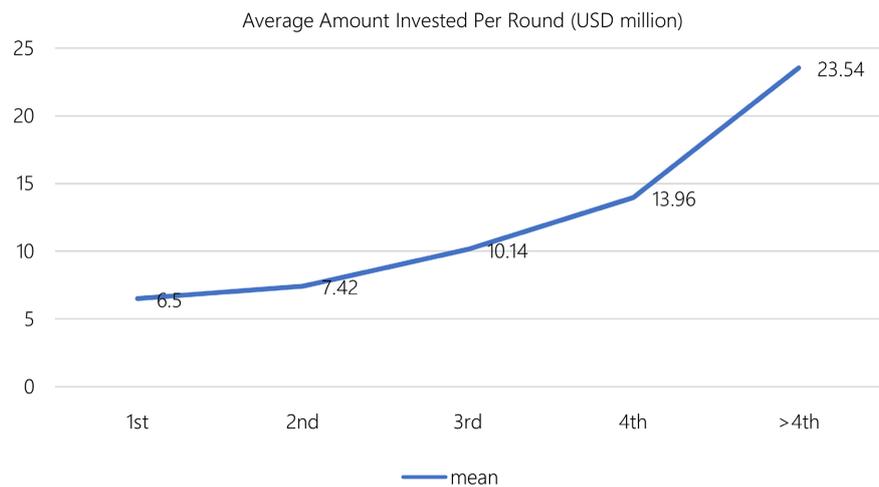


Figure 1. Average amount invested per round (USD million). Source: Author, 2023.

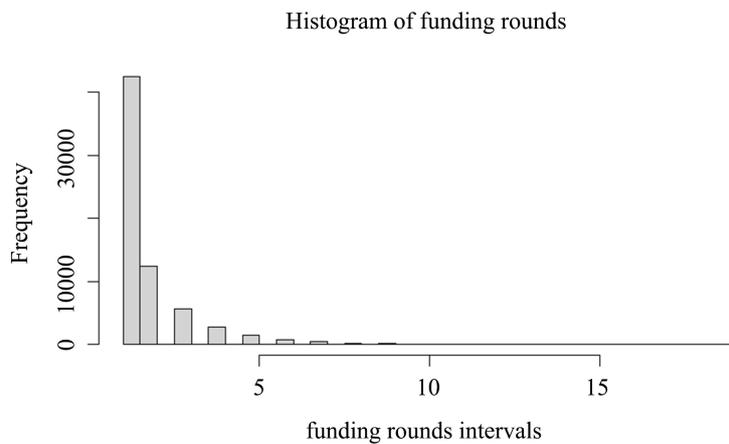


Figure 2. Number of rounds each firm raises (histogram). Source: Author, 2023.

Table 2. Number of rounds each firm raises.

	5th	25th	median	75th	95th	max
Number of rounds	1	1	1	2	4	19

Source: Author, 2023.

2.3. Leveraged Buyouts and Private Equity

Since the 1960s, leveraged buyouts and private equity have been used by investors to regulate and finance companies through a combination of equity and debt. Over time, policies in the financial markets began to change with the aim of, among other things, regulating leveraged buyout and private equity businesses and controlling socioeconomic fluctuations caused by investments. Leveraged buyouts can provide a company with capital and associated financial technology. Different types of debt, such as senior debt, mezzanine debt, and high-yield bonds, are used to obtain contracts secured by company assets. On the other hand, when investors make leveraged buyouts and private equity investments, the economic impact on society and businesses cannot be ignored. For example, after a large amount of capital injection, the performance of the company will be improved, which will create employment opportunities for the society and improve the concentration of the industry. Although it will be affected in enterprise restructuring, on the other hand, it will also promote the process of enterprise restructuring and help enterprises transform.

Leveraged buyouts and private equity can not only bring money to a company, but also help with its management and decision-making. Private equity firms typically intervene in the management of their portfolio companies, appoint new management teams, implement new strategic plans, and make operational improvements to the companies to increase the value of their investments.

