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Exploring Financial Principles of Venture Capital & the Finance of Innovation

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This thesis is a product-based study, and its main objective is to research about significant elements and components regarding venture capital as well as finance of innovation, in which the element playing a key role is Research and Development (R&D).

In recent decades, venture capital has emerged as a spectacular phenomenon with the appearance of many potential start-ups along with the development of advanced technologies that allow investors to easily approach and execute business deals with the entrepreneurs in order to create profits for themselves. Venture capitalists (abbreviated as VCs) are a special kind of investors who are willing to take more risk of loss, but also higher rate of return by investing in start-ups companies. Before funding a business, VCs usually base on their own list of investment criteria along with their subjective opinions about the future development of the enterprises. Besides, it is also significantly vital for the VCs to take a special concern about corporate finance challenges in the organization. The main reason stands behind this is the necessity for estimating cost of venture capital, which stands a precise rate of return required by venture capitalists when performing joint-venture with the start-up businesses.

The second concern discussed is the importance of R&D to innovation in business organizations, especially start-up companies. It is possible to argue that R&D is the most powerful tool for small and medium-sized enterprises (SMEs) to compete against other big corporations in the same market, since it supports the entrepreneurs in the process of integrating new ideas and concepts that are critical for the innovation. Historically, governments around the globe has always encouraged the enterprises to focus more on R&D spending due to its significant impact on the economic growth, and this tendency seemed to relentlessly increase until the post-period of the 2008 financial crisis when plenty of business organizations started to switch from R&D innovation to share buybacks funding with the purpose of looking more attractive to investors.

Keywords	Venture Capitalists, Entrepreneurs, Innovation, R&D

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1 Introduction

1.1 The concept of venture capitalist

Venture capitalists are investors who provide capital for start-up ventures or support small businesses demanding to expand the range of operation. In some circumstances, the venture capitalist might be referred as angel investors, or just simply angels. From the perspectives of the angels, they are willing to invest in such companies due to the fact that they can earn a major return if these companies become successful or experience a massive loss when the companies fail. Therefore, interest rate of return for investing in start-up is typically higher than other types of investments such as stock market, and the companies chosen are usually promising entrepreneurs or young businesses that have a high potential for growth but are also high risk (Ward 2011). Generally, all venture capitalists have perceived that high risk must be justified by the chance of high reward, and they have always kept in mind that most of their investments will fail due to plenty of causes. Thus, in order to become successful, VCs really desire big winners that cover the costs of other failures and still allow the VC investors to make an acceptable return on investment (ROI) overall (Keaney 2019).

1.2 The rise of venture capital

After some positive changes in the Employee Retirement Income Security Act of 1974 (ERISA) in the early 80s of the 20th century in the United States, venture capital has emerged as a phenomenon, when this amendment allowed U.S. citizens to allocate a great amount of capital up to 10% to high-risk assets including venture capital. Before that, this act apparently prevented people to invest their money into venture funds (Gompers 2001). After 1979, venture capital became more popular and hit the highest point at the ends of 90s with the boom of dot-com bubble, which absolute played a significant role in the economic growth of United States. In addition, some private equity funds also seized the opportunity to venture with potential start-ups during this flourishing period. Dates back to the time after the Second World War, when the country of United States along with Soviet Union emerged and became the superpowers of the world by providing and selling weapons and heavy arms to allied countries in the war against the axis leaders. One of the most eminent figures in this period, who can be seen as the man laying down the foundations for venture capital in the U.S was General Georges F. Doriot. In 1946, he founded American Research and Development Corporation (ARDC), which is well-known as the globe's first true venture capital firm (Metrick 2007: 10). Many researchers claimed that different from other modern funds operating at the same time, the structure of the organization was designed for the purpose of publicly trading and make it easier for various types of investors to approach. According to the statistical data provided by Fenn, Liang and Prowse in 1998, the annualized rate of return of the investors joining the organization was 15.8 percent. Besides, the most successful investment of ARDC was the $70.000 investment in Digital Equipment Company in 1957, which grew in value to more than $355 million in latter periods after its initial public offering in 1968. After 25 years of operation, General Doriot decided to retire and subsequently merged ARDC with Textron in 1972 after having plenty of investments in over 150 companies (Gompers & Lerner 2001).

Generally, it could be argued that General George F. Doriot was one of the pioneers in the movement of venture capital during the period of drastic growth of the U.S economy after the Second World War, and his firm: American Research and Development Corporation could be seen as the origin model of modern venture capital, and based on this foundation, many formers employees of ARDC have continued to establish several prominent venture capital firms that are famous worldwide such as: Greylock Partners (founded by Bill Elfers and Dan Gregory in 1965 with the amount of committed capital up $3.5 billion under management) or Morgan Holland Ventures founded in 1982 by James Morgan, which is well-known as Flagship Pioneering nowadays (Kirsner 2008).

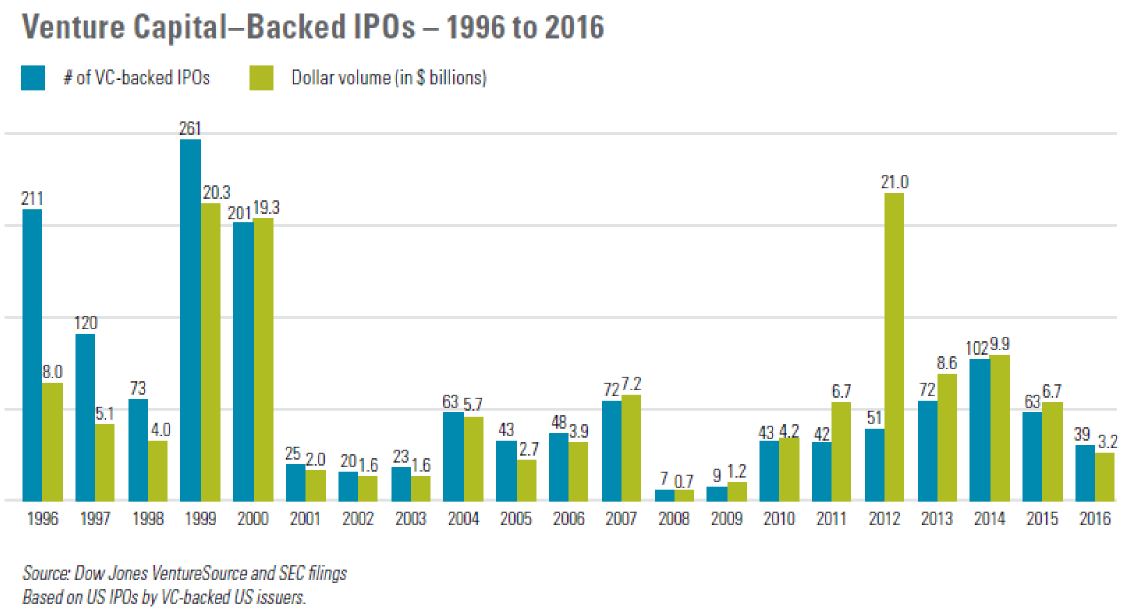

Figure 1. Number of IPOs Backed by Venture Capitalists & Their Dollar Volume from 1996 to 2016.

As can be seen above, the most noticeable point in figure 1 is the significant drop in number of Initial Public Offering (IPO) invested by venture capitalists in the beginning of the 21st century. There were only twenty-five investments conducted by the VCs, resulting in an extremely low volume of dollars invested. Since 2001, there had not been many critical increments in comparison to the impressive data recorded in the previous decades. In 2019, professor Michael Keaney from Metropolia Business School pointed out the two main reasons led to the plunge in the amount of venture capital investment in the country of United States, they are the dot-com bubble and the event of terrorist attacks on 11 September 2001.

Theoretically, the dot-com bubble was defined as the U.S. stock market bust initially caused by an excessive speculation of shares issued by growing internet companies of which domain name is dot.com in the 1990s. According the statistical data recorded, between 1995 and 2000, the Nasdaq Composite stock market index soared up to 400% and its P/E ratio reached 200, this number was considered to be far beyond the index 80 of Nikkei 225 during the period of Japan's real estate bubble in 1991. Therefore, it came as no surprise when investors nearly spent all of their money into internet start-ups with the hope that those companies would be extremely profitable in the future. In fact, even though almost internet business organizations at that time were considered to be lack of assets and technology, many of them were overvalued in the stock market in the beginning. Subsequently, investors who believed in some ambiguous predictions about the future of IT industry, continued to pour a large amount of capital into dot-com companies without a precise statement of history of returns. The bubble continued to expand until 2001 when a huge number of internet companies started announcing about their deficits in profit. Consequently, investors had to quickly converted their investment capital to other financial instruments, leading to the situation of sell-off along with a significant drop in stock prices. As a result, several internet companies went bankruptcy and many investors were facing steep losses, reflecting a slight economic recession in the U.S and some other countries (Hằng Hà 2019). As a result, the venture capitalists have always kept a sceptical attitude that internet companies that never seemed to make a profit. It is clear that the quantity of VCs who are interested in backing IPOs in recent years is not really impressive in comparison to the last decade.

The second factor effecting the dwindle in quantity of venture capital investment during this period is the attacks caused by the infamous terrorist group Al-Qaeda against the United States on the morning of Tuesday, 11th September, 2001. The incident occurred at New York city when two aircrafts which was previously hijacked by terrorists, crashed into two tower buildings and made them entirely collapsed after one hour and forty-two minutes (Huiskes 2019). It is undoubted that the destruction of the biggest financial centre of the world really had a significant impact on the economy of the U.S. and some other countries. As a result, during this period, many investors were sharing the same fear of the very real risk of war and terrorism following this event. The appetite for investor risk had always been constrained until the leader of Al-Qaeda, Osama bin Laden was killed on 2nd May 2011 by the U.S. military force. In the latter periods, there was a positive transformation in the desire for risky investment from the side of venture capitalists when the amount of dollar invested in 2012 was recorded as the highest despite the fact that the number of IPOs backed at the same moment was solely 51. From a general perspective, with the development of advanced technology and the appearance of many outstanding entrepreneurs, venture capital has become much easier to approach to various kinds of investors. Nevertheless, the success of these start-ups still needs dedicated guidance from the VCs and it is undoubted that the financial targets and achievements that the businesses reach in the future will contribute greatly to the economic growth of the United States.

2 Venture Capital Investment Process

The process of venture capital can be divided into three main activities: investing, monitoring and exiting (Metrick 2007: 9). Investing phase begins with VCs prospecting for new opportunities and does not end until when a contract between both parties has been signed. During this first-stage, the entrepreneurs and the angels start to initiate contact and discuss with each other about the terms of investment. Besides, the investors also reasonably give a quick evaluation of whether the venture is a worthwhile investment (Meglio, Li Destri & Capasso 2017). Once an investment is made, the venture capitalists is primarily engaged in monitoring the company's performance through various kinds activities such as: board meetings, networking, regular advices, and strategic feedbacks. In fact, many venture capitalists believe these activities provide the best opportunity for them to add value and they are also the main source of comparative advantage for a successful venture capital. Nevertheless, Metrick (2007: 10) argues that this argument may indeed be correct, but monitoring activities do not lend themselves well to quantitative analysis. Finally, the investment process ends with the exit phase, which enables the VCs to convert their non-liquid equity positions into cash or publicly traded stock. Besides, they are also able to sell their stake to other investors in the venture capital secondary market, and the substitution of the investors could be seen as a result of the successful growth of the invested company which requires new partners with different capabilities and larger financial resources (Meglio et al. 2017).

