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Software acquisition by start-up companies

What, how and why?

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Authors: Blerta Deliallisi
Pien Walraven

Supervisor: Björn Johansson

Examiners: Odd Steen
Paul Pierce

Software acquisition by start-up companies: What, how and why?

Authors: Blerta Deliallisi and Pien Walraven

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Abstract:
Software acquisition is very important for any type of company nowadays, including start-up companies. This study examined which software applications are acquired by start-ups, in what ways, with what motivations, and for what purposes they are used. The study was done by first conducting a survey amongst 50 start-up companies in the Netherlands and Sweden and by then doing four follow-up interviews with companies that also participated in the survey. Results showed that start-ups mostly acquire software for communication purposes, and that start-ups mainly use Freeware and Single Licensed software. Most of the time decisions about software acquisition are being made by the CEO, sometimes with help of colleagues, friends or other informal contacts.

Popular applications include, amongst others, software packages as Google Apps and Microsoft Office. Reasons behind choosing for a specific software application were mainly ease of use, familiarity, requirement fit, reliability, flexibility and gradual scaling. Reasons to use free software options were mainly budget-related, however, reliability and quality were perceived to be really important, especially when it comes to customer-serving applications. Start-up companies therefore said to be willing to pay for these applications if reliability is higher in that case.

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Pien Walraven

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1 Introduction

Start-up companies have been researched for a few decades already, from several points of view. For example, studies have been done about market entry determinants (Burgel & Murray, 2000) and strategy differences compared to larger companies (Archibald, Thomas, Betts & Johnston, 2002). Furthermore, Carter, Gartner and Reynolds (1996) wrote about the steps that are initiated in order to begin a new business. They also focus on the amount of steps that are taken and the order in which they are taken. They found that entrepreneurs that succeeded in starting a business do undertake certain activities:

"*They undertook activities that made their businesses tangible to others: they looked for facilities and equipment, sought and got financial support, formed a legal entity,organized a team,bought facilities and equipment,and devoted fulltime to the business"* (Carter et al., 1996, p.161)

Thus, according to Carter et al. (1996), arranging facilities and equipment is an important aspect of starting a new firm. Nowadays, a crucial form of equipment for practically every company is that of Information Systems (IS). Several researchers have covered this part of the field as well. For example, Thong (1999) wrote about the aspects that affect Information Systems adoption within small companies and Davila and Foster (2007) did a study on the rate of adoption of management control systems in early start-up companies. On the other hand Nelson, Richmond and Seidmann (1996) did a study that focuses on the software acquisition decision in particular, whereas other recent studies discuss on a 'make vs buy' acquisition model in SME (Small Medium Enterprises) (Daneshgar, Low & Worasinchai, 2013) or in-house software development characteristics of start-ups (Giardino, Unterkalmsteiner, Paternoster, Gorschek & Abrahamsson, 2014).

Another aspect that has evolved over time, and not only in start-ups, is the way that companies acquire their software. Apart from the traditional Single Licence model**,** Open Source software, Freeware and Shared License, several other types of software acquisition methods have evolved, like Software as a Service (including Pay-Per-Use and Subscription Licensing models), and Entrepreneur Licenses. In addition because a lot of emerging start-ups tend to be tech related and given the technical expertise of the initial staff, in such circumstances more opportunities for in-house developed products would exist (Daneshgar et al., 2013).

1.1 Problem Area

Computer based information systems, otherwise referred to as software applications or just software, offer more efficient and effective methods to execute business processes and sometimes even help them gain competitive advantage in the market (Ives & Learmonth, 1984; Porter & Millar, 1985). While computing capacities continually grow and digital services become ubiquitous, they become more viable even for limited budgets companies such as start-ups (Daneshgar et al., 2013; Thong, 1999). The results from the study by Knight and Cavusgil (2004) that start-ups are more often born globally, meaning that they target an international

market from the point they are founded, makes IT even more important. For example, communicating and working remotely is facilitated by IT in these cases. Thong, Yap and Raman (1996) discuss that because of the budget limits some companies make trade-offs to choose lower cost IS that maybe are not the best option for what they want to achieve.

While technology evolves, it unfolds new possibilities to facilitate existing services. However, not all start-ups survive in the harsh environment of competition (Zalesna, 2012): Actually 60% of newly founded companies fail in their first five years (Giardino et al., 2014), thus a risk always coexists with undertaking business initiatives (Giardino et al., 2014). Therefore, start-ups would require to carefully assess their options and financially measure each step and acquisition decision to initially adopt what is necessary and focus on launching core products or services (Sutton, 2000).

The biggest challenge faced during software acquisition is to choose the option and the system that will increase the efficiency and target different organizational needs (Nelson et al., 1996). In the specific case of start-up companies an emphasis is given to their lack of resources and dependency on third party software application (Giardino et al., 2014). However different start-up face different needs in terms of software systems to adopt.

In this context the biggest advantage of start-ups is their ability to embrace the newest technology without any constraint from previous employed systems and issues in switching systems or data migration (Giardino et al., 2014). However some drawbacks are also observed as many software applications have specific product features and start-ups do not know yet what they are going to need later thus careful software evaluations are also needed (Giardino et al., 2014).

Because of unclear demands when start-ups want to embrace software systems for daily usage they generally settle for general purpose software systems that they feel can accommodate their future needs and specifications (Sutton, 2000).

Daneshgar et al. (2013) did a study on software acquisition and came up with their description of decision-making in the field based on the book by Turban, Aronson, Liang & Sharda (2007, p. 53), who base their description on the well-known decision making model by Simon (1977, p. 40-44). Following their work, the process of software acquisition typically undergoes four phases: (i) intelligence, (ii) design, (iii) choice, and (iv) implementation. In the first phase the company scans the market and explores for alternatives, during the design phase the alternatives are identified and some criteria for the optimal option is set. The choice process is when the actual alternatives are assessed and a decision is reached, and then implementation of that software systems follows in the final step.

As technology advances, the competitive environment of start-ups becomes highly dynamic and unpredictable, thus creating a need for academic literature to be updated as well. Considering that IS usage is present in almost every company to some extent, and keeping in mind the limited budget and growing needs of start-ups, it would be of interest to understand how software acquisition is handled within start-up companies. This can be done both in terms of what kinds of software they acquire (for what usage purposes are applications engaged) as well as what software acquisition methods are applied for it. The field of interest for this study is therefore how start-up companies acquire their software, and why.

1.2 Research Question

The research question suggested for this study is as follows:

"*How do start-up companies acquire their software and why?"*

This research question can be divided in three sub questions:

1. What software applications do start-up companies acquire and for what usage purposes?
2. In what ways do start-ups acquire their software?
3. Why do start-ups acquire their software in the way they do?

With the first sub question, we identify what specific applications are mostly used by start-up companies and for what purposes these applications are used. The second sub question is about the software acquisition methods applied by start-up companies, and whether the decision-making around these methods is done in-house or by a third party. The third sub question aims to identify motivations behind acquiring specific software and behind opting for a specific acquisition method.

1.3 Purpose

The purpose of this study is twofold, namely both academical and practical. In terms of the academical point of view, the purpose is to update the knowledge there is about software acquisition amongst start-up companies: the most recent study we could find about this subject specifically is done by Davila and Foster (2007) (see chapter 2.4 for a more elaborate analysis of existing studies), and with the rise of new technological developments like mobile, cloud services and an even more widespread use of the internet, the results of that study might be outdated. Furthermore, their study does not focus on the software acquisition methods applied by start-up companies or the motives behind adoption of a software or opting for a specific acquisition method.

From a practical point of view, the study provides an overview of how start-up companies adopt information systems, despite their often limited resources. A company's IS adoption depends on many variables (Thong, 1999) which have different priorities relating to the company aspiration and vision. Therefore the research could help new entrepreneurs set up their own companies more easily in terms of IS and furthermore help software vendors to target start-up companies more effectively.

1.4 Delimitations

The first delimitation of this study is that it focuses on supporting software, in order to be as generalizable as possible and inclusive for various industry types. With supporting software we mean any software that is not the core product of the company. Examples include systems for resource planning, financial reporting and communication.

Furthermore, an aspect that our study does not cover is the examining of the entire decision making process (Daneshgar et al., 2013; Simon, 1977; Turban et al., 2007) as it happens, since our study focuses on decisions on software acquisitions that are already made, so our companies have passed all four stages and therefore our research focuses on looking back on the decision-making process. However we do compare these findings to how companies expect to make decisions on software acquisition in the future.

Finally, although most other studies in the field that we found often did not provide a clear definition of start-ups, in this study we will define start-up companies as companies that are founded at most five years ago. This maximum age was chosen based on Giardino et al. (2014), who say that 60% of all start-ups fail within their first five years. We argue that these companies therefore have to pay even more attention to what to invest in and what not to invest in and that they are thus more likely to be comparable to each other in terms of budget and search for stability.

In this thesis, we use the terms software acquisition and software adoption interchangeably. They both refer to the act of deciding to use specific software within a company.

2 Literature Study

This chapter will lay out the theoretical background and the literature foundation of our study on software acquisition in start-up companies. This could provide some intuition on potential problem solutions and open opportunities for knowledge enhancements (Bhattacherjee, 2012; Randolph, 2009; Recker, 2013; Webster & Watson, 2002). Firstly definitions of start-up companies will be discussed, followed by a description of types of software acquisitions in organizations. Then a focus will be put on motivations behind the adoption of specific software and the choice for a specific software acquisition method, and concluding, an overview of existing literature in the field of software acquisition in start-up companies will be given, along with a summary of our final theoretical framework applied in this thesis.

2.1 Start-up definition

Several authors have written about start-up companies, but only few have explicitly defined the term. Blank (2012) in his definition of start-up companies focuses on their yet unknown business model. However, most prior research (Archibald et al.; 2002, Burgel & Murray, 2000; Carter et al., 1996) does not define start-ups explicitly but seems to focus on the time of existence and / or the number of employees. However a more recent study by Giardino et al. (2014) completes the notion of start-ups as not just newly founded small organizations, but additionally describes the companies to operate in an unexplored and highly unstable market and attempt to solve previously unsolved issues. Another characteristic of start-ups is their unpredictable future, sometimes taking high risks in their first moves but other times expanding quite quickly (Giardino et al., 2014).

Although the uncertain environment referred by Giardino et al. (2014) is used as the pivotal point to differentiate start-ups from any other newly founded company, it clearly makes some distinction based on the innovativeness introduced by start-ups products. If we were to choose our participant companies based on innovativeness or uncertain environments it could turn out to be very complex to measure and moreover we are not interested in getting to know software applications and their acquisition methods in such specific conditions. Therefore, as described earlier, we eventually chose to base our definition on company age.

2.2 Software acquisition methods

As shortly described before, companies can choose whether to make their own software applications or to acquire them from third parties. This is the difference between the *make or buy* decision. Not much research has been done on software acquisition methods by start-up companies: The only research that was found on this topic in particular is that of Nelson et al. (1996), who developed a framework for software acquisition. In this model, they distinguish between in-house and outsourced software acquisition teams, as well as custom software and packaged software acquisition approach. Their model is visible in figure 2.1.

		Acquisition team	
		Insource	Outsource
Acquisition approach	Custom	Internal resources only for needs analysis, coding, etc.	Vendor performs needs, analysis, coding, etc.
	Package	Internal resources only for package selection, installation, etc.	Vendor performs package selection, installation, etc.

Figure 2.1: Software acquisition model (Nelson et al., 1996, p.30)

In this model, the *make* option is the custom insource approach of software acquisition, where the used software is custom made by the company itself. The *buy* option is in the package approach, both insource and outsource, and in the custom outsource approach. With a package insource approach, the company buys the software and makes the decision around it itself. With a package outsource approach, the company buys software from a third party but asks for help to do this, for example from a consultant. The custom outsource approach means that the company buys software that is custom-made for them. The development is done by an external party in this case.