There are also some differences between PE funds and VC funds. The investment liquidity of PE funds is relatively poor, and the investment objects of PE funds are mostly private companies with poor liquidity. And the longevity of private equity funds is long, which means it can take many years for private equity managers to become profitable. But such private-to-private investments tend to have high profit margins (high leverage). For private equity investors, screening companies to maximize returns is their top priority. Therefore, private equity investors pay more attention to the operation of the company and try to get on the board after the investment intervention to achieve supervision and governance.

2.4. The Impact of Exit on Enterprise Financing

The IPO listing of enterprises is not as simple as imagined, only with high financial and other compliance standards to have a listing qualification, and the positive impact of enterprise exit is undoubtedly greater. Whether it is IPO financing or refinancing after listing, it can provide a large amount of funds needed for the development of enterprises, and the cost of equity financing of listed companies is lower than other financing methods. At the same time, withdrawal can also increase the visibility of the company. Before the withdrawal of the enterprise, the venture capital institutions and investors who have invested in the enterprise have a high yield exit channel after the IPO, and some founders and executives can also obtain a lot of income through stock pledge, reduction and other ways.

In short, exit is not only a reward for investors and entrepreneurs, but also a way to attract investors.

From another point of view, the changes can be seen intuitively in the data by comparing the investment received by all enterprises and the exiting enterprises. The average number of investment rounds received by all companies was 1, and companies in the 75 percentile received 2 rounds. The average number of investment rounds received by exiting companies is more, at 2, while companies in the same 75 percentile received 3. Through the comparison of data, it can be clearly seen from the results that exit has a positive impact on the favor of investors. In other words, exit, as a future plan of enterprises, can better attract investors to invest (Table 3 and Figure 3).

3. Investor's Investment Preference

Understanding investors' preferences is crucial to the success of venture capital. The research shows that investors' risk appetite, investment experience, access to information and market environment play an important role in investors' decision making. Therefore, for startup entrepreneurs, understanding investor preferences to build a good partnership can significantly improve the probability of securing an investment.

Before studying investor preferences, we need to consider what factors affect investor preferences. Nilsen and Rovelli mentioned in their research in 2001 that the higher the investor's risk aversion, the greater the volatility of the financial market, that is, the investor's risk appetite. Nilsen and Rovelli believe that the

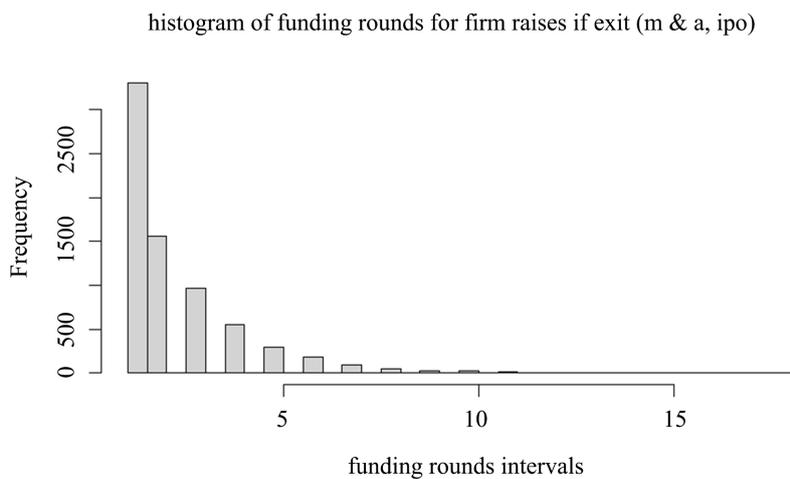


Figure 3. Number of rounds each firm raises if exit (Histogram). Source: Author, 2023.

Table 3. Number of rounds each firm raises if exit.