2.1 Fundraising

The first stage of the VC investment process is fundraising or sourcing. Basically, there are plenty of ways for the venture capitalists to seek for some potential investment opportunities. The deal flow can often come directly from the entrepreneurs, referrals from trusted sources, or from participating in networking events providing information and knowledge of potential entrepreneurs (Aukland 2011). Consequently, if the first impressions are positive, both parties will move to the "screening" process. Besides, in the article written by Hall & Hofer (1993), they also suggested that VCs also need to keep track on market conditions when conducting the deal with the entrepreneurs. To be more specific, the venture capitalists will try to analyse the deal in various aspects such as: sector of industry, geographic location or the amount of capital needed. After gathering all necessary information, the following step is “due diligence”, which is considered as the most consuming phase since it involves a variety of knowledge related to customer references, product and business strategy evaluation, management capabilities, and other relevant information. The last phase in establishing a business relationship between the entrepreneurs and the investors is the term sheet, which is a non-binding document clearly figuring the basic terms and specific conditions of the investment agreement. Generally, the term sheet is negotiable and must be agreed upon by all parties, thereby the funds will be available to be invested (EduPristine 2017). Nevertheless, if any term or condition discussed is not satisfactorily resolved, the deal can be still cancelled.

2.2 Monitoring and value adding activities

Generally, monitoring and value adding activities are aimed to reduce the uncertainty and asymmetric information associated with a venture capitalist – entrepreneur relationship. For instance, if the young firm tried to raise equity from outside investors, the managers would have an incentive to involve in secretly wasteful expenditures as they might be disproportionately beneficial from those but do not have to bear the entire cost. Likewise, if the firms raised debt, the managers would possibly increase the risk to an undesirable degree (Jensen & Meckling 1976). Therefore, it is undoubted that the role of VCs in monitoring and advising the entrepreneurs to operate and develop on the right path is essentially vital, since it includes various supporting key decisions and helpful guidelines with respect to the strategic orientation, efficient operating processes as well as resource allocations (Cumming 2010). Moreover, venture capitalists also perform a significantly reputational role in the extension of the entrepreneur’s network by attracting and persuading more potential stakeholders to become involved in the venture. As Megginson and Weiss (1991) claimed in their journal article, they pointed out that reputational advantages are of paramount importance during the process of initial public offerings, when venture capital backing signals the quality of the offers to the potential investors.

2.3 Exiting venture capital investment

The venture capitalists usually give the decision of exiting from financing the young firms from three to seven years since the initial funding. In general, VC is an illiquid market, therefore, in order to make profit on their investments, it is necessary for venture capitalists to turn the illiquid stakes into realized return (Gompers & Lerner 2001).

As previously mentioned, there are two possible options for exit: the investments might either go publicly or be privately sold in the venture capital secondary market. Each of these possibilities has both pros and cons depending on specific market conditions and the VC's preferences. Typically, the most profitable exit opportunity is an initial public offering (IPO). Some benefits that could be mentioned are not only can it increase the investment's liquidity but other significant information about the entrepreneurs also become more accessible to the new generation of venture capitalists. However, one disadvantage of IPO is the transaction costs. To be more specific, a public offering can be extremely expensive due to the large amount of underwriting fees that might reflect a lower market value of the investment in comparison to what the VC firm could obtain from a trade sale (Hunsaker 2017). In the second scenario, by selling the shares to other investors, the initial VCs will be able to receive immediately the cash returns, and the investment can have a strategic value for a buyer which potentially result in higher exit price in the latter periods. Nonetheless, one of the drawbacks of this exit strategy is the fluctuation of the investment value over time reflecting the risk degree of the investment. Besides, another disadvantage is the issue of trust which possibly arise when there were two private parties involved in a deal without a third party endorsing the trading information (Aukland 2011).

3 Venture Capital Investment Criteria

Basically, investment criteria usually fall into five categories: the personality of the entrepreneurs, their own experience as well as qualifications, types of product and service which they are providing, business market and financial considerations. Generally, the vast majority of venture investors will have the tendency to concentrate more on the characteristics of the entrepreneurs and they usually put this factor at the top priority of their tier list during the phase of understanding the start-ups. Nevertheless, in some certain circumstances, some VCs are likely to prefer other investment criteria in judging and making the final decision of collaborating with the businesses. On the other side, it is also significantly vital for the entrepreneurs to be familiar with these criteria and different requirements from the side of the investors in order to adjust their business plans and propose more competitive strategies during the period of partnering with the venture capitalists.

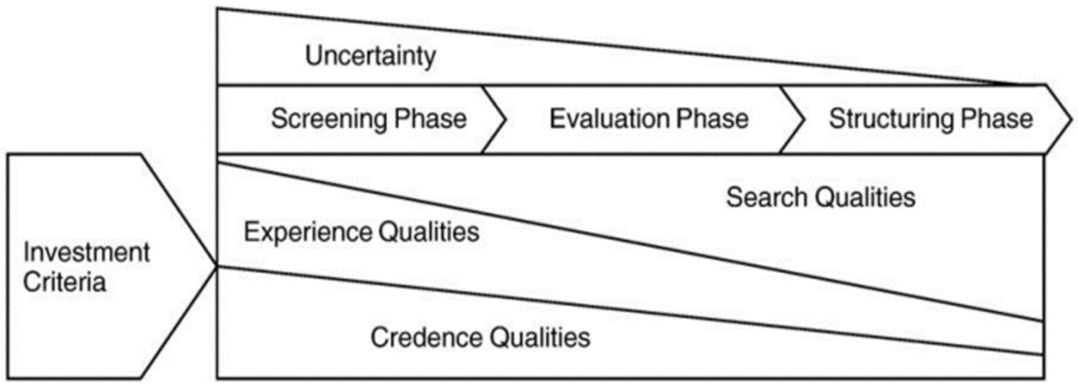

Figure 2. Search, experience, and credence qualities and the venture capital process

As can be seen from figure 2 provided by Kollmann & Kuckertz (2010) the factor of uncertainty is put at the top over the three-stage of the fundraising step, which is the initial step of the whole VC investment process. According to Champenois, Engel and Heneric (2006), they argued that uncertainty or risk is the main cause of the variation of the investment criteria. To be more specific, depending on a given market situation or some unexpected events combining with the level of experience of the venture capitalists, the evaluation criteria will not be stable and it requires the business owners to flexibly adapt to those changes in order to be selected by the investors. Generally, the standards for financing a start-up company are also associated with search, experience and credence attributes as they represent for the type of products and services that the business is offering, and in some circumstances both VCs and entrepreneur will be able to predict the fluctuations in the market as well as to know more about their competitors and customers. Under the perspective of marketing, whilst search products are easily evaluated by consumers prior to purchase, the qualities of experience goods are just only commented after payment and a period of experiencing. Finally, credence products are a special merchandise that cannot be rated at any given time, even after one or more purchases. Therefore, the decisive factor that customers choose to buy this kind of products is their beliefs toward the reputation and brand of the producers.

To summarise, it could be claimed that that the personalities of the entrepreneurs themselves are the main concentration of venture capitalists during the stage of collaborating with the businesses. The analysis of “gender differentiation in venture capital” which is mentioned below, will explore in detail and point out the necessary characteristics that entrepreneurs must own in order to be chosen by the investors. Mean whilst, in some circumstances, types of products and services offered seem to be the most influential element in the list of investment criteria of venture capitalists, and they will be described more specifically with two illustrative examples: a reality show: Shark Tank U.S., and the research about negative impact of coronavirus pandemic on the global economy in the year 2020.

3.1 Shark Tank: “Drop Stop” Case Analysis

3.1.1 Introducing Shark Investors

Shark Tank is an American business reality television series which is broadcasted and copyrighted by the American Broadcasting Company (abbreviated as ABC). This is the place where the start-up owners bring their innovative and unique ideas as well as prove the value of themselves in order to convince the millionaire investors to invest in their companies.

In this context, the investors can be referred as sharks, and it is obvious that these sharks also have their own investment criteria. The main motivation of the sharks in selecting the entrepreneur is heavily based on their in-depth knowledge about a certain field or a particular industry which they have concerned for a long-term period.

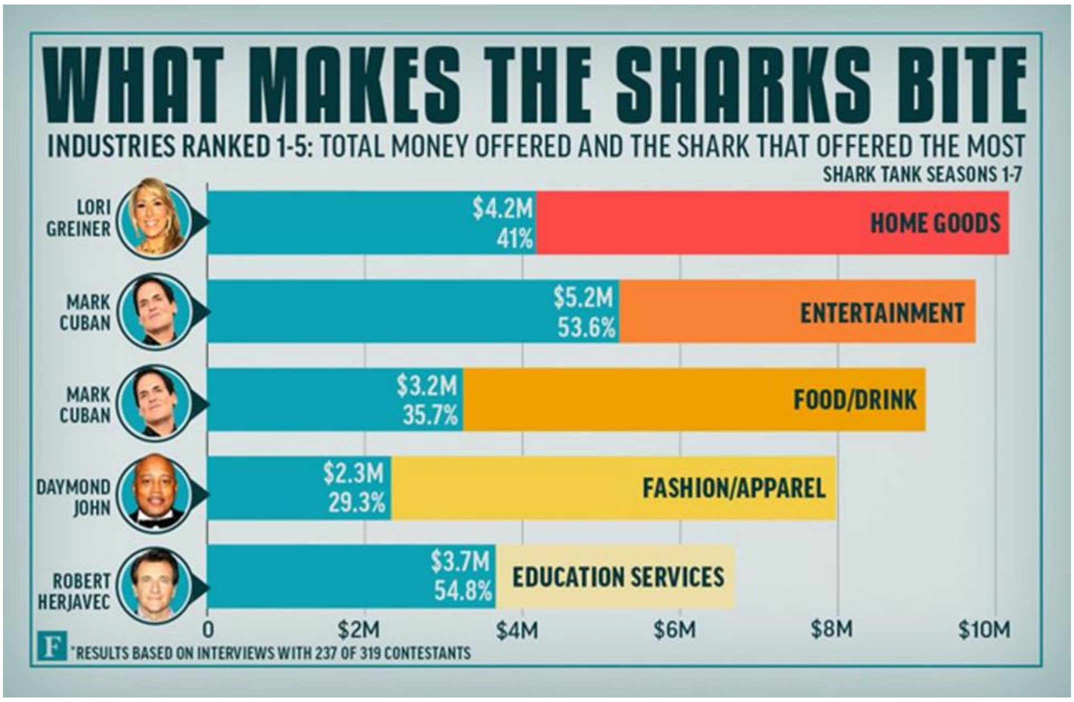

Figure 3. What makes the sharks bite most (rank 1-5)

