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**CHARACTERISTICS OF THE SUBSCRIPTION  
REVENUE MODEL IN SAAS APPLICATIONS**



JYVÄSKYLÄN YLIOPISTO  
TIETOJENKÄSITTELYTIETEIDEN LAITOS  
2012

## ABSTRACT

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Characteristics of the subscription revenue model used in SaaS applications

Jyväskylä: University of Jyväskylä, 2012, 22 p.

Information Systems, Bachelor's Thesis

Supervisor: Ojala, Arto

Cloud service and cloud business have increased tremendously in the last few years. Both the technology and business aspect of cloud services have been studied widely, especially the advantages of cloud computing from the customer perspective. Cloud service pricing and its characteristics have been studied less than the technology and business models, and this thesis concentrates on the characteristics, advantages and disadvantages of the subscription model used in Software as a Service (SaaS) applications.

The thesis is based on a literature review conducted by using various academic article databases such as IEEE Explore and ACM Digital Library. The research was conducted by using academic articles and up-to-date Internet resources. Among the principle findings of this research is that the characteristics of the subscription model are closely related to the already know characteristics of cloud services.

The most surprising finding was how using the subscription model motivates the software developers to create better software faster and more efficiently when compared to traditional software models. From the customer point of view, a negative finding was the possible customer lock-in effect caused by the subscription model together with the SaaS delivery model, as the combination might cause enormous switching costs should such a change be required. The profitability of the subscription model should be analyzed from the customer perspective as well as the provider perspective. This should be done with a view to reducing the negative aspects and increasing customer satisfaction even further.

Keywords: software as a service, cloud business, cloud software, cloud services subscription model, revenue model

## TIIVISTELMÄ

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Jyväskylä: Jyväskylän yliopisto, 2012, 22 s.

Tietojärjestelmätiede, kandidaatintutkielma

Ohjaaja: Ojala, Arto

Pilvipalvelut ja niihin liittyvä liiketoiminta on lisääntynyt huomattavasti viime vuosien aikana. Sekä pilvipalveluiden teknologiaa että liiketoimintaa on tutkittu laajalti, ja paljon tutkimusta löytyy erityisesti liittyen pilvipalveluiden hyötyyn asiakasnäkökulmasta. Hinnoittelua ja sen ominaisuuksia on tutkittu teknologia- ja yleistä liiketoimintanäkökulmaa vähemmän, ja tässä tutkielmassa keskitytään pohtimaan Software as a Service (SaaS) -palveluissa käytettävän tilausmallin ominaisuuksia hyötyineen ja haittoineen. Tutkielma on tehty kirjallisuuden pohjalta käyttäen apuna erilaisia tieteellisiä julkaisuja sisältäviä tietokantoja, kuten IEEE Explore ja ACM Digital Library -tietokantoja.

Tutkielman tarkoituksena oli tutkia ja kuvata tieteellisten artikkelien ja Internet-lähteiden avulla tilausmallin ominaisuuksia SaaS-pilvipalvelumallin yhteydessä, ja löytää sen hyviä ja huonoja puolia sekä asiakkaille että palveluntarjoajille. Tutkimuksessa havaittiin, että tilausmallin ominaisuudet ovat vahvasti kytköksissä pilvipalveluiden jo tiedettyihin ja tutkittuihin ominaisuuksiin. Tilausmalli tuo kuitenkin omat hyötynsä ja haittansa SaaS-pilvipalvelumallin lisäksi.

Mielenkiintoisin havainto oli tilausmallia käyttävien pilvipalvelutarjoajien suurempi panostus ohjelmistokehitykseen ja jakeluun verrattaessa perinteisiin ohjelmistoyrityksiin. Asiakkaan näkökulmasta negatiivinen havainto oli tilausmallin ja SaaS-palvelun mahdollinen asiakkaan lukitseminen yhden pilvipalvelutarjoajan piiriin vaihdon osoittautuessa taloudellisesti kannattamattomaksi. Tilausmallin kannattavuutta tulisikin tulevaisuudessa tutkia lisää niin asiakkaan kuin palveluntarjoajan näkökulmasta, etsien kehityskohteita negatiivisten huomioiden poistamiseksi ja asiakastyytyvyyden lisäämiseksi.