Within the Package software acquisition approach, there are different kinds of software licenses that are used. The most traditional, well-known type of software licensing is a Single-User license, meaning that one user pays for the software and only that user can use it on his or her device. Additionally, several other types of licensing are used for software distribution, including Open Source software, Freeware, Shared License, Pay-Per-Use and Subscription. Open Source software is software where not only the software is free but the code is freely available to adapt as well **(**Wang & Wang, 2001). In the case of Freeware the code itself is not available but the software is free to use (Liao-Troth & Griffith, 2002). Shared License refers to cases where a limited amount of users can make use of the same license to use the application (Indenbom, 2009). With a Pay-Per-Use licensing model, the company pays for each time they use the software (Michel & Reinke, 1997). Subscriptions are characterized by the fact that companies pay a specific amount of money for a certain period generally for each subscriber that uses the application (Choudhary, 2007). Finally, another important type of license is Entrepreneur Licenses, such as BizSpark by Microsoft ("Microsoft supports your startup as you grow", 2013), which are offered by some companies and provide usually paid-for software packages to start-ups for free. Although we are conscious that there are a lot of illegal software packages easily accessible, we did not include this in our study since piracy is considered an illegal activity. This point of view is similar to that of previous studies with a comparable subject (Daneshgar et al., 2013).

2.3 Motivations behind software acquisition and software acquisition methods

Apart from the usage purpose of the software, there are several factors that can influence the decision on which software to acquire and in the way that software is acquired. Liang, Huang, Yeh, and Lin (2007) wrote an article on the adoption of mobile technology in businesses and developed the fit-viability model, which was based on a previous article by Tjan (2001), who

wrote about adapting portfolio strategy to the digital age. The fit-viability model describes aspects that influence the success of a mobile technology adoption, consisting of two main dimensions: fit and viability. An overview of the model is shown in figure 2.2.

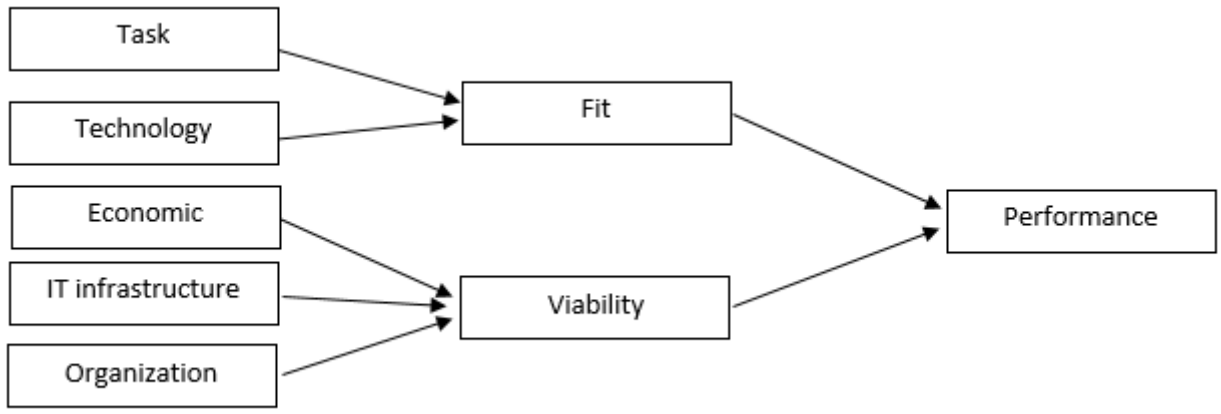

Figure 2.2: Fit-Viability model (Liang, Huang, Yeh, & Lin, 2007)

As Liang et al. (2007), basing their work on Liang and Wei (2004), describe in their article, the fit-viability model defines criteria for measuring fit and viability of mobile systems adopted within organizations.

More specifically, in case of the Fit aspect, it is assessed if the characteristics of mobile technology (which are in the "Technology" category) are fit with the task requirements (which are in the "Task" category) (Liang et al., 2007). In case of the Viable aspect, Liang et al. (2007) evaluate the fit between an application and its economic feasibility (which is in the "Economic" category), the maturity of the IT infrastructure (which is in the "IT Infrastructure" category) and social readiness of the organization for the application (which is in the "Organization" category).

As visible in figure 2.2, the model uses fit and viability categories as factors that influence performance, which refers to the likelihood of successful performance in the long run, if the system under evaluation would be adopted. Since companies of course want their acquired technology to be adopted successfully within the company and therefore want to have their adopted software to have a high performance, it is likely that the factors mentioned in this model (fit and viability) are closely connected to motivations behind the choice for a specific technology. For example, a company might choose a specific software because it is cheap (which would fall into the economic aspect or of viability) or because it is the most user-friendly option to perform the task for which it is meant (which would fall into the task category of fit). Since this model focuses on mobile technology only, for our study we will leave out the "Technology" category, as we don't focus on specific technological settings for the software that is adopted by start-ups. However, all the other categories are applicable to the applications itself and are therefore relevant to our study.

Another study also considered the fit-viability model to explain adoption of group decision support systems (GDSS) (van Hillegersberg & Koenen, 2014). Therefore the model has proved to be applicable to software adoption apart from technology adoption.

We also considered other models to support our results on motivations behind ways of software acquisition, like the Technology-Organization-Environment framework (Baker, 2012), which represents how the context of a firm influences the adoption and implementation of innovations, while taking into account three different aspects: the technological context, the organizational context and the environmental context. However since the type of software that we are looking to study can be considered innovative but also ubiquitous (we are not doing such classifications but generally referring to only supporting software). Therefore, we chose not to use this model.

Another model that we took into consideration is the model by Thong (1999), who studied information systems adoption in small businesses in Singapore. He developed a model consisting of contextual variables as determinants of IS adoption within these businesses, including "*decision-maker characteristics, IS characteristics, organizational characteristics, and environmental characteristics"* (Thong, 1999, p.187). More specifically, they found that CEO's innovativeness, CEO's IS knowledge, relative advantage of IS, compatibility of IS, complexity of IS, business size, and employees' IS knowledge significantly influenced the likelihood of IS adoption. Furthermore they found that business size, employees'IS knowledge and information intensity significantly influenced the extent of IS adoption within small businesses. However, because this model does not clearly take into consideration financial factors and other motivations behind the way of acquiring the software, it is difficult to motivate the acquisition methods based on this model. As (Giardino et al., 2014) stated, start-ups have limited resources and therefore we believe it is extra important to take this aspect into consideration. The fit-viability model (Liang et al., 2007) does include financial factors and is therefore more suitable to explain motivations for choosing specific software acquisition methods.

Summarizing, the main reason why we chose to use the fit-viability model as a basis to describe motivations behind acquiring a specific software application and applying a specific software acquisition method, is that it is the only model that is able to motivate both the way of acquiring software and the adoption decision for a specific software application in itself. The model by Thong (1999) very well helps to base findings on motivations behind acquiring a specific software application, although it does not focus on motivations behind opting for a specific software acquisition method. The model by Baker (2012) is too much focused on innovation. Our final reasoning is illustrated in figure 2.3.

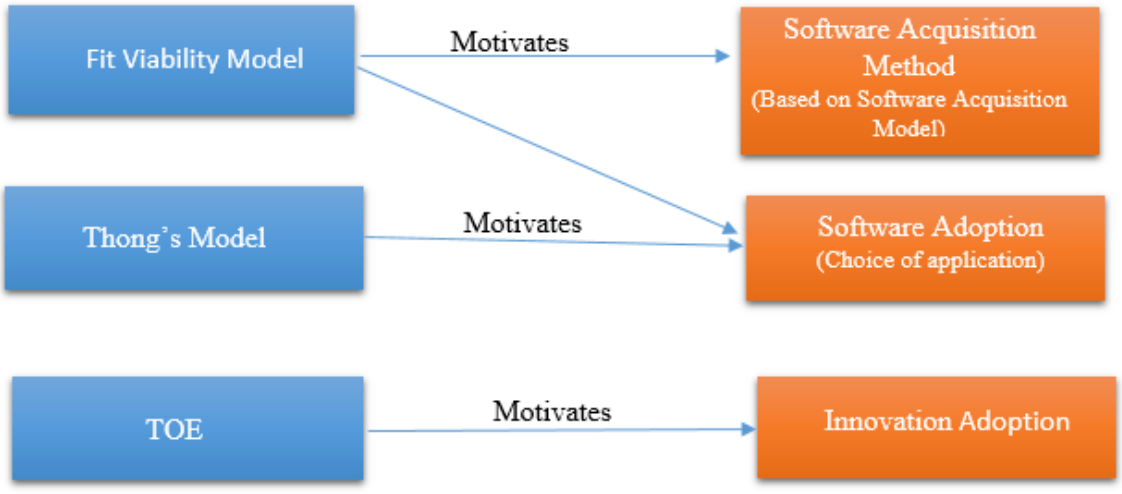

Figure 2.3: Argumentation to choose for Fit-Viability model

2.4 Prior related research on software acquisition in SMEs and start-ups

Except for the study by Thong (1999), as described in the previous section, there are a few other studies that focus on software acquisition, although not many of them focus on start-ups specifically. However, they do focus on small companies and are thus at least for that matter comparable to start-ups. This is the reason that the results of these researches could be relevant for the current study.

An example is the study by Harrison, Mykytyn Jr, and Riemenschneider (1997), who studied business executives' decision to adopt Information Technology. They based their research on the Theory of Planned Behavior (Ajzen, 1991) and studied 162 small businesses (which had between 25 and 200 employees) in different industries. They also looked at a wide variety of IS systems, focusing at systems that provided the companies with a competitive advantage. Results showed that attitude towards IT adoption, subjective norms about adoption and perceived control over adoption influenced the decision on adopting IT.

An important downside of the studies by Thong (1999) and Harrison et al. (1997) is that both of them are quite old, and that more recent research is lacking in this field. This is problematic since IT has evolved a lot since the 90s and therefore the results of these studies might be outdated. There are however a few articles on software acquisition in start-up companies that are fairly recent: Davila & Foster (2007) write about the rate of adoption of management control systems (MCS) within start-up companies. They found that financial planning and financial evaluation systems are the first to be adopted by start-up companies (80% respectively, 77% of the companies that they studied adopted these systems by the end of their fifth year), followed by Human Resource Planning, Human Resource Evaluation and Strategic Planning. Despite the fact that their main focus does not lie on the motivations behind software acquisition, they do make some comments related to this: for example, they write that in their interviews, they found "*descriptions of specific MCS adoption being associated with the hiring of a particular manager"* (Davila & Foster, 2007, p. 935) and also that "*Early-stage companies adopting product development MCSs sometimes referred to the "requirements" of third parties [...] when explaining why specific MCSs were implemented"* (Davila & Foster, 2007, p. 935). Important to note about this research is that their definition of start-up companies is different from ours: Their research sample included companies which were at most 10 years old and which were independent with in-between 50 and 150 employees. This means that a large part of these companies fall outside of our definition of start-ups.

Another research that is more recent is that of Daneshgar et al. (2013), who studied Small and Medium Enterprises and what factors influence the decision making in terms of software acquisition within these companies. Results showed that these factors include requirements fit, cost, scale and complexity, commoditization/flexibility, time, in-house experts, support structure, and operational factors.

For a better understanding of existing research related to software acquisition in start-up or SME organizations discussed above, we created table 2.1, where we show an overview of the key aspects of each of them.

Table 2.1: Overview of prior research on software acquisition in SMEs and start-ups

Author	*Researched companies*	*Focus of research*	*Core findings*
Thong (1999)	Small businesses (<100 employees, fixed assets below $7.2 million, sales below $9 million)	Contextual variables as determinants of IS adoption	Determinants of IS adoption are: - Decision-maker characteristics - IS characteristics - Organizational characteristics - Environmental characteristics
Harrison, Mykytyn Jr, and Riemenschneider (1997)	Small businesses (between 25-200 employees)	Business executives' decision to adopt Information Technology	Factors that influence the decision on adopting IS are: - Attitude towards IT adoption - Subjective norms about adoption - Perceived control over adoption
Davila & Foster (2007)	Start-up companies (between 50-150 employees, age less than 10 years, independent)	Rate of adoption of management control systems within start-up companies	Financial planning and financial evaluation systems are the first to be adopted by start-up companies, followed by Human Resource Planning, Human Resource Evaluation and Strategic Planning.
Daneshgar et al. (2013)	SMEs (not specified more detailed)	Factors that influence decision-making in terms of software acquisition	Factors that influence decision-making in terms of software acquitisition are: - Requirements fit - Cost - Scale and complexity - Commoditization/flexibility - Time - In-house experts - Support structure - Operational factors.