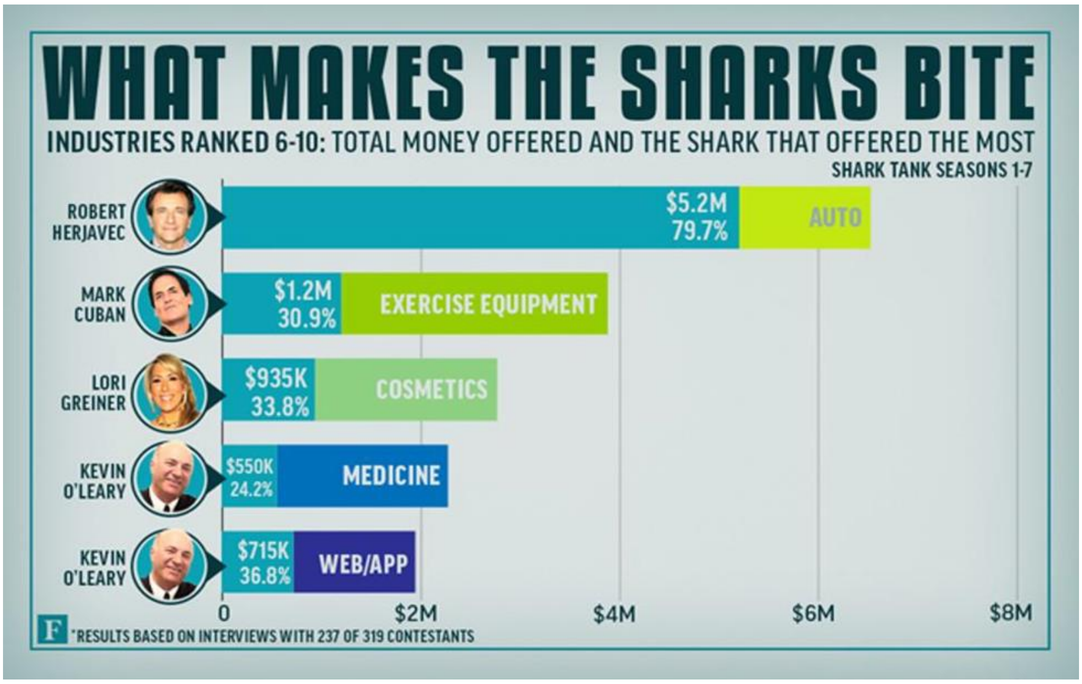

Figure 4. What makes the sharks bite most (rank 6-10)

Source: Article written by Emily Canal (Forbes Staff)

Let’s take an example of the wealthiest investor among the sharks, Mr. Mark Cuban, who is the majority owner of the basketball team: Dallas Mavericks which is currently participating in the professional basketball league of United States, the National Basketball Association (NBA). In addition, he is also the co-owner of 2929 Entertainment and the chairman of AXS TV. Therefore, based on his back ground, and as can be seen from figure 3 and figure 4 above, entertainment is the industry that Mr. Cuban have been attracted most with the capital invested up to 5.2 million dollars, following section is the field of food and drink with the total of 3.2 million dollars given to the entrepreneurs, and finally, as also a basketball player, it is not surprising that Mr. Mark also a spent a relative amount of money for the start-ups creating and selling exercise equipment. In general, Shark Mark Cuban has always been interested in sport businesses and other fields related to entertainment. From this point of view, it is possible to argue that possibility which the entrepreneurs are chosen depends heavily on the personal interest of the investors. This is also entirely correct to Shark Robert Herjavec, who owns a great collection of supercars, as his total amount of capital invested to the auto industry is even equal to the entertainment sector of Mr. Cuban.

The investor who has been considered as the most fastidious investor among the sharks, Mr. Kevin O’Leary is the venture capitalist that has the lowest number of closed deals since he has just spent 715 thousand dollars for the entrepreneurs who build and develop websites and mobile applications. Besides, the start-up companies who are going to operate in the field of medical health are also accounted for the amount of 550 thousand dollars in the portfolio of Mr. O’Leary, also known as Mr. Wonderful. From a general perspective, in comparison to the capital invested from other fellow investors, the investments of Mr. Wonderful can be evaluated as relatively low, and as can be visually viewed from figure 5 below, the number of entrepreneurs succeeding to convince Shark Kevin O’Leary become their financial stakeholder is also the lowest.

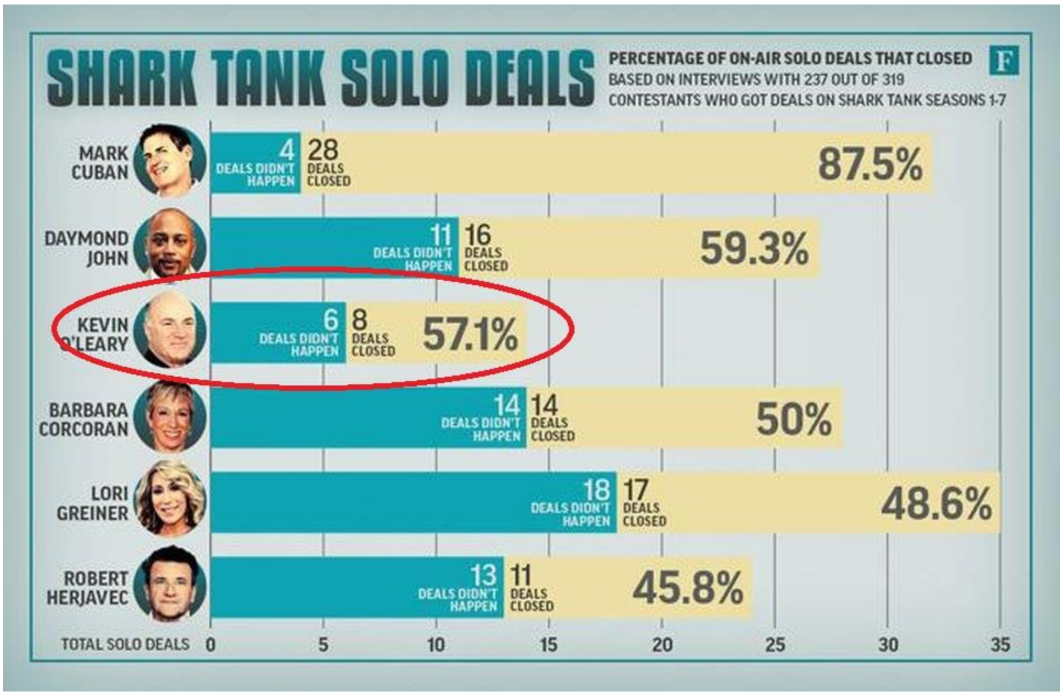

Figure 5. Statistics of Shank Tank Solo Deals

Source: Article written by Emily Canal (Forbes Staff)

As mentioned above, Shark Kevin O’Leary is considered as the most meticulous in investing his money into start-up companies, and according the assumptions of many audiences, they have supposed that Mr. Wonderful might be a “risk-averse”. In the theoretical aspect, a risk-averse is the investor who always avoids the risk-diversification. Instead, they have the tendency of looking for safer opportunities which have lower returns but known risks rather than the investment deals with higher returns and unknown risks. Some typical examples that can be mentioned here are: dividend growth stocks, Treasury bonds or the shares of the big enterprises that have been growing prosperously in recent decades. Therefore, it is not surprising that becoming a major shareholder of a start-up company is obviously an unfavourable choice to this kind of investor. However, in the case of Mr. Kevin O’Leary, as being also an entrepreneur in the early days of his career and the oldest investor among the sharks, it is undoubted that he has accumulated a lot of experience in building and developing start-up enterprises through plenty of failures which he has undergone in his life. Therefore, it is possible to argue that Mr. Wonderful is not entirely a risk-averse since he has always made some difficult questions about the business and growth strategies for the entrepreneurs to answer. From this point, Mr. O'Leary will be able to figure out the current shortcomings in their method used to organize the business, as well as risks that the firms might encounter when the company's size is expanded. Subsequently, he will conduct some preliminary assessment about the future development of the start-ups and Mr. Shark also gives a meticulous consideration about the financial risks, which he refers as "calculated risks", and eventually Mr. Kevin O'Leary will make a final decision that this start-up is appropriate for him or not.

3.1.2 Drop Stop

The following numerical data and information mentioned below were derived from Shark Tank Season 4, Episode 20 when Drop Stop, one of the rare start-ups with an extremely creative product that made Mr. Wonderful immediately accept the offer proposed. Subsequently, this shark even competitively criticized "The Queen of QVC", shark Lori Greiner, who were also pitched in order to become the solely shareholder of the business.

Image 1. Drop Stop product

Source: https://www.amazon.com/Drop-Stop-Original-Patented-Filler/dp/B00BYH6C1E

The special entrepreneurs are Marc Newburger and Jeffrey Simon, who are the co-founder of Drop Stop and their product is also named the same. In essence, “Drop Stop” is a patented equipment designed to fulfil the gaps between the car’s front seats and the centre consoles. This will prevent the driver’s items from falling into the “black hole”, as hilariously called by the producers. Coming to Shark Tank in 2012, the entrepreneurs sought $300.000 in an exchange for 15% stake of their company. It means that their start-up would be worth $2 million, and according to Mr. Jeffrey Simon, their growth sales was $1.3 million with 260.000 units sold since the company was first established in 2009. Therefore, the capital call amount which the entrepreneurs required from the investors and the value of the company if selling is totally reasonable.

After providing information about the growth sales and profit that the company earned during the third quarter in 2012 as well as the financial goal for the last quarter of the year, the start-ups continued to give the shark the sample of their product. As mentioned above, the decision of venturing with a start-up company is affected by many factors, in which the vast majority comes from the in-depth knowledge of the investor in a specific field of industry. It can also sometimes originate from the personal feeling and belief that this business will be able to grow sustainably and profitably or not. Back to the case of Drop Stop, even though the numbers of the profit gained by Drop Stop were quite impressive, the trio sharks: Mark Cuban, Daymon John and Robert Herjavec decided not to invest as they did not wholeheartedly trust the product with the practical evidence that they have never drop anything in the gap between the front seats and the centre console. Furthermore, shark Mark Cuban also had a belief that even though the value which the product brought to the people’s lives, both economic and social value, were deserved to be recognized, he pointed out it would take a lot of efforts and time for Drop Stop to turn their product into a pragmatic merchandise that would attract plenty of customers. Moreover, as an investor whose interest is the most about the entertainment industry, there is no doubt that Mr. Cuban tends to prefer practical products which efficiently meet the market demand as well as help him to regain his capital in the shortest period.