	5th	25th	median	75th	95th	max
Number of rounds	1	1	2	3	6	18

Source: Author, 2023.

higher the sensitivity of investors to risks, the more vulnerable the financial market is to external shocks and financial crises, which means that investors' sensitivity to risks will affect the stability and volatility of the entire market (Nilsen & Rovelli, 2001).

Investment experience also influences investors' decisions. Usually, experienced investors have greater confidence in venture capital and a better understanding of how markets and businesses work. Investors can better identify potential investment opportunities through the ability to gain experience and reduce errors in investment decisions. Reilly and Hatfield's research on investor experience well explains the importance of investment experience. After the IPO of a start-up company, investment experience will help investors choose whether to participate in the IPO activities. In previous cases, experienced investors are more inclined to participate in the IPO because they can better understand the characteristics, investment opportunities and risks of the IPO, and can better evaluate its potential return (Reilly & Hatfield, 1969). For less experienced investors, they may be more susceptible to market sentiment and short-term fluctuations, resulting in missed investment opportunities or misjudgments.

3.1. Industry Factor

In the study of "Investors' industry preference in equity crowdfunding" by Johan and Zhang, they found that industry characteristics have a significant impact on investors' preference. Investors are more likely to choose sectors with high growth potential and technological innovation, such as technology, biotechnology and renewable energy. These industries are generally considered to have high return potential and innovation opportunities (Johan & Zhang, 2022). Risk level is one of the important factors for investors to choose industries, and investors are usually more inclined to invest in low-risk industries. On the other hand, investors with more experience can rely on their own knowledge level and investment history to identify potential investment opportunities and risks, which also enables them to show more clear industry preferences.

In order to study the industry preferences of investors, we selected data on 66,368 start-ups that received investment worldwide between 1950 and 2020. First, from the perspective of the amount of venture capital received, 66,368 startups were classified by industry, and then the top ten industries received the most investment were calculated. The results show that the Biotechnology industry received the largest amount of investment during the 70 years, accounting for 8.5841 percent of the total amount of investment, far more than other industries, and nearly 5 percentage points more than the second-ranked Clean Technology industry. In other industries, the more prominent is all kinds of software and hardware industries, including Information Technology, Mobile and other communication transmission industries (Table 4).

On the other hand, analyze the data from another Angle, ranking the industries by the amount of investment received. Of the 66,368 funded startups, star-

tups in the Software industry received the highest number of investments at 3995; Biotechnology, which received the most investment, was close behind, with 3615 investments; The Clean Technology sector, which received the second largest amount of investment, received only 1133 investments during the 70 years. In other areas of note, the Semiconductors industry also received 3148 investments, far ahead of other industries, and in the overall data distribution of Software, Biotechnology, Semiconductors in the position of outlier. The amount of investment received was more than twice that of the other top 10 industries (Table 5).

Through these data, we can see that investor preference exists and is evident in venture capital activities. The three industries of Software, Biotechnology and Semiconductors are in a period of rapid development from 1950 to 2020, and their rapid development momentum and broad development space have attracted a large number of investors to invest. Based on the above research, the results again confirm the findings of Johan and Zhang, and investors are more inclined to choose industries with high growth potential and technological innovation, such as technology, biotechnology and renewable energy. On the other hand, the phenomenon of high investment amount and low investment quantity shown in the data of Clean Technology industry is also in line with investors' investment thinking. In the case of relatively more investment, investment risk will increase, and investment risk will directly affect investors' investment decisions. Investors often need to consider the balance between risk and return. Although high risk is often accompanied by the opportunity of high return, it is also accompanied by a greater possibility of loss. Therefore, investor experience has become an important factor affecting investor preferences.

Table 4. Top 10 industries for investors (summarizing by fraction of dollars).

Industry	Fraction_percentage
Biotechnology	8.5841
Clean Technology	3.7152
Software	3.5519
Communications Infrastructure Information Technology Mobile	3.0381
Semiconductors	3.0255
E-Commerce	2.5958
Health Care	2.1445
Mobile	1.5996
Enterprise Software	1.5509
Biotechnology Health Care	1.3052

Source: Author, 2023.