2.5 Final theoretical framework

As visible in the analysis of existing literature on software acquisition by start-up companies, our final theoretical framework can be divided in three main sections: One section that focuses on software acquisition methods and one section that focuses on motivations behind acquiring specific software and motivations behind the chosen acquisition method. In the last section we will take related research into consideration in order to make a comparison between our and previous literature results.

The first section of our framework, in which software acquisition methods play a central role, is mainly formed by the Software Acquisition Model by Nelson et al. (1996). This model,

complemented with more detailed software acquisition methods on Package software acquisition, forms the basis of our final categorization of software acquisition methods as practiced by start-up companies. The main reason why the model by Nelson et al. (1996) forms the basis of this part of our theoretical framework, is that it is the only model that focuses on software acquisition methods in particular. Although this model is quite old we find it still relevant, as new technological developments still fit in the model. For example, cloud services introduce new ways of software licensing however the model by Nelson et al. (1996) is so general that even these new developments can be categorized based on this model.

The second section, which focuses on motivations behind the choice for a specific software application, and motivations behind the choice for a specific software acquisition method, is formed by the Fit-Viability Model by Liang et al. (2007). This model supports our analysis of underlying motivations of start-ups to adopt specific software and on motivations behind software acquisition methods. Reasons why we chose this model have been described earlier in this chapter.

In order to put our results in a wider context, we will compare our findings to those of comparable research as described in section 2.4.

Table 2.2 shows which parts of our theoretical framework are connected to which research (sub) question(s). The final connection between the found conclusions and this framework will be discussed in chapter 6 (Discussion of conclusion based on theoretical framework), after describing the research methods (chapter 3), results (chapter 4, Results and analysis of survey and interviews) and drawing a conclusion based on these results (chapter 5, Conclusion based on results).

Table 2.2: Theoretical framework, connected to research questions

Research question	*Theoretical foundation*	*Approach of results discussion*
How do start-up companies acquire their software and why? (main question)	Earlier research done on comparable subjects (see table 2.1)	Comparison of found results in this study to existing results
What software applications do start-up companies acquire and for what purposes? (sub question 1)	Earlier research done on comparable subjects (see table 2.1)	Comparison of found results in this study to existing results
In what ways do start-ups acquire their software? (sub question 2)	Software Acquisition Model (Nelson et al., 1996) Additional information on software licensing (Wang & Wang, 2001; Liao-Troth & Griffith, 2002; Michel & Reinke, 2007; "Microsoft supports your startup as you grow", 2013)	Categorization of software acquisition methods
Why do start-ups acquire their software in the way they do? (sub question 3)	Fit Viability Model (Liang et al., 2007), not taking into consideration the "Technology" aspect.	Categorization of motivations behind acquiring specific software using a specific software acquisition method

3 Research methods

In this chapter a detailed description of the followed research approach is provided. For this study, we used mixed methods: both a survey and semi-structured follow-up interviews were conducted to answer our research questions. In the following of the chapter, initially we introduce the material used for data collection and then the sample population is described, both for the survey and the interviews. Then we go on by describing the steps performed to collect the data and the data analysis phase. Finally, because it is important for the analysed items to be checked for validity and reliability we describe the measures taken to ensure our research quality.

3.1 Design of Survey and Interview Questions

In this section we will describe and motivate the choices we made in terms of designing the survey and designing the interview questions.

3.1.1 Survey Design

The questionnaire sent was composed of three sections, the first containing demographic information on the respondent companies, such as company age, yearly turnover, size and industry type. To create a general idea of the industry types of the sample population we asked them to select between a predefined list of possible industry types but also left the possibility for the user to fill it himself. We compiled the list based on Ideon Innovation Center (Ideon, n.d.) and LinkedIn (LinkedIn, n.d.) classification of industry types, but we reduced the list to only the more general industries so that the chance that a company would fit into different categories at the same time was minimized and therefore the survey would be easier to fill in for respondents.

Moreover to reveal something on the position of the respondent himself we asked him on his role at the company. While previously mentioning that in early start-ups, because of few employee number almost everyone knows what is going on in the company, we still decided to collect this information so that some insight can be given to situations where answers would seem unreliable.

The second section of the questionnaire included questions on top five software applications being used by the company, the purpose the application was used for, the perceived importance of the software application and how that application was provided, i.e. software acquisition method. We asked for top five applications, since if the list would be very long, respondents might have been discouraged to fill them in since the respondents were not only required to fill in the application name but also their usage purpose, acquisition method and importance. According to Bhattacherjee (2012) long surveys usually do have a lower response rate.

The perceived importance of applications was measured using a five-point Likert Scale ranging from 1 (“Very important”) to 5 (“Unimportant”). The Likert scale is one of the well-

known rating scales to measure such kind of ordinal data (Bhattacherjee, 2012). For the software acquisition method we provided the respondent with a list of predefined licensing types, an in-house development option and an option defined as "other". The respondent was provided with the possibility to fill in the actual used acquisition method by a text field that said "If other license type, please specify:". This was provided for the case where the respondents did not find the license in the list, they did not know or for some reason they did not want to reveal the information.

In the third and last section, respondents were asked if they agreed to participate in a follow-up interview related to the study and if they wanted to be informed on the results of the research. Respondents were assured on the confidentiality and anonymity of their company data. An overview of the questions used in the survey can be found in appendix A.

It was of special value for the survey questions to be checked for correctness and clearness and to avoid any ambiguities that could confuse our respondents. To avoid such uncomfortable situations, we firstly asked our supervisor to review our list of compiled questions and then we approached our contact point at Ideon Innovation centre to get a professional opinion from a person working on a daily basis with start-ups and who is familiar with their business language. Feedback of both of the abovementioned people was processed before actually sending out the survey. This way we executed our initial pre-test for the research in correspondence with the recommendation of Bhattacherjee (2012) to do such a test.

3.1.2 Interview question design

After conducting the survey, we did semi-structured follow-up interviews with four start-up companies, in order to learn more about their motivations behind software acquisition and their decision in terms of the followed acquisition method. The aim of the interview was to gain a deeper understanding on the subject and answer our two research question of "In what ways do start-ups acquire their software?" and "Why do start-ups acquire their software in the way they do?". The interview guide was designed based on the previously discussed models on software acquisition by Nelson et al. (1996) and Fit-Viability Model (Liang et al., 2007) and of course on the survey results by asking them what they look for when selecting the software they use and what makes the systems win over other alternatives. In Table 3.1 we show how the questions are connected to our research questions and our theoretical framework. In Appendix B our interview questions are shown but also other follow-up questions were asked during the interviews themselves for a better understanding of discussed topics.

Since the literature review showed that start-ups are companies that have limited resources and that evaluate their choices carefully in financial aspects, we asked them specifically on the budget dedicated to software systems in their company. We saw a pretty low usage of Entrepreneur Licensing from the surveys and asked them how aware they were about this type of license and if they had any further comments in general and the discussed issues. This set of questions pertains to the complementary questions in the interview guide. The final interview transcripts can be found in Appendix D.

Table 3.1: Interview Guide

<table>
<tr><th>Research Question</th><th>Theoretical Foundation</th></tr>
<tr><td>In what ways do start-ups acquire their software?</td><td>Software Acquisition Model (Nelson et al., 1996)</td></tr>
<tr><td colspan="2">Questions :
How did you make the decision of acquiring your software (did you use any help e.g. consultancy or competitors or did you make the decision completely by yourself)
If the decision was made in-house, which employees were involved in the decision (e.g. IT guys, CEO, founder etc.)
Outsourced: If they outsourced anything, how much did you outsource (e.g. just advise or the entire acquisition, was it custom developed)
Do you have any plans on acquiring software in the future? If so, for what purpose? How are you going to make the decision on which software it will be?</td></tr>
<tr><td>Why do start-ups acquire their software in the way they do?</td><td>Fit-Viability Model (Liang et al., 2007)</td></tr>
<tr><td colspan="2">Questions:
The software applications that you filled in are mostly [purpose] related, do you use software for other purposes as well? If so, which software applications?
You are using [software] for [purpose], why? Have you also considered other alternatives? If so, why did [software] win over other alternatives? (repeat this question for every software mentioned in the survey and during the interview)
What aspects were most important when selecting software? (Cost, usage by competitors, flexibility for future needs, etc.)
Why did you decide to use mostly (License type) software (free or paid)?
In what ways could the current offering of software be improved to target start-up companies more effectively? Is there anything missing/wrong/ etc based on your own experience?</td></tr>
<tr><td colspan="2">Complementary questions :
What priority does software acquisition have in your budget planning?
If the company doesn't use entrepreneur licensing: Are you familiar with entrepreneur licensing? (E.g. by Microsoft and IBM) If so, did you look into this as an option to acquire software with your own company? Why didn’t you choose this type of software acquisition?
Is there anything that we didn’t talk about that you feel is interesting for our study?</td></tr>
</table>

3.2 Participants

In this subsection, firstly the participants for the survey will be described and argued for and following, the participants of the interviews will be described.

3.2.1 Survey Participants

According to the World Economic Forum website (weforum, n.d.) Sweden and Netherlands are among the top innovative countries in the world for the years 2014-2015. Examples of companies that started as start-ups in Sweden include Spotify and Skype. While an example of a widely known start-up founded in the Netherlands is GitHub. Furthermore, in both Sweden and the Netherlands, the circumstances in the country are very beneficial for start-ups.

Sweden namely has several support policy programs to help start-up companies grow (Melin, Håkansson & Thorell, 2011). One of the most interesting initiatives is SiSP (Swedish Incubators & Science Parks) which is a national organization with the goal of creating favourable conditions in Incubators and Science Parks for innovative start-ups to emerge and grow assisted by a collaborative environment (SiSP, n.d.). Moreover Sweden is one of the countries giving top priority towards R&D investments (StudyInSweden, n.d.).

The Netherlands provide a good environment for start-ups as well: for example, the Dutch government offers a *Highly Skilled Migrant Visa*, which allows people to get a working permit within 4-6 weeks (Chau & Schiefelbein, 2014). Furthermore, the Netherlands Foreign Investment Agency, part of the Ministry of Economic Affairs, provides services useful for start-ups originally from Northern America (Chau & Schiefelbein, 2014).

Taking into consideration all of the factors mentioned above, we have eventually chosen our sample population for the study to be composed of start-ups from Sweden and the Netherlands. A list of companies to be contacted was obtained from online sources which will be explained in more detail in the data collection section below. Because there are no clear limits to what defines a company from being still a start-up as opposed to a matured company, some companies refer to themselves as start-ups even though they were founded more than five years ago. To ensure the reliability of our data we included a question in our survey asking respondents on their foundation year so that a company's age could be checked. No other criteria of selecting specific industry areas were applied.

The survey was sent to approximately 450 companies from which 63 responded by filling the survey, thus scoring a 14% response rate. Approximately one week time was provided to companies before collecting the data and beginning the analysis phase. Of the 63 responses, 13 were not suitable for our research because of several reasons, which are described in detail in section 3.4.1.

As priorly stated our sample population is composed of start-up companies that are at most 5 years old. Our final sample was on average 2.4 years old, with a median value of 2 (Appendix C, Table C.1).
An important metric to reveal company size is undoubtedly the number of employees working in a company. Our respondents consisted with an average staff size of 6,7 (almost 7 employees) while variations in this variable ranged from having 0 employees (implying the founder is still on his own) to 36 employees.