Asiasanat: software as a service, pilvipalvelujen liiketoiminta, pilviohjelmistot, pilvipalvelut, tilausmalli, ansaintamalli

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# 1 INTRODUCTION

Commercial cloud computing has been gaining market share rapidly in the past few years (Darrow, 2011), creating new possibilities for large and small software vendors around the globe. As Software as a Service, SaaS for short, has risen to battle amongst the traditional perpetual software markets, knowledge about cloud computing is sought, initiating research about business models, strategies and revenue models. Academic research relating to cloud computing and the business around it is increasing. The hype has been steadily growing for a while – and for good reason. A recent study shows how companies offering SaaS have skyrocketed in the markets when compared to perpetual software markets (Darrow, 2011), showing the increase in the profitability of cloud business and SaaS especially. However, Darrow points out that traditional software vendors buy talented SaaS companies, possibly making the comparison between the markets harder in the future. Martin Wolf, the president and founder of Martin Wolf Securities, illuminates the reason behind the success of SaaS and cloud computing (Cody, 2011):

“The reason why these small companies are more valuable than the large companies is because they spend 65 percent of their SG&A on selling and marketing and SAP only spends 25 percent”

An important part of SaaS is the subscription model, which has challenged the traditional software markets by offering a solution that profits both the provider and the customer. The goal of this thesis is to look into the characteristics of the subscription model used in SaaS application to find its advantages and disadvantages. The focus is more on the business aspect than on technology. The research questions for this thesis are:

- What are the advantages of the subscription model in SaaS?
- What are the disadvantages of the subscription model in SaaS?

The main research method used was a literature review, researching academic articles related to cloud computing and cloud business, with a focus on

SaaS and the subscription model. The literature review was conducted by using research article databases provided by IEEE Explore and ACM Digital Library and using the academic search engine Google Scholar for an easier access to specifically defined information inside documents.

The reason this thesis focuses on the subscription model is that the revenue models used in cloud computing have not been studied widely. Studies on the advantages of SaaS and the subscription model related to traditional perpetual software licensing models have been conducted. The characteristics of the subscription model are vital information for start-ups and existing Cloud Service Providers (CSPs for short), as they continue to improve their services in the cloud world.

In the second chapter a general view on cloud computing is given, presenting the most common cloud services available on the markets with some newer views as well. In the third chapter the research progresses into a discussion about software pricing and the most common revenue models used in the software industry and cloud computing. The subscription model, its characteristics, advantages and disadvantages especially within a SaaS application environment are described in the fourth chapter. The final chapter consisting of a summary and conclusions regarding the findings of the study together with possible new research areas suggested areas for future work related to the subscription model and SaaS.

## 2 CLOUD COMPUTING

In this chapter the basic services of cloud computing are explained briefly, offering a basis for the fourth chapter where SaaS and the subscription model are studied in more detail. Armbrust et al. (2010) describe how cloud computing “has the potential to transform a large part of the IT industry”. Starting up an IT-business has never been easier and more financially feasible, as the hardware and upkeep costs for an IT-infrastructure can be outsourced to a Cloud Service Provider (CSP). This allows a start-up to concentrate on important business processes more than creating and upkeep of a new IT-system. Small and medium enterprises, SMEs, are able to create more profit with smaller investments in computational hardware and upkeep, as they need be less concerned about the right amount of resources offered, as this is part of the CSP’s job. Computing resources may be increased or decreased according to demand. (Armbrust et al., 2010)

The basic stack of cloud computing and the relations between infrastructure, platform and the service models can be described as a unity (Youseff, Butrico & Da Silva, 2008). The layers of cloud computing can be stacked and create a whole layer of cloud computing. Figure 1 shows how the layers can be and often are related to each other.

