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Valuation methods and value drivers for SaaS startups

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ABSTRACT

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In recent years, the software industry has seen a big change regarding the business models used in the industry. Software as a service (SaaS) model has become the most used business model for existing and new startup companies. This business model has several advantages when compared to other models. The biggest one being the predictability of the revenues. In this research we are focusing on the valuation of these SaaS startups and the value drivers which investors are looking for. The research method we chose was literature review and case study. From the earlier academic literature we can see that these topics are relatively poorly studied. This is due to the fact that both startup companies and venture capital investors are private parties, who do not wish to share their data or knowledge to the public. Our findings in this research reveal that the multiple method is the most popular method for valuing a SaaS startup. Discounted cash flow methods, which is generally a very popular method, was not often used and it proved to be unreliable for companies who have high growth rates. Regarding the value drivers, metrics and especially growth rate is the thing that investors are looking for.

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Viime vuosien aikana ohjelmistoalalla on nähty iso muutos alalla käytettäviin liiketoimintamalleihin liittyen. Ohjelmisto palveluna (SaaS) -malli on noussut suosituimmaksi vaihtoehdoksi sekä vanhoille yrityksille että uusille toimijoille. Tässä liiketoimintamallissa on monia etuja muihin malleihin verrattuna. Merkittävin ero on liikevaihdon ennustettavuus. Tämä tutkimus keskittyy näiden ohjelmisto palveluna -startup-yritysten arvonmääritykseen sekä arvotekijöihin, joita sijoittajat etsivät. Tutkimusmenetelminä käytettiin kirjallisuuskatsausta sekä tapaustutkimusta. Aiemman akateemisen tutkimuksen perusteella voidaan todeta, että näitä aiheita ei ole tutkittu paljon. Tämä johtuu siitä, että sekä startup-yritykset että niihin sijoittavat pääomasijoittajat ovat yksityisiä tahoja, jotka eivät halua jakaa dataansa ja osaamistaan julkisesti. Tutkimustulokset osoittavat, että kerroinmenetelmä on suosituin tapa määrittää ohjelmisto palveluna -startup-yrityksen arvo. Diskontattu kassavirta -menetelmä, joka on yleisesti hyvin suosittu menetelmä, ei ollut sopiva eikä suosittu menetelmä tässä tapauksessa. Tämä osoittautui epäluotettavaksi yrityksille, jotka kasvavat nopeasti. Arvotekijöistä metriikka ja etenkin kasvuvauhti osoittautuivat tärkeimmiksi tekijöiksi, joita sijoittajat arvostavat.

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Robert Kivirinta

Table of contents

1. INTRODUCTION

Software as a service (SaaS) industry has been rising a lot in recent years. Many software suppliers have changed their business model to SaaS model and we also see a great amount of new SaaS companies being established. One major reason for this and also one of the biggest advantages of SaaS is easy accessibility for both employees and customers.

In SaaS business the revenue model is called subscription model. There the customer pays recurring fee to the company, usually monthly or yearly. In return the customer is allowed to use the product for that time. This business model is very common today, it is used by for example Netflix and Spotify. These companies have shown that the subscription model can offer huge growth potential. (Campbell, 2019a)

The SaaS business model combines subscription model and cloud-based solution. This means that the product is used by an internet browser and the customer does not have to download any physical software to the computer. The SaaS business model is very commonly used today and a great example of that is Salesforce.

Salesforce offers CRM solutions for their clients. The company was established in 1999 and it was one of the first software companies that used the SaaS model. Salesforce was able to scale their operations and now the company is worth several billions. (Shah, 2020)

The popularity of the SaaS model has yielded a great amount of SaaS startups. These companies want to grow as aggressively as possible. To do that they need external funding from business angels, venture capitalists and other investors. This creates a problem, since to offer funding the investors need to know the value of the company.

The valuation of any startup is tricky, since those might not be making any profit right now but still, they are valuable. Good example of this is Uber. In the May of 2019 Uber got listed on the New York Stock Exchange with the value of 82 billion US dollars. At that time Uber had never made any profit. They had been burning nine billion US dollars since its foundation. (BBC, 2019a)

It's hard to give an accurate description of a startup, but we can find some common characteristics. Most common characteristic of a startup is high growth, this is why many of the startups are tech companies. The great advantage of tech companies is that they can be anywhere and serve customers all around the world through the internet.

All companies need some kind of funding, at least at starting the company. Startups usually need much more funding since they want to grow faster than the natural growth of revenue allows. To get the necessary funding startup companies usually run several funding rounds. In these funding rounds startup companies aim to acquire funding from investors. The company can acquire either equity or debt. Debt is of course cheaper option from the entrepreneur's point of view. In many cases companies cannot acquire debt because they do not have enough equity to convince the lender that they can pay the loan back. That is why many startups have to give up some equity to get the funding.

In return for money the investors receive shares of the startup company. Investors of course aim to receive profit for their investment in the future. Since there are so many startups founded every year, investors have many options to where to invest. The hard part is to find a successful company. When investors are evaluating the possible investment opportunities, they look for things that provide value to the company. In other words, they look for value drivers.

1.1 Focus of the research

The main focus of this thesis is valuation. Valuation is an essential part of today's corporate finance and finance in general. Valuation is the base for equity investing and therefore it is interesting from the companies and investors point of view. Valuation methods have been created to help us determine the value of certain assets. There are plenty of theoretical valuation methods, some are very general, and some are very specific. In this thesis we are focusing more on the methods that can be used to evaluate especially SaaS companies. Valuation methods are often very theoretical and do not necessarily apply in real world situations. One part of the research is to find out how well these methods work in the real-world case.

Before we can focus on that we need to have a good understanding of the background. The figure 1 shows how we are focusing the research. We will start by defining startups in general. Then we are going to define SaaS and software industries. After that we will focus on the business and revenue models for SaaS companies. After that we have a good understanding of what a SaaS startup is. We are also focusing on funding and investors behind that. The figure 1 illustrates the position of valuation, between company and investors. We are also going through some valuation methods and value drivers. Both of these are a major part of the valuation process.

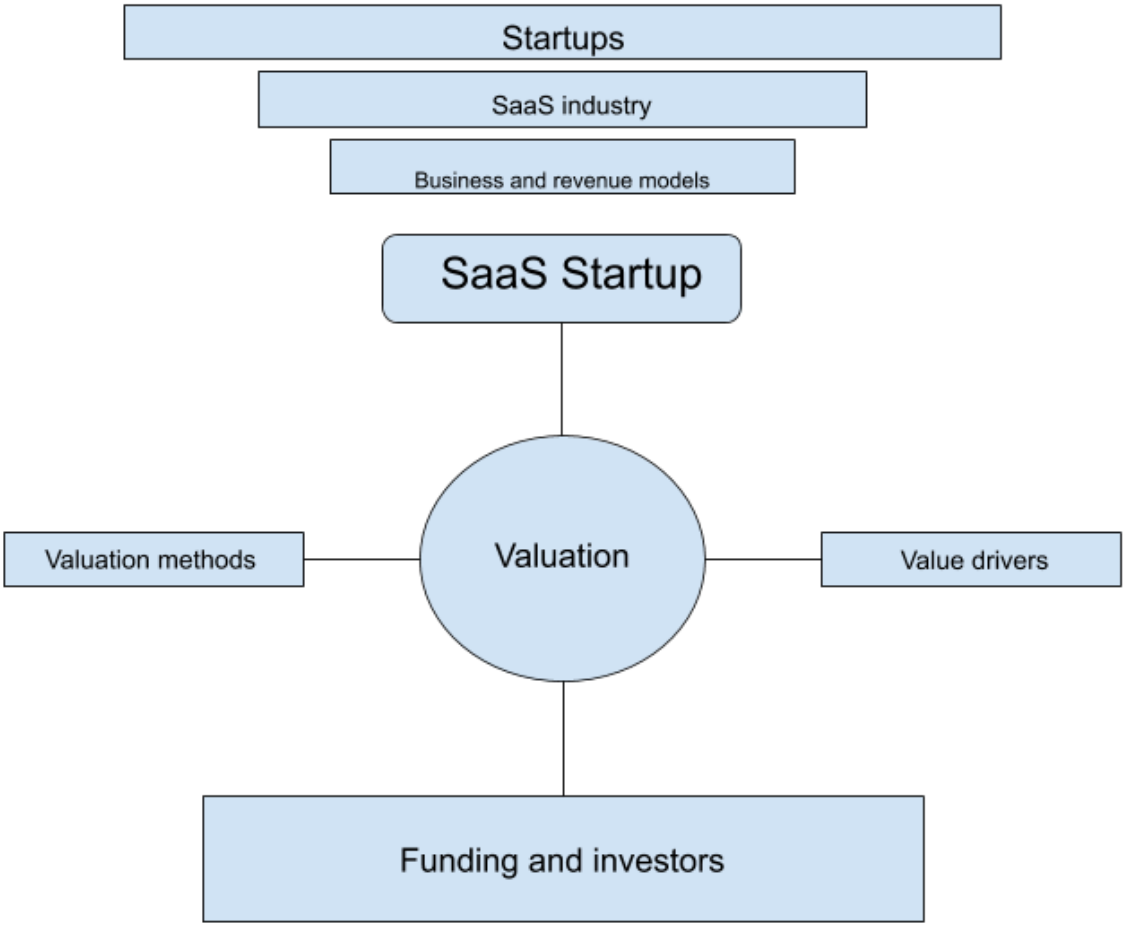

Figure 1. Focus of the research.

In the SaaS industry the location of the company is generally irrelevant, so we are not applying any demographic boundaries. Our case company is a private company, so we are focusing the whole thesis about private SaaS companies. The investors we are interviewing are also from the private sector.

1.2 Research questions

In this thesis we have a few main goals. The first one is to get a clear understanding of what has been written about valuation methods used for valuing companies in the SaaS industry. We are also looking at what has been written about value drivers that investors look for when they are valuing a SaaS company.

Secondly, we are interviewing the investors of our case company, so that we can find out whether these theoretical methods work in real world cases. At the same time, we are finding out if these methods capture the value drivers that investors are looking for. Lastly, we are looking for what has been written about value drivers in the valuation process and we compare that to our own findings.

Based on these objectives we have formed four research questions. When we have the answer to all of these, we can say that we have accomplished our goals for this thesis.

1. What theoretical valuation methods can be used for valuing SaaS companies?

2. What value drivers' investors are looking for when they are valuing a SaaS company?

3. Do the theoretical valuation methods capture the value drivers that investors are looking for?

4. What has been written about the use of value drivers in the valuation process?

1.3 Methods

There are basically two types of research, quantitative and qualitative. In quantitative research the material is a large amount of numeric data. The quantitative research aims to find statistically significant results. It is used to answer questions like how much or how often. In quantitative research it is really important to get a wide range of data so that it represents the target area or group. In qualitative research the data is collected by interviewing the target group. There the aim is to get a deep understanding of what people are meaning. Interviews are the most common method in qualitative research and there are several types of interviews that can be used. The qualitative

research aims to answer questions like how and why. (Juuti, Laukkanen, Puusa & Reijonen, 2014, 85-88)

The research is mostly qualitative, but we also use some quantitative methods to assist us. In the first part of the research we are doing a literature review. This part of the research is purely qualitative. This way will find out what has been written about valuation methods and value drivers in the SaaS industry. This way we will get an answer to our first research question and a solid base regarding our last research question.

The second part of the research is empirical. Here we are combining qualitative and quantitative methods to get the most meaningful results. We are introducing our case company and calculating what valuation we get with theoretical methods that we found earlier. After that we are interviewing the investors of our case company. Here the aim is to find out what value drivers they are looking for in a company and to see how well the methods match up with the drivers. This way we will get an answer to our third and fourth research question. We are also seeing how our findings compare to earlier results regarding the use of value drivers.