Since an email survey was sent to official contact information of start-up companies, another important input to shed led on the correctness of gathered data is to know the role of the actual respondent employee in the company. Although considering that information flow is very high in small companies, i.e. with few staff members, so that almost everyone knows everything also our respondents seemed to occupy mainly CXO level positions, owner, founder or co-founder status of the company (Appendix C figure C.1). This implies that input data was revealed by key people from the respondent companies, certainly having a clear vision and understanding of what is going on in the company.

Most of our participant start-up companies are active in Information Technology & Service Industry (33%). Following are Consultancy (10%) and Media (8%) industries. In figure 4.1 a complete overview of the industry areas of all the participating companies is shown. Overall a wide variety of industries is represented in our sample population.

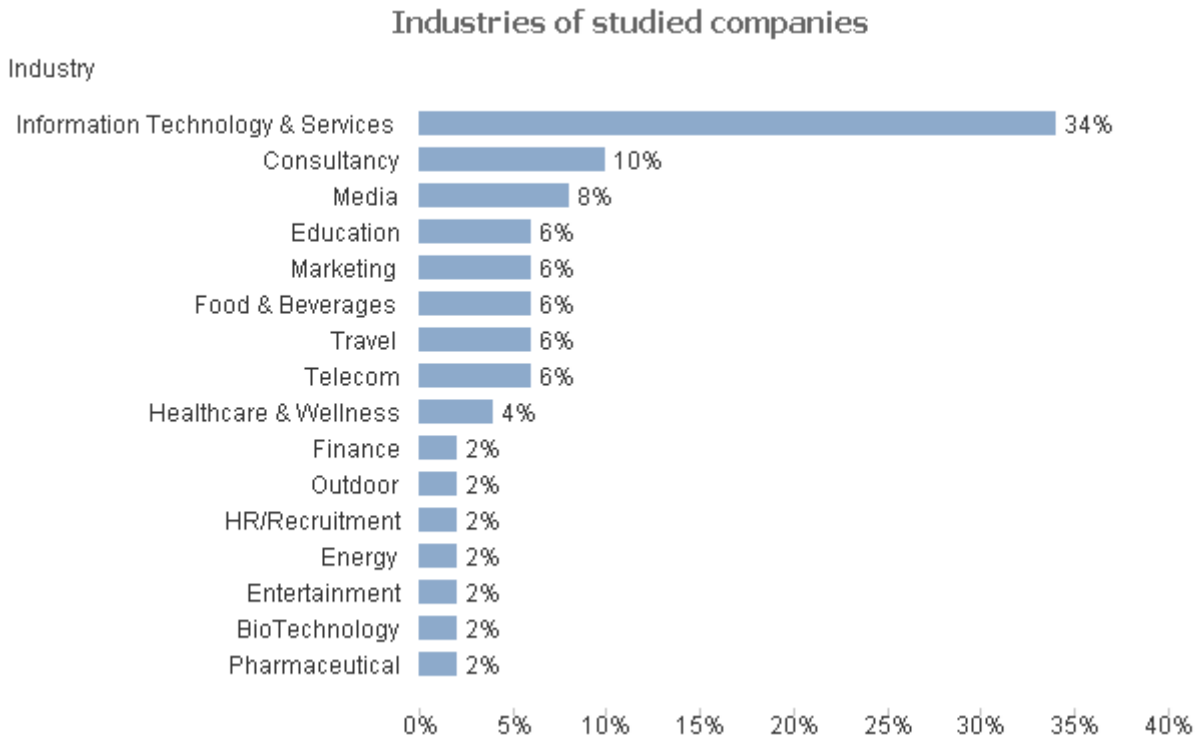

Figure 3.1: Industry areas of studied companies

Half of the participating start-up companies indicated that their target market was international (meaning not only Europe). 32% of the companies targeted the Netherlands, 10% targeted Europe and only 8% of the participants indicated Sweden to be their target market.

3.2.2 Interview participants

To select companies for the interviews, we used the results of the survey. To make sure that the companies we interviewed represented as many types of companies present within the survey as possible, we chose to interview one company that uses (almost) only paid software, one that uses (almost) only free software (open source or freeware) and two that use a mix of the abovementioned acquisition methods. In that way we would be able to encounter all aspects from the software acquisition model. Furthermore, we made sure that all four companies

were from different industries, to prevent the overall interview results to be influenced by industry characteristics. All interviewed companies also participated in the survey and had indicated they wanted to participate in the interview. This way, we were able to analyse differences in motivations behind the choices that these companies made when acquiring their software. A complete overview of the interviewees is shown in table 3.2.

Although we had interviewed two companies that used a mix of acquisition methods, we still interviewed both of them as one of these companies had an in-house developed solution and the other one did not. In each category that we wanted to interview in terms of software acquisition methods (almost) only paid software, (almost) only free software, a mix of paid and free software), we had the choice between two or three companies that indicated that they would want to collaborate with an interview. We then proceeded to approach a random company from each of these categories, taking into consideration industry types so that we wouldn't interview companies from the same industry type. When a company wouldn't reply after five working days, we approached another company that fell into the same category. Below an overview of our interviewee profile is shown.

Table 3.2: Interviewees profile overview

	Company 1	*Company 2*	*Company 3*	*Company 4*
Industry	IT & Services	Consultancy	Healthcare & Wellness	Communication & Content Creation
Foundation Year	2014	2011	2014	2012
Country	Sweden	Sweden	Sweden	Netherlands
Interviewee	Founder	CEO Founder	CEO	Owner
Acquisition Type	Open Source	Paid Software (Shared License, Single License)	Mix (Pay-Per-Use, Freeware)	Mix (In-house Developed, Freeware, Pay-Per-Use, Single License)
Transcription	Appendix D – Interview Transcript 1	Appendix D – Interview Transcript 2	Appendix D – Interview Transcript 3	Appendix D – Interview Transcript 4

3.3 Data collection

Each start-up chooses complementary software applications for general business support, independent of its unique core business systems. Because there would be various options to choose from, the motives for the need of these systems remain somehow the same, the starting point being helping and assisting users to better do their job (Ives & Learmonth, 1984; Porter

& Millar, 1985). In order to do an inclusive study that many other firms can relate to, it is suitable to perform a quantitative research (Recker, 2013). Therefore, to investigate which supporting software applications are adopted by companies and in what ways, we decided to start with a survey.

Initially we compiled a list with contact information of start-ups in Sweden and Netherlands to be included in our research. These companies were taken from websites such as Ideon Innovation Center (Ideon, n.d.) and SiSP catalogue (SiSP, n.d.) and several websites with start-up companies from the Netherlands, like Dutch Startupmap (DutchStartupmap. n.d.). Furthermore, we used our own network to find start-ups by asking our contacts on Facebook and Twitter to help us find more start-up owners in Sweden or the Netherlands.

The collected data for the research was obtained by sending an online questionnaire to start-up organizations in Sweden and Netherlands via e-mail.

As described earlier, after analysing the results of the survey, four follow-up interviews were done. The aim of these interviews was to investigate the motivations behind choosing for a specific software application and acquisition method. The interviews were semi-structured, of which one was conducted using Skype, two were conducted using Google Hangouts and one was conducted in person. The reason why three of the interviews were not done face-to-face, but using either Google Hangouts or Skype, is because all of these companies had their office based relatively far away from Lund. However, we believe that because we made use of video calls and therefore we were able to see the interviewee's body language and facial expressions, the quality of these interviews was still adequate. The interviews had a length varying from 12 to 20 minutes. This relatively short time span can be explained by the quite specific focus of our questions, which seemed clear to them, especially when the respondents were very informed on the discussed topic and most of times giving straight-forward answers. We were able to forward our questions in a specific direction because we already gained important knowledge from the survey results on which we based those questions. However, the interviews helped us enrich our research with a deeper understanding of software acquisition by their companies and also provide some additional feedback and suggestions that might be interested for future studies in the area. For example, we asked for each specific software that the interviewed company filled in the survey if they had considered other options for the same purpose and why this specific software was eventually chosen.

In summary, this study has followed a combined quantitative and qualitative approach. Therefore there are two types of collected data that have been analysed in different ways. The analysis of both types of data is described below.

3.4 Survey Data Analysis

In the below sections we will describe how we firstly performed a data cleansing on the survey data and furthermore we will describe how we analysed the data.

3.4.1 Data cleansing

Our main purpose of the survey was to gain an overview on the software systems adopted by start-up companies and the acquisition trends of how those systems were acquired. As a first step while collecting data a cleansing check was performed to exclude faulty answers. This included leaving out companies older than five years or answers which did not reveal the names of software applications being used although admitting using software applications. Also few respondents which did not give details on what licensing types were used (not even selecting other) when adopting software applications were left out of analysis process. There was also one response which filled in San Francisco as their target market, which we left out as well. We thought that probably someone had forwarded the survey to some other company not based in either Sweden or the Netherlands or the company was a branch located elsewhere and owned by a company based in one of the previous mentioned countries. Since we considered the answer as suspicious we did not take it into consideration.

We did some checks on the entered software application names for typing mistakes or application which were filled in with their abbreviations, so that same application names were consistent throughout the survey. Although we expected it beforehand that leaving respondents to fill in data by their own would result in all kinds of answers and required a lot of work from the researcher part, it would be impossible and shortcoming to provide respondents with predefined software application names that they could choose from, given the large amount of available applications out there. An example of the kind of data cleansing done in this step is correcting entries such as “xcode” and “Apple x-code” to “Apple X-code” since they refer to same application. Similar entries include “Microsoft Office” or “MS Office” which were updated to Microsoft Office or “Excel”, “Microsoft Excel” were updated and the later name was used. After performing the cleaning process our sample data was composed of 50 valid survey entries.

Furthermore since the focus of our study was to look for supporting software applications we did not take into consideration entries having a usage purpose such as ‘core product’.

Finally, we found out that most respondents did not fill in the importance Likert scale as we hoped they would (meaning to rank the five software applications from one to five), but instead they often indicated all their software as important (2) or very important (1). We therefore decided to leave this data out in the final analysis.

3.4.2 Survey Analysis

After ensuring that our data were clean, it was analysed by doing descriptive analytics using QlikView. QlikView is one of the many available software packages used to explore associations in uploaded datasets and to perform data analyses on them (Qlik.com, n.d.). Since the researchers were already familiar with the software and it could perform all the needed descriptive statistics and also provide rich graphics to better visualize results, the choice was

easy. In order to make an analysis in QlikView possible, we transformed the data by putting it in two separate main tables: a software table and a company table, linked by a key that was based on the company.

As a way to understand possible trends on collected data without priorly preconceived ideas, data triangulation was performed based on different possible control variables such as company's age, employee number, industry type, market orientation and company's yearly revenue and analysed them carefully. Because of the many different purposes of software filled in by the respondents, we developed groups for the software purposes, to make the results easier to understand. For example, the purpose group "Communication" includes entries like writing, e-mail, external communication and SMS-service. Furthermore, we divided the target markets in local (then classified into Dutch, and Swedish markets) and international (including Europe and International outside of Europe) to see if there were any patterns to be found when that distinction was made.

Additionally, to better identify which applications were used the most we did some grouping of software packages such as:

- Google Apps was denoted the big group containing individual used applications: Gmail, Chrome, Google Analytics/ AdWords, Google Apps, Google Apps for Business, Google Calendar, Google Docs, Google docs & sheets., Google Drive, Google Hangouts, google maps & google places.
- Adobe Package for Adobe Photoshop, Adobe, Adobe CC, Adobe Creative Suite, Adobe InDesign.
- Android Studio to represent android studio, Android Studio/Intellij.
- Atlassian for Atlassian, Atlassian Confluence, Jira, HipChat.
- Microsoft Office for Microsoft Excel, Microsoft Excel and Word, Microsoft Office, Microsoft Outlook, Microsoft PowerPoint, Microsoft Word.

The final data structure that we used for the analysis in QlikView is visible in figure 3.2.