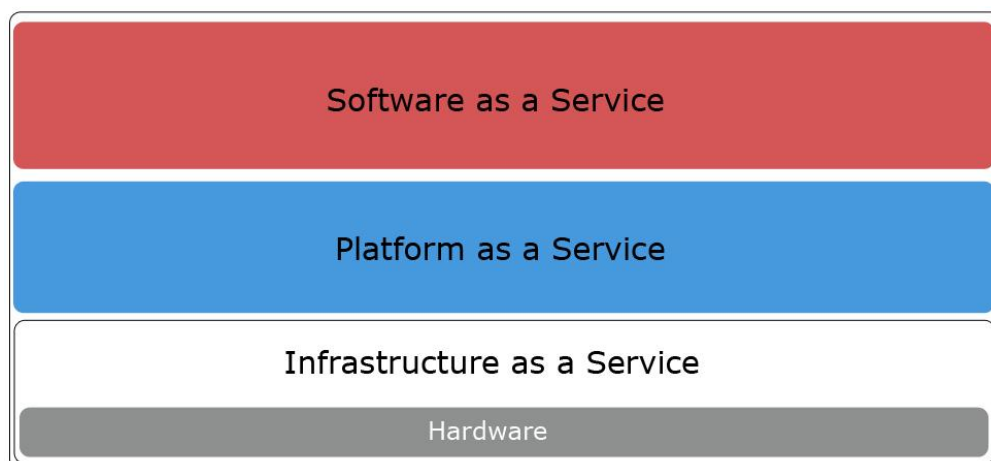


FIGURE 1 The cloud computing stack simplified (Youseff, Butrico & Da Silva, 2008)



## 2.1 Infrastructure as a Service

In the Infrastructure as a Service (IaaS) service model, CSP's provide computing resources such as storage and processing power to customers. This is made possible by the CSP's large amount of original computational resources that are split to different customers through virtualization and sharing of original resources (Vaquero et al., 2008). Through virtualization, it is possible for the CSP to provide customers modifiable solutions and assign more resources easily when needed. A user interface for these resources is also often provided by the CSP, making the service easily accessible.

Loeffler and Price (2011) add that this model can also be used by the customer to run software services. It is financially more efficient for small and medium enterprises (SMEs) to enter the markets by renting third-party infrastructure than by investing large amounts of money on computing resources and support services of their own. IaaS is offered by companies such as Amazon with their Elastic Compute Cloud (EC2) and Secure Storage Services (S3) (Bhardwaj, Jain & Jain, 2012). Other cloud infrastructure providers include companies such as Rackspace (Li et al., 2012). Both of these providers have reached high customer volumes with their early established services.

## 2.2 Platform as a Service

In the Platform as a Service (PaaS) service model, CSP's provide a platform (or platforms) for online software development, offering various tools from debugging to completed software lifecycle management. This model follows SaaS, as PaaS is also an online based service offering the same cloud software advantages. The CSP offering a PaaS service determines the infrastructure underneath, determining the programming language, operating system and available development tools. With the PaaS model, a complete online tool chain is provided for software developers, creating recognized benefits such as increased productivity, quicker development chains and lower development costs with an already existing platform while outsourcing the platform and the infrastructure. (Lawton, 2008)

Lawton (2008) further explains how PaaS is also offered through virtualization like IaaS, providing the same benefits and pitfalls. As in other cloud services, the greatest concern in PaaS is the capability to offer a non-stop service. With all cloud services, service peaks are sometimes hard to forecast, creating pressure on CSPs. PaaS is offered by companies such as Google with their Google AppEngine, that provides a platform for software developers using Python or Java and EngineYard that offers Ruby on Rails (Bhardwaj, Jain & Jain, 2010).

## 2.3 Software as a Service

Software as a Service (SaaS) is one of the best known and widely used delivery models in cloud business. In commercial cloud computing, that most often consists of applications and services offered together, is generally offered over the Internet, provided by data centers that host the software and the hardware needed (Armbrust et al., 2010). Because of the easy distribution of SaaS, it is easily the most used cloud service amongst normal consumers. Although it is possible that sometimes a consumer might not even realise that the program (service) used is hosted in a cloud.

Weinhard et al. (2009) present SaaS as an application, which is the most common way of describing SaaS. It can be layered atop of a PaaS service, which can be built on top of an IaaS service. SaaS is a delivery model made possible by the development of the enterprise software industry today, making it possible for vendors to create applications that are widely available over the Internet and thus easily accessible by customers (Waters, 2005). SaaS is offered by providers such as Salesforce.com with their Salesforce CRM product (Salesforce.com, 2012) and Google with their Google Apps for Businesses (Google, 2012).