1.4 Structure

This thesis contains four major sections. First one is the introduction. In that section we are taking a brief overview of the major areas covered in the thesis. We are also going through our objectives, methods to achieve those objectives and our research questions. Second section is background and business valuation. Here we are diving much deeper into our research area. We will cover the general basics of our background regarding the thesis.

In the third section we are starting the actual research. This section is literature review. In this section we will cover the theory behind the valuation. We will start with valuation

methods for SaaS companies. We will also go through what has been written about value drivers and how those are affecting to the valuation.

The fourth section is empirical. Here we will introduce our case company and calculate its value based on the methods we found in the third section. Then we are doing the interviews and comparing how well the methods match to investors opinions. After the fourth section it’s time for conclusions.

2. BACKGROUND

In the background section we are covering the general basics of the important background areas relating to the research. We will start with startups then move to software and especially SaaS industries. Then we are covering the finance aspect of our background. We are also going through what value drivers are. In the background section we aim to describe the extensive segments shortly and focus more on the most relevant parts regarding our research.

2.1 Startup

This thesis is focusing heavily on startups, so we need to start by defining what startup is, what are typical characteristics of startups and how they differ from other companies. In her article A. Fontinelle (2019) says that startup is a recently established company, which aims to develop a new service or product to market. E. McGowan (2018) describes a startup as a company who is trying to solve a problem and focusing heavily on growth. There are plenty of definitions about startups, so it is very hard to say one exact definition for a startup. It's much easier and more valuable to describe the characteristics of a startup. We can identify some characteristics that help us. In her article Scarlett Cook (2019) lists several key characteristics of startup, like growth, funding and problem solving.

These are very typical characteristics for startups. Problem solving means that startups are often aiming to solve some specific problems in a way that no one else has done before. Because of this startups often have no one to follow and they must create their own paths. (BMI, 2020) Startups are often founded with their own money from the founders and since startups aim for high and fast growth they usually have to rely on external funding. The money from founders doesn't usually last long and therefore startups seek funding from financial institutions and investors. (Gilmanov, 2019) Growth is maybe the most referred characteristic when talking about startups. Graham (2012) describes growth as the most important thing in a startup. He says that for startups the growth acts as a compass, which guides all other things.

Every company was small at some point and all of them wanted to grow, but still there is a difference between startups and small businesses. We can identify three major differences. First one is how these companies plan their growth. Startups plan their business in a way that they can focus on growing fast. They usually have a service or a product which they can sell to a large market. In other words, the business is easy to scale. With small business this is usually not the case. The second big difference is funding. Since startups focus on growing, they usually have to rely on external funding from investors. The funding allows them to invest more money on growth than they would have with only internal funding. The third difference is that startups have a strategy for exit. This means that the owners and investors are planning to sell the company or to get their money from it in other ways, they do not want to own it for a long time. Exit strategy is essential to get the external investors to invest in the company. (Landau, 2019)

2.2 SaaS

SaaS comes from words Software as a Service. SaaS is a cloud-based solution which allows people to use tools or applications that are not saved to their computer's hard drives. Instead the tools or applications are used through an internet browser. (Turner, 2019) SaaS company is a company who has an application or software and they offer it to customers through the internet. This means that the customer can be from anywhere in the world as long as they have internet access. (Brook, 2018)

Traditionally software providers have used the business model where they sold a perpetual license to the software and then maybe charged some maintenance fee later. Now most of the software providers have switched to subscription-based business models. In the subscription model the customer pays recurring fees for the software. The fee is paid usually monthly but sometimes quarterly, every six months or yearly. The subscription model offers a lot of benefits when compared to the perpetual model. The financial measurements are totally different when we compare traditional business models and subscription business models. (McCormick, 2018)

2.2.1 History of Software business

As business software's are not anything new, the name has changed a little over time, but the basics are the same. Software business can be seen to be born in the 1960's, at that time it was called time sharing system. In the 1960's computers were very expensive and really big so those were also very rare. Time sharing system allowed several people to use one computer through multiple terminals. (Hur, 2017)

At that time the development was slow and that is why this kind software business model continued for several decades. In the late 1980's computers started to get much more affordable to small- and medium-sized businesses. This caused software systems to change a little bit. The time sharing system changed to Local area network system or LAN. It meant that companies had their own central servers and all of the applications were stored there and all the employees who were connected to the LAN could use the data and applications from the server. (Hur, 2017)

Later in the 1990's more and more people started to have their own computers, so companies did not have to create central servers to allow employees to use applications. Those applications were downloaded straight to the computers. (Hur, 2017) This meant that the hard drives of the computers started to fill up with applications. At some point users ended up with situations where they had a lot of applications but no memory to save those. This really fuelled the development of the software industry. People and companies realised that they do not need to use applications that need to be saved to the computer. Instead they can buy the whole service from a SaaS service provider and use the tools and applications online. This way they can save money by not needing to store everything on their own. (Hur, 2017)

2.2.2 Software business today

SaaS business is a modern version of software business as were time sharing system and LAN at some point. Even though SaaS has become more and more popular in the software industry, there are still other business models in use.

Many companies have started to shift their old business models towards SaaS model. Some do it by offering the software fully online but still using some other revenue model. The delivery method is one of the most recognizable characteristics of the software and biggest differences of software companies. Some companies have chosen the on-premise delivery solution and others have to use it without any choice. This might be because the software needs reliable and high performance, or it might process so sensitive data that companies do not wish to handle those online. (Yaskevich, 2019)

The SaaS model is a combination of two key components. First is that the software is cloud-based. This means that the SaaS service provider takes care of all the infrastructure regarding the hosting of the software. This way the client can access the tool or the application with a web browser. The second key component is the subscription model. In this model the client pays recurring fee, usually every month, in return for access to the software. (Elfrink, 2016)

2.3 Business and revenue models in the software industry

Business model is a combination of several characteristics of a company's business. For software companies the most easily recognised characteristics are distribution method, code licensing, revenue model and target audience. For the distribution method there are three options, on-premise, cloud-based solution and a combination of these two. For code licensing there are two options, proprietary and open source. Proprietary means that the company owns the code and the user can not access or change it. Open source means that the user gets access to the code. For the target audience there are also generally two options, businesses and consumers. For revenue models there are several options. When companies plan their business models, they have to choose at least one option from each category. (Altexsoft, 2018) From the valuation point of view the revenue models are the most interesting characteristic of software companies.

Every company needs to have a revenue model. This defines how the company will earn their revenues. Many companies use several models at the same time to maximize their efficiency. For software companies there are several popular options, such as perpetual license fee, usage-based, advertising, in-app purchases, transaction fee, freemium and subscription. (Altexsoft, 2018)

The perpetual license authorizes the buyer to use the software for as long as they want. Usually the license fee covers only the one exact version of the software and it also does not include any maintenance. From the supplier's point of view the revenue is a onetime sale. (Shachal) In the usage-based model the customers pay depending on how many units of the product they have used. This model is popular with phone subscriptions, where the costs are dependent on the number of minutes used or messages sent. (Childs, 2016)

The advertising revenue model is based on the sale of advertising space. This is traditionally used by media industries. Usually the idea is to offer content free for the user and then generate the revenue from selling advertising. So basically, the end user of the actual product is not paying anything to the supplying company. (Kokemuller) The in-app purchases model is very popular in the mobile app industry. It means that like in advertising model the user has access to the product for free. The revenue is created by encouraging the user to make purchases in the app. (Plachta) In the transaction fee model the supplying company doesn't usually sell anything, they only collect a fee for every transaction made in their product. The user may sell and buy services through the product and they will keep most of the revenues. Uber is one of the most well-known companies who uses this revenue model. (Singh, 2019)

Freemium is a combination of free and premium, which describes the freemium revenue model well. In this model the base version of the product is free for the users. The content or services are limited in the free version and if the user wants to use all of the services, they have to upgrade to premium. This is a very popular method since it allows the user to test the base version before paying anything. (Segal, 2019) Tinder

is a good example of a well-known company who uses this model as one of their revenue models.

For SaaS companies the subscription model is the most relevant. Many companies use some other revenue model as well, but the subscription model is the main revenue model in the SaaS industry. For this reason, we are going to have a much deeper look at it.

2.3.1 Subscription model

In the subscription revenue model, the revenues are recurring. This is the reason why the subscription revenue model is also called recurring revenue model. This means that customers pay recurring fee to the company. (Campbell, 2019a) In the software business subscription business model is relatively new, but in other industries it has been used for centuries. It was used in the newspaper industry as early as in the fifteenth century. It has become extremely popular after the web-based products have risen in the last decades. (Aria Systems, 2016)

The subscription business model has many benefits for both companies and customers. For customers it is really easy. Subscriptions are usually renewed automatically, so the process of buying is really easy. The customers also gain access to highly valuable products by paying a relatively small fee. (Campbell, 2019b)

For companies the benefits are also clear. Subscription model itself creates a good relationship with customers. This makes customers more likely to stay with the company. Also, this allows companies to sell even more to this client. The subscription model is also very predictable, so companies can easily make predictions for the future and scale the business with less risks. (Campbell, 2019b)

The revenue gains with recurring revenue are totally different than with non-recurring revenue. Figure 2 illustrates the situation of non-recurring and recurring revenue. There we can see that with a non-recurring revenue model the company has made

profit from this sale, but that is it for this transaction. If the company would like to earn more money, they would have to make another sale. We can also see that with the recurring revenue model the cumulative revenue reaches the level of costs in nine months and after that everything is profit. Both of these situations explain the case with one sale for one customer, but unlike with non-recurring models, for recurring models this is not the end of the revenue. The revenues will keep adding up till the customer cancels the subscription. (Campbell, 2019c)

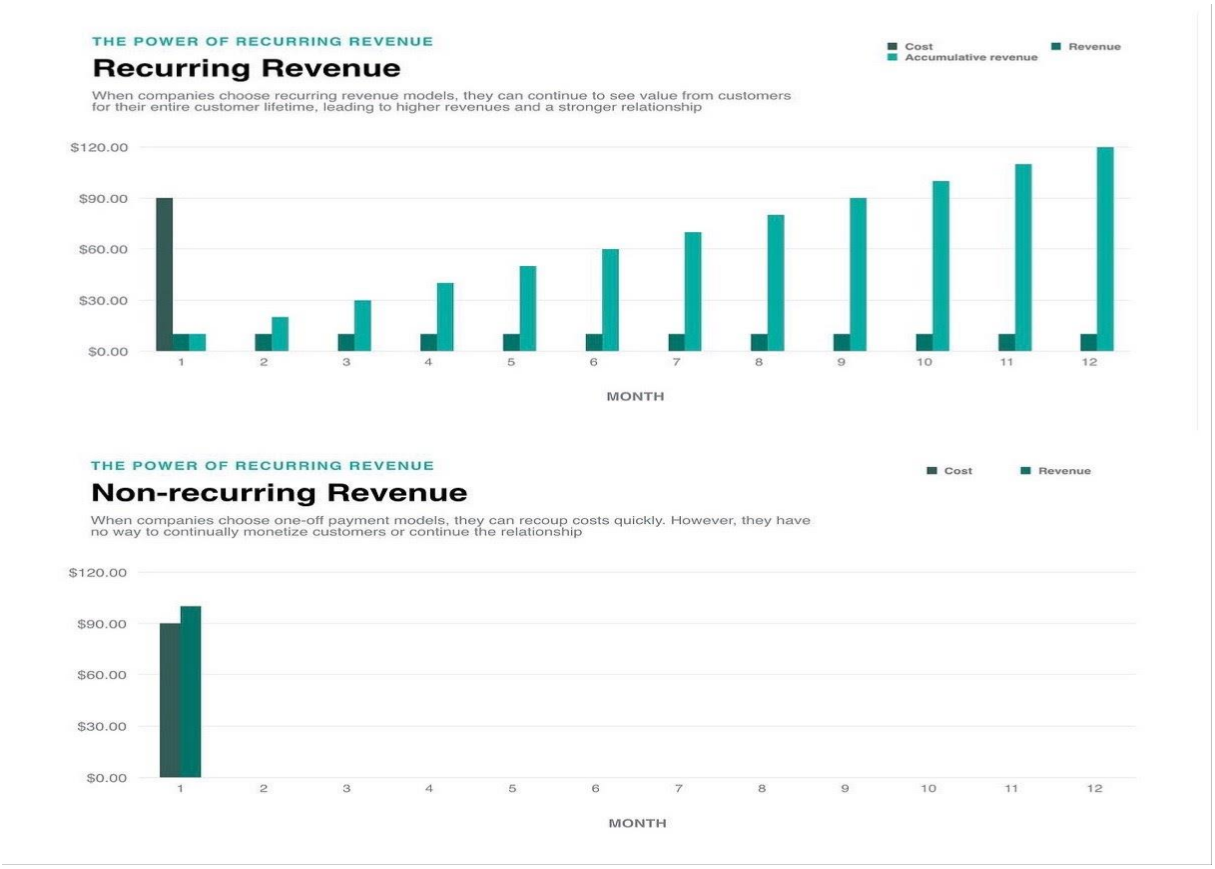

Figure 2. Recurring Revenue and Non-recurring Revenue. Modified. Source: Price intelligently.