Nonetheless, in order to promote the product to customers, Drop Stop has been conducting many marketing campaigns on several distribution channels, including QVC, a television network which primarily focus on the area of shopping. Therefore, it is undoubted that shark Lori Greiner, who is known as the “Queen of QVC” absolutely did not miss this excellent opportunity by giving the start-ups the amount of $300.000 in exchange for 20% stake of the company. Besides, shark Kevin O'Leary also spent a special interest in this business, and he also accepted to offer the investment capital of $300.000. Nevertheless, instead of asking for a shareholder position in Drop Stop, Mr. O'Leary requested to earn a commission of $2 for each unit sold until he recouped his initial investment amount. Subsequently, the royalty would go down to $1 per unit in perpetuity. Since the wholesale price of each unit was $3, it meant that the start-ups just only have $1 left in sales during the first phase of co-operating with Mr. Wonderful, and then their revenue would double in the following periods.

Generally, it is possible to argue that the capital amount offered by Mr. Wonderful was quite safe in some scenarios. In the first assumption, based on the statistical data of sales provided by the entrepreneur that more than 250.000 units of "Drop Stop" product was sold in three years since the company started to operate in 2009 until when they came to Shark Tank to appeal for fund in 2012. Therefore, it is easily calculated that Mr. O'Leary would be able to have his capital back in less than one year and eight months with 150.000 units sold. Moreover, as committed between both parties, he would also receive a stable amount of income from the entrepreneur perpetually. However, in the contrast scenario, the business of Drop Stop went bankrupt caused by some unexpected events or sales were not enough for paying debts. It is undoubted that shark Kevin would lose all of his money invested. Though the probability for this assumption to happen is relatively low, it is also necessary for Mr. Wonderful to guide the start-up going on the right direction by using his own knowledge and experience in the case that Drop Stop accepted the offer from him. Nonetheless, there was also one noticeable point that shark Kevin O'Leary needed to consider thoughtfully. After his capital investment was recouped, since Drop Stop still had the right to increase the selling price of the product in the case whether their business thrived vigorously, and they just needed to pay $1 for each unit sold according the commitments. Therefore, it is possible to argue that the investment capital that Mr. Wonderful had spent deemed unworthy of the interest amount that he should earn for investing.

Towards the side of the entrepreneur, choosing shark Kevin O'Leary as their investor would lower their sales revenue in the first period of co-operating, and it was also uncertain that their company would increase their market share in order to sell a sufficient number of products and pay commission to Mr. Wonderful. Therefore, accepting the offer from shark Lori Greiner was absolutely a smarter choice, since the company had performed many advertising shows on the channel of QVC before, and it is undoubted that when the Queen stood out as the representative to promote the product of Drop Stop, their market share and sales revenue would grow rapidly. The only concern when Drop Stop gives 20% of equity shares to shark Lori Greiner is the difficulties in dealing the price value of the company when someone wishes to repurchase the business, as Ms. Lori is a major shareholder, she still has the right to agree or oppose the decision of selling the business. Nevertheless, it can be argued that towards Mr. Marc Newburger and Mr. Jeffrey Simon, Drop Stop can be seen as a special brainchild of them. With the efforts that they have put in Drop Stop, the scenario that the company is going to have new owners in the future period may not happen. In fact, the entrepreneurs made the final decision to form the partnership with shark Lori Greiner. By utilizing her reputation as well as marketing experience, the "Queen of QVC" really made the product to be widely distributed into more retail stores across United States. By the end of 2017, the company has sold 2.4 million Drop Stops with revenues totalling $24 million, which is almost twenty times higher than the sales presented to the investors when they first came to Shark Tank in 2012.

3.2 Impacts of COVID-19 pandemic on business organizations and entrepreneurs

It is possible to argue that the year 2020 can be seen as the worst crisis period of the 21st century due to the appearance of virus SARS-CoV-2. Various types of business organizations including state-owned enterprises as well as private companies are heavily in debt and go bankrupt as a sequence. In fact, the COVID-19 pandemic has caused the most significant impact on the aviation industry due to travel restrictions and a plunge in demand of travellers. As a result, the number of flights around the globe have been reduced dramatically and plenty of pilots have to fly the airplanes which have no travellers among the airports in order to keep space for the other aircrafts. Besides, a lot of passengers almost never receive their refund for the tickets bought, since many airlines want to save money as much as possible, and use for the expenses of aircraft maintenance and airport fees (Rooley 2020). Besides, the aircraft manufacturers have also to suffer a huge financial loss, resulting in the unemployment status of hundred thousand employees. According to many economic researchers, they have claimed out that comparing to the financial crisis back in 2007-2008, this event can be classified into another different level of disaster.

Thus, under the impact of COVID-19, it is undoubted that the probability of which some entrepreneurs stand out of the crowd and build their start-ups is extremely low. The clearest reason is the lack of capital invested since the investors have to undergo a great amount in debt and mostly lose all of the profit from other significant investments. Moreover, in the circumstance that entrepreneurs are funded by themselves, it is also extremely challenging for them to seek for customers due to the policies of travel restrictions. To be more specific, all citizens are recommended and even forced to stay at home, they are only allowed to go out for necessary demands such as: purchasing foods, medicine, and other urgent situations. Besides, the businesses operating in the field of customer service including restaurants, bars as well as entertainment areas which have crowed people are entirely restricted and forbidden. In general, all of the policies issued by the governments mentioned above lead to the fact that people do not have enough income to cover their living expenses. Thus, it is completely clear that they will not spend any amount of their saving into the investments which undoubtedly bring no return to them, and start-up funding is absolutely not a wise choice. Nevertheless, as previously mentioned when the demand of citizens in purchasing canned foods and other necessities for life has dramatically increased in the pandemic period. There are a few people consciously or unconsciously cumulated a large amount of these necessary products such as: mask, hand wash or protective gloves, and subsequently sell them with a price which is relatively high. Some of these entrepreneurs have been really successful in developing their start-up businesses as well as having a foothold in the market. Meanwhile, the entrepreneurs who are laggards in this reluctant competition have to face a lot of difficulties as their products are not able to compete again other rivals, and they also have some problems related to the state policies when the local authorities suppose that the selling prices of these commodities are not appropriate.

Towards the side of investors, sensitive and smart shareholders will ignore and even immediately sell their shares of the businesses operating in the industries suffered the most in the period of COVID-19 pandemic. Consequently, it is clear that they will concentrate all of their resources to invest in the companies as well as start-ups who are and will be selling the previously mentioned products. In this circumstance, it can be argued that the key factor in the decision of funding these businesses is neither personalities and experiences of the investors nor the qualification of the companies. Instead, it is the product type that decides the co-operation between both sides: venture capitalists and entrepreneurs, since they all have the belief that the consumers will take the initiative to reach them in the current context.

4 Gender gap in venture capital

The term "gender gap" in this circumstance is used to indicate the differentiation between male entrepreneur and female entrepreneur. Sometimes, this concern unintentionally becomes one of the investment criteria of venture capitalists when they tend to prefer forming partnership with the start-up companies which led by a man to a woman. Historically, the financing of venture capital has always been a significant challenge for women entrepreneurs since they just access only a small percentage of the total equity investment (Brush 2018). In order to have a clearer view about the concept of "gender gap", it is essentially vital to understand the differences in leadership style between men and women inside business organizations in general and start-up companies in particular.

In general, many researchers have claimed that every individual has their own leadership style, regardless of gender. This distinctive difference may be affected by plenty of external factors such as: organizational environment, employee characteristics, resources, demographics, economic and political factors, technology and the culture of the organization (Finch 2019). Indeed, there has not been an obvious connection between gender and the style of leadership as it is connected to the personality. In fact, some studies also figured out that women are more likely to have certain personality traits that men are less likely to have and vice versa. To be more specific, the Dan Lok organization (2020) claimed that women leaders are likely to be more careful in making any kinds of decision associated with the growth of the company, and they also usually take care of every small action of their team members in order to ensure that there are no problems occurred during the whole process of working.

Other whilst, men leaders have a general overview about the concerns of the company, and they usually do not focus on detail. Instead, they will delegate some trusted persons to represent them handling and figuring out the optimized solutions for the issues. Besides, one of the major differences between male leader and female leader is their self-perception and self-confidence in the specific way that they have applied to manage their business organizations. Typically, women tend to be harder on themselves, and sometimes they have the feeling of self-doubt and undeserving of their leadership position. Therefore, whist these ladies have a negative thinking of incapability to perform well the role assigned, plenty of gentlemen take the initiative to exaggerate themselves in a confident way. As an evitable result, these types of men are extremely proactive when applying for a leadership position in a business organization, and becoming an entrepreneur is not an exception. Furthermore, it is also possible to argue that the difference between men and women leaders is specified by their style of working and their personal approach to this role. Towards male leaders, they tend to have a more autistic leadership style, when they usually consider their decisions as the best and take less advice from the team. In addition, these leaders may be stricter and less caring of their subordinates. By contrast, the female leaders are likeable to make the final decision which has already been referred by their team members. Therefore, it could be claimed that women are better communicators than men, since every opinion is recognized and the employees who work under the female leaders' authority always feel that they are respected.

In the circumstance of start-ups, it seems much more difficult for a lady to start her own business rather than a man. As previously mentioned, women leaders sometimes feel sceptical about their competence to manage a whole business as well as to convince the employees, especially the male ones. Therefore, there are not many cases which a woman stands out to become a sole business owner, she alternatively will be the co-founder with a long-time partner, and this co-founder is typically also a woman as the two-female leaders will be able to find equality in start-up management. In addition, as greater communicators than male leaders, it is undoubted that the ability to connect people inside the organization is more effective, reflecting time shorten in problem-solving as well as seeking for more capital from the investors. From a general perspective, the meticulousness of female entrepreneurs in building and developing start-up businesses should also be a criterion that investors need to consider thoughtfully when forming the business relationship with the businesses. To be more specific, the VCs can be assured that they will gain the most effective co-operation from the side of the entrepreneurs, as women leaders usually have the tendency of listening and respecting others' opinion. Thus, there is no doubt that the advices from the shareholders are highly appreciated, and these venture capitalists will feel proud of guiding young entrepreneurs on the road to success. Furthermore, though many people have claimed that female leaders have a narrow view about the future development of the business, and their ability to seize the opportunities is not as great as men's. Nonetheless, the success of a start-up is determined by many factors, and one of the key elements that is essentially necessary for the growth of the business is the capability of bringing everybody in the organization together, and the most appropriate people who are able to handle this are obviously women leaders.

Meanwhile, as great self-confidence leaders of their own business organizations, gentlemen usually do not hesitate to present and impose their ideas and opinions to the stakeholders inside the company. Moreover, under certain circumstances, as a type of person who has strong personalities, the male entrepreneurs are willing to intensely argue with the shareholders about the disadvantages and difficulties that they have to handle if the stake required by venture capitalists is too high. From a general perspective, male entrepreneur-owners are likely to feel that they are the most powerful and important character in the hierarchy, they do not like to be strictly monitored by the shareholders, at least a moderate level of control. Therefore, they believe that the achievements which their start-ups will gain in the future period is the best evidence proving that the capitalists did not invest their money to the wrong place, and their trust towards the entrepreneurs is entirely worthy.