Table 5. Top 10 Industries for Investors (summarizing by numbers).

Industry	Fraction_percentage
Software	3995
Biotechnology	3615
Semiconductors	3148
E-Commerce	1332
Mobile	1177
Clean Technology	1133
Curated Web	1050
Hardware + Software	932
Health Care	930
Games	862

Source: Author, 2023.

3.2. Geographical Location Factor

Geographical factors also play an important role in venture capital, with regions influencing the distribution of investment activity, the availability of capital, and the overall success of the business to some extent. Based on previous research, businesses that are closer to venture capital hubs, such as Silicon Valley in the United States, have easier access to investment, which can significantly affect the availability of funding. The reason for this is that these centers are often home to venture capitalists, angel investors, and successful entrepreneurs, in which case nearby startups have easier access to capital and expertise.

Infrastructure and resources as geographical factors also affect venture capital activities. Infrastructure can be understood as having convenient and fast transport networks, modern communication technologies and a supportive business environment, all of which contribute to the promotion of entrepreneurial and venture capital activities. Resources represent human resources. Regions with excellent universities and research institutions usually gather many experts and outstanding graduates. In such regions, enterprises can obtain more excellent human resources, and startups with many talents will naturally be favored by venture capital.

The role of social factors in venture capital cannot be ignored. For example, the size and growth potential of a local market can influence venture capital decisions. Niche markets with a large consumer base or significant growth prospects are often more attractive, allowing start-ups to scale operations and generate returns for investors. Local laws, regulations and economic policies have a direct impact on business development and investor returns. Different regions usually have different local government policies, regulations and tax incentives, favorable policies can attract more start-up entrepreneurs and venture capital-

ists, and sound laws and regulations can help enterprises grow smoothly.

Ferrary and Granovetter, in their article on the regional factors of venture capital firms, illustrate the important role that venture capital firms play in Silicon Valley's innovation network. As an information intermediary and resource provider, venture capital firms play an active role in promoting the formation and development of innovation networks (Ferrary & Granovetter, 2009). Therefore, we used data from 66,368 start-ups funded worldwide between 1950 and 2020 to study the regional factors in venture capital investment. First, from the perspective of the amount of venture capital received, 66,368 startups were categorized by region, and then the top ten industries received the most investment were calculated. The results showed that startups in the SF Bay Area received a staggering 19.8387% of the total amount of investment, far exceeding other industries and more than 10 percentage points more than New York City, which ranked second. The rest of the region was flat, with only Boston receiving more than 5% of the total (Table 6).

On the other hand, analyze the data from another Angle, ranking each region by the amount of investment received. Of the 66,368 funded startups, SF Bay Area startups still received the most investments at 8804, far ahead of New York City in second place. Meanwhile, while Boston and London have received more than 2000 investments, New York City and New York City combined don't even come close to the SF Bay Area (Table 7).

By analyzing the results of the regional data, it is not difficult to find that compared with startups in other regions, SF Bay Area is more favored by investors. For obvious reasons, Silicon Valley, the kingdom of the world's electronics industry and computer industry, is located in the SF Bay Area. Silicon Valley is famous for the research and production of silicon-based semiconductor chips,

Table 6. Top 10 geographic locations for investors (summarizing by fraction of dollars).

Region	Fraction_percentage
SF Bay Area	19.8387
New York City	7.9233
	7.7592
Boston	5.6382
Austin	2.9691
Los Angeles	2.6773
Beijing	2.5831
Seattle	2.4075
London	2.2564
San Diego	1.8851

Source: Author, 2023.

Table 7. Top 10 geographic locations for investors (summarizing by numbers).