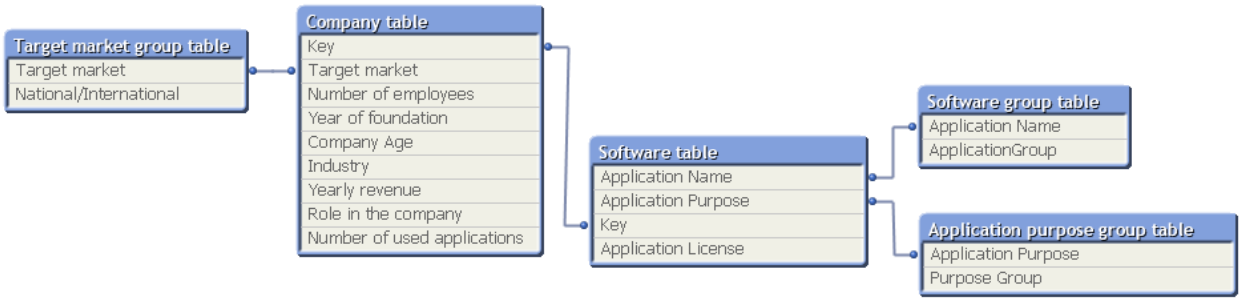

Figure 3.2: Data structure used in QlikView

3.5 Interview Data Analysis

The interview data was first transcribed into text for further analysis. This text was then analysed using *coding*, which is described by Recker (2013, p. 92) as "*[…] assigning tags or labels as units of meaning to pieces or chunks of data collected – words, phrases, paragraphs,*

or entire documents". In order to do this, we used the software *NVivo*. This is a software used for analysing unstructured data like interview transcripts (QSRInternationalPtyLtd, 2015), by dividing the data in fragments and then putting these fragments into categories and sometimes subcategories. The used categories for the interview transcripts from this study included criteria behind software adoption, extent of consideration of other options, acquisition decision, acquisition, software acquisition plans and future suggestions. We then analysed the interview results based on these categories.

3.6 Research Quality

To ensure quality and trustworthiness of our research we took quality in consideration in every step of our study. Since our study includes both quantitative and qualitative methods, including interviews as a consecutive research method to previously conducted surveys, we were conscious that ensuring the quality of surveys would affect the next step as well, similar to selecting and collecting data would contribute to our analysis and result and so on.

Therefore our main principle throughout the entire process was to stay true to every single stated action in the research method above and describe every step. In the following sections we will explain in more detail measures taken for validity, reliability, generalizability and ethical aspects of our study.

3.6.1 Validity

Validity refers to the data validity collected for analysis and that the data represents and measures what is supposed to (Recker, 2013). Some guidelines were followed to choose our sample population, as to select start-ups based on their location and their foundation year, employing no other criteria thus sustaining our intent for having a broad industry range between respondents and the process is transparently introduced.

By performing the data cleansing step described in the survey analysis section (3.4.1) we made sure that no invalid answers would be considered and influence our findings.

In the second phase, before starting to perform the interviews, we selected our participants based on the survey findings, so that more knowledge could be generated based on identified patterns, and selecting equal number of respondents from dominant industry and non-dominant industries. After compiling the transcribed interviews, we did a double check by the person who did not transcribe the original interview to check to make sure that no errors or misunderstanding existed.

3.6.2 Reliability

Undoubtedly reliability of the research is very important so that the data which are then analysed are reliable and real to the underlying environment so that another person can end up with the same results (Bhattacherjee, 2012). For the data collection, companies were surveyed directly and data was thus not collected from secondary sources. Furthermore, to make sure that respondents themselves occupy trustable positions in the company we asked them on their employment role within the company, which turned out to be pretty assuring. Next to

make sure we actually interviewed participants from the survey, we contacted survey participants that filled the survey and which indicated that they wanted to cooperate with a follow-up interview and provided their e-mail address so that voluntary participation as suggested by Bhattacherjee (2012) could be achieved

3.6.3 Generalizability

To ensure external validity which is important so that some level of generalizability is achieved from the findings that relate to our research population (Bhattacherjee, 2012), we explain and give as much details as possible on how and which criteria were used to select respondents and going step-by-step through each of the analysis and result findings. As described before, we included companies from all types of industries and looked at supporting software, so that the results are as widely applicable as possible. However since we put a limitation in our definition of start-ups to consider only companies that are at most five years old, we will not pretend our results to relate to older companies as well, as further studies would be required to further investigate that.

3.6.4 Ethics

Ethical behaviour from the researcher's part but also for producing an ethical research in overall was ensured by following some literature suggestions regarding the matter.

Firstly when conducting the surveys we ensured respondents on their anonymous treatment of their data during analysis and no results would be shown that could connect any company with the results (Recker, 2013), which we actually did. Special care was dedicated to fully explain the intent of our study at the beginning of the survey but also to the interviewed participants to make sure they would understand the purpose of our study.

We followed the guidelines by Bhattacherjee (2012) for an ethical study where participation in the interviews and surveys was voluntary and before starting any interviews we asked for the interviewee permission to have the conversation recorded and no personal irrelevant questions were asked. Moreover we ensured and stayed true to our agreement with interview respondents that collected data would be treated in a confidential way (Recker, 2013).

Ethical guidelines by Bhattacherjee (2012) were considered also during data analysis and results sections where no findings were left out and transparently describing each and every step of the research.

4 Results and analysis of survey and interviews

In this chapter the results of our study will be described. These will be structured based on our sub questions, with both relevant survey and interview results for each sub question. Then in the following chapters, first a conclusion based on these results will be presented in chapter 5, and finally this conclusion will be discussed based on our theoretical framework in chapter 6.

4.1 What software applications do start-up companies acquire and for what usage purposes?

In this part we will discuss our findings on the software applications acquired by the studied start-up companies, and their usage purposes. This will be done based on the results of the survey, since the interview did not focus on answering this question.

4.1.1 Survey results on software applications and their usage purposes

Regarding the number of used applications we found that most of the respondents indicated that they use more than 10 different software applications (64%). The number of used software applications of the remaining 36% of the companies varied between 1 and 10, where most of them used either 5 applications (8%) or 3 applications (8%). A complete overview is visible in figure 4.1.

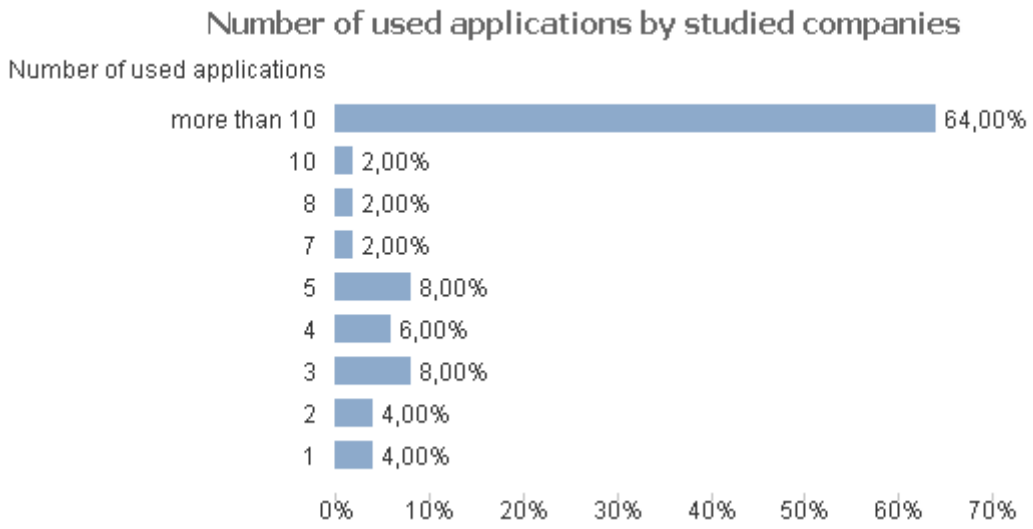

Figure 4.1: Number of used applications by studied companies

Although our participant's employee number ranged from 0-36 employees (as mentioned in the participant profile section) when trying to find some relation between number of employees and number of software applications adopted for usage in companies, a relation between this two variables could not be found.

A total number of 214 used software applications was filled in by the 50 participating start-up companies. Of these 214, most are (part of) Google Apps (mentioned 32 times) and Microsoft Office (mentioned 24 times), followed by WordPress and Atlassian products like Jira and HipChat (both mentioned 9 times). Furthermore, Adobe Package (mentioned 8 times), Trello (mentioned 8 times) and Slack (mentioned 7 times) can be considered to be relatively popular amongst the participating start-up companies (see table 4.1). A few of the above mentioned application groups include several software applications. This goes for Google Apps, Microsoft Office, Atlassian and Adobe Package.

In the Google Apps application groups all applications by Google were included (e.g. Gmail, Google Analytics, Google Calendar, Google Drive) and of these, Google Drive was mentioned most often (8 times), followed by the entire Google Apps package (mentioned 5 times) and Gmail (mentioned 4 times). Some start-ups specifically stated that they use Google Apps for Business (mentioned 3 times), which as opposed to the default Google Apps offers more support targeting companies such as company email storage, archiving, online calendar et cetera.

The Microsoft Office application group includes all applications that are part of Microsoft Office, such as Microsoft Word and Microsoft Excel, but also mentions of the entire Office package were put in this group. Within this application group, Microsoft Excel was mentioned most often (9 times), followed by the entire Office package (mentioned 7 times) and Microsoft Word (mentioned 5 times).

Within the Atlassian application group, Jira was mentioned most often (4 times), followed by HipChat (3 times) and Atlassian / Atlassian Confluence (both mentioned once).
The Adobe Package application group includes Adobe Photoshop (mentioned 4 times), Adobe, Adobe CC, Adobe Creative Suite and Adobe InDesign (all mentioned once). It is important to mention that Photoshop is probably used more than just the four times it is explicitly mentioned, as it is part of both Adobe CC and Adobe Creative Suite. The same goes for Adobe InDesign ("Creative Cloud", 2015).
A complete overview of all application groups that were mentioned at least three times is shown in table 4.1. A more detailed overview of the applications within the above described application groups can be found in appendix C (Tables C.3, C.4, C.5, and C.6).

Table 4.1: Top Applications with a frequency of at least 3

ApplicationGroup	Frequency	Percentage
	214	**100 %**
Google Apps	32	14,95%
Microsoft Office	24	11,21%
Atlassian	9	4,21%
WordPress	9	4,21%
Adobe Package	8	3,74%
Trello	8	3,74%
Slack	7	3,27%
Dropbox	6	2,80%
Git	5	2,34%
MailChimp	4	1,87%
Sublime Text	4	1,87%
Apple x-code	3	1,40%
AWS	3	1,40%
Eclipse	3	1,40%
MoneyBird	3	1,40%
Skype	3	1,40%
Vim	3	1,40%
Zendesk	3	1,40%

The survey showed that most software applications were used for communication purposes (mentioned 33 times), followed by development purposes (mentioned 23 times), file management & storage purposes (mentioned 22 times), planning & finance purposes (mentioned 18 times), administration & organization purposes (mentioned 16 times), web presence purposes (mentioned 16 times), planning purposes (mentioned 15 times) and data analysis & processing (mentioned 13 times). A complete overview of the purpose groups mentioned in the survey can be found in table 4.2.

Within each of these purpose groups, similar written purposes were included. For example, the communication purpose group includes apart from the general term “Communication” (mentioned 12 times) terms as mail (mentioned 2 times) and meetings (mentioned once). Besides these, there are eighteen other purposes within the communication purpose group, all mentioned once. A complete overview of all the purposes within this purpose group is shown in appendix C (Table C.18).

After seeing the most frequently mentioned software applications and software purposes, we connected the two abovementioned aspects to see for which purposes the most frequently mentioned applications are used. Results of this analysis showed that Google Apps is mostly used for communication purposes (10 out of 32 mentions) and file management and storage (10 out of 32 mentions), followed by web presence, administration & organization and planning.