Generally, the differences between men and women entrepreneurs occasionally become the key factor that decides the success in the future of a start-up from the subjective perception of some venture capitalists. Nonetheless, plenty of investors are quite favourable of entrepreneurs that are able to listen the ideas and advices from them rather than the start-up founders who prefer controversy, regardless of their gender. Furthermore, in a modern society which the discrimination against women is no longer exist, it is undoubted that the role of women leaders in the organization has become more significantly vital, and the value they brought to the growth of business is extremely impressive in recent decades. In fact, an investigation conducted by four researchers: Candida Brush, Patricia Greene, Lakshmi Balachandra and Amy Davis in 2018 provided a relatively impressive statistic that from 2011 to 2013, 985 of 6793 total companies with women entrepreneurs on the executive team received 15% of the total capital investment in the United States. This proportion was calculated as more than double in comparison with the amount of money invested by VCs in the first periods of the 21st century. However, they continued to claim that there had been still a significant gap between two genders, as the entrepreneurs that are full of male members have four times higher opportunities to receive funding from venture capital investors than entrepreneurs having at least one woman.

5 Corporate finance challenges in venture capital

In general, there are not many significant differences of corporate finance challenges between a typical corporation and a start-up company. The three main concerns that will be mentioned and analysed in this part are: asymmetric information, active ownership structure, and risk and return. According to the arguments written by Auckland (2011), he claimed that these issues might symbolically represent for the distinctiveness in venture capital. Nevertheless, they also entail a discrepancy for considering the fundamental assumptions in modern finance when describing the VC market. While these differences are undoubtedly a challenge to the venture capitalists, it is inaccurate to suppose them as only a threat since they are also potential opportunities to grow.

5.1 Asymmetric information

Basically, asymmetric information is the situation in which one party has different information to another. In the circumstance of venture capital, it is the cost associated with the managers having more information about the firm’s prospects than do the investors. This asymmetry is even much greater between the two parties than it would be on a stock exchange due to the fact that it is extremely difficult for the venture capitalists to completely obtain all of the data information of the company they are going to adventure with, and it is also the entrepreneur’s best interest to hide the poor prospects of the firm. Generally, it is possible to argue that the hidden of bad information does not really have a huge impact on the fluctuation of the stock market due to the fact that it obviously requires the entrepreneurs to provide necessary information publicly in their initial public offerings (IPOs). Hence, this is not the priority for the venture capitalists to keep in mind. Instead, the problem arises is often referred to as the adverse selection issue within the agency theory (Milgrom & Roberts 2000).

During the operation process after investing, the adverse selection now becomes much more concern due to the possibility that the entrepreneur may attempt to utilize his/her own costs as the expense account of the business. In order to explain for this, Jensen and Meckling (1976) claimed the main reason why the start-up company is able to and still do in the future since the venture capitalists cannot cost-efficiently monitor and control the manager's behaviour at all times, which unexpectedly leading to the positive benefit-cost trade-off when the firm owner gets involved in non-pecuniary expenditures. For example, if the entrepreneur has 70% stake of the company, then he or she will only need to pay 70% for a private car or other necessary office supplies and equipment. Generally, in the VC model, the problems related to adverse selection or moral hazard towards the venture capitalists is seen as more considerable for those investing in public stocks, as there are fewer investors who are willing to provide capital on the investments in which they have more than 50% of stake.

5.2 Active ownership structure

Theoretically, active ownership is the utility of the right and position of ownership to create certain impacts on the activities and behaviour of the invested companies. Nowadays, it can be argued that active ownership is one of the fastest-growing investment strategies and it is also regarded as one of the most effective mechanism functioning risk reduction (Principles for Responsible Investment 2018).

According to the theory of investment portfolio management, a tradition investor will be able to reduce and nearly eliminate all types of risks within the firms by investing in various stocks and make the portfolio diversified. Nevertheless, in venture capital investment process, this applicable method seems much more difficult as the investment possibilities are not entirely liquid. Due to the issue of asymmetric information mentioned above, there is extremely little information about the historical operation of the entrepreneur, and it is also more challenging for the venture capitalists to predict and control the financial risks occurred during the operation process. Therefore, in order to build and develop an effective ownership structure, a vast majority of VC partners have tended to invest in some specific industries which they have proper expertise and knowledge. Another strategy which VCs also take consideration is to spread investments across multiple industries, however, a recent study revealed that a company's overall strategy is not the key factor that will decide the success. Instead, if the individual partners in the VC firm focus on a specialized industry, this tend to effectively reduce the amount of uncertainty and yield a higher rate of return (Gompers, Kovner & Lerner 2009). According to Auckland (2011), there are two reasons that properly explain for this argument. The first reason is the possibility of seeking outstanding investment opportunities in each specifically emerging industry with the well-known expertise of the specialized partners, and follow on, they are better suited to add value and also to minimize risk for their investments. Nonetheless, it does not entirely recommend that venture capitalists should solely allocate all of the capital in one company in that industry. Due to the individual investment's risk profile, it is absolutely wiser if the VCs could diversify their funds to some other degrees (Weidig and Mathonet 2004). In another research published by Keuschnigg and Kanniainen in 2003, they claimed that an optimal portfolio for a venture capitalist is the harmonious combination of the quantity of investments and the intensity of advice which is theoretically based on the advantages that active ownership structure brings to VC firms.

5.3 Risk and return

It is undoubted that there has always been a positive relationship between these two factors that are inherently attributed to the success of a business, and VC firm is not an exception. When the investors seek for investment opportunities on the traditional stock market, all shares are completely available, and their information is also publicly clarified, and this might help investors to propose and develop a long-term investment plan which yields for them a higher return. Besides, another research has resulted that inexperienced venture capitalists find it relatively difficult to seek for and obtain potential investment opportunities and they also have less bargaining power in comparison to smarter investors who have more experiences (Gompers et al. 2009). Nevertheless, when deciding to venture with start-up companies, the situation apparently becomes more complicated and it applies to all types of VCs who already have experiences or not. Since the future of growing young firms is ambiguously predictable, it is undoubted that the typical characteristics such as weighted average of possible returns and standard deviation or volatility are more clearly featured, and the risk of bankruptcy is seen as normal scenario towards venture capitalists.

Generally, the ultimate goal of VCs is to construct and develop an optimal portfolio which not only contains highest rate of expected return but also lowest amount of volatility. In reality, the large majority of venture capitalists have tried to diminish all kinds of firm-specific risk by diversifying the portfolio across different stages during the growth of the companies. Besides, the diversification of investment also depends greatly on the choice of the industries that are full of potential for further development in the future. In a survey conducted by Richard Robinson in 1987 when he examined a total of 53 venture capitalists, and they also gave the same solution for handling the concern of uncertainty was to include companies in all three phrases of the market. He also pointed out that the investors are also likely to divide the number of investments with an equal of one-third to three stages of business growth: capital seeding, early development, and continuous expansion.

6 Cost of venture capital

Theoretically, the cost of capital indicates the firm's cost of financing, and it is the minimum rate of return that a project must earn to increase the firm value (Gitman & Laurence 2012). The main sources of most firms nowadays primarily come from debt amount of the debtholders and equity financing of the shareholders. It could be argued that the ultimate goal of every firm is to maintain an effective combination of these two factors in order to create a sustainable capital structure for long-term growth. Nevertheless, venture capital is a form of private equity, which means that the amount of capital for entrepreneur companies are funded entirely by venture capitalists, and for many years the returns to VC funds have indeed been very private (Metrick 2007). In general, the main concentration of the cost of venture capital is the trade-off between risk and return, and the vast majority of venture capitalists usually desire a greater expected return during the early stage rather than later stages since the first periods of growth have a higher rate of failure than the upcoming periods. Therefore, it is possible to claim that the cost of venture capital depends heavily on the non-diversifiable risk of the investments that the firm has made. In order to signify the relation between the cost of capital to the non-diversifiable risk or market risk of an investment, the VC partners unanimously agree to use the Capital-Asset-Pricing-Model (CAPM), which measures how much additional return that venture capitalists should expect from experiencing a little extra risk. By using the beta coefficient to measure the non-diversifiable risk, the Capital-Asset-Pricing-Model is given in the following equation:

$$R_i = R_f + \beta\,(R_m - R_f)$$

In this formula, R_i represents for the required return on asset *i*, which VC firm invested. Other whilst, R_f is the risk-free rate of return, and it is usually set as a standard which is measured by the return on a U.S. Treasury bill. In addition, R_m is the return on the whole market portfolio of assets, β is the beta coefficient or the level of non-diversifiable risk for asset *i*. Besides, the difference of $(R_m - R_f)$ is called as the market risk premium standing for the relation between the expected returns of the equity market portfolio and the treasury bond yield, which is a type of investment without risk and has the beta index equals to 1. Generally, it could be argued that market risk premium might also reflect the historical returns and the market risk premium itself is applied identically to all types of investors, and venture capitalist and not an exception. Nevertheless, the required and expected market premium will differ among investors since it depends greatly on their investment styles and the firm's long-term proposal plans (Gitman 2012).

In recent years, based on the extension of the Capital-Asset-Pricing-Model (CAPM) financial researchers have conducted plenty of further investigation about other forms of non-diversifiable risk and some other crucial factors that have an impact on the potential growth of the firm such as: capability, value/growth status, and liquidity (Metrick (2007: 80). Among these elements, many researchers claimed that liquidity might be the one that has the most influence on the cost of venture capital due to the following reasons mentioned below.

First of all, a remarkable number of illiquid investments may result in an inefficient portfolio diversification (Kerins 2003). Since risks in any kinds of portfolio can be theoretically reduced by combining various types of stock, and the amount of risk which has been eliminated depends on the degree to which the stocks face common risk and their prices move together. Nevertheless, a stock of which the status that cannot easily and readily traded on the market, or converted into cash might have a substantial impact on the portfolio structure. In theorical aspect, illiquid assets are supposed to be sold slowly due to the reason of low frequency of trading activities and investors' interest in the issue, which reflect a greater price volatility. Moreover, it is possible to argue that whether an illiquid investment is just accounted for a negligible part in a portfolio, this fraction might contribute to an aggregate portfolio illiquidity that is costly for the investor along with other illiquid holdings.

The second factor which also plays a significant role in estimating the cost of venture capital is the capability of the firm that venture capitalists are going to venture with. From a general perspective, there is no doubt that depending on the current competence in the business market as well as the potential growth in the future, the minimum rate of return required by venture capitalists will also vary throughout the period of collaboration. The cost of venture capital which is too high in the first phase of building foundation of the business might create negative pressure on the entrepreneur's managers since they have work harder in order to meet the investors' requirement. By contrast, the VCs will have to undergo a low rate of required return that is not entirely worthy compared to the amount of capital invested. Therefore, it is significantly vital for both sides: venture capitalists and the entrepreneurs to precisely estimate the appropriate cost of capital in each specific stage of the growth, and based on this clearly stated rate of return, the start-up company will be able to propose and develop appropriate business strategies in each specific period.