## 2.4 X as a Service

X as a Service, Anything as a Service (XaaS), is a newer definition of innovative cloud services. XaaS describes any service that has been made available to the consumers via a cloud platform (Lenk et al., 2009). Services like these may include innovations such as Gaming-as-a-Service (GaaS) (Ojala & Tyrväinen, 2011) and Content as a Service (CaaS). The CaaS model has created markets and possibilities for services such as Music as a Service (MaaS) (Doerr et al., 2010).

One of the best known MaaS providers is Spotify, that offers music streamed online together with an offline application option with a freemium revenue model (Kreitz & Niemela, 2010). Other XaaS services include e.g. Security as a Service offered by various anti-virus and Internet security companies (Maddison, 2009; F-Secure, 2012) or Service as a Service such as Salesforce.com's online enterprise application, that created with the management of customer service options in mind (Buley, 2009).

### 3 SOFTWARE PRICING

Pricing is a crucial part of every software product developed for the consumer markets. As the industry is still lacking international consensus on how software value should be measured, developers and providers face a hard task in creating the perfect pricing scheme for their product. However, the current movement towards a more service-oriented method of providing software has brought new elements to pricing, hopefully creating an easier pricing scenario for the developers offering these services. So far, no universal pricing or revenue models exist, and various revenue models are used, permitting vendors to orientate towards different customer segments and create variable pricing options. (Bontis & Chung, 2000)

Even though Bontis & Chung's research was conducted over 10 years ago, the same problem remains: what is the best revenue model used in software business? Cloud computing often uses a pay-per-use or an on-demand revenue model (Sainio & Marjakoski, 2009), which differs significantly from the perpetual or packaged revenue model. These models offer flexibility unknown in traditional models.

#### 3.1 Common revenue models used in software business

In this thesis, the following definition of a revenue model by Sainio and Marjakoski (2009) is used:

The revenue model is the operational description of the basis on which revenue is collected from customers or partners.

A revenue model describes how money is made with products or services that are usually offered online (Popp & Meyer, 2010). The revenue model is related to revenue logic, which describes the possible sources for creating revenue and how the business will generate profit. Revenue logic is an important part of the business model and it is a strategic view on earning revenue (Sainio & Marja-

koski, 2009). The most common revenue models used in software business are described according to Ferrante (2006) in Table 1.

TABLE 1 Common revenue models in software business (Ferrante, 2006)

<b>Revenue model</b>	<b>Description</b>
<i>Packaged</i>	Single software (license) is bought for a single user or a machine.
<i>Perpetual</i>	A permanent license or licenses are bought upfront.
<i>Trial</i>	A free (possibly limited) trial before buying the actual product.
<i>Server (per CPU)</i>	The number of hardware used determines the number of licenses required.
<i>Network-based</i>	A centralized system for providing licenses to users of the network.
<i>Subscription-based</i>	A license is bought for a predefined period of time.
<i>Pay-per-use</i>	The customer is charged based on the actual usage of the program.

Cost-based pricing is connected to the costs of creating a product and thus cost accounting (Diller, 2008). Cost-pricing is a common way of pricing products and services, but it is often not seen as the best way for determining prices in the software industry. Shapiro and Varian (1999) describe how information goods and products should be priced more in accordance with consumer value than actual production costs. Thus, cost-based revenue models are not normally seen as suitable in the software industry, but in SaaS determining prices for services through costs might be more plausible as SaaS providers deal with considerable variable costs such as hosting and support services (Lehmann & Buxmann, 2009).

## 4 CHARACTERISTICS OF THE SUBSCRIPTION REVENUE MODEL IN SAAS APPLICATIONS

The fact that the Cloud Service Provider (CSP) offering the application maintains the software and anything behind it makes Software as a Service an easily approachable delivery model for customers is, as it provides customers with more services for fewer up-front costs (Ojala & Tyrväinen, 2011). SaaS and cloud computing in general has been made easy for the consumer: detailed knowledge of the software is not required, as all maintenance work is usually handled solely by the CSP (Savu, 2011).