One of the great benefits of the subscription model is that total revenues of one customer are not capped at all. Basically, some customers can stay with the company as long as they exist. Customers who stay with the company for years will bring much more cumulative revenue to the company when the subscription business model is used compared to one off sales model. (Bala)

Another great benefit of the subscription model is that it produces a much stronger connection between customer and seller than just one non-recurring purchase (Bala). This offers the company a great chance to sell more to the same client. This is called upsell. In the SaaS business the company usually brings the customer in with the main product and then later tries to upsell to increase the recurring amount. Usually the upsell is for some add-on for the original product or then another product that will be valuable for the customer. (Solomon, 2020)

Figure 3 illustrates this situation. In this case the situation is the same as in figure 2 for the first six months. The upsell happens on the seventh month and as we can see the revenue starts to add up even faster. In this case the payback time is reduced by more than a month. In this case we can see one upgrade in the monthly price, but the company can upsell much more if they have more add-ons or products.

Some companies use this as their main strategy. They have some main products which are really cheap and easy to see valuable for customers. Then they try to upsell as much as possible to increase the monthly price as high as possible. The reason for this is that acquiring new customers is expensive so it is much easier to sell to your current customers. Upselling can be up to ten times cheaper than new customer acquisition. (Patel, 2015)

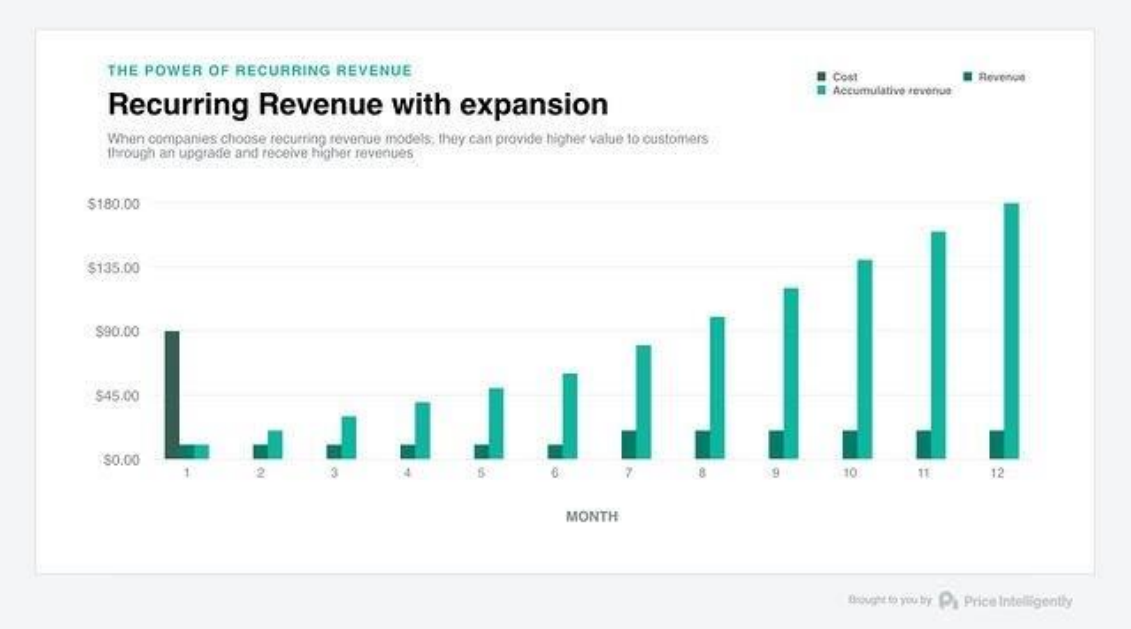

Figure 3. Recurring revenue with expansion. Source: Price intelligently.

These situations explain the revenues when the payments are monthly. Many customers prefer this since it allows them to commit to the product for one month at a time. There is also a psychological aspect in this, the monthly prices look more attractive to customers than annuals. (Domljanovic, 2019) This can be seen as one of the weaknesses of the subscription model. This will automatically cause the company to need financing, since all the costs appear upfront and the revenue gathers slowly. If the situation is similar to figure 3, the company would need to operate with negative cumulative cash-flow from this subscription for nine months.

If the payment would be yearly, the figure for the first year would look like in non-recurring revenue in figure 2. Since the subscriptions renew automatically the company would receive the revenue again next year, but then there would not be any costs anymore. This is the ideal situation for companies using subscription business. This will reduce the need for financing since the costs are covered right away. Also, the profit can be used to fund other subscriptions. (Chargify, 2016)

In accounting the revenue needs to be shown for the month it is recognised. This is called revenue recognition. This concerns companies that sell subscriptions with longer than one-month term. In practice it means that if a company sells an annual deal worth 1200 dollars, in accounting it is recognized as 100 dollars per month. (SaaSoptics, 2011)

Shortly said, the monthly payments will increase the need for financing and annual payments will decrease it. This is why many companies offer significant discounts for customers who are willing to pay annually.

2.3.2 SaaS Metrics

In the SaaS industry data gathering is considered to be very important. Many companies track hundreds of different metrics. In this chapter we are going to go through the main metrics SaaS companies track. The first metric is monthly recurring revenue or MRR. It means the revenue customers bring every month. MRR can be turned to annual recurring revenue or ARR by multiplying it with 12. The second important metric is churn. It means lost revenue. You can measure churn by customers or MRR. Churn for MRR is calculated by dividing the amount of lost MRR by total MRR. Next one is lifetime value or LTV. It means the total amount of revenue the customer will bring in. It can be calculated by multiplying the lifetime value rate with MRR of the specific customer. Lifetime value rate is calculated by dividing one with the churn rate. For example, if the churn rate is 2 percent, the lifetime value rate is 50. If the customer pays 100 dollars per month, their lifetime value is 5000 dollars. (Bern, 2018)

The next metric is customer acquisition cost or CAC. This shows how much the company has to spend to acquire a new customer. CAC can be calculated by dividing the total amount spent for marketing and sales with the total number of new customers. The next one is months to recover the CAC. This will illustrate the time that it takes for the customer to become profitable to the company. After that comes LTV to CAC ratio. It is simply the lifetime value of the customer divided by acquisition cost of that customer. This will bring back a single number and it is especially useful when comparing companies to each other. (Bern, 2018)

2.4 Funding

Companies need to spend money before they can earn money, they need to hire staff, buy vehicles and rent office space. Funding is the thing that makes this possible. Every company needs funding at some stage. Especially at the start of a company's life cycle the incoming revenue can be so low that it does not cover these costs. Also, at the growth stage many companies seek external funding to get the ability to grow faster than organically would be possible.

The reasons why companies need funding varies depending on the industry and company's state of the life cycle. When the business is started the company needs external money since there is no revenue yet. When the company has been started it may need some working capital to get the business running. Some companies also rely heavily on fixed assets such as vehicles or machines, so they need funding to help them to acquire the assets. Growing the company also often creates a need for funding. Expansion of the business increases the costs at the start before the revenue starts increasing. These are the most common reasons for companies to seek funding. (Floatapp, 2016)

Typically, there are two types of external funding, debt and equity-based funding. The deciding factor is what the investor receives as a return for the money. At the same time, it is the cost of the money for the company. In debt financing the cost is the interest that company has to pay. In equity financing the cost is the profit that the investors expect to receive. (Majaski, 2019)

Many companies prefer funding with debt instead of equity, since it is much cheaper in the long run for shareholders. The biggest advantage is that the owners do not have to give out their equity or control of the business. The company can also deduct the interest payments as expenses. The issue, especially for startups, is that the lender requires some collaterals or guarantees for the loan. When the business is just started it does not have much assets which could act as a guarantee. (Ward, 2020) For this reason many startups are looking for equity funding, since there is no repaying obligation linked to that. Of course, by this the owners lose some portion of the equity and profits. On the other hand, equity investors will do everything they can to help the company to succeed. (Fundersclub, 2019a)

2.4.1 Funding rounds and investors

When someone is investing equity in a company, they are basically buying a share of the company. The company receives money and the investor receives equity from the company. Like this investor will create a relationship with the company. If the company

fails to succeed and goes bankrupt the investor loses the invested amount. Usually with startups the investor earns money when the company is acquired by another company or when the company goes public. (Fundersclub, 2019b)

Companies can acquire equity funding at several stages. It is important to know which investor groups are usually investing in the company at any given state. The figure 4 from profitwell (2019) shows the most common stages where SaaS companies acquire funding. SaaS startups will usually need external funding at several stages. The reason why companies need the money differs depending on what stage they are on. (Campbell, 2019d)

The first stage is Pre-Seed, with this money the company can move from ideas and dreams to actual business. At this stage the company is so small that it is really hard to acquire external funding. This is the reason why many founders have to rely on their own personal money at this point. With this money the company can for example build an early stage version of the software and test if it raises interest among potential customers. (Brown, 2019) With the seed investment the company can really get things running, this money allows them to invest in product development and recruiting. Companies can start widening the user base and possibly reach for new or bigger markets. (Law, 2018)

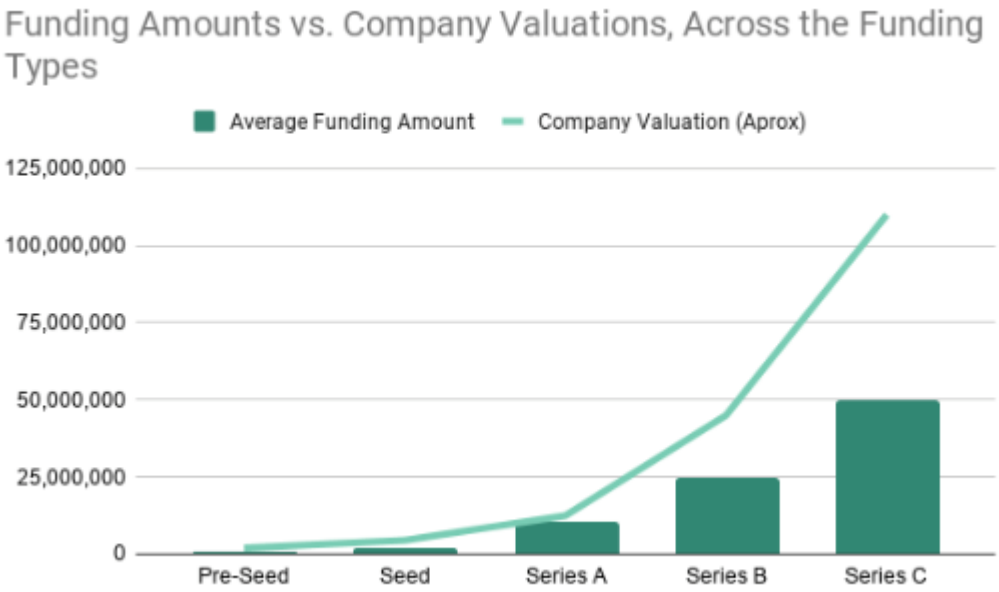

Figure 4. Funding Amounts vs. Company Valuations, Across the Funding Types. Source: Profitwell