Region	Fraction_percentage
SF Bay Area	8804
	8083
New York City	3528
Boston	2378
London	2345
Los Angeles	1877
Seattle	1207
Washington DC	1035
Chicago	980
San Diego	899

Source: Author, 2023.

and as a high-tech area mainly focused on computers and covering other fields, numerous companies, investors, and developers gather (Castilla, 2003). Florida and Kenney also use Silicon Valley as an example in their research on venture capital and regional development to explore the relationship between venture capital, high-tech industry and regional development. Florida and Kenney found that venture capital played a key role in promoting high-tech industry and regional development, while also attracting more investors (Florida & Kenney, 1988).

The results also confirm once again the role of geography in venture capital. For start-ups, venture capital not only provides capital and resources for entrepreneurs, but also helps them achieve rapid growth and innovation. Especially in high-tech areas with frequent venture capital activities, such as Silicon Valley, the concentration of high-tech industries can promote the transformation and growth of regional economy. For investors, they have the opportunity to focus on high-tech industries and regions with potential and look for investment opportunities from them.

4. Venture Capital Firms

Before we can understand how venture capital firms help startups, we need to analyze how venture capital works. Unlike other financial instruments, the financial markets involved in venture capital are characterized by strong relationships and networks rather than fair spot market transactions. Networks play a very important role in the venture capital industry. When investing, venture capital firms tend to partner with another venture capital firm rather than invest alone. At this point, VC firms with strong networks begin to show an advantage, and a successful investment track record will improve VC firms' network posi-

tion. On the other hand, venture capital with stronger network and industry status tends to have a better relationship, leading other venture capital in terms of influence, investment opportunities, information access, etc., which directly affects investment performance. At the same time, the probability of investment success will bring VC more ideal partners, such as high-yield IPO, will also increase VC's network position.

4.1. The Choice of Venture Capital Leaders

Leading venture capital firms such as The Blackstone Group, Alibaba, Google, Intel, Tencent Holding and Time Warner have all shown an Internet bias in venture capital. Whether it is E-Commerce or Internet, Mobile startups have received strong support from these investment firms. On the contrary, the development of Alibaba from a start-up to the current status of an Internet business giant cannot be separated from the support of capital. In September 2012, Alibaba, still in its early stage of establishment, received 5 investments of 2 billion US dollars from different investment companies, totaling 10 billion US dollars. The five investments came from Boyu Capital, CICC, CITIC Capital Holdings, Glade Brook Capital Partners and Primavera Capital Group. When we observe the investment history of these investment companies, we find that these investors are more willing to invest in enterprises in the same industry or other industries with industry connections. For example, most of the investments in Alibaba are for E-Commerce startups. The Blackstone Group, on the other hand, prefers to invest in software, semiconductors or high-tech companies. This finding is crucial for start-ups seeking investment, which can be funded by industry leaders in the same industry when seeking funding in the capital market. In this case, not only is the probability of obtaining investment higher, but also more industry channels can be obtained from investors after obtaining investment, which is more conducive to the success of start-ups.

4.2. Network of Venture Capital Firms

Yael Hochberg established the investment model of VC portfolio companies when studying VC network status and studied the investment performance under this model (Hochberg et al., 2007). Hochberg found that a VC's network centrality has a significant positive effect on the probability of a portfolio company surviving to the next round of funding or a successful exit. The economic impact is huge. On the other hand, network centrality can also bring a lot of transaction traffic for VC, and provide better value-added services for the companies they invest in. After controlling for fund characteristics, deal flow competition, investment opportunities, and parent experience, the model concludes that network centrality of venture capital firms can improve fund performance to some extent, and the importance of network centrality can be explained in reverse when there is evidence of sustained performance. At the same time, network centrality can bring positive influence and transaction control to ven-

ture capital. In cases where the VC itself is not a well-funded syndicate, portfolio companies can also get money from venture capital firms with good networks to make portfolio investments.