Providing multi-tenant SaaS applications is considered as an effective way of harnessing the full capability of the income the hardware is capable of generating, as the model offers various benefits to the CSP. The usage of the multi-tenancy model allows a certain, single, instance to be run by the CSP and directing multiple tenants (customers) to the defined instance (Bezemer et al., 2010). The model simply allows a certain group of customers to work in the same offered application, allowing the defined group to configure the functions to their needs in their own specified environment. Bezemer et al. (2010) describe a tenant as a group, for an example an organization, which pays for the multi-tenant SaaS application. A tenant usually consists of a certain group of users within the paying organization. Offering this model requires configuring the service for the diverse needs of various tenants, requiring some extra effort on the point of the provider (Kwork, Nguen & Lam, 2008).

Bezemer et al. (2010) explain how using a multi-tenant model offers various benefits for the service provider. The model allows the CSP to put out only a single application instance to one tenant, rather than single instances to every individual user. Hardware efficiency can also be increased by allowing resources to be allocated between several different tenants. The multi-tenancy model offers more efficient software deployment to CSP's, creating considerable decreases in costs and making the application more attractive to smaller organizations with limited financial resources. Through these positive attributes various CSP's are evolving to offer their single-tenant applications as multi-tenant. This may be a long process and may require thorough re-engineering of

the application, creating extra costs and slowing down the transformation process (Tsai et al., 2007).

#### **4.1 The subscription model**

The study conducted by Arun Sundararajan (2002) shows how offering a fixed-fee pricing scheme is profit-improving when there are non-zero transaction costs and suggesting that there may be optimal markets for fixed-fee pricing only. The study emphasizes that companies selling information goods should offer a combination of usage-based pricing together with an unlimited-use pricing model, which could nowadays be regarded as the subscription model. For the subscription model to be successful the benefits must be clear to the customer, so that changing to the subscription based service will be seen as a positive change away from the perpetual licensing model (Rappa, 2004).

“Comparison of Software Quality Under Perpetual Licensing and Software as a Service” conducted by Choudhary (2007a) regards the differences between ordinary perpetual licensing and the subscription based model used in the SaaS delivery model and discusses how the different revenue models affect the publisher’s eagerness to invest in software quality. The study shows a clear connection between SaaS and software quality that was provided faster and more efficiently. This was caused by the subscription model and the possibility to update the software faster than software with the traditional, separately sold (boxed) software. A faster channel motivates the providers to develop their software quicker, better and further in order to keep their customers satisfied and renewing their subscriptions. (Choudhary, 2007a)

Lehmann and Buxmann (2009) describe how there are usually two options when planning revenue models for software products. The provider may offer a single payment option, granting a customer with perpetual rights over software or a model requiring recurring payments. It is also possible to combine the two models (Kittlaus et al., 2004), offering a variety of solution best suited for the customer. Lehmann and Buxmann (2009) continue the discussion on recurring payments, describing how it is possible to offer diverse options to both the CSP and the customer, as it is feasible to tailor the frequency and amount of the payment, offering a flexible and modifiable solution, best suited for the customer. Due to the flexibility of the subscription model, the CSP and the customer can agree to a certain payment option occurring over a previously defined amount of time, for an example a payment delivered every three months over two years. These types of contracts are often used by SaaS providers (Cusumano, 2007), where a customer is allowed a certain time of service according to a payment agreed. This is also known as the subscription model or rental model (Buxmann, Hess & Lehmann, 2008). Usage of the subscription model is seen as a lasting and increasing trend for its positive customer aspects instead of more expensive, single payments (Lehmann & Buxmann, 2009).

#### 4.1.1 Advantages of the subscription model

Advantages of the subscription model are heavily related to the advantages of cloud computing in general, but the revenue model has its separate advantages in addition to the ones provided by the usage of cloud technology. The subscription model often offers a more financially beneficial solution for short-period software usage, as the subscription fees are often less than a perpetual licence (Cusumano, 2007). Waters (2005) presents how the total cost of ownership (TCO) is lower in SaaS together with the subscription model, as there are no hidden costs unknown to the customer thanks to the service providing approach of SaaS. For smaller and medium organizations every resource is vital, so the biggest advantage the subscription revenue model can offer are the savings in the up-keep costs of the software and hardware (Haselmann & Vossen, 2011).