The final concern that the financial researchers pointed out is the value or growth status of the entrepreneurs. In general, the vast majority of venture capitalists nowadays tend to look for technology-driven businesses and enterprises with high-growth potential in sectors such as: information technology, communications, or biotechnology (BDC 2018). Towards venture investors who are interested in the fields other than those mentioned above, the research for estimating cost of venture capital have to be analysed meticulously due to the reason that the financial risks in these fields tend to be more difficult to predict, and these uncertainties are essentially affected by plenty of many external factors such as: economic depression, scarcity of human resources, natural hazard or force majeure events. An outstanding example of force majeure that can be mentioned in the year 2020 is the pandemic of coronavirus or COVID-19. Due to the spread of the disease, a lot of companies and businesses have been on the brink of bankruptcy, even international corporations. Hence, it is no surprise that start-up businesses have an extremely low chance to exist in the darkest period of the 21st century.

Nevertheless, with an incredible development pace of advanced technology, online working or remote working seems to become a new trend in the period of pandemic. To be more specific, the role of coders and programmers in order to create and develop the programs serving for the increment in demand of working at home has become more essentially crucial. Therefore, as previously mentioned, towards the entrepreneurs who are having the intention of joining this field of business, the probability which they are attracted to investors will be extremely high. Nonetheless, as every coin has two sides, the expectation from the venture capitalists to the start-up technology companies is absolutely higher, leading to greater rate of return or the cost of venture capital.

To summarise, estimating the cost of capital when investing money in any kinds of entrepreneur is absolutely a vital phase that VCs should spend a lot of effort, since there has been an estimation that 90% of start-up companies will fail. Therefore, it is significantly important for both venture capitalist and firm’s managers to co-operate and manage effectively business strategies in each specific stage of development. In addition, it is also necessary for the investors to always keep in mind that their knowledge and experience of management as well as their contact network will be the key factor in helping the entrepreneurs stand out of the crowd and become a prestigious part of 10% start-ups who will “shine” brilliantly in the future.

7 Finance of Innovation

7.1 Definition

The term “finance of innovation” could be defined as the act of proposing and creating innovative strategies as well as new financial instruments, technologies, institutions and markets for business promotion (Financial Times 2018). For effective innovation, the fundamental activity that should be undertaken in any kinds of organization is Research and Development (R&D).

Generally, it is undoubted that R&D plays a significant role in the success of any kinds of business, especially in the start-up companies. The main function of R&D is to provide a platform for creativity and innovation to flourish inside the organization. Innovative breakthroughs have happened only due to painstaking efforts of R&D undertaken (Ganapathy 2014). In addition, it can be seen as a competitive “sword” for the start-ups to compete with other rivals operating in the same market or in the specific industry, since it allows the entrepreneurs to shape their own business processes, in which the marginal costs are cut, thus increasing marginal productivity in order to create earn more revenues as well as adapt the business itself in an efficient way to market changes. Furthermore, in the era that advanced technologies are developing with an incredible speed, effective R&D undertaking will help the entrepreneurs gain more business opportunities for further development.

7.2 Sources of R&D funding in the United States

Metrick (2007: 339) claimed in his research that R&D is extremely critical for the economic growth and the improvements in human health and welfare. Besides, he also figured out the total amount of R&D spending is likely to be more focused in developed countries than in the past, especially in the United States when R&D investment is nearly $300 billion per year and comprises approximately 2.7 percent of GDP. Since total VC investment has averaged about $20 billion per year since 2002, it is clear that the vast majority of R&D funding must come from other sources.

According to statistical data from the National Science Foundation's National Centre for Science and Engineering, total spending on R&D reached $449 billion in 2015, and the vast majority of R&D funded amount comes from businesses, accounted for near 70 percent ($355 billion). This trend was estimated to continue increasing in the future period due to the relentless development of private enterprises nationwide. By contrast to the upward trend of the firms, the second largest funder of R&D spending, the federal government did experience a slight decrease after the financial crisis from 2008 to 2015. See figure 6 below:

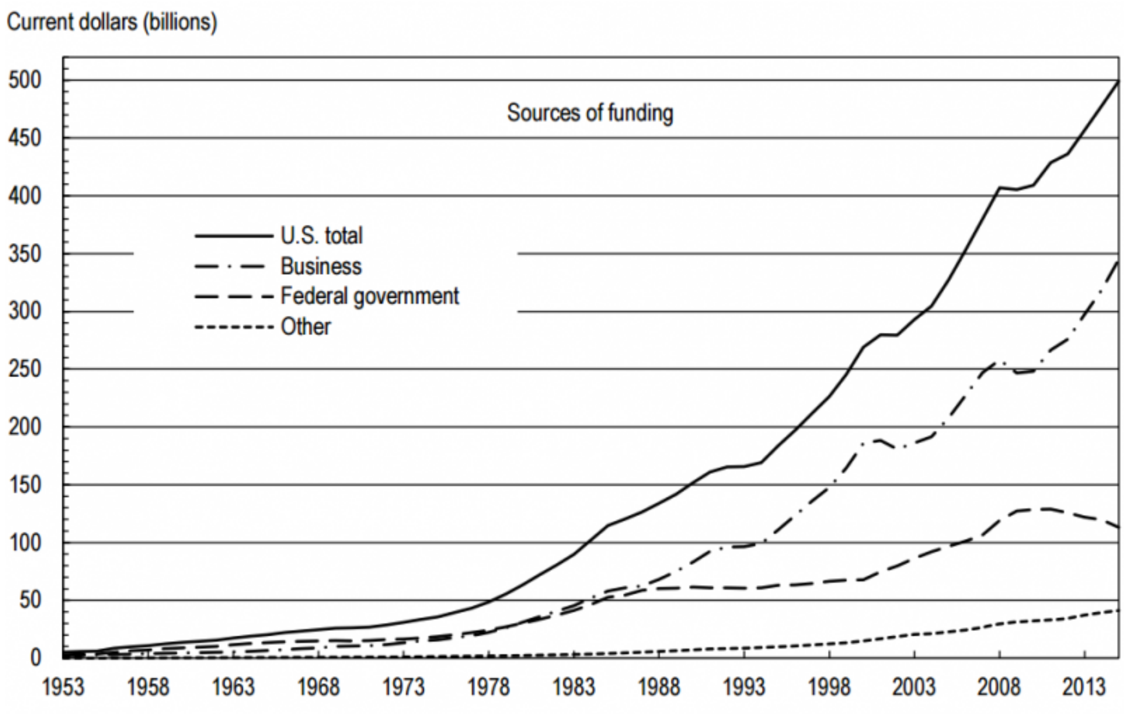

Figure 6. U.S. R&D, by performing sectors and source of funding: 1953-2015

Source: NSF, National Centre for Science and Engineering Statistics, National Patterns of R&D Resources (annual series)

Basically, NSF divides R&D spending into three specific categories: basic research, applied research, and experimental development. According to the information provided by the Organization for Economic Cooperation and Development, the overall distribution among these three types has remained stably since 1970: basic research between 13 and 18 percent, applied research between 19 and 23 percent, and experimental development between 61 and 65 percent. According to the NSF data, the federal government has always been remaining as the top supporter of basic research, funding 45 percent of the national total while businesses funded 27 percent (Henry 2016). From my perspective, it is understandable that the U.S government with the policies of economic recovery after the financial crisis 2008, invested more in basic research of innovation handled by universities and other institutions of higher education, resulting in the deduction of funded amount of applied research and experimental development, and also the total spending.

7.3 Mission-oriented innovation policies and their incentives for R&D

Historically, especially after the financial crisis 2008, it is undoubted that governments around the globe all have been seeking for the economic growth, which is sustainable, inclusive and also innovative. Generally, innovation has been acknowledged as not only a rate but also a direction in the new era of development. To be more specific, the 21st century is becoming increasingly defined by the need to respond to major challenges associated with social, environmental, and economic. Some typical examples that could be mentioned are: climate change, demographic, health, well-being concerns, and other difficulties in generating sustainable and inclusive growth (Mazzucato 2018).

Theoretically, mission-oriented policies can be defined as a set of publicly systemic policies drawing on frontier knowledge to achieve certain goals for the country's requirements. According to Professor Mariana Mazzucato (2017: 3), her research supposes that mission-oriented innovation policy responds to the grand challenges mentioned above by clearly identifying and figuring out specific issues that may galvanize production, distribution, and consumption patterns across various industrial sectors. Particularly, in the sector of R&D, innovation policy is not just about funding, but it also facilitates for new knowledge and ideas spread over the entire system in order to create more effective changes that are necessary for further development.

In fact, there have been many evidences showing that the innovation policy has played such a significant role in several mission-oriented agencies, not only in stimulating investment during the recession periods. According to statistical number provided by the National Institutes of Health (NIH), the cumulative expenditure spent on R&D has accounted for more than $900 billion during the period from 1936 to 2016, and the annual amount funded has exceeded $30 billion since 2004. See figure 7 below:

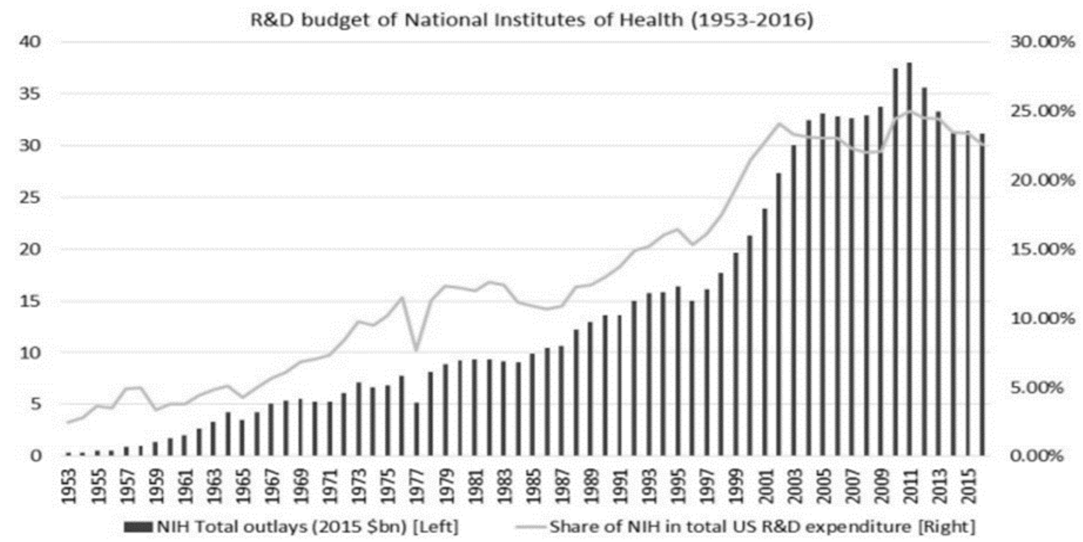

Figure 7. R&D Budget of National Institutes of Health from 1953 to 2016.