Microsoft Office appeared to be mostly used for planning & finance (7 out of 24 mentions), and administration and organization (4 out of 24 mentioned), followed by communication and file management & storage (both mentioned 3 times).

The results of the survey showed that Atlassian products are mostly used for communication (4 out of 9 mentions) and development (2 out of 9 mentions), and that (part of) the Adobe Package is used mostly for design (6 out of 8 mentions). WordPress is almost solely used for web presence (8 out of 9 mentions) and Slack is exclusively used for communication purposes (7 out of 7 mentions). Trello, which was a popular application as well, appeared to be mostly

used for planning purposes (5 out of 8 mentions) and for administration & organization (2 out of 8 mentions). A complete overview of all of the abovementioned application groups and their related purpose groups can be found in appendix C (tables C.3, C.4, C.5, C.6, C.7, C.8, and C.9).

When the same analysis was done with the most popular purpose groups as a starting point, results showed that for communication (with a total of 33 mentioned software applications), Google Apps is mostly used (mentioned 10 times), followed by Slack (mentioned 7 times) and Atlassian (mentioned 4 times).

For development (with a total of 23 mentioned software applications), there was no obviously outstanding popular software application: Sublime text was mentioned most frequently (4 times), but it is closely followed by Apple x-code and Eclipse (both mentioned 3 times), Android Studio, Microsoft Visual Studio and Atlassian (all mentioned twice).
For file management & storage (with a total of 22 mentioned software applications), again, Google Apps is most popular (mentioned 10 times), followed by Dropbox and Microsoft Office (both mentioned 3 times) and Vim (mentioned twice).

Table 4.2: Usage purpose grouping of software applications

Purpose Group	Frequency	Percentage
	214	**100,00%**
Communication	33	15,42%
Development	23	10,75%
File Management & Storage	22	10,28%
Planning & Finance	18	8,41%
Administration & Organization	16	7,48%
Web presence	16	7,48%
Planning	15	7,01%
Data Analysis & Processing	13	6,07%
Design	9	4,21%
CRM	6	2,80%
Database & Storage	6	2,80%
Source Control	6	2,80%
File Sharing	5	2,34%
Infrastructure	3	1,40%
Marketing	3	1,40%
Marketing & Human Resources	3	1,40%
Monitoring	3	1,40%
Support	3	1,40%
Other	2	0,93%
Planning & Communication	2	0,93%
Production	2	0,93%
Testing	2	0,93%
CMS	1	0,47%
Integration	1	0,47%
Modeling	1	0,47%

For planning & finance (with a total of 18 mentioned software applications), there were two software groups that stood out, namely Microsoft Office (mentioned 7 times) and MoneyBird (mentioned 3 times). An important note is that all seven cases of software within Microsoft Office in this case were actually Microsoft Excel. Therefore it can be said that Microsoft Excel is the most popular tool for planning & finance, followed by MoneyBird.
For administration & organization (with a total of 16 mentioned software applications), the most popular tools were Microsoft Office (mentioned 4 times), Google Apps (mentioned 3

times) and Trello (mentioned twice). An interesting note is that two of the three mentions of Google Apps is actually Google Apps for business and thus a paid version.
For web presence (with a total of 16 mentioned software applications), the most frequently used software applications were WordPress (mentioned 8 times) and Google Apps (mentioned 4 times). However, it should be noted that three out of the four mentions of Google Apps in this case actually were mentions of Google's browser Chrome.

For planning (with a total of 15 mentioned software applications), the software applications that stood out the most were Trello (mentioned 5 times) and Google Apps (mentioned 3 times), followed by Asana and Microsoft Office (both mentioned twice). Again, it should be noted that both mentions of Microsoft Office in this case are Microsoft Excel.

For data analysis & processing (with a total of 13 mentioned software applications), there were no outstanding software applications. Microsoft Office and MixPanel were mentioned most frequently (both twice), but all the other software applications for this purpose were only mentioned a single time. An overview of all applications mentioned for the eight most popular purpose groups as described above can be found in appendix C (Tables C.10, C.11, C.12, C.13, C.14, C.15, C.16 When we did an additional analysis to see if the purpose group distribution was affected by companies that use multiple applications for the same purpose group, we found that this was not the case in general.

Looking at how these purpose groups were divided over the companies, the same dominant usage purpose groups can be seen. This is illustrated by comparing tables 4.2 and C.33 in Appendix C.

Another analysis was data triangulation trying to identify which top purpose groups pertain to which industry type. It clearly turned out that companies operating in IT & Services are those that adopt the biggest number of software applications (16 companies revealed using more than 10 applications) (see appendix C, figure C.3). However the result of IT companies using more applications clearly relates to our respondent nature of operating mostly in this field. The companies in IT & Services adopted especially software for communication (15 mentioned applications), development (10 mentioned applications), administration & organization (8 mentioned applications), and file management & storage functions (8 mentioned applications). An overview of all software purposes in IT & Services is visible in table 4.3.

Table 4.3: Main purpose groups in IT & Service industry

IT & Services usage Purposes	Frequency
	82
Communication	15
Development	10
Administration & Organization	8
File Management & Storage	8
Design	6
Planning & Finance	6
Planning	5
Data Analysis & Processing	4
CRM	3
Monitoring	3
Source Control	3
Web presence	3
Database & Storage	2
Support	2
File Sharing	1
Infrastructure	1
Marketing	1
Testing	1

When looking to other industry types of respondents such as Consultancy, most usage purposes are those related to communication (4 responses) and file management & storage (4 responses). While in Media, which composed 8% of respondent start-ups, top purpose groups were web presence (5 responses), followed equally by communication, development, planning & finance, each having 2 responses. A detailed view of Consultancy and Media industry type versus their respective purpose groups can be found in Appendix C (Tables C.23, C.24).

We also compared purposes of software usage to target markets of companies. The results of this analysis show that for all target markets communication is the most frequently mentioned software purpose, except for the companies which have an international target market.
For start-up companies that have the Netherlands as their target market, a total of 60 software applications was mentioned, of which 10 were for communication purposes, 7 for planning & finance, 7 for web presence, 6 for administration & organization and 6 for file management & storage.
For start-up companies that have Europe as their target market, a total of 23 software applications was mentioned, of which 6 were for communication purposes, and 3 for web presence. All the other purposes of software applications used by companies that have Europe as their target market were only mentioned once or twice.
For start-up companies that have Sweden as their target market, a total of 19 software applications was mentioned, of which 4 were for communication purposes. The rest of the software purposes present at start-ups with Sweden as their target market were only mentioned once or twice.

As said earlier, the only target market group that did not have communication as their most frequently mentioned software purpose was the group of start-ups that have an international market. A total number of 112 software applications was mentioned, of which the most frequently mentioned purpose was development (mentioned 17 times), followed by communication (mentioned 13 times) and file management & storage (mentioned 13 times). The fact that

development is the most important software purpose for start-ups with an international market could be due to that most participating start-ups operating in the IT & Services industry indicated that they have an international market. A complete overview of all the mentioned purpose groups for each target group can be found in appendix C (Tables C.19, C.20, C.21, and C.22).

The next analysis we did was to look for a correlation between the number of employees and the software purposes mentioned by the participating start-up companies. This showed that there was no clear pattern or correlation to be found; the most important purposes stayed the same no matter the amount of employees working for the company.

Below we present a summary of the most used applications, what their vendors are advertising them to do and what start-ups are using them for.

By comparing what these applications are advertised to do and what they are used for, we found that most software are used for the purpose it is advertised for, although some companies use software for a more specific purpose. For example, Microsoft Excel is advertised to be used for data analysis and gaining insight into data, while its actual usage goes one step further using it purely for finance.

Table 4.4: Application advertised purpose vs their actual usage

Software Application		*Application description from vendor*	*What companies are using it for*
Google Apps		"A powerful, integrated suite -Anytime, anywhere access to business email, online calendar, file storage, docs, video meetings, surveys and much more. Communicate, create, share and collaborate, from any device with ease." (Google, n.d.)	Communication File Management & Storage
Microsoft Office		"Business-class email, File storage & sharing, Online meetings" (Office.com, n.d.a) "Unlock insights and tell the story in your data."(Office.com., n.d.b)	Planning & Finance Administration & Organization
Atlassian	Jira	"Enable development and IT teams to capture issues, plan work, and resolve requests. Spend less time managing work and more time building great software." (Atlassian, n.d.)	Communication Development
	HipChat	"HipChat is a hosted private chat service for your company and team. Share ideas and files in persistent group chat rooms, video chats, and more. Get your team off AIM, Google Talk, and Skype – HipChat is built for business." (Atlassian, n.d.)	Communication
WordPress		"WordPress is web software you can use to create a beautiful website or blog." (WordPress.org., n.d.)	Web presence
Adobe Package	Photoshop	"Image editing and compositing" (Adobe.com, n.d.a)	Design Graphics Marketing & HR
	InDesign	"Page design and layout for print and digital publishing" (Adobe.com, n.d.a)	Design
	Creative Cloud (CC)/Creative Suite	"you have all the tools and assets you need to create amazing work across desktop and mobile devices. There are plans for everyone, including students, photographers, and small and medium business" (Adobe.com, n.d.b)	Production Graphics
Trello		"Drop the lengthy email threads, out-of-date spreadsheets, no-longer-so-sticky notes, and clunky software for managing your projects. Trello lets you see everything about your project in a single glance."(Trello.com., n.d.)	Planning
Slack		"Slack is a platform for team communication: everything in one place, instantly searchable, available wherever you go." (Slack.com, n.d.)	Communication

4.2 In what ways do start-ups acquire their software?

In this section software acquisition methods will be discussed. To increase the understanding of these results, first the definitions of the different software acquisition methods will be repeated.

As described in the literature review, we base our categorization of software acquisition methods on the Software Acquisition model by Nelson et al. (1996). This model differentiates four different types of acquisition methods, being "Custom Insource", "Custom Outsource", "Package Insource" and "Package Outsource". In this model, custom software refers to software that is custom-made for the company and package software refers to existing packages offered on the market. In case of the custom software, insource means that the software was developed in-house, and outsource means that the software was developed by a third party. In case of the package software, insource and outsource refer to the decision-making process around acquiring the software: Package Insource software is acquired by the company, with the decision-making and selection process done within the company. Package Outsource software is eventually acquired by the company, after the decision-making and selection process is done by a third party (Nelson et al., 1996).

In the survey we asked about one dimension of this model, namely about the distinction between Package software and Custom Software. Since there are a lot of different options to acquire Package software, we also differentiated between different kinds of Package software, namely Freeware, Open Source, Single License, Pay-Per-Use, Shared License, Subscription, and Other. Freeware is software that is distributed for free, Open Source is software that is distributed for free and additionally has its code publicly available, Single License software is software that is paid for and that can be used by one user, Pay-Per-Use software is software that is paid for each time you use it, Shared License software is software that is paid for and that can be used by a predefined number of users, and Subscription software is software that is paid for every set period (e.g. month, year). In the interviews, we focused on the second dimension of the Software Acquisition Model (Nelson et al., 1996), which is the differentiation between in-house and outsource.

In the following of this subchapter, firstly the survey results on software acquisition will be presented and secondly the interview results on software acquisition will be presented.

4.2.1 Survey results on software acquisition

We found that the top five used software acquisition methods are Freeware (68 responses), Single License (42 responses), Open Source (31 responses), Pay-Per-Use (23 responses) and Shared License (21 responses). We found no relation between a company's yearly turnover and their used acquisition method, with the most used methods being dominant in different revenue groups. In table 4.5 the most widely used acquisition methods by distribution are shown.

Table 4.5: Software acquisition method distribution

Software acquisition method	Frequency	Percentage
	214	**100,00%**
Freeware	68	31,78%
Single License	42	19,63%
Open source	31	14,49%
Pay per use	23	10,75%
Shared License	21	9,81%
Subscription	13	6,07%
Other	8	3,74%
Entrepreneur License	4	1,87%
In-house developed	4	1,87%

The least popular software acquisition methods are Subscriptions (13 response), In-house Development (4 responses), Entrepreneur License (4 response), and other (8 responses).