If the companies make it to series A round, they have succeeded to get the basic business running quite well. With this round companies can scale their operations and increase the recurring revenue. At this point many companies also invest in finding new revenue channels that can help the growth. With the series B companies can expand their business even more and usually at this point they start to hire some expensive hires for key executive positions. Series C doesn't differ much from B; companies keep expanding and they might acquire other companies to help with that. Series C is usually the last funding round but not always, there can be several more. Usually the last funding round aims for IPO or acquisition, where the company is bought by another company. (Law, 2017)

As said earlier in the pre-seed stage companies are usually funded by the founders and maybe their family and friends. In some rare cases an angel investor or startup accelerator might help also. For these reasons the amounts are small, and the company valuation is almost nothing. In the seed stage company has gained some value and here the investors are usually angel investors or early stage venture

capitalists. (Grigoryan, 2019) In series A the investors are usually venture capitalist. These rounds are usually so big that angel investors drop out of them since they can't afford to invest that much in a single company. At B stage the amounts and valuations are relatively high and there is a lot of risk related to the company. This is the reason why almost always B rounds are invested by venture capitalists. At C or later stage, the risk has usually diminished a lot, and this brings new investors to the negotiation table. In addition to venture capitalists there are private equity firms and hedge funds. (Law, 2017)

Angel investors are private investors who are investing in early stage companies. They are typically ready to tolerate high risks and in return are expecting high profits. Often angel investors also offer more than financial support to the company, they can guide and help the entrepreneurs. (Ganti, 2019) Venture capitalists can also be persons but usually they are companies which gather money from other investors and invest those. They invest in high risk targets and also expect high returns to their investments. (Ward, 2019) Private equity firms are much like venture capital firms. The difference is that private equity firms are investing bigger amounts to more mature companies. They also acquire much more equity, usually over 50 percent. (Pitchbook, 2020)

Venture capitalists are very common investors of SaaS startups, since they can invest in so many different stages. Some venture capital firms concentrate on companies in one particular stage and others may invest in companies in many different stages. Venture capitalists are usually much more organized, and they require more decision-making power than angel investors, since they are often investing money that is gathered from other investors. (Stephan, 2018)

2.4.2 Venture Capital

Venture capital is one form of private equity, typically it refers to a person or a company who is investing in companies with high risk and high profit expectations. Usually venture capital firms set up a fund and gather the money from investors and financial institutions there. Then they invest the money in several promising companies. In

venture capital the risks are high since so many startups fail to succeed. Also, the returns are well above average market returns. This makes it attractive for other investors. (Chen, 2019)

Venture capital is a niche market in the capital markets. It exists because often startups cannot use any other sources to acquire the funding. Many institutions such as banks can not invest in startups because of the law or regulations, which protects the individual owners of these institutions. The money from venture capitalists is not for long term. The basic idea is to make the company ready for the liquidity process, like initial public offering or acquisition by another company. (Zider, 1998)

Venture capital firms are usually well organized, they have staff working on various levels of the organization. The typical organization structure from bottom to top is analyst, associate, principal and partner. Each of these positions can have junior and senior roles. Analysts are usually young graduates who do not make decisions, they only observe and make research. Associates are usually people with financial background who also do not make decisions but can introduce ideas and people to decision-makers. Principals are the first people who can make decisions, not for the whole company but on the individual investments. Partners are the top executives of the venture capital firms. They make the decisions about the firm's strategy and are in charge of fundraising. Investors of venture capital firms are called limited partners, they invest their money in the firm but usually do not participate in its operations. Venture capital firms earn their money in two ways. First is the management fee and second is the profit from the investments. Management fee is typically a few percent of the managed amount. Most of the profits from the investments go to investors of the venture capital firms, but the firm also usually takes around 20 percent of it. (Cremades, 2018)

The figure 5 shows how venture capitals place themselves at the capital markets. There are four major players, venture capitalists, entrepreneurs, private investors and investment bankers. Private investors are looking for high profits and they invest their

money in venture capital firms. Entrepreneurs need funding for their business, so venture capital firms offer this to them. When the entrepreneur has increased the value of the company enough venture capitalists will cash-out with the help of investment bankers. Investment bankers are looking for opportunities to earn money by selling the stocks to public markets. Basically, venture capitalists create a market for the other three players to operate, they act as middle market before entrepreneurs can use the public markets. (Zider, 1998)

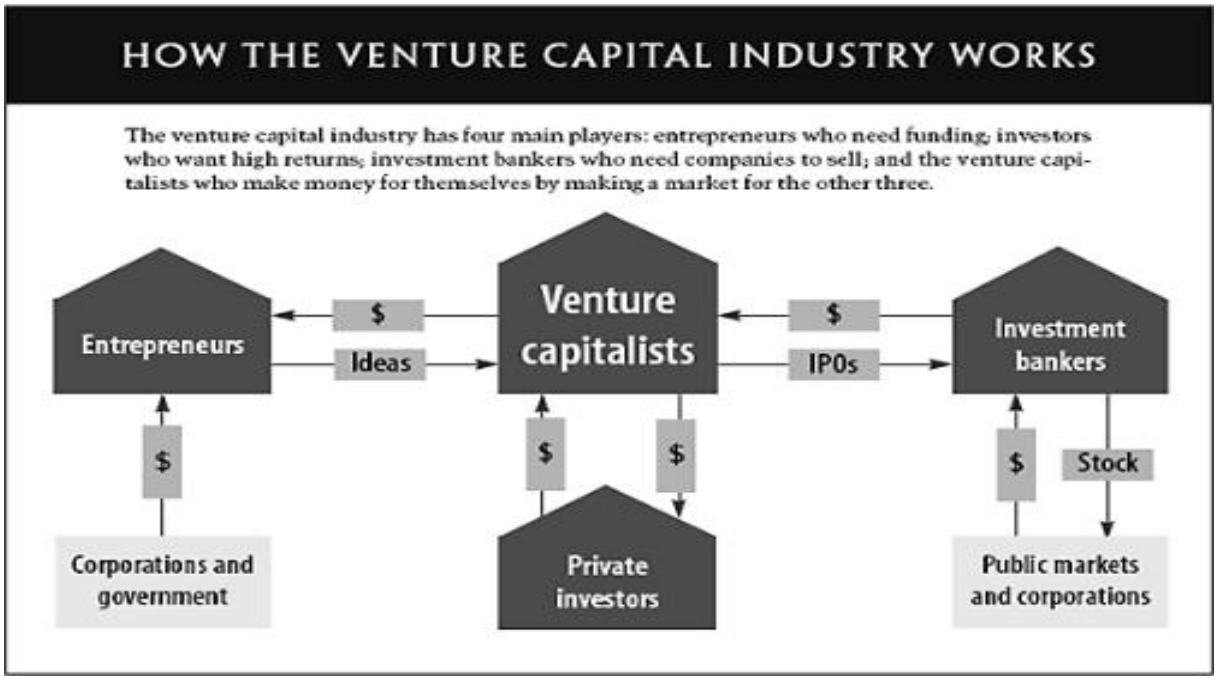

Figure 5: How the venture capital industry works. Source: Harvard Business Review

There are plenty of startups looking for funding and plenty of investors looking for companies to invest in. Investors always want to maximize their profits on the investment. The things that make them invest in one company and not to the other are the value drivers.

2.5 Value drivers

Value drivers are the things that make the company stand out compared to competitors and the buyers to pay premium. Value drivers differ for companies and especially for industries, but for any company those can be the things that have a huge impact on

the success of the company. (SearchERP, 2016) For company shareholders it is essential to recognize the critical value drivers that can reduce the risks for business and increase the cash flows. (CFI, b) Value drivers cannot just be created out of thin air when someone is selling the company, value drivers must always exist before the selling is happening. Common value drivers either reduce the risk or increase the growth opportunities. Good examples of common value drivers are skilled and motivated management team, increasing and stable cash flow, diversified customer base, good business systems and effective control of finance. (Business Enterprise Institute, 2018)

Many companies fail to notice the importance of value drivers, they think that every factor in their operation is equally important. Instead they should identify and focus on value drivers, these will have a significant impact on the value. One way to do this is to do a value driver analysis by mapping the value drivers. The idea here is to break down the operating factors into smaller components until we have factors that are managed on a daily basis. After that you should test how much a change in each factor affects the total value. Then you should check which factors you can control, and which are given. The factors that can be controlled and have a significant impact on overall value are the key value drivers. (L.E.K., 2017)

A. Buchberger (2017) says that when they are valuing SaaS Business in SenovoVC they are looking for following value drivers: customer base, upselling opportunities, IT roadmap, churn and technology. T. Gardner (2013b) lists the five most important value drivers for SaaS companies. The first and most important driver is growth, second is addressable market size. The third and fourth drivers are customer retention and gross margins. The least important driver in this list is customer acquisition costs.

For SaaS companies the growth is the most critical driver, especially in the early stages of the company's life cycle. The growth is measured by total revenue, which can be divided into two factors. First is the number of customers and second is the average amount that a customer pays. To gain the most rapid growth, the company has to be able to increase both of these factors all the time. In the SaaS industry the growth is a

measurement of financial success and it is used to measure the position against competitors. (Cadambi & Easwaran, 2016) Addressable market size refers to the total size of the market where the company is in. Investors are interested about this because it reveals how much the company can scale. If the company has already acquired half of the customers in its market it is not an attractive investment for investors, since the company can only double their customer base. If the company has the possibility to scale its operation much more it is much more appealing to investors. (Gardner, 2013a)

Customer retention is not so important for companies who have just launched their product, but for companies who are at the scaling phase it is extremely important. Customer retention impacts straight to growth. Churn means a loss of customers and for every churned customer the company has to acquire a new one to be able to grow. Of course, some customers bring more revenue than others so acquiring a very big customer can cover the churn of a few smaller one. (Cadambi & Easwaran, 2016) Good gross margins bring flexibility to the company. In periods of rapid growth, it allows companies to invest in product development and sales and in slower growth periods it allows companies to become profitable. Gross margin becomes more and more important when the company approaches the maturity phase, since gross margin gives good insight about the cash generating potential. (Iltchev, 2019) The customer acquisition cost means the amount spent on sales and marketing to acquire one new customer. The customer acquisition cost is high if you spend a lot of money in sales and marketing but acquire only a few new customers. Obviously, the aim is the exact opposite situation, where you spend a little and gain many new customers. (Smale, 2020)

3. Business valuation

The valuation is the process where the aim is to determine the economic value of the underlying asset or company. The business valuation is an important part of corporate finance. It comes essential for companies when they are looking to sell some part of their operations or when they are seeking equity-based funding. (Hayes, 2019)

General valuation can be divided into four approaches. The first one is valuation based on discounted cash flows. This relies on the assumption that the expected future cash flows determine the value of the asset. For example, the value of the stock would depend only on the future dividends and other payments that it generates. The second approach is accounting and liquidation valuation, which focuses on the assets of the company. The third approach is relative valuation, where the value is not based on the asset itself but rather on other similar assets. With this theory investors would determine the value of an asset by comparing it to similar assets on the market. The fourth approach is an option-based model. Here the idea is to calculate the value of assets that remind options. (Damodaran, 2006)

The valuation of startup companies is difficult. There is a lot of uncertainty about the future and there is no history where to reflect the current situation. It is hard to do the valuation with discounted cash flow methods, because it is hard to determine the inputs to use in the valuation process. On the other hand, it is not easy to use relative methods either, since there are not many comparable companies. Many startups fail in the first few years, so it is hard to find another company for the comparison. (Damodaran, 2010)