Source: National Institutes of Health Office of Budget

As can be seen from the chart above, the share of R&D expenditure spent by NIH in total share of the U.S. has risen considerably over the past 50 years, especially during the financial crisis and the following periods, when it accounted for nearly 25% of the total outlays of the state. Nonetheless, Mazzucato (2018: 808) argued that the surge in R&D spending taken by NIH could not be simply perceived as the outcome of increment in total R&D funded by government throughout the period of downturn. Instead, it should be considered as a deliberate and targeted choice on where to direct public R&D funding.

8 Share buybacks and cutbacks in R&D Funding

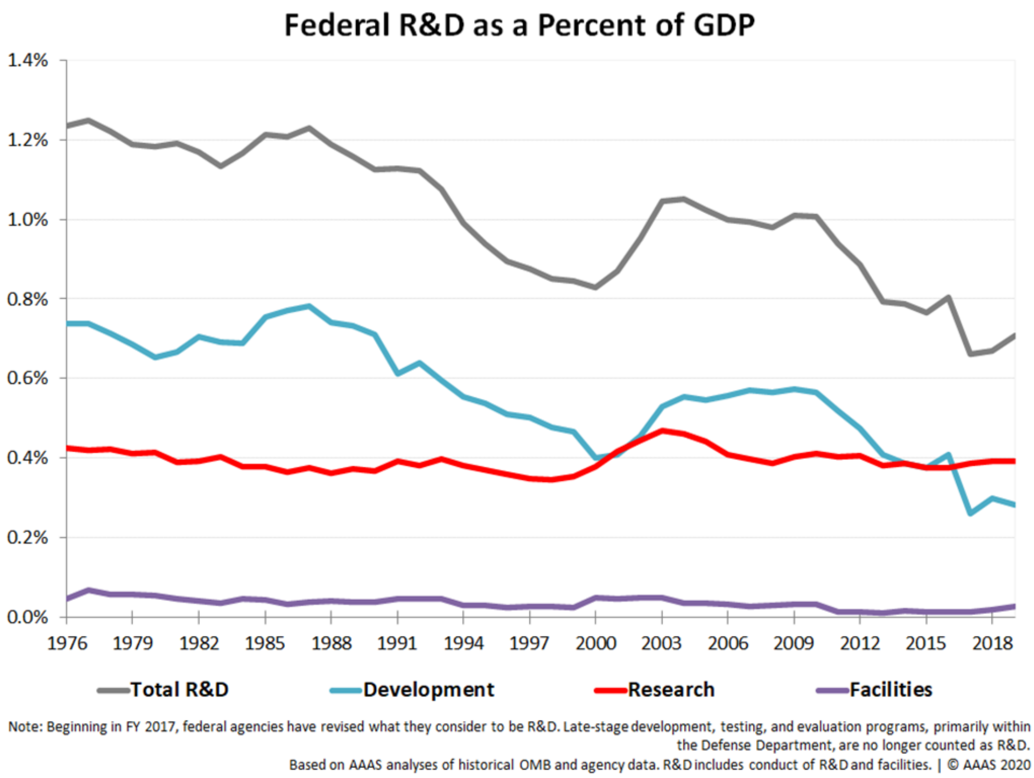

Figure 8. Federal R&D as a Percent of GDP, 1976-2020

Source: American Association for the Advancement of Science

As can be seen from figure 8 above, except the percentage of facilities does not have any noticeable fluctuations, it is totally clear that the lines representing for Research and Development both have a downward trend after the financial crisis 2008. In fact, plenty of business organizations decided not to spend the vast majority of their sources investing in employees' skills anymore. Instead, they primarily concentrated on increasing their equity value by stimulating share buybacks and dividend pay-outs. Theoretically, the most critical reasons of repurchasing shares of stock by the company that issued them are to consolidate its ownership structure as well as to leverage the financial ratios with the purpose of looking more attractive to potential investors. In the past, dividend pay-outs are the most common way that businesses return profit to their shareholders. However, in recent years, this form of wealth distribution is having the signal of being dominated by shares repurchase.

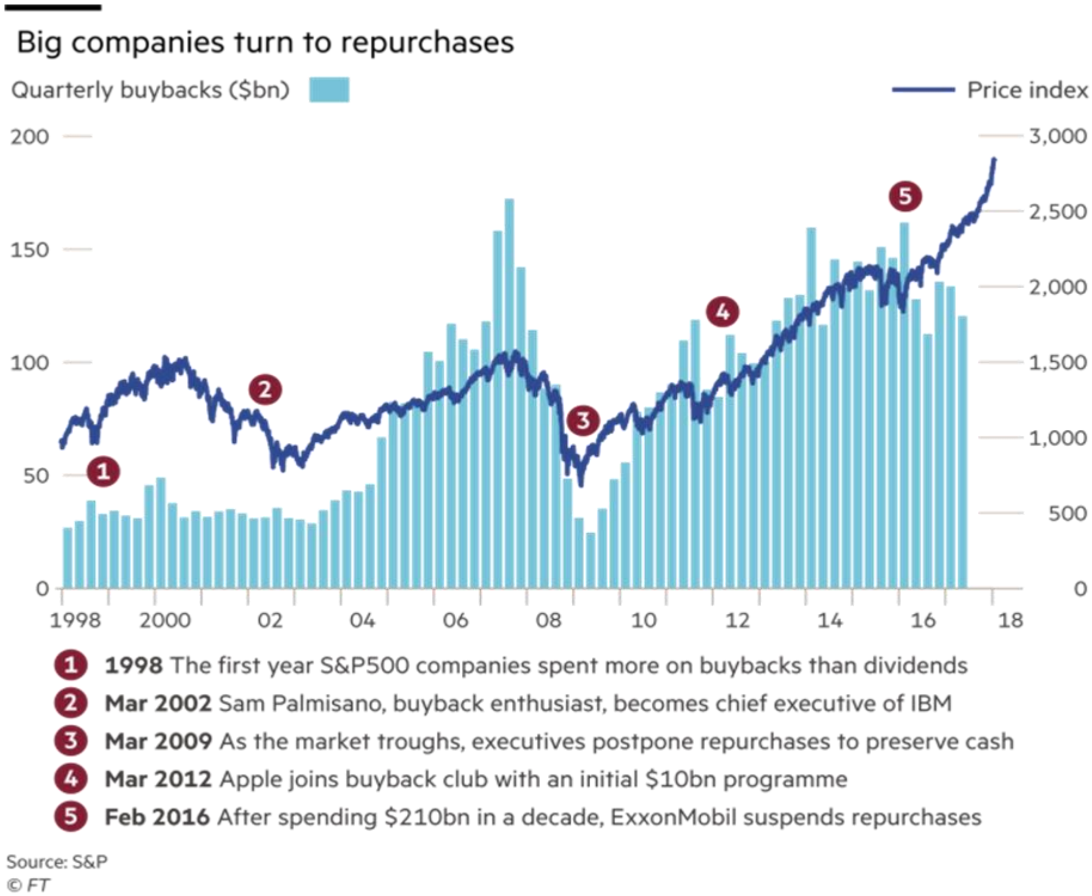

Figure 9. The rise of share buybacks

Source: Financial Times Newspaper

In fact, it can be easily viewed from figure 9 that there was a clear different of stock buybacks tendency between the pre and post periods of the 2008 crisis. Whilst the amount of billion dollars spent for repurchasing shares always experienced some insignificant fluctuations from 1998 to 2008, the counterpart period witnessed an upsurge financial sources used by large corporations in regaining their shares, and a well-known technical enterprise which could be mentioned here is Apple Inc. In 2015, according to Chief Financial Correspondent of the Financial Times, Henny Sender stated that in the first week in May, Apple announced to raise $8bn in debt to help fund its fourth buyback driven deal in just over a year. The US tech group plans to spend $200bn mostly on buybacks (though some amount on dividends) through March of 2017. "The company has now launched $43.5bn of long-term US dollar-denominated debt offerings since April 2013, backing massive capital returns to shareholders" said S&P Capital IQ's LCD division. The iPhone producer had spent in total $80bn on buybacks over the past two years, it added.

9 Conclusions

9.1 Summary

It is possible to argue that the main stream of venture capital could be summarised as “high risk high return”. Instead of choosing and funding their capital in some safe investments which do not have any significant volatility but stable rate of return, venture capitalists are willing to accept the possibility that their start-ups companies will either go bankrupt, or they will earn massive amount of return if the business succeeds in the future. Therefore, the evaluation criteria required by VCs is obviously higher than any other investments since they want to carefully select the entrepreneurs who are qualified for their own standard. It is important to repeat that the investors’ criteria are primarily built on their in-depth knowledge about a certain field or a particular industry which they have concerned for a long-term period. Moreover, VCs are likely to judge the attitude and then the characteristics of the entrepreneurs in order to make the final decision. Nevertheless, in some specific circumstances and certain conditions, the collaboration between both parties are executed depending on the types of products and services supplied by the business.

In the next stage of the venture capital process when the deal is made, the role of venture capitalists in providing strategic guidelines and monitoring activities of the start-ups absolutely becomes much more significant as it will help the shareholders figure out the corporate finance challenges and suitable solutions to tackle them. Subsequently, VCs will be able to propose a reasonable cost of capital or the required rate of return for each specific project undertaken by the business with the goal of increasing the firm value. Eventually, when the start-up becomes successful as expected by investors, they can decide between continuing to stick with the company and receive dividend periodically, or selling their shares to other potential investors on the stock market since the business at this moment may require new partners with larger financial resources.

In addition to the fundamentally significant knowledge provided, the author also found it really precious to include to the concern of gender gap in venture capital since women entrepreneurs are proving that they have excellent qualities which are not less competitive to the men entrepreneurs. It is obvious that each entrepreneur will have his/her own style and unique characteristics to lead the business to success, the issue of differentiation in gender seems to become inessential for venture capitalists. As mentioned above, the attitude of the start-up owners is the key factor deciding they will be able to receive the capital from the investors or not. On the other side, VCs will choose to co-operate with entrepreneurs whose strategic thinking that manage the business go on the growth path which they are favourable.

From the personal perspective, it can be affirmed once again that innovation is the most competitive “sword” which helps the business gain a foothold in the market and the ability to compete again other rivals. This even become more accurate in the circumstance of start-up entrepreneurs, who are undoubtedly considered as the laggards in the competition. In general, Research and Development (R&D) is still the most focused activity due to the great advantages which it brings to the business organizations. Nevertheless, in the case of large corporations, who are seen as pioneers in their particular industry, the factors of creativeness and innovation have become slightly insignificant. In fact, they have reduced the amount funded for R&D to focus more on share buybacks with the purpose of consolidating their capital structure and increasing the ownership of the shareholders.