Analysing software acquisition methods for each prevalent purpose group would shed some light which business functionalities were covered by Freeware or Open Source and which are the process start-up are paying for. The purposes of the software per software acquisition method are shown in Appendix C (Tables C.25, C.26, C.27, C.28, C.29, C.30, C.31, and C.32).
From table 4.6 below we notice that the Freeware software acquisition method is mostly employed for communication purposes (18 applications), planning (10 applications), development (8 applications) and file management & storage (8 applications). While other purposes are mentioned less often (6 times or less).

Table 4.6: Freeware software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Freeware	Percentage
	68	**100,00%**
Communication	18	26,47%
Planning	10	14,71%
Development	8	11,76%
File Management & Storage	8	11,76%
Administration & Organization	6	8,82%
Web presence	6	8,82%
Data Analysis & Processing	3	4,41%
File Sharing	2	2,94%
Planning & Finance	2	2,94%
Source Control	2	2,94%
Marketing & Human Resources	1	1,47%
Monitoring	1	1,47%
Planning & Communication	1	1,47%

While Single License was the second most mentioned software acquisition method there is not a clear pattern in finding for what purpose it is being used. Our analysis showed that planning & finance (7 applications) and design (7 applications) are in the top purposes, followed by other sparsely distributed purposes.

The Open Source software acquisition method was mostly used for development (6 applications), data analysis & processing (5 applications) and database & storage (5 applications) followed by web presence (4 applications), file management & storage (3 applications) and source control (3 applications). Other purposes were encountered with single mentions only.

The Pay-Per-Use software acquisition method was mostly engaged for communication (6 responses) and planning & finance (3 responses) with few dispersed mentions of other purposes. The Shared License software acquisition method comprised 21 of the total 214 mentioned applications, however no outstanding purpose group could be drawn in particular (with 2 or 1 responses for different purpose groups).The Subscription License software acquisition method was encountered in 13 responses, but also this license did not show any distinguishable purpose groups. In-house developed applications and applications acquired using an Entrepreneur License are mentioned only in four applications each, with different general purposes (administration & organization, data analysis & processing, planning and planning & finance) for in-house applications while the later used for development, design and planning.

When comparing the acquisition methods to the number of employees, no clear relationship was found. Our research sample included companies with employee numbers varying from zero to thirty-six employees, and most types of software acquisition were represented in all company sizes. For some software acquisition methods it seems that they are mostly used by companies with fewer employees, such as freeware. However, this is due to the fact that only one company had thirty-six employees and a lot more companies had two employees. The only software acquisition method that was only represented amongst relatively small companies (maximum of five employees), was the Entrepreneur License. These findings can also be seen in Appendix C (Figures C.4, C.5, C.6, C.7, C.8, C.9, C.10, C.11, and C.12).

When comparing company age to software acquisition methods, no clear pattern was found: all methods were present in a range of company ages. This can be seen in table 4.7.

Table 4.7: Software acquisition methods vs company age

Software acquisition method	Company Age (years)	Frequency
		214
Entrepreneur License	1	2
Entrepreneur License	3	1
Entrepreneur License	4	1
Freeware	0	2
Freeware	1	12
Freeware	2	26
Freeware	3	14
Freeware	4	7
Freeware	5	7
In-house developed	2	1
In-house developed	3	3
Open source	0	2
Open source	1	9
Open source	2	6
Open source	3	13
Open source	5	1
Other	1	1
Other	2	5
Other	3	2
Pay per use	1	4
Pay per use	2	11
Pay per use	3	8
Shared License	1	2
Shared License	2	2
Shared License	3	9
Shared License	4	7
Shared License	5	1
Single License	0	6
Single License	1	9
Single License	2	7
Single License	3	5
Single License	4	11
Single License	5	4
Subscription	2	1
Subscription	3	4
Subscription	4	3
Subscription	5	5

When comparing target markets to software acquisition methods, there was also no clear pattern to be found. We compared companies that have a national target market (for Swedish companies this is Sweden, for Dutch companies this is the Netherlands) to companies that have an international target market (both inside and outside of Europe). The results of this analysis are shown in tables 4.8 & 4.9.

Table 4.8: Distribution of software acquisition methods in International Market

Software acquisition method	Number of applications for International target market	Percentage
	135	**100,00%**
Freeware	43	31,85%
Open source	21	15,56%
Single License	21	15,56%
Shared License	18	13,33%
Pay per use	11	8,15%
Subscription	10	7,41%
Other	6	4,44%
Entrepreneur License	4	2,96%
In-house developed	1	0,74%

Table 4.9: Distribution of software acquisition methods in National Market

Software acquisition method	Number of applications for National target market	Percentage
	79	**100,00%**
Freeware	25	31,65%
Single License	21	26,58%
Pay per use	12	15,19%
Open source	10	12,66%
In-house developed	3	3,80%
Shared License	3	3,80%
Subscription	3	3,80%
Other	2	2,53%

As visible, the differences are not very large, the percentage of used freeware is almost the same for both target markets, and so are the percentages of Open Source software. The numbers of used applications for the other acquisition methods are too small to draw viable conclusions on. However, it is notable that Entrepreneur Licenses are within our sample only used by companies with an International target market, and most of the In-house developed applications come from companies with a National target market.

To explore how start-up from different industry sectors are behaving towards software acquisition, we analysed this data by each industry and looked into the main industry types from our respondents, being Information Technology & Services, Consultancy, Media followed equally by Education, Marketing, Food & Beverages, Travel and Telecom and remaining areas.
Interesting was to know that in Information Technology and Services the biggest group (37%) are using the Freeware software acquisition method; 9 out of 24 (most of the applications) in Consultancy were using the Single License software acquisition method; 7 out of 11 responses from Telecom were using the Open Source software acquisition method; 4 out of 7 responses from Entertainment were using the Freeware software acquisition method.

4.2.2 Interview results on software acquisition

Before starting to introduce the results from the interviews we will shortly summarize the characteristics of our respondent companies first introduced previously in table 3.2. Company 1 was founded in 2014, in Sweden and operates in Information Technology and Services. Company 2 was founded in 2011 in Sweden and operates in Consultancy. Company 3 was founded in 2014, in Sweden and operates in Healthcare and Wellness while Company 4 was founded in 2012 in Netherlands and operates in Communication & Content Creation. To

easier reference them in the following sections we will use Company 1 (or C1 in interview quotes), Company 2 (C2), Company 3 (C3) and Company 4 (C4).

It was very crucial for our study to understand how the software applications are actually acquired by start-up companies: How potential software systems for usage are identified or implemented, who makes such decisions in the company or the extent of using external resources to help make such decisions.

In turned out that all of the companies admitted making the decision mostly internally, especially the interviewee themselves, or consulting with their colleagues in cases when such discussions are needed. For example, Company 1 stated: "*In the case we needed to collaborate..we did a five minute chat about which alternatives do we have, which is best [...] just the technical people [...] the ones that had to work with the tools*" (Table D.1, row 38).

Interesting to know was that all the interviewed companies owned internal IT expertise, developers, people that work with technology or somebody dedicated for gathering software requirements. Although, Company 2 admitted just being passionate on exploring software requirements, which is easy thanks to internet resources. The interviewee of Company 2 described himself as an above average user more than an IT professional, but still didn't hire external expertise to advise him which software to use. The companies that stated having IT expertise said that some of the applications they used were in use because of their previous experience with the systems and gained familiarity (Table E.1, row 12).

In general our interviewees, who mostly occupied high managerial roles in the company (CEO, founders), felt very comfortable in asking for advice from friends and colleagues and obtain information through social ties as to what other companies are using.

One of the companies (Company 2) had a custom made software for very specialized purposes, where an external consultancy was employed to do the job, however requirements analysis and testing were done by the start-up company itself through continuous and informal communication. The interviewee explained: *"collaboration, and interaction and iteration...it was not a formal work really that we had a long list of detailed specifications that must be fulfilled...it was just a talk over a cup of coffee"* (Table D.2, rows 98, 100 and 102). This software is not taken into further consideration since it is very specialized and therefore not applicable to other industries.

Three of our interviewees (Company 1, 2 and 4) revealed not having any plans in the near future to buy software while company 3 admitted that they would re-evaluate a few software applications they were using and would acquire more while they were still expanding and 'scaling up'. We looked back if any relation could be drawn from our respondent regarding their foundation years and future acquisition plans, but we have two companies founded in 2014 that have different acquisition plans in the future. The other companies were founded in 2012 and 2011 making them generally fresh in the market but relatively saturated in terms of software systems since three out of four weren't planning on future acquisitions.

While they planned to make the decision of which software to acquire almost in the same way followed until this moment or asking for advice among friends and colleagues (Company 2, Company 3 and Company 4) or commonly used software (Company 1).

4.3 Why do start-ups acquire their software in the way they do?

In this part the results on motivations behind software acquisition will be presented. Since this question is solely based on the interview results, no survey result will be discussed in this section.

4.3.1 Interview results on motivations behind software acquisition

During the interviews, we asked the companies why they choose to adopt specific systems and what was important in selecting the software they wanted to use, interviewees confirmed that ease of use (all 4 companies), integration and conforming to other collaborating parties (all 4 companies), reliability (Company 1, 2 & 3), flexibility (Company 1, 3 & 4), cost (Company 1, 3 & 4), what others are using (Company 2 & 3), software features (Company 3 & 4) and familiarity (Company 1 & 4) were important factors. Ease of use was referred to systems perceived as simple to make them work and implement functionalities and also easy for different people to work with them, and systems that don't use many resources.

All four interviewees confirmed making the selection of using specific software as they need some kind of easier integration and collaboration with customers or third parties or even with their other systems. Some of them specifically referred to such systems as "*standardized software*" (Table D.1, row 64) that other people use as well and because "*[...] is just easier to collaborate with others"* (Table D.2, row 32). Company 4 seemed to firstly evaluate how easy it was for the required functionalities to be implemented internally because they needed information from their existing systems while company 3 spurred this issue in their suggestions for future improvement in the market of software applications, that of providing easier integration with other systems from the beginning.

For Company 1 & 2 it was important for the systems to be reliable, perceived as everyday functioning system, while company 3 emphasized that having reliable systems was crucial to serve their customers properly (Table E.1, row 2).

Three of the respondents mentioned also flexibility, if their acquired systems guaranteed them some level of flexibility they felt able to grow with the software (Company 1) and also free as start-up companies need some level of freedom. Company 3 pointed out flexibility to be an important aspect affecting their software choices and Company 4 said that they skipped using systems that introduced them limitations and switched to more flexible systems. (Refer to interview coding table at Table E.1).

Two of the interviewed companies (Company 2 and Company 3) admitted that when they are in doubt of which software to acquire they search around to find out what others are using for the same purpose and be affected by what competitors or other related companies are using.

However some of the interviewees (Company 1 and Company 4) because of previous IT experience went on to use systems that they already knew how to use, because they knew what the system could do, making the system work was almost immediate and they didn't have to learn new things which would require time. To illustrate, Company 4 said for example: *"People get used to something, so that they want to keep on using that."* (Table D.4, row 22).

Although software costs and the financial factors in general were considered an important factor three of the interviewees emphasized that money was not the first priority after finding something easy to use and reliable was identified "*and second of that it's its cost*" (Table D.1 row 28); "*and also that it's free of course*" (Table D.3, row 10) and "*that it meets all our requirements, that's the most important thing, and also the price*" (Table D.4, row 58).

Having the right requirements although obvious since every software application is acquired with the purpose to cover a business functionality, one of the respondents was more specific to bring into attention the software feature of being available on mobile (Company 3) or additional features that the company staff might need. Company 3 gave specific examples of features that they needed in one application:*" It's more a system that you only use for work and not for other activities and it's searchable, as [...] can search for words"* (Table D.3, row 18).