3.1 Characteristics of startup valuation

Startups are difficult to value for various reasons, most of these reasons are derived from the characteristics of startups. The most obvious characteristic is that startup companies do not have history. Startups also usually do not have much revenue and have a lot of operating losses. This is why many of them are heavily dependent on private equity investments and they usually need several claims of that. Startups are

private companies, so the investments in those are not liquid and it may take several years for investors to receive the money back. These characteristics create difficulties in the valuation process, for every approach. (Damodaran, 2009)

The discounted cash flow methods rely heavily on the inputs used in the calculations and those are not easy to determine for startup companies. There are 4 major input variables in the formula. First is annual cash flow and second is the growth on these annual cash flows. The third one is terminal value and the fourth is the discount rate. (Damodaran, 2009) The annual cash flow for the first year might be relatively easy to determine but the growth rate of cash flows for future is always only an estimation. For startups who have no history it is hard to estimate the growth rate reliably. The terminal value is also an outcome of these same inputs and it is as hard to estimate as the growth rate. For this reason, the estimation is an educated guess at best. (Bobbink, 2019) Weighted average cost of capital is usually used when determining the discount rate. For that we need the cost of equity and cost of debt, the cost of debt is easy to determine since it is stated at the loan agreement. The cost of equity is much harder since investors determine that and a startup company may have several investors and every one of them might have different opinions. (Damodaran, 2009)

With relative valuation methods Damodaran (2009) describes five issues, which are multiple scaling, comparable companies, risk determination, failure control and illiquidity. The issue with multiple scaling is that many multiples are totally different when we compare startup companies and mature companies. EBITDA is commonly used multiple when valuing mature companies, but it cannot be used when valuing startup companies since they are usually not making any profit. This brings us to the second issue about choosing the companies where to compare the startup. Since the nature of the business and the multiples are so different with mature companies, we need to find a more suitable company where to compare. Much like with discounted cash flow methods the determination of risk is hard in relative valuation methods. The risks change all the time and it is determined by many entities. (Wong, 2013) Startup companies have a high failure rate and that should be calculated in when determining the risk. This also means that the risk should diminish when the company becomes

more mature and the risk of failure decreases. Taking this into consideration in the valuation process is not easy. Investors also have to remember that investments in startup companies are highly illiquid, they need to adjust the calculations based on that. This becomes an issue when comparing publicly traded companies and private startups. (Damodaran, 2009)

3.2 Valuation methods

In this section we are covering some of the most used valuation methods. Some of these methods are more suitable for valuing startups than others, but all should be usable at least at the theoretical level. In the first literature review part we will find out which methods are used when valuing SaaS companies.

3.2.1 Discounted cash flow method

Discounted cash flow or DCF method is based on the idea that the value of an asset is based on the future cash flows it generates. When an asset has high cash flows it is worth more than other assets with low cash flows. The basic idea is to take the free cash flows to the firm or to the equity of every year and then discount those to current value. Weighted average cost of capital is used in discounting if we are calculating the value for the firm. If we calculate the value for equity, we shall calculate the cost of equity with capital asset pricing model. It is hard to predict cash flows for several years, so it is common to predict those for example for five years. After that the value is calculated either with terminal value or liquidation value. In the liquidation value process, we assume that the business will end at the terminal year and the assets will be liquidated after that. In the terminal value process, we calculate the terminal value as follows. We take the cash flow of last predictable year, multiply it by the growth percentage. Then we divide this with the difference of our discount rate and the growth rate. By summing up the discounted cash flows of predictable years and terminal value or liquidation value we get the value of the firm or equity, depending on what inputs we use. (Damodaran, 2010)

The figure 6 from CFI shows the situation when the cash flows are predicted for five years and after that they have estimated the terminal value. The cash flows are estimated to be stable at 100 million dollars for five years. The terminal value is estimated to be 300 million dollars after five years. The cost of capital is estimated to be ten percent annually and it is used to discount the future cash flows for today. When everything is summed up, we get the value of 565 million dollars. (CFI,a) From the formula we cannot see if the value is calculated for equity or the firm and how the terminal value and cost of capital is calculated. We can still see the basic idea of discounted cash flow valuation method.

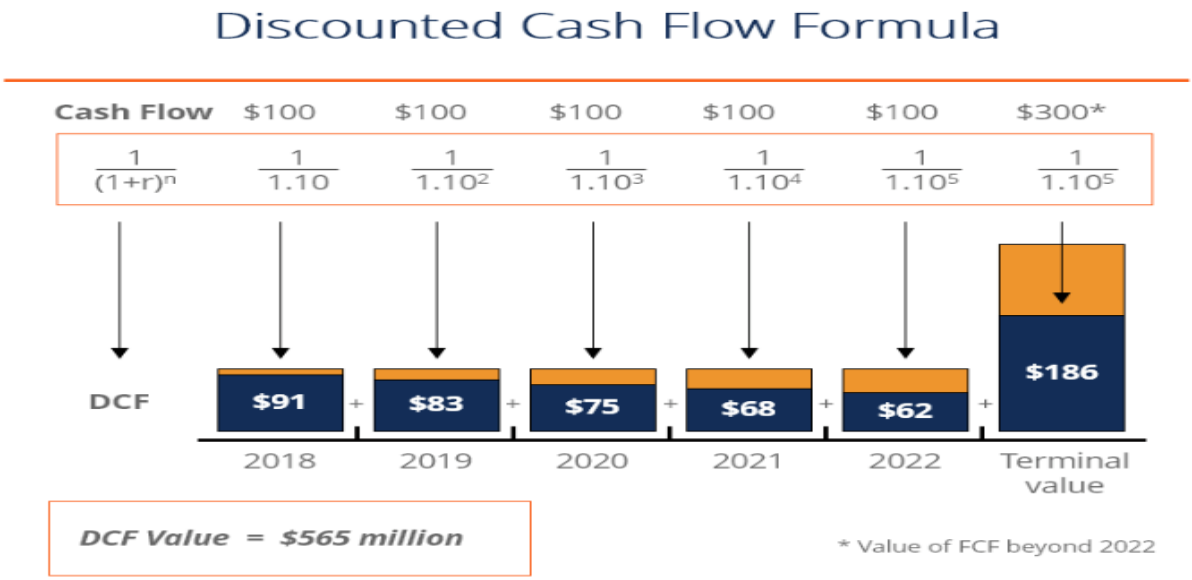

Figure 6. Discounted Cash Flow Formula. Source: CFI,a

3.2.2 Comparable transaction method

Comparable transaction method is a relative valuation method. There the aim is to determine the value of the certain company by looking for transactions about similar companies. The more the compared companies remind each other the better this method works. Also, the transactions of other companies need to be relatively recent, since the value can differ a lot in a few years. If the companies remind each other a lot and the transactions of other companies are relatively recent, we can assume that the market values are also close to each other. (Tuovila, 2020)

3.2.3 Multiples method

Multiples method is also a relative valuation method. It is similar to a comparable transaction method. Multiples are indicators that help to determine the value of a stock. Multiple is a ratio that can be calculated by dividing the value of an asset by some item from the financial statement. The multiples method assumes that the ratio can be used for several companies which operate in the same industry. The basic idea is to determine the value of a company based on the other company. (Smith, 2019) Price per earnings ratio, market value divided by book value ratio, earnings before interest, depreciation, and taxes (EBITDA), and free cash flows are the most frequently used multiples. This method assumes that there are companies which can be used as comparable. (Aydin, 2015)

3.2.4 The venture capital method

The venture capital method is a valuation which focuses heavily on the future. It doesn't rely on the value today instead it focuses on the value in the future. It starts by defining the annual return rate or the exit multiple. With one we can calculate the other. Let's says that the VC is expecting a 50 percent annual internal rate of return and the investment is for five years and that the investment required now is 3,5 million. With these we get the exit multiple, (1,5)^5=7,6. This means that the VC is expecting to receive the investment back 7,6 times in five years. If we assume that the value of the company is 15 times the earnings and that the earnings will be 2,5 million in five years, we get that the company is worth 37,5 million in five years. We can calculate that VC needs 7,6*3,5=26,6 million back. From this we can calculate that the VC needs the ownership of 26,6/37,5=70,9% to receive the required return for the investment. On the other hand, this means that the company is now worth 3,5/0,709=4,94 million. (Sahlman, 2009)

3.2.5 The first Chicago method

The first Chicago method is a method mixed with elements from relative and cash flow approaches. There we use multiples to determine the terminal value based on last year's cash flow and discounted cash flow method to value the cash flows. This method requires three scenarios for the cash flows, worst case, neutral and best-case

scenario. We also need to determine specific probabilities for each scenario. After that we can calculate the value for each scenario and then the weighted average value. This method uses several estimation methods and takes the risk into account, so it is really comprehensive. This is the reason that it is often used by venture capitalists and private equity firms. (Gordon, 2015)

3.2.6 Real options method

Real option means flexibility, it is the possibility but not the obligation to do something. Therefore, the owner of the real option has the choice to do or not to do something. This choice is valuable because it offers flexibility to the owner. For this reason, the real option is valuable. The name real is derived from the fact that these options concern some real assets. Since real options means flexibility it must be that an asset without real options is not as valuable as an asset with real options. As the owner of the option has the right to execute or not to execute these options, the owner will never execute these options if those cause him or her to lose money. Therefore, the value of the option must always be non-negative. (Collan, 2012, 25-29)

Real options offer flexibility in many forms, in his book Collan (2012) identifies five different types. First is selecting and changing the input and output variables of the certain process. Second is increasing or decreasing the scale of the operation. Third is stopping and restarting the certain operation. Fourth is choosing the time of taking actions. The fifth is abandoning the whole operation. Real options are usually referred to a certain asset or operation, not so much for the whole company. If the case is that an investment company is valuing another company and thinking about investing in them, it can be seen as one asset and therefore the investment process can be seen as a real option. This is possible as long as the investment process is still at the planning stage and the investment is not yet made. (Collan, 2012, 25-29)

Although real options are different than financial options, they are traditionally valued the same way. The common methods are Black-Scholes pricing formula, binomial valuation method, Monte-Carlo methods and some variances of these methods. These

models are generally really complex and hard to understand without great understanding of the underlying mathematics. Also, these models assume that they can forecast the markets as a process accurately. For financial options this might be true, since those are traded in efficient markets. Real options on the other hand are not publicly traded. These characteristics of traditional option valuation methods makes them less accurate for real options. (Collan, Fullér & Mezei, 2009)

In their article Collan et al. (2009) present one alternative for these methods. Their method uses fuzzy numbers to capture the values of the pay-off distribution. In this method the value of the real option is the weighted average of the positive result from the pay-off distribution. This method is based on Datar-Mathews method which uses Monte-Carlo simulation to create a probability distribution for the net present value of the project. In his book Collan (2012) presents the pay-off method with more details. The pay-off distribution is the result of three cash-flow scenarios, minimum, best guess and maximum. For each scenario we have a different net present value and the pay-off distribution starts from the net present value of the minimum scenario and ends to the net present value of the maximum scenario. The distribution is presented as a triangle. The value of the option is the positive area of the triangle divided by the whole area of the triangle, multiplied with the possibilistic mean of net present value. (Collan, 2012, 9-32)

4. LITERATURE REVIEW

Literature review is an essential part of this research. Here the aim is to get a comprehensive knowledge of existing academic literature focusing in our main focus area.

Literature review is a vital part of the research. All new research should be backed up with the existing knowledge of the research area. The idea of the literature review is to identify and organize the relevant existing literature of the subject area. The aim of the literature review is to summarize the previous and current research about the research area. To get the best result, we should avoid broad fields. Therefore, literature review should be as focused as possible. (Rowley & Slack, 2004)

In their article Webster and Watson recommend using a three-step approach for finding the relevant literature for the review. The first step is to find the key articles which are most likely to be found from leading journals. Journal databases are a good way to identify relevant articles. The second step is to go through the citations of these articles found in the first step and look for other relevant articles. The third step is to find articles which cite the key articles identified in the first step. (Webster, Watson, 2002)

In this thesis we will be following the method Webster and Watson (2002) suggested. We will start by defining relevant keywords for our research. We will use EBSCO - Business Source Complete database so search the key articles. In the second step we are going to use all possible sources to find articles relevant for the research. The third step is conducted with the help of the Web of Science database, where we can see most of the articles citing our key articles. The EBSCO - Business Source Complete database allows us to search with words or combinations of words, we can combine these with Boolean operators. The operators we can use are “and”, “or” and “not” We have to limit the search for results where we can access the full text. This way we should be able to find most of the relevant articles for our research.