9.2 Project evaluation

From a personal perspective, the author supposes that the topic of venture capital is unlikely to be of much interest to many people. After figuring out the ideas, the author subsequently started looking for reference sources, and it was quite surprised when he was able to find only a book written about venture capital in his university’s library. The vast majority of references come from the articles published on the internet as well as the supportive ideas contributed by the author’s supervisor, professor Michael Keaney.

It is possible to argue that the difficulties that the author had to face primarily came from a relatively wide scope of the topic chosen. To be more specific, it was a little bit challenging when reading and understanding some reference sources providing too much in-depth knowledge about one specific aspect of venture capital with plenty of specialized vocabularies. Sometimes, their content appeared to be inconsistent with another which subsequently caused some certain issues for the process of synthesizing and paraphrasing information.

Nevertheless, the most favourable point that the author figured out while making this thesis is the skill of applying his financial knowledge as well as information gathered from the sources to analyse the practice case of “Drop Stop” in Shark Tank from both perspectives of the investors and the entrepreneurs. Furthermore, performing research about the movements of R&D funding and share buybacks in the United States really helped the author understand more about the importance of financial strategies used by the businesses to increase shareholder value, and he also gained a realistic view about different aspects that have significant impact on the economic growth of the country in particular and the globe in general. Finally, it was quite interesting that the author had to spend a separate section to emphasise the concern of “gender gap” in venture capital, which clearly belongs to the field of human resources (HR) management, an area that the author is not interested at all.

9.3 Reflection on learning

Generally, it could be claimed that research skill is the most crucial factor when writing this thesis. Even though, the author had gained some fundamental knowledge about business investment through financial courses at the university as well as online self-study before, he still found it a little bit shocked when facing a huge amount of information when referring the sources. At this point, applying filtering skill obviously became a vital step in order to synthesise necessary and important aspects of venture capital and the finance of innovation.

Besides, the author used to assume that he could be able to finish this thesis earlier. Nonetheless, under the pressure of many internal and external factors, this research took him longer to get everything done than expected. Hence, project and time management skills can be seen as the most valuable skill that the author learnt from the failure of not achieving daily goal of writing, delay, laziness… Last but not least, the author argues that the attitude of constant of learning of financial investment is also extremely essential due to the desire of becoming a wealthy investor in the future.

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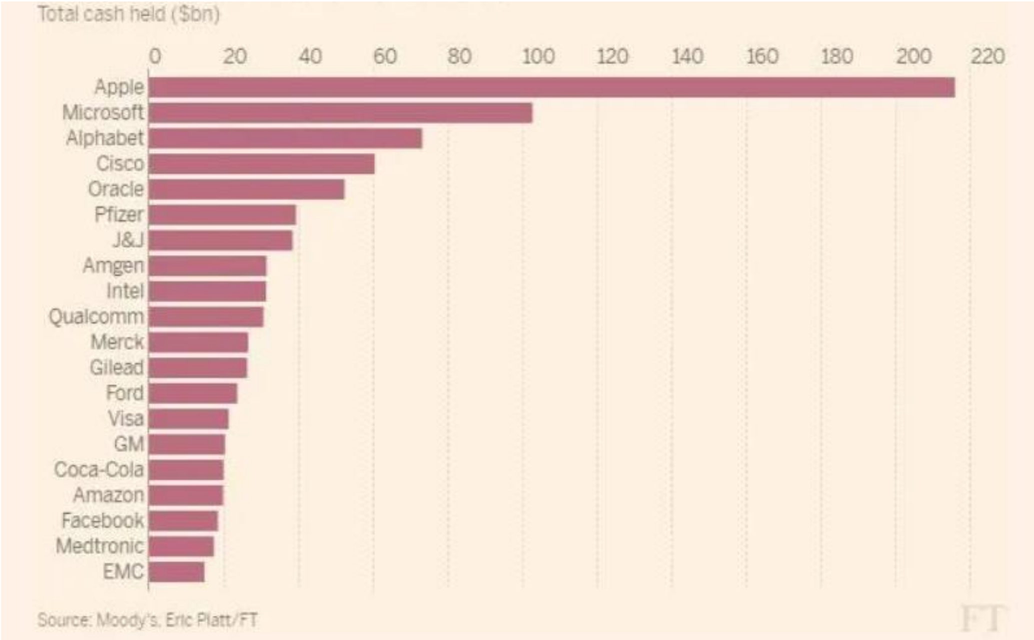
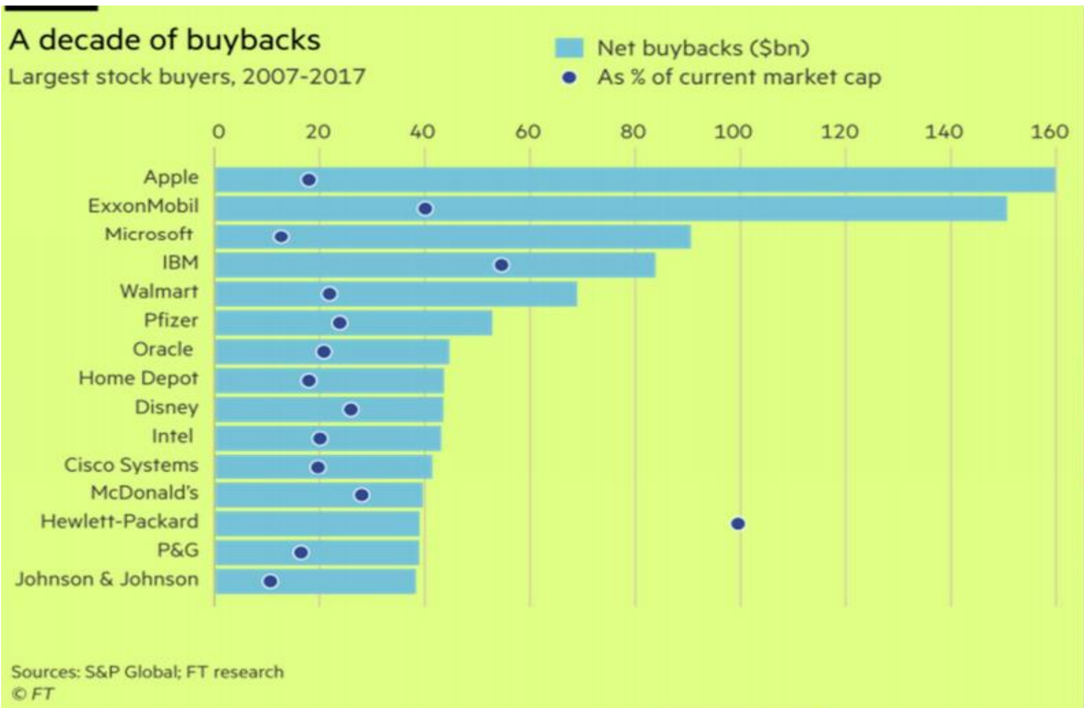
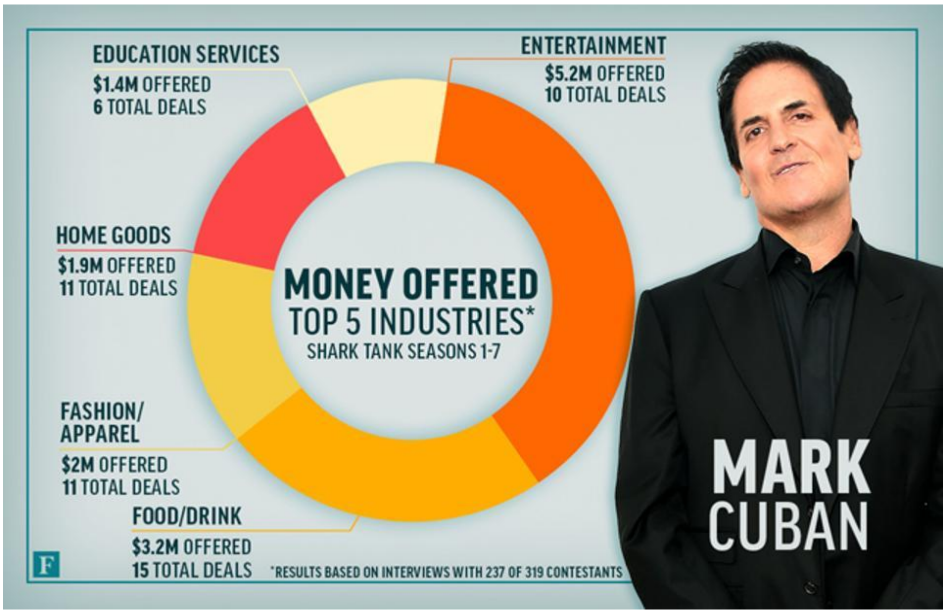


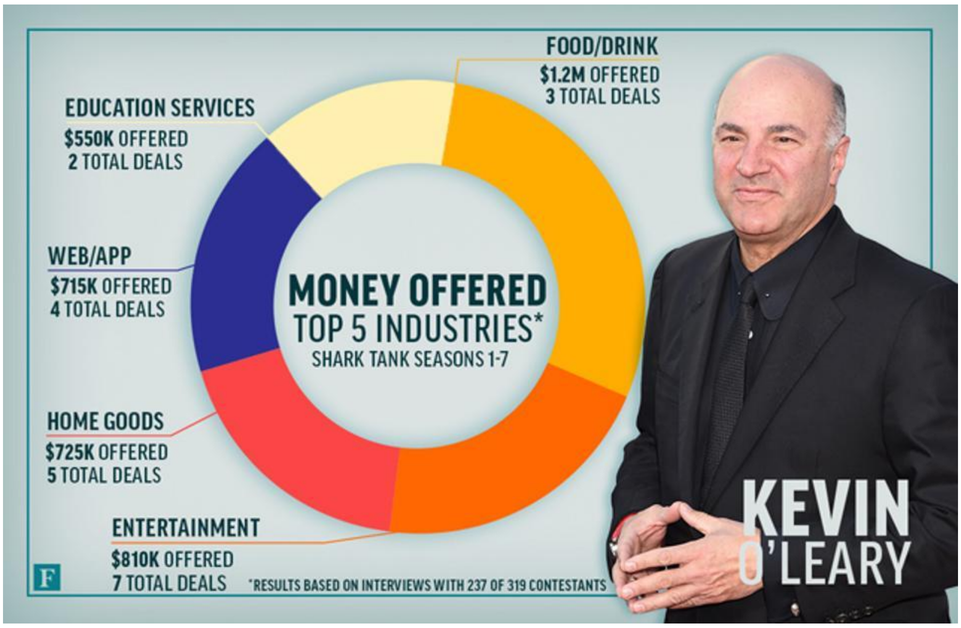
A Decade of Buybacks



Total Money Offered by Mark Cuban: The Greatest Shark in the Tank



Total Money Offered by Kevin O'Leary: The Most Fastidious Shark in the Tank



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