4.3. Assistance from Venture Capital Firms

Venture capitalists have several tools at their disposal in investing. For example, they can use convertible securities to reduce the risk of investing in start-ups, convertible bonds or preferred shares to manage investment risk and increase the likelihood of a successful exit. Optimal contracts, on the other hand, give venture capitalists more cash flow rights in an acquisition than in an IPO. The use of convertible securities not only provides some benefits to venture capitalists and reduces risk, but also allows investors to participate in the upside potential of start-ups. Convertible bonds help ease conflicts between investors and start-ups, such as some of the challenges that arise in initial public offerings (IPO), such as uncertainty over pricing and the possibility of insufficient demand.

5. Regression Model

In order to further study the impact of venture capital on the success and survival time of start-ups, I established a regression model to study enterprise differences. The relevant variables are defined as shown in **Table 8** below.

Regression Result Analysis

A regression model is built in R Studio to analyze the factors that may affect the success of a startup, such as the region where the startup is located, the number of funding rounds it has received, and the type of funding it has received. In the model, I set the startup status of “operating”, “ipo”, “acquired” as 1, and the startup status of “closed” as 0.

The results of the first linear regression are as follows (**Table 9**).

Through the first linear regression of the characteristics of venture capital, I'm going to filter out the above non-significant variables *venture*, *debt_financing*, *grant*, *angel*, *post_ipo_equity*, *convertible_bond*, *post_ipo_debt*, *secondary_market*. R-Square and F-stat were obtained by re-performing linear regression (**Tables 10-12**).

After the second linear regression, I built this formula to measure startup success versus venture capital factors:

$$\begin{aligned} \text{status} = & 0.8657145 + 0.0177023 * \text{funding_rounds} + 0.005583 * \text{seed} \\ & + 0.0059 * \text{undisclosed} + 0.0029254 * \text{private_equity} \\ & - 0.030018 * \text{equity_crowdfunding} \end{aligned}$$

At the same time, R-squared value in the second linear regression is 0.013, which is relatively low, indicating that simple linear regression model cannot give a good explanation of data variance. On the other hand, F-stat value is 94.73

and P -value is much lower than 0.05, indicating that the model's interpretation of data is significant.

Table 8. Regression model variable.

Variable type	Variable name	Variable definition	Variable symbol
Independent variable	Start-ups funding rounds	The sum of all rounds of financing received by the enterprise	funding_rounds
	Start-ups seed funding	The number of seed rounds funding received by the enterprise	seed
	Start-ups private financing	The number of private (directed) financing received by the enterprise	undisclosed
	Start-ups venture capital financing	The number of venture capital financing received by the enterprise	venture
	Start-ups borrow from banks	The number of times the enterprise borrows from a bank	debt_financing
	Start-ups government funding	The number of government funding received by the enterprise	grant
	Start-ups angel round financing	The number of angel rounds funding received by the enterprise	angel
	Start-ups private equity financing	The number of private equity financing received by the enterprise	private_equity
	Convertible bond	Whether the enterprise uses convertible bond	convertible_bond
	Equity financing after listing	The number of raised equity funds after listing	post_ipo_equity
	Debt financing after listing	The number of raised debts after listing	post_ipo_debt
	Start-ups equity crowdfunding	The number of equity crowdfunding received by the enterprise	equity_crowdfunding
	Start-ups secondary market financing	The number of secondary market financing received by the enterprise	secondary_market
Dependent variable	Start-up success	Start-up status	status

Source: Author, 2023.

Table 9. Regression result (I).

	Estimate	Std. Error	Z value	Pr (> t)
(Intercept)	1.575519	0.035653	44.190	<2e-16***
funding_rounds	0.353895	0.022304	15.867	<2e-16***
seed	0.122854	0.013904	8.836	<2e-16***
undisclosed	0.165209	0.072070	2.292	0.02189*
venture	-0.009181	0.006629	-1.385	0.16607
debt_financing	0.074462	0.068601	1.085	0.27773
grant	-0.021194	0.092631	-0.229	0.81903
angel	-0.031504	0.019322	-1.630	0.10301
private_equity	0.174644	0.065574	2.663	0.00774**
convertible_bond	-0.014890	0.048454	-0.307	0.75862
post_ipo_equity	-0.191970	0.112860	-1.701	0.08895
post_ipo_debt	0.993058	0.909620	1.092	0.27495
equity_crowdfunding	-0.310436	0.117628	-2.639	0.00831**
secondary_market	0.253516	0.669231	0.379	0.70482

Signif. codes: 0 “***” 0.001 “**” 0.01 “*” 0.05 “.”. Source: Author, 2023.