Self-service management together with the subscription model creates a simple environment for the customer, as it is possible to offer customer service information together with options to subscription management options (Rimal, Eunmi & Lumb, 2009). This easy approachability turns into an important asset when the CSPs begin acquiring new customers, as the easy handling of the subscription with a self-service model gives more options to the customer, creating an image of an easy start, usability and modifiability (Turcsanyi, 2011). As usability is always a topical issue, a well planned application with good self-service options might be able to bring more users to cloud computing and the subscription model, but only if the CSP's are ready to invest increasingly in usability and quality in general.

According to Choudhary (2007b) SaaS application providers spend more effort in creating software and releasing fixes and new versions than traditional developers. Due to cloud services and the subscription model, it is possible to deliver updates and fixes faster or instantaneously in general compared to perpetual software models. As subscribers are pleased with and excited to receive future upgrades with the same subscription fee, CSP's motivation to provide better quality services faster increases, resulting in pleased customers. This higher motivation and the amount of work put into SaaS software development results in better software, pleased customers and strong advantage against traditional software models. (Choudhary, 2007b) A summary of the advantages is presented in table 2, visualising the advantages benefitting customers, CSPs or both.

TABLE 2 Advantages of the subscription model in SaaS for customers and CSPs

Description	Customer	CSP
<i>Cheaper than a perpetual license (Cusumano, 2007)</i>	x	
<i>Smaller Total Cost of Ownership (TCO) (Waters, 2005)</i>	x	
<i>Self-service management of the subscription model (Rimal, Eunmi &amp; Lumb, 2009) (Turcsanyi, 2011)</i>	x	x
<i>Higher motivation in development stage (Choudhary, 2007b)</i>	x	x

### 4.1.2 Disadvantages of the subscription model

Even when the subscription model offers benefits to the customers, it creates more financial pressures on the CSP, creating possible difficulties in creating positive revenue for subscription based SaaS applications (Hill, 2008). It is crucial that the CSP offering a SaaS solution is able to ensure the availability of their service and offer back-up plans when a service is not available. As continuous availability of service is required and it is seen as a great advantage of SaaS, the subscription model may turn into a problem if such issues do occur. The user pays for full up-time, and downtime may cause great financial losses for both the customer and the CSP, as the customer is not able to access their information stored in the cloud. The subscription model also faces a forced renewal of service if the customer wants to obtain new releases. Problems may also arise in secure networks, where access to online services are limited, causing limited usage of the service and making the investment in a perpetual software license look more beneficial. (Ferrante, 2006)

CSPs providing service must provide excellence, as bad service will create losses in customer bases as the word spreads (Nirpaz, 2011). A subscription model may be beneficial for the software buyer if it forces the provider to improve its product. Accordingly, a psychological reaction may occur when a customer renews a subscription, which may not occur during a one-time transaction: if the buyer is not satisfied with the service, he/she can simply leave the subscription to expire and find another seller (Choudhary, 2007a; 2007b).

Vendor lock-in, also known as “customer lock-in”, happens when the switching costs from a product or service to another rise so high that it is not financially profitable to change to another product or service (Farrell & Klemperer, 2006). Weiss (2007) is concerned that SaaS together with the subscription model may cause a lock-in possibility, as the cheaper subscription model makes changing providers financially un-profitable and creates a dependant relationship between the CSP and the customer. The lock-in effect is a positive thing for the provider, as the lock-in will ensure stable flow of revenue, but for the customer it creates concerns as after an early lock-in it might be nearly impossible to to change providers. As there are no universal standards for cloud computing, a lock-in effect will cause trouble to the customer as the costs from turning away from a CSP may turn out to be extremely large (Leavitt, 2009). A summary of the disadvantages is presented in table 3, describing the disadvantages concerning customers, CSPs or both.