4.1 Valuation of SaaS startups

At this section we are covering the relevant articles about valuation of SaaS startups. We start by defining keywords and search strings which will allow us to find relevant articles and keep the focus tight. Some obvious keywords are valuation, SaaS and startup. The table 1 shows how many results we got with different search parameters. As we can see the sentence “valuation of SaaS startups” is too specific and did not return any articles. When we separated the words and opened up SaaS, we got some results, but the amount is still too low, and the headlines of these articles were not interesting. If we drop one word the number of results increases considerably. Although when we drop “SaaS” away the results are not relevant for us anymore. When we drop “startup” away we have 190 results and the headlines for these articles look promising. When we expand the search with the word “value” the number of results increases to 1433. The brief look at the headlines reveal that these articles are not suitable for us. Changing that to “valuation methods” gets us back to 190, which indicates that this word does not add any value to us. The string “Valuation” and “SaaS or software as a service” yielded the most relevant articles for us. Based on these results we think that it is best to start browsing through these 190 articles. Of course, not all of these articles are relevant for us, but when we go through these, we will find the ones which are.

Search parameters	**Number of results**
“Valuation of SaaS startups”	0
“Valuation” and “SaaS” and “startup”	1
“Valuation” and “SaaS or software as a service” and “startup”	5
“Valuation” and “startup”	559
“Valuation” and “SaaS or software as a service”	190
“Valuation or value” and “SaaS or software as a service”	1433
“Valuation or valuation methods” and “SaaS or software as a service”	190

Table 1. Search parameters and number of results 1.

As we went through these 190 articles we identified 10 relevant articles.

As there were so few relevant articles, we had to expand the search. We used google scholar and searched with “Valuation of SaaS startups”, This search returned 1190 results. As we went through these articles, we identified 2 relevant articles. Now we have 12 relevant articles in total. These articles will act as key articles for our research, and this completes the first step of the three-step approach. Figure 7 demonstrates the process flow in the literature review. In the second step we looked at the citations of these key articles and found 8 additional relevant articles. In the third step we used the Web of Science database to help us to find articles where our key articles have been cited. This way we did not find any relevant articles. In the process flow the second step is on the left side to illustrate that we are moving backwards from the key articles and the third step is on the right side to illustrate that we are moving forward from key articles. In total we have identified 20 relevant articles for our literature review. It is now clear that there is very little academic literature about our subject. The articles we found often cited blog posts and other non-academic sources.

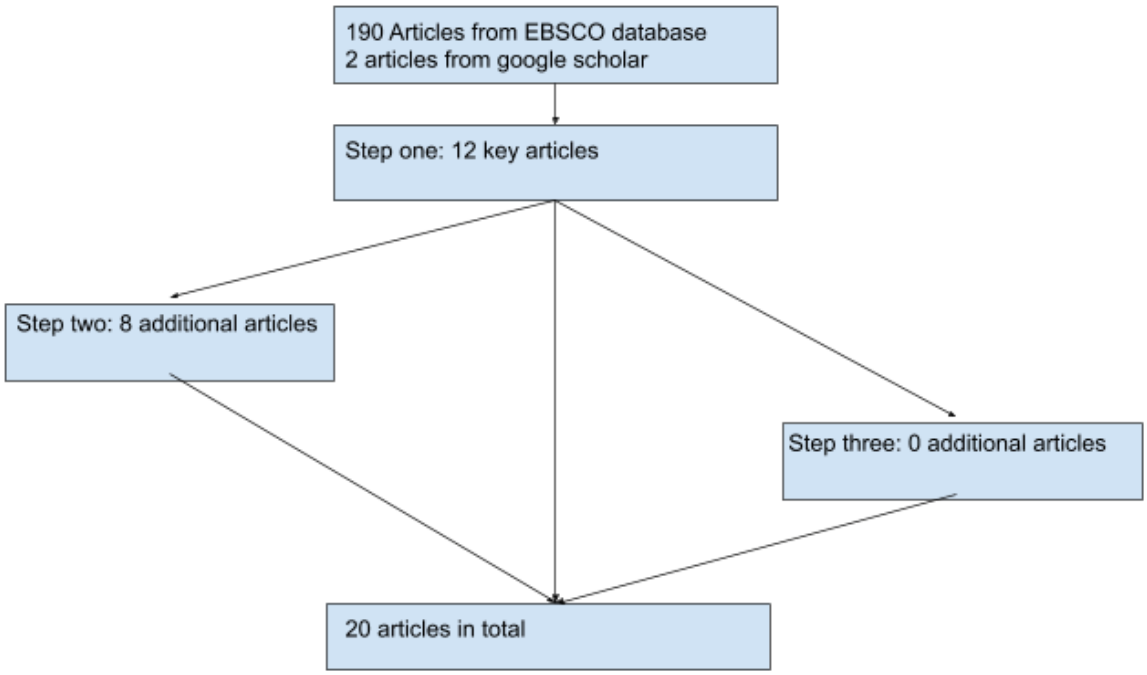

Figure 7: The three-step literature review process 1.

In their article Cohen and Neubert (2019) says that the method used in the valuation process is dependent on the lifecycle stage of the company. They use Salesforce as a case company in their research. They say that Salesforce can be seen as a young

company in the growth stage. In their research they use two different valuation methods, discounted cash flow and relative valuation method, where the value was determined by comparing the case company to peer companies. The discounted cash flow method was able to calculate the price of the stock very well, but the relative valuation method was not suitable for that. The calculations made with the discounted cash method differed only 0,24 % from the actual valuation. With a relative valuation method, the difference was 17 %, this was mainly because the comparison companies are not growing as fast as Salesforce. (Cohen and Neubert, 2019)

Kanaryan and Trichkova (2015) uses the first Chicago method to estimate the value of SaaS startup. In their case the company was established only three years ago. They used four different scenarios in the valuation process. First one ended in the initial public offering. The second scenario ended in a merger or acquisition deal. Third scenario was the stable growth scenario and it had the highest enterprise value. In these three scenarios they estimated the terminal value with industry price multiple. The last scenario was a failure. The enterprise value was low, and the terminal value was substituted with liquidation value. Each of these scenarios had different probabilities and the total enterprise value was the weighted average of these scenarios. (Kanaryan and Trichkova, 2015)

Heimann and Rathi (2017) studied the operating metrics and valuation of SaaS companies in their article. They studied more than 90 public SaaS companies. They also included valuation metrics about private mergers and acquisitions to show the difference between private and public companies. They found out that revenue growth is the leading valuation driver and that markets are starting to appreciate healthy EBITDA margins. In their key findings they point out that revenue multiples are the main valuation method in the SaaS investments. For average public SaaS companies, the multiple was six and in mergers and acquisitions of average private companies the multiple was around four. (Heimann and Rathi, 2017)

Even though there are not many academic articles about this subject, we were able to find the answers to what we were looking for. SaaS companies, both public and private are valued with discounted cash flow method and relative methods. Discounted cash flow method can be used on its own or as a part of another method like the first Chicago method. On the relative side, the comparable transactions and multiples methods were used. The simplest valuation method was the revenue multiple method, where the value of the company was simply determined by multiplying the annual revenue. The non-academic literature we found also suggests these methods.

4.2 Value drivers in the valuation process

At this section we are covering the relevant articles about the use of value drivers in the valuation process. We start by defining keywords and search strings which will allow us to find relevant articles and keep the focus tight. Some obvious keywords and key word combinations are valuation, value drivers and value drivers in valuation. The table 2 shows how many results we got with different search parameters. We started with the “value driver” and it yielded 1042 results, as did “value drivers”. Next, we searched with “value” and “driver”, this way we got 5614 results. In these cases, we got a great amount of results, but the articles were mostly irrelevant for us. Next, we added the word valuation in the string and tested several different combinations of these words. As we can see from the table the amount of results decreased a lot, but we found much more relevant articles with these parameters.

Search parameters	**Number of results**
“Value driver(s)”	1042
“Value” and “driver”	5614
“Value driver” and “valuation”	133
“Value” and “driver” and “valuation”	279
“Valuation” and “driver”	508
“Driver” and “business valuation”	57
“Driver” and “enterprise value”	44

Table 2. Search parameters and number of results 2

We browsed through the articles found with each parameter and discovered that there are some relevant articles in each search. As we went through these articles, we identified 13 relevant articles. These articles will be our key articles in the three-step literature review process. Figure 8 illustrates this process. We start with these 13 articles. Secondly, we looked at the citations of these articles, this way we found four relevant articles. In the third step we looked at articles which had cited our key articles and found two more articles. The search parameters yielded a great number of articles, but most of them were irrelevant for us. In total we have 19 articles which are relevant for us and we will conduct the literature review based on these articles.

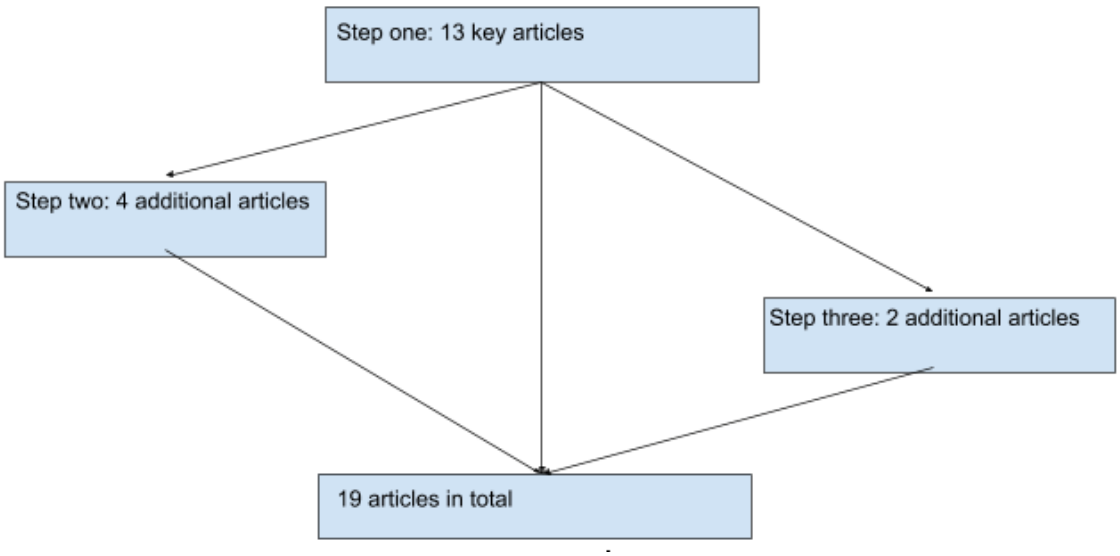

Figure 8: The three-step literature review process 2.