Table 10. Regression result (II).

Residuals				
Min	1Q	Median	3Q	Max
-1.11355	0.06348	0.09888	0.11366	0.25590

Table 11. Regression result (III).

	Estimate	Std. Error	t value	Pr (> t)
(Intercept)	0.8657145	0.0025472	339.863	<2e-16***
funding_rounds	0.0177023	0.0009573	18.492	<2e-16***
seed	0.0055830	0.0006190	9.019	<2e-16***
undisclosed	0.0059000	0.0033649	1.753	0.0795.
private_equity	0.0029254	0.0023171	1.262	0.2068
equity_crowdfunding	-0.0300180	0.0119116	-2.520	0.0117*

Signif. codes: 0 “***” 0.001 “**” 0.01 “*” 0.05 “.”. Source: Author, 2023.

Table 12. Regression result (IV).

Residual standard error	0.2863 on 35621 degrees of freedom
Multiple R-squared	0.01312

Continued

Adjusted R-squared	0.01298
F-statistic	94.73 on 5 and 35621 degrees of freedom
<i>P</i> -value	2.2e-16

Source: Author, 2023.

According to the significance results shown in model 2, the number of seed rounds (seed), the number of private equity rounds (private_equity), and the number of non-public (directional) rounds (undisclosed) have an obvious positive correlation with the survival of a company. That is, companies with more rounds of such financing are more likely to extend their survival. Based on this result, the results can be analyzed, and the more funding_rounds, the stronger the company's survival ability, and the above regression results show that the impact coefficient of financing rounds on the company's survival ability reaches 0.34. At the same time, equity_crowdfunding has an obvious negative correlation with the company's survival ability, with the coefficient reaching -0.30. The results may reflect the reality that when a company's survival is in trouble, it will have to turn to crowdfunding to solve its funding crisis.

6. Conclusion

Based on the data of 66,368 funded startups from 1950 to 2020, this paper deeply studies the impact of investors' industry preference, regional preference and venture capital on the success of startups, and the results are general. Key findings are as follows:

First, investor preferences are evident in venture capital activities. High-tech sectors such as Software, Biotechnology and Semiconductors were more popular. Other sectors with high growth potential and technological innovation, such as technology, biotechnology and renewable energy, are also on investors' radar.

Second, by analyzing regional data, startups located in the SF Bay Area are more likely to receive investment. This is because the geographical factor is also a key factor in venture capital, high-tech areas gather countless investors and entrepreneurs, high-tech industries gather to promote the regional economy at the same time, but also attract people from other regions, in this case, investors will pay attention to high-tech industries and potential areas and find investment opportunities.

Thirdly, through the conclusion of regression model, we can learn that startups should constantly seek seed round financing, private equity financing and private financing in the early stage of entrepreneurship. These three types of startups with more financing times have a relatively long survival time, while those with more equity crowdfunding times have a shorter survival time, which is a warning for entrepreneurs. If a startup starts to seek equity crowdfunding, the company is likely to be on the verge of bankruptcy, and entrepreneurs need

to make timely internal and external adjustments.