TABLE 3 Disadvantages of the subscription model in SaaS for customers and CSPs

Description	Customer	CSP
<i>Financial pressure for providing service (Hill, 2008)</i>		x
<i>Service downtime may cause financial losses (Ferrante, 2006)</i>	x	x
<i>Access to online services limited in secure networks (Ferrante, 2006)</i>	x	
<i>Customer (un)satisfaction; renewal of subscription (Choudhary, 2007a; b)</i>		x
<i>Lock-in effect (Leavitt, 2009)</i>	x	



## 5 SUMMARY, CONCLUSIONS & FUTURE WORK

Cloud computing has created various possibilities, offering easier and more affordable computing resources to smaller businesses around the globe (Armbrust et al., 2010). While much hype surrounds it, the advantages of cloud computing cannot be ignored. We are living in the age of Internet software and the changes in the software industry have been profound. The revenue created with cloud computing has increased year by year (Darrow, 2011) and there seem to be no limits in sight.

Software as a Service and its advantages have been studied widely. It is an easily approachable software delivery model for individual users as well as larger organizations. The benefits of SaaS are many; accessibility, reliability smaller or nonexistent up-keep costs for the customer, easy manageability, and moving the software risk management away from the customer to the CSP (Waters, 2005).

The advantages of the subscription model in SaaS do not solely concentrate on the customer side, but there are some clear advantages for the CSPs as well. The subscription model used in SaaS is often cheaper than a perpetual software license (Cusumano, 2007), making it more attractive for customers both big and small. Smaller total cost of ownership (TCO) (Waters, 2005) creates less financial pressure on the customer as normally expensive hidden costs of software are smaller in SaaS. This however creates more pressure on the seller, as the background functions are to be maintained by the CSP. SaaS that is offered through self-service options benefit both the customers and the CSPs, if subscriptions are easily managed through a well-established self-service system (Rimal, Eunmi & Lumb, 2009; Turcsanyi, 2011). The most interesting advantage of the subscription model in SaaS was the discovery indicating, that CSPs offering SaaS through a subscription model have a higher motivation in developing their services (Choudhary, 2007b). This higher motivation benefits both the customer and the CSP; customers get better software offered quicker in the cloud with the subscription fee, and CSPs offering good service keep their subscribers and create a constant flow of revenue.

The greatest disadvantage of the subscription model for the customer is the possible lock-in effect, in which the customer is locked in to a certain CSP, as the switching costs might prove to be very large (Leavitt, 2009). A service offered through the internet is prone to connectivity problems, which may cause financial losses to both the subscribers and the CSPs (Ferrante, 2006). CSPs using the subscription model are under financial pressure to provide good service (Hill, 2008), as unsatisfied customers can easily stop renewing their subscription if they are unsatisfied (Choudhary, 2007a; 2007b). Another major disadvantage for the customers using a service through a subscription based contract is the limited access to online services in secure networks (Ferrante, 2006), which may cause the customer to move to a perpetual license model.

Academic research on the impact of the subscription model is limited, and gathering detailed information proves to be challenging. Internet resources helped in finding up-to-date information shared by some of the leading SaaS professionals. It shows, however, that there is room for detailed case studies regarding the usage of the subscription model. The subscription model in SaaS services should be studied to better determine how customers see SaaS services and their various pricing models including the subscription model, and how these models could be developed further. SaaS providers can use variable revenue models, but the most visible one to normal consumers is the subscription model with its easy accessibility and modifiability.

Software industry is changing, and cloud business related research is drastically increasing together with the usage of offered cloud services. But it is not only about the provider, as customers are also interested in the benefits of SaaS and the subscription model together with the newer freemium model. Customers include private individuals as well as large organizations, who ponder the possibilities and benefits of switching to SaaS. Pricing becomes crucial when acquiring new customers, and so it is essential for the providers to know the benefits, not only of SaaS, but also the pricing behind it, to be able to market their product more efficiently. Interesting research topics include researching more beneficial ways of using the subscription model, benefits of Software as a Service on the provider side, further developing self-service options forward in cloud computing and the usability of cloud computing in general. How customers see the subscription model would be an interesting topic too, as the customer side is not always aware of the benefits of cloud computing services.

Together with a company using the Software as a Service delivery model, this thesis will be expanded upon in the following Master's thesis. Customer satisfaction and the positive and negative aspects will be studied. The research topics for the Master's thesis will be defined later as the research work is set in motion, but the study will be related to SaaS and the subscription model. The study will give more insight on how well the subscription model is received and what aspects should be developed further to ensure that both customers and providers are satisfied with the business.

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