In their article Kazlauskienė and Christauskas (2008) studies value drivers and their impact on business value. Their aim was to create a linear business valuation model based on the value driver analysis. From the model one should be able to determine the most critical drivers and the model should also reveal the relationships between different value drivers. In their conclusions they state that the introduced model was not able to reveal the impact that value drivers have to business value. The linear form of the model also caused issues with identifying the relationships between different drivers. They also state that there is not much scientific literature about value drivers and their impact on business value. (Kazlauskienė and Christauskas, 2008)

Holthausen and Zmijewski researched the multiples valuation method. They say that multiples method is one the most used valuation method in addition to the discounted cash flow method. They state that even if the company under valuation and the comparable company seems similar their multiples may differ a lot. This makes the companies not comparable. In their article they show that differences in value drivers results in different multiples. They also state that these differences in value drivers have different effects on many multiples. To ensure the comparability of companies one must know how the differences in value drivers affect the multiples. One value driver can cause changes in many multiples and some multiples are more sensitive to changes in these valued rivers than others. Value drivers play a major role in multiples valuation method. (Holthausen and Zmijewski, 2012)

In their article Cannice, Graham and Sayre (2002) research which financial and non-financial factors drive value to internet companies. Their findings show that net income had no significant effect on market value and that book value had a modest positive correlation with market value. From non-financial drivers, unique visitors and page views had a significant positive impact on market value. They also discovered that different drivers were more beneficial for some companies than others. For example, some companies benefited a lot from page visits, and some benefited more from unique visitors. (Cannice, Graham and Sayre, 2002)

Blees (2011) raises a valid point about value drivers in his article. This is essential for especially companies who aim for acquisition. He says that value drivers need to be considered from the buyer’s perspective. The current market value of the company does not mean anything if it is based on value drivers that the buyer does not appreciate. For example, if the current owner appreciates an educated management team and therefore invests in that a lot and does not invest in growing the customer base. This actually decreases the value of the company if the buyer is more interested in the customer base. (Blees, 2011)

In their book Goedhart, Koller and Wessels (2010) introduces the value driver formula for determining the terminal value. The formula is based on the cash flow, but it also takes growth and return on invested capital into account. This formula is purely theoretical since it is not used in practice. The value drivers in this formula are net operating profit less adjusted taxes, growth rate, return on invested capital and weighted average cost of capital. (Goedhart, Koller and Wessels, 2010, 45-50) In his article Jennergren (2013) points out that the value driver formula has some issues, he suggests that the value driver formula should be modified so that it would be more useful. He also introduces the extended value driver formula in his article. (Jennergren, 2013)

In summary, there are no valuation methods which would incorporate the value drivers directly. Value drivers still have an impact on some valuation methods and the business value, but it is not clear how big the effect is. In academic literature value drivers is still relatively rarely researched subject. The effect of value drivers is most visible when the valuation is done with the multiple’s method.

5. EMPIRICAL

In this section we are going to conduct the empirical part of our research. We will start by defining the research methods. After that it is time to introduce our case company and present some preliminary calculations for the value of the company. Next, we will do the interviews and then present the results of those. Lastly, we will compare the findings from literature review to findings from interviews.

5.1 Methods

In this research we will use mostly qualitative methods to get the answers to our research questions. We will be using a combination of two qualitative methods, case study and interviews. We are also using some quantitative methods to assist us. We calculate the value of our case company before the interviews and use those calculations to gain the full potential of the interviews. The qualitative methods are essential for us, since we are aiming to find answers to questions like what, how and why.

Qualitative research is usually said to be the opposite of quantitative research. Both of these are often presented in comparison to the other. Qualitative research means that the research is done with non-numeric data. It is especially useful when the researched phenomenon is not researched a lot. Qualitative research seeks answers to unstructured problems so the research should be flexible and exploratory. In business research qualitative methods are often used to provide a better understanding of problems that quantitative research has failed to solve. (Eriksson and Kovalainen, 2008, 3-8)

There are several different methods to conduct qualitative research. Interviews are one of the most commonly used methods. Interviews can be performed in one-on-one situations or as a focus group interviews. Interviews offer a great opportunity to gather very precise data about people's opinions and beliefs. The questions are often pre-determined, and interviewers can come up with follow up questions. Interviews can be

conducted in several ways, like face-to-face interview or phone call interview. One of the simplest ways to do qualitative research is case study. In case study the idea is to find answers to research questions by studying some individual entity or organization. Case study can provide great results since it involves a deep dive into the case organization and thorough understanding of the collected data. Ethnographic research is also one optional method for qualitative research. There the researcher adapts to the target audience and collects data this way. This kind of research usually aims to understand the challenges, cultures or motivations of certain populations. (Bhat, 2020)

In this research we are doing a case study and also semi-structured interviews. The case study is necessary since the researched phenomenon is focused on private companies. For private companies it is not possible to find enough reliable data to conduct the research otherwise. In interviews we used semi-structured format but also asked extra questions and gave the interviewee the freedom to speak more about the subject. The interviews were conducted by phone calls. The interview questions are presented in chapter 5.3.

5.2 Case company

Our case company wishes to stay anonymous, so it will be called only as a case company in this research. To guarantee the anonymity of the company we had to do some adjustments to the way we present our findings. Most of the numbers presented in this research are developed by multiplying the actual number with our research multiplier. This way we can still make conclusions based on the relationship between numbers, without risking exposing the critical information of the company. These relative numbers are presented inside parentheses, so it is clear that these numbers are not the real numbers

5.2.1 General information

Our case company is a privately owned startup in the SaaS industry. The company was founded less than ten years ago. For a startup, the company has a relatively long

history. The company was founded by three founders and they still own a major part of the company's shares.

The business model for our case company is purely SaaS. The product can be accessed through the internet and all of the revenues are recurring. The case company has several thousand clients all around the world. Northern America and Europe are the biggest markets for our case company. The company has proven that the business can be efficiently scaled in several different markets. In the last three years the company's annual revenues has been over million euros and the growth rate of the revenue has been over 50 percent each year. The company is focusing heavily on growth and therefore is not making any profit at the moment. To fund the growth the company has closed several funding rounds. The last one took place more than one year ago and yielded several millions of euros from the investors to the company.

The investors are professional venture capital companies. At the moment there are three different venture capital companies owning the shares of our case company. In the last funding round, all of them invested based on a single valuation. Two of these companies had already invested in the case company in earlier funding rounds.

5.2.2 Valuation based on theoretical methods

To calculate the value of the company we used discounted cash flow method and revenue multiples. When calculating the value with discounted free cash flow method, we started with the actual revenues from 2018. After that we estimated the annual growth rate for each year separately and then calculated the annual revenues for the next five years. After that we estimated the costs and all other necessary values. With these we were able to calculate the free cash flow for each year. The terminal value we calculated by multiplying last year free cash flow with the perpetual growth rate, which we estimated to be 2,5 percent. Then we divided that with the difference of WACC and perpetual growth rate. To calculate the weighted average cost of capital we needed to figure out the cost of equity and the cost of debt. To do this we used the

capital asset pricing model. We also adjusted it with a risk premium for startups, so that the result would reflect the real situation more clearly. We used WACC also as our discount factor. With these estimates we got the total value of the company to be (97) million euros.

When calculating the revenue multiple, we started with looking at the multiples for public SaaS companies. In 2019 the multiple was around nine for public SaaS companies. The discount for private companies is around two times the revenue. The growth rate and the size of the revenue needs to be taken into account also when determining the final multiple. In the SaaS industry the multiple is calculated for trailing twelve-month revenue. (SaaS-Capital, 2019) After deducting the private company's discount factor from the multiples of public companies we have a multiple of seven times the revenue. After taking all other factors into consideration we ended up with the decision that the multiple should be 6,8. The trailing twelve-month revenue or ARR was (42,9) million at that time. With these we get the total value of the company to be (296) million euros.

It is now clear that these two methods provide very different valuations. The valuation with multiple method provides a valuation that is three times as big as the valuation with the discounted cash flow method.

5.3 Interviews

The questions for interviews are listed below. There were two main topics and three questions in each section. The first section was valuation, here the aim was to understand what theoretical valuation methods are used and how well those apply in real world situations. The second section was value drivers. Here we wanted to find out what value drivers investors are looking for and to see if the theoretical valuation methods capture these value drivers. These questions were sent to interviewees before the interview by email. All of the interviews were conducted by phone calls. All interviewees are working on a decision-making role for their companies. The numbers presented in this research are not the actual numbers but, in the interview, we used

the actual valuation calculations as our background knowledge. The email sent to the investors is presented below.

> *In academic literature valuation of SaaS startups is a fairly poorly studied area. Value drivers are studied a bit more, but the effect of those is still unclear. The aim of this research is to provide more academic knowledge of these subjects.*
>
> *On the last funding round, you agreed to invest based on the valuation of (240) million euros for the whole company. The purpose of this interview is to gain detailed knowledge of how you ended up with this valuation. The questions below are the base of the interview and the interviewer might ask follow up questions. You are welcome to answer as freely as you like.*

- *Valuation:*
    1. *What valuation methods were used?*
    2. *Do the theoretical valuation methods work in real world cases?*
    3. *What issues did you come up with, when determining the valuation?*

- *Value drivers:*
    1. *What value drivers are you looking for?*
    2. *Are these value drivers incorporated into the valuation methods that you are using?*
    3. *How do the value drivers affect the valuation?*

The first interview was conducted on 30.4.2020. This company was the main investor in the last funding round, and they had the biggest impact on valuation. The interview lasted around 35 minutes. All interview questions were answered, and the interviewer also asked several follow up questions. The second interview was conducted on 4.5.2020. This company had already invested in the case company in an earlier funding round. This interview lasted around 40 minutes. The interviewee discussed the subject and questions very freely. Only a few follow up questions were needed. The third interview was conducted on 5.5.2020. This company was also already a shareholder

of our case company. Much like in the second interview, the interviewee spoke very freely and only few follow-up questions were needed.

In the first interview the interviewee said that they always use many different valuation methods. One single method does not provide much valuable information but using several methods provides much more reliable information. The interviewee said that discounted cash flow is one of the most important methods, but they also use comparable companies, comparable transactions and venture capital methods. When the interviewer asked if the sensitivity of cash flow estimates and discount factor causes any trouble, the interviewee said that discounted cash flow method provides always too low valuation. This is because growth is impossible to take into account fairly with discounted cash flow methods. Also finding good comparable companies is difficult. The valuation multiple for revenue is the most used tool for valuation. It is used a lot because it is simple, and it can easily be modified and adjusted.

For the second question the interviewee answered that theoretical methods do not work in practise. The only way those would work is if the company would be mature and if the business would be very steady. In practise all methods have their positives and negatives and it is up to people to use those methods as they see fit. When asked about the difficulties in the valuation process the interviewee said that the biggest issue is that these processes typically take several months. The valuation is always the best estimate of the current situation, but if the whole process takes several months the valuation changes of course. Another issue that arose was cultural differences. The SaaS industry itself is quite immune to cultural differences but investing in another company is always a negotiation between at least two parties. The interviewee had solved this issue by investing in countries where the cultural differences are small to their own culture.

When asked about value drivers, the first investor said that there are two main value drivers they appreciate, growth and capital efficiency. There are also many other value drivers that they are looking for, like the size of the market, growth of the market. Some

of those are quantifiable and some are more like checkboxes. A good example is a good management team. These value drivers play a key role when the investor is prospecting a company. If some value driver is not good enough, they are not interested. Growth and capital efficiency can be incorporated into the valuation methods but those rarely get the fair recognition that way. Value drivers are more used when the investor is determining whether they are interested in the company or not. The exact amount or percentage the value drivers affect the valuation is impossible to say, but generally a great amount of good value drivers makes the company more attractive and more valuable for the investor.

The second investor said that they do not use any cash flow methods. Their opinion is that those predictions are too unreliable and too easy to manipulate when the company is young and has only a little revenue at the moment. The multiples method is the most used method for the second investor. The valuation with revenue multiple starts on the multiples of public SaaS companies and other comparable SaaS companies. These multiples are then adjusted depending on other factors.

The second investor said that the theoretical valuation methods do not work for startups in the real world. Those can only be applied to companies who are much more mature. When asked about issues in the valuation process the second investor raised a point that that is always a negotiation between the investor and the entrepreneur. This was not an issue in this case but sometimes entrepreneurs have a different view of the valuation than the investors.

The main value driver is once again the growth rate. Other SaaS metrics are also highly appreciated. These factors have a positive impact on the valuation. The second investor thinks that experienced founders and management team are also key value drivers, these have a small positive effect on the valuation. The main effect is still that those value drivers make the investment more attractive to the investors. One other value driver that could have a straight positive impact on the valuation is patents. The growth rate and metrics are taken into consideration when determining the proper multiple for the valuation.