The research in this paper is universal. In venture capital activities, entrepreneurs and start-up entrepreneurs are two-way choices. For startup entrepreneurs, seeking venture capital is necessary for startup entrepreneurs. As the special shareholders of start-ups, venture investors are conducive to the improvement and improvement of enterprise performance. The intervention of venture capital can not only bring a large amount of capital support, but also carry out the supervision of management and operation, provide many opportunities and channels, and enhance the status of the industry. When start-up entrepreneurs seek venture capital, they should first consider engaging in or have a history of investment in the same industry or related industry venture capital, such venture capital is more conducive to the success of the start-up. For investors, when investing should consider a variety of factors, such as the industry of the start-up, the geographical location, and whether the founder has industry experience or entrepreneurial experience is also a very important factor, entrepreneurs with entrepreneurial experience know how to avoid risks and have a more accurate strategic vision, compared with entrepreneurs without entrepreneurial experience more opportunities to succeed. In addition, venture capital is not a one-time investment, investors who are actively involved in business activities have higher returns, and start-ups have a better chance of success. In this case, investors can not only bring financial support to the start-up, but also contribute to the supervision of the development of the enterprise and put forward the strategic opinions of the enterprise.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- Aizenman, J., & Kendall, J. (2008). *The Internationalization of Venture Capital and Private Equity (No. w14344)*. National Bureau of Economic Research.
<https://doi.org/10.3386/w14344>
- Bengtsson, O., & Sensoy, B. A. (2011). Investor Abilities and Financial Contracting: Evidence from Venture Capital. *Journal of Financial Intermediation*, 20, 477-502.
<https://doi.org/10.1016/j.jfi.2011.02.001>
- Bottazzi, L., Da Rin, M., & Hellmann, T. (2008). Who Are the Active Investors? Evidence from Venture Capital. *Journal of Financial Economics*, 89, 488-512.
<https://doi.org/10.1016/j.jfineco.2007.09.003>
- Casamatta, C. (2003). Financing and Advising: Optimal Financial Contracts with Venture Capitalists. *The Journal of Finance*, 58, 2059-2085.
<https://doi.org/10.1111/1540-6261.00597>
- Castilla, E. J. (2003). Networks of Venture Capital Firms in Silicon Valley. *International Journal of Technology Management*, 25, 113-135.
<https://doi.org/10.1504/IJTM.2003.003093>

- De Bettignies, J. E. (2008). Financing the Entrepreneurial Venture. *Management Science*, 54, 151-166. <https://doi.org/10.1287/mnsc.1070.0759>
- Ferrary, M., & Granovetter, M. (2009). The Role of Venture Capital Firms in Silicon Valley's Complex Innovation Network. *Economy and Society*, 38, 326-359. <https://doi.org/10.1080/03085140902786827>
- Florida, R. L., & Kenney, M. (1988). Venture Capital, High Technology and Regional Development. *Regional Studies*, 22, 33-48. <https://doi.org/10.1080/00343408812331344750>
- Hochberg, Y. V., Ljungqvist, A., & Lu, Y. (2007). Whom You Know Matters: Venture Capital Networks and Investment Performance. *The Journal of Finance*, 62, 251-301. <https://doi.org/10.1111/j.1540-6261.2007.01207.x>
- Johan, S., & Zhang, Y. (2022). Investors' Industry Preference in Equity Crowdfunding. *The Journal of Technology Transfer*, 47, 1737-1765. <https://doi.org/10.1007/s10961-021-09897-8>
- Ljungqvist, A., & Richardson, M. P. (2003). *The Cash Flow, Return and Risk Characteristics of Private Equity*. <https://doi.org/10.3386/w9454>
- Metrick, A., & Yasuda, A. (2011). Venture Capital and Other Private Equity: A Survey. *European Financial Management*, 17, 619-654. <https://doi.org/10.1111/j.1468-036X.2011.00606.x>
- Nilsen, J. H., & Rovelli, R. (2001). Investor Risk Aversion and Financial Fragility in Emerging Economies. *Journal of International Financial Markets, Institutions and Money*, 11, 443-474. [https://doi.org/10.1016/S1042-4431\(01\)00045-2](https://doi.org/10.1016/S1042-4431(01)00045-2)
- Reilly, F. K., & Hatfield, K. (1969). Investor Experience with New Stock Issues. *Financial Analysts Journal*, 25, 73-80. <https://doi.org/10.2469/faj.v25.n5.73>