The third investor said that discounted cash flow methods do not work for startup companies. These methods always show too low or even negative valuation and the estimations are usually ridiculous. At the very early stage the only methods that work are different variations of venture capital methods. In this case the case company had already some history so the multiple method was also used. The data from public SaaS companies provides really good knowledge about the SaaS industry, therefore multiple method is the most reliable method. Generally, the theoretical valuation methods do not work for startup companies. When asked about issues in the valuation process, the third investor said that people have different opinions. To get the funding round closed both investors and current shareholders have to agree on the valuation. Shareholders always want to have as high valuation as possible and investors want to have as low valuation as possible.

For the third investor there was one value driver which was the most important. It was market understanding of the founders. The Investor said the most important thing is that the founders know the markets where the company is heading. Founders themselves are also a key value driver. Like in this case when the company has already some history, the metrics start to become an important value driver. The understanding of markets, skilled founders and good metrics are seen as prerequisites for the investment. None of these really affect the valuation. If the founders have some record of earlier success or the metrics are top tier in the industry, it makes the investment more attractive.

5.4 Results

All three investors had quite similar answers to each of the questions. The table 3 summarizes all of the answers from each investor. From there we can see that revenue multiple method is the most used method for valuation. In general, discounted cash flow method is one of the most used methods, but in our case, it was used only by one investor and even they said that it is not too good. Discounted cash flow methods tend to yield too low valuation since it cannot take high growth properly into account.

Investors also think that the estimates used in these methods are too unreliable. The multiple method relies heavily on data from public SaaS companies. Those multiples are first discounted because private startups are illiquid and risky. Then those are adjusted based on the company specific factors, like growth rate and other metrics. All of the investors think that the public data is reliable, and that this method provides the most accurate estimate of the value. Venture Capital method and some variations of that were also often used, but those were used more like a guideline or rough estimate. The investors did not use those to determine the actual accurate valuation.

From table 3 we can also see that none of the investors think that theoretical methods work well in practise for startup companies. Startups are too unstable, those grow fast and usually do not make any profit. For these reasons, the classical theoretical valuation method does not work. All investors said that valuation for startup companies does not come straight from any formula, it is always a sum of several different factors. Some factors matter more than others and the preferences are different for each investor. Valuation methods play a major role in the process but there are also a lot of opinions and feelings in as well.

The question number three concerned the issues regarding the valuation. This was the only question where the answers varied a lot. One investor did not find any major issues in their valuation process. The third investor raised a point that the valuation process is always a negotiation between current shareholders and the new investor. These two parties have usually different opinions about the valuation and of course both of them want to benefit as much as possible. This often ends up in the situation where current shareholders think that the valuation is higher than what the investor thinks. Also, the investor who used discounted cash flow method said that it always fails to appreciate the growth of startup companies and therefore yields too low valuation. The same investor also said that finding good comparable companies or transactions is hard and therefore they prefer the multiple method which depends on the multiples from public companies. The first investor also pointed out that these processes can take several months or sometimes even years so the value changes all the time. SaaS business is generally seen as immune to geographical differences, but

the cultural differences between current shareholders and the new investors may cause issues in some cases.

Question	Investor 1.	Investor 2.	Investor 3.
1. *What valuation methods were used?*	DCF, Multiple, Comparable Companies and Transactions, Venture Capital.	Multiple, Comparable companies.	Multiple, Venture Capital.
2. *Do the theoretical valuation methods work in real world cases?*	No.	No.	No.
3. *What issues did you come up with, when determining the valuation?*	DCF provides too low valuation and comparable companies are hard to find. Duration of the process and cultural differences.	No major issues.	Different opinions.
4. *What value drivers are you looking for?*	Growth and capital efficiency. Metrics, markets and management team.	Growth, Metrics, founders and management.	Market understanding, founders, metrics.
5. *Are these value drivers incorporated into the valuation methods that you are using?*	Partly.	Partly.	Partly.
6. *How do the value drivers affect the valuation?*	Some value drivers have a positive impact. Some of them make the investment more attractive and some are seen as a prerequisite.	Some value drivers have a positive impact. Some of them make the investment more attractive and some are seen as a prerequisite.	No positive impact. Some of them make the investment more attractive and some are seen as a prerequisite.

Table 3: Interview questions and summary of answers.

From the table 3 we can see that metrics is the most important value driver and especially revenue growth rate. All of the investors said that the company needs to collect data and create these metrics and also those metrics need to be good. If the company would not collect data for the metrics or the metrics would be bad, all the investors would walk away from the investment. From metrics, the growth rate was by far the most appreciated. Management team and founders are seen as a key value driver. Several investors said that they want to make sure that the founders have enough equity in the company, so that it will keep them motivated.

All investors said that it is hard to incorporate these value drivers to valuation methods. Some value drivers are more like checkboxes and some can be quantified. Still all of the investors used multiple method to do the valuation and used the growth rate to adjust the multiple. For that reason, the table 3 says partly in the answers for the fifth question. One investor also said that an experienced management team who has a previous successful track record can be seen as a valuable asset. In some cases, it can be included in the valuation process. All of the investors said that most of the value drivers are seen more as prerequisites for the investment.

Two investors said that very good metrics have a positive impact on their valuation calculations. Founders and management team can also have a positive impact on the valuation, but generally they just make the investment more attractive. The establishment of metrics and the reasonable state of those are seen as prerequisite for the investment by all investors. Market understanding, market size and capital efficiency are also seen as a prerequisite. In general value drivers have very little impact on the valuation.

In summary, the value drivers investors are typically looking for are metrics, experienced management team and motivated founders. The theoretical valuation methods fail to capture these drivers. The multiple method was the only usable method where some of the metrics could have been incorporated into. Even with the multiple

method the valuation process needed some serious investigation and knowledge of the company.

5.5 Comparison

When we compare our findings in the literature review and the case study, we can see many similarities. The methods we discovered are almost the same in both. Based on the literature review, you can use discounted cash flow, first Chicago, comparable transactions and multiple methods. In the case study we found out that investors use discounted cash flow, comparable transactions, comparable companies, venture capital, and multiple methods. Investors used the venture capital method more as a guideline than an actual valuation tool. Multiple method was by far the most important method for the valuation.

In the interviews results we said that cash flow methods do not work for startup companies. Our own discounted free cash flow calculations estimated the value to be (97) million euros. The multiple method provided us a valuation of (297) million, which is much closer to actual valuation. The funding round was done based on the valuation of (240) million. Now it is clear that discounted cash flow methods underestimate the value a lot. With that method the difference to actual valuation was -60 percent of the actual value. With multiple method the difference was +23 percent. This is still a big difference and it shows that even this method needs some manual adjusting and knowledge to do that.

In literature review we were not able to find any value drivers that would be important for all companies. We learned that those need to be evaluated differently for every company. We were also unable to find valuation methods which would incorporate the value drives well. In the case study we found out that different investors appreciate different value drivers, but still we were able to find some value drivers which are the same in the whole industry. For SaaS companies, metrics seem to be the most appreciated value driver. Even though the metrics are seen as a industry wide value

driver, there is no valuation method which would incorporate these properly. On some level these can be taken into account in the multiple method.

6. CONCLUSIONS

In this research we had few main goals. Firstly, we aimed to get a clear understanding of valuation methods used for valuing SaaS startups. Secondly, we aimed to reveal what valued drivers investors are looking for in SaaS startups. Based on these objectives we founded four research questions. To get the answers to these questions we did literature review and also interviewed the investors of our case company.

The first research question was:

> "What theoretical valuation methods can be used for valuing SaaS companies?"

We found the answer to this question from a literature review. We noticed that this subject is fairly poorly studied. There was a lot of non-academic literature available, but not a lot of peer reviewed academic research. The reason for this is that these companies are privately owned and therefore there is not a lot of data available to back up the research. We were still able to find some relevant literature for us. In these articles we found out that multiple method is generally most often used. The articles also revealed that discounted cash flow, first Chicago and comparable transactions methods are also used. In the interviews we got a clear confirmation to our findings. All investors said that multiple method is the best option.

The second research question was:

> "What value drivers investors are looking for when they are valuing a SaaS company? "

The answer to this question was found from our interviews. There was one value driver which was especially appreciated. It was the metrics and especially growth rate. After the interviews it became clear that the SaaS industry is very much data driven. Investors also appreciated the management team and founders. In startup world founders are often also the management team. Investors appreciate if these people have a good track record and that they have a good motivation to work hard. Other value drivers that came up in the interviews were capital efficiency and market understanding of the founders.

The third research question was:

> “Do the theoretical valuation methods capture the value drivers that investors are looking for?”

The answer for this question was also found from the interviews. All investors said that the valuation methods do not generally capture the value drivers. Some metrics can be included in the multiple method, but the effect is not standardized. It is based on the opinions of the person who makes the valuation. Other value drivers like experienced management or founders are not incorporated into any of the valuation methods.

The fourth research question was:

> “What has been written about the use of value drivers in the valuation process?”

The answer for this question was found from the literature review. There we learned that value drivers are not researched much in academic literature. Still we were able to find some relevant literature. It becomes clear that value drivers are different for every company and that those need to be considered from the buyer's perspective.

The effect that the value drivers have on the valuation was not clear after the literature review. In our interviews we tried to discover this as well. In the interviews we found out that different people appreciate different value drivers and that it is impossible to say how much one value driver affects the valuation.

One aspect of this research was to reveal the differences between theory and practice. In this research we found out that regarding the SaaS industry, there is not much difference between theory and practise. Our findings in both literature review and interviews supported each other. In the research we found out that when talking about the valuation of SaaS startups, there is not much academic literature about it. This is because startup companies are privately owned and therefore the data that would back up the literature is unavailable. In literature review we stated that the multiple method was the most important valuation method. In the interviews we ended up with the same result. Comparable companies and transactions methods were used to help to determine the fair revenue multiple. Discounted cash flow methods were suggested in the literature review, but it is not often used in practise. Investors said that discounted cash flow methods do not offer a fair valuation for startup companies, it can only be used for more mature companies. Venture capital method was used by multiple investors but not as a pure valuation method. It was used more as a guideline.

For value drivers the previous academic research was also lacking. In this research we learned that value drivers are different for every company, but we can still find similarities inside the industry. For SaaS startups the most common value driver was metrics. It was listed by all investors in our interviews. In interviews we also aimed to find out how value drivers affect the valuation. We learned that some value drivers are considered as prerequisites for the investment and some may have a positive impact on the valuation. None of the investors were able to determine some exact amount or percentage of how the value drivers impact the valuation. The only valuation method which includes the value drivers even at some level is the multiple method. Even there the full effect is impossible to determine.

6.1 Validity of the research and suggestions for further research

As mentioned earlier in this research, the subjects are fairly poorly studied in academic literature. This is due to the fact that SaaS startups are privately owned companies and those do not wish to share their data to the public. This is the situation also in this research and therefore we cannot mention the case company by name or reveal any actual numbers like revenues or valuations. By default, this causes some issues regarding the validity and trustworthiness of the research since the findings cannot be confirmed with publicly available data. Therefore, we did not give much appreciation on the quantitative side of this research and focused more on the qualitative side. The quantitative results were only shortly discussed in the research and those we used as a background knowledge in the interviews.

The findings from literature review are valid since anyone can end up with the same result following the research path presented in the literature review section. In the interviews we only interviewed three investors so the findings from there cannot be said to be true for the whole industry. This was known all the time since we decided to do the case study. There our aim was to get very specific information about our case company and the investors of that.

These issues regarding the validity of our research raises up few natural suggestions for further research. First suggestion is to do similar but purely qualitative research on a much larger scale. Here the researcher would interview many investors from the SaaS industry. This way the results could be said to represent the norm in the industry. The other suggestion would be quantitative analysis of public SaaS companies. Currently the valuation of private companies relies heavily on the valuation of public companies. The further research would reveal more insight behind these valuations.

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