In terms of assessment of alternative options for software applications, depending on the situation and the software under discussion, companies scanned or did not scan the market. In some cases interviewees admitted checking other alternatives or at least tried, downloading demos to check out different options. Company 2 said to settle for something that was easier to use, Company 3 explained that they wanted to find the best option for their requirements, and Company 4 preferred a more flexible option while also mentioning cost reasons. Furthermore, Company 3 mentioned that if free alternatives for their used software would become available they would be willing to try them out. Company 1 and 3 said to have a lack of time to look for more alternatives and learn how to use them.

Company 3 in particular was clearer in their choices and had experimented more with other software applications as well but settling for the best fit option for the company or the reason was for the software not being updated and improved through time. The interviewee explained: *"..it seems that it hasn't been [...] sort of improved for like ten years, it's the same system since I started using"* (Table D.3, row 20).

But the company was open in considering other freeware options if those existed or better options would soon be available not only in terms of financial costs but also of better perceived functionalities

In one occasion, at Company 3, the software provider was applying strict criteria for the companies they collaborated with thus introducing a new kind of limitation in the software offerings where not only the company chooses what to acquire but also the provider with whom to collaborate with. The interviewee explained: *"We started using a [...] in the beginning.. it didn't work at all […] so they were a bit conservative in which industries they wanted to work with"* (Table D.3, row 56, 58)

In the cases where companies did not consider other software for usage, such behaviour was explained by their previous familiarity with the same software or tradition, and seeing no reason to change or tradition (Company 1, 2 & 4) but also lack of time once something appropriate is found (Company 3).

In terms of used software acquisition methods, interviewed companies were in a mixed situation, paying for what they should and getting cheap what they could , however they all agreed never compromising on software quality: such as ease of use and flexibility of open source (Company 1); Company 2 stated that "*it's not really the money*" (Table D.2, row 188) implying if there are no free alternatives, accessing between paid version of software a couple of

thousand euros was not much of a difference, Company 3 stated that if the financial difference was insignificant they would settle for the software delivering the best value and Company 4 said that meeting their requirements was the most important and secondly the price.

Companies being charged for some of their software applications said that they chose paid software because it makes them feel more secured to demand support in case something went wrong or they needed updates (Company 2 & 3). Another important reason for paying for software applications is because no other available free option were identified yet (Company 3). Two of our respondents implied that they felt comfortable having to pay as they scale thus employing Pay-Per-Use where there are no upfront costs and one revealing to have more software applications that offered these type of licensing (Company 2 & 3).

Asked on what portion of their budget planning was dedicated to software acquisition, all of the interviewed companies implied that software acquisition was not a priority in their budget planning and thus that the importance of software acquisition in their budget planning was very low.

Only one of the respondents (Company 2) had custom made software for his company usage due to the fact that they need very specialized software for their tools and the company paid for its development performed by an external party. While another respondent (Company 4) had in-house developed product due to the fact that available alternatives were too expensive and also didn't match entirely with their requirements. However since they had internal employees to deal with the implementation it was not a problem.

One of the companies (Company 1) which used mainly open-source software did so because they felt free but also owned the knowledge to change and customize functionalities and would be free of forced upgrades in the future.

4.3.2 Start-ups current needs and future suggestions

Since we were particularly interested in the software acquisition method Entrepreneur license, as it is one of the newest and aimed to be targeted for a niche market such as start-up companies we were surprised to see that very few companies from the surveyed ones admitted to using it. Therefore we were interested to know if there was any particular reason for this licensee not to have a wide usage yet. All of our interviews admitted not being informed on this type of licensing.

Additional reviews and reserves that our interviewees had regarding current software offering and how they felt the market targeted start-up needs were also considered interesting in our research. Suggestions included start-up companies wanting more options for open source software, because they need a bigger level of freedom (Company 1), while two others suggested wanting more flexible licensing type for growing companies (Company 2 & 4).

While Company 2 suggested for more Pay-Per-Use licensing, scaling more gradually from individual to business packages and feeling more in control of their budget, Company 4 stated that sometimes such billing method might get expensive as not all users need the same software to the same extent.

Company 4 suggested that the way software functionalities are communicated to the start-up market can be improved and that they felt the need to have some comparing tool in terms of software functionalities.

One of the respondents (Company 3) pointed out that it was important for them to have full functionalities offered from the start even for small companies and then scale up and pay according to their usage but not being 'forced' to switch the environment entirely because what works in the beginning does not work when they become bigger.

Furthermore, Company 3 mentioned that a smoother integration of different software applications would help them a lot. The interviewee explained: *"some of the software applications [...] could have easier integrations or automatic integrations from the beginning [...].If you could get that in one package that would be pretty cool.."* (Table D.3, row 122). Later, the interviewee added to this that he expected start-ups to be willing to pay for this type of software as well: *"Eh, and I think most would be willing to pay for it as well."* (Table D.3, row 122).

5 Conclusion based on results

In this chapter, we will answer our research question. We will do this by firstly answering all of our sub questions and then by finally drawing a general conclusion that forms an answer to our main research question.

5.1 What software applications do start-up companies acquire and for what usage purposes?

Start-up companies make wide use of software packages like Google Apps and Microsoft Office, two packages which had extensive usage among young companies. Other popular applications include Atlassian products such as Jira and HipChat, and also WordPress, Adobe products, Trello and Slack seem to be relatively popular.

As discussed in the results chapter, the software that is mostly used by start-up companies in general is software for communication purposes. When mapped to other variables, this generally remains the case: For example, it goes for every industry type except for start-ups that operate in the Media industry, where web presence was the most important purpose. When mapped to target markets, results showed that companies with an international target market had development as their main purpose, however companies that have their target market in Europe, the Netherlands or Sweden again show communication as their main purpose. Furthermore, the number of employees didn't change anything: No matter the number of employees, communication was still the most important purpose for acquired software. Other important software purposes are development, File Management & Storage, Planning & Finance, Administration & Organization and Web Presence.

The findings on applications and purposes are in line with each other: For example, communication is the most frequent software purpose, and the most used software applications for this purpose are Google Apps, Slack and Atlassian, which are all in the most popular application groups. WordPress, Adobe and Trello are mostly used for Web presence, design and planning respectively. Microsoft Office is mostly used for Planning & Finance and Administration & Organization. Furthermore, Google Apps is also widely used for File Management & Storage. All of these purposes are in the top 6 of generally used purposes, except for design. This can be explained by the fact that apparently the software that is used for design is in almost all cases (part of) the Adobe package, while some other purposes that are generally more frequently mentioned, such as development, are served by a wider variety of software applications.

5.2 In what ways do start-ups acquire their software?

Start-up today mainly adopt Freeware software followed by Single License, Open Source and other types. The high adoption rate of Google Apps, WordPress and Trello explains the popularity of freeware as all of these applications are freely available. Other popular applications such as (part of) the Microsoft Office package, Atlassian products, and Adobe products explain the high frequency of Single License software applications.

Slack offers multiple pricing models, including a free option (with more limited functionality) and paid subscription options, with more extensive functionalities (Slack.com., n.d.). When looking into the data we found that most companies using Slack (6 out of 7) actually use the free option, which contributes to the finding of the popularity of Freeware.

When it comes to the decision-making process, results of our interviews showed that most of the time the CEO takes the decision on software acquisition himself, sometimes after talking to involved employees and co-founders and sometimes after asking advice from friends. There was no interviewed company that said to ask advice from professional third parties such as consultants to select existing software packages for them. Often other options for software with the same purpose were taken into consideration and a founded choice for one alternative was made, but sometimes the software was adopted without really considering other options as the company or founders seem to own very good IT knowledge or at least they have internal resources knowledgeable in the field.

5.3 Why do start-ups acquire their software in the way they do?

A reason why companies wanted to pay for their software, especially in cases where the software served customers, is because they felt more secure to demand a higher level of support in case of facing problems. A likely explanation for the fact that some start-ups took into consideration free options first, if those existed, was that their budget planning dedicated to software acquisition was pretty low. However main reasons to settle for a specific software application include ease of use, compatibility (both internally and externally), reliability, flexibility, requirement fit and familiarity, even if companies had to pay a little bit for it. Furthermore an important aspect that was taken into consideration when selecting software is looking at the software that is used by competitors.

Start-ups appear to be constrained in some of their options as communication and being compatible with what they third-parties/customers were using was highly important. However interesting to know was that the companies knew very well what they needed and believed to be competent enough in selecting the best software for them. Technical requirements were therefore also an important factor in selecting their software.
In the cases that companies considered other options for the same purpose, they tended to choose for familiar products or “traditional” products. In these cases, the learning curve for the selected option was lower than that of alternatives.

There was one interviewed company who developed their own ERP-system. They did so because they felt like the software offered on the market was too expensive and did not meet their requirements. However, it should be mentioned that this is an exceptional case, since the company was one of the few that actually developed their own software. Furthermore, another case adapted Open Source software themselves to make it fit to their company. This was mainly done as they wanted the flexibility and freedom to grow and be independent of forced upgrades.

In terms of software acquisition methods start-up companies feel more comfortable with the Pay-Per-Use software acquisition method as no upfront costs were involved and they felt in control of how much money they were spending and that also scaling and shifting to a business license felt more acceptable. However one company suggested that sometimes not all

employees are using the software applications at the same extent therefore in those cases a more flexible pricing model would be more fit.

The interviewed companies also did some suggestions to improve the current offering of software, which gives us information about their motivations behind software acquisition as well. These suggestions include firstly to have more open source software (free software with publicly available code), because it provides a certain level of freedom and flexibility in terms of software acquisition: It should be noted that the company that did this suggestion had a high level of IT knowledge and therefore was able to adapt the software in such ways that it suited their company better. A second suggestion done by another company was that of having more flexible licensing, so that a more gradual shift from individual usage to business usage can be made: The interviewee more specifically suggested to have plans that are particularly suited for smaller companies, with for example five employees. Another suggestion made by a third company was to provide easier integration or more package offerings of software that include features that are commonly needed by start-up companies. Finally a suggestion for software vendors was to communicate software functionalities more clearly.

5.4 General conclusion

Coming back to our main research question, "*How do start-up companies acquire their software and why?"*, we are able to say that most start-ups acquire software for communication purposes, while the most used software packages are Google Apps and Microsoft Office. The choice for a specific software application is mostly made in-house, often by the CEO, sometimes with help from his colleagues or supported by familiar or informal advice. Interesting to see was that interviewed start-ups often had internal technical expertise, and were therefore knowledgeable in assessing available software. Furthermore, thanks to their technical expertise, companies clearly had in mind what the software needed to provide.

Reasons to choose for a specific software application include ease of use, compatibility, reliability, flexibility, and previous familiarity. Most start-ups prefer free or cheap software, supported also by the fact of their lower budget planning for this purpose, although reliability and quality of the software shouldn't be compromised, especially in the case of software that serves their customers. In these cases, start-ups confirm that they are willing to pay for their software. Right now, acquisition of paid software mostly occurs in a single license set-up, although interviewed start-ups showed to prefer Pay-Per-Use, as it is more flexible and because they feel more in control over how much money they spend. Another reason to be willing to pay for software is that companies feel like they can get support easier if needed.

6 Discussion of conclusion based on theoretical framework

In the following of this chapter we will connect our conclusions to our theoretical framework as shown in table 2.2. Firstly we will elaborate on how our findings relate to the Software Acquisition Model by Nelson et al. (1996), secondly we will describe the connection between our conclusions and the Fit-Viability Model by Liang et al. (2007). Then, we will compare our results to existing studies on comparable subjects and finally we discuss our results more generally and elaborate on implications of our study.

6.1 Software acquisition model

Interviewed start-ups although operating in different industries (IT & Services, Consultancy, Healthcare & Wellness and Communication & Content Creation) resulted in having an extensive IT knowledge and had it very clear what they wanted out of their software systems. The decision on how to acquire software by referring to the previously identified software acquisition model by Nelson et al. (1996) in our study, made for the distinguishable associations to be Insource-Package or Outsource-Custom while there is a vague existence of Outsource-Package relation slightly different in start-ups, who seek external advice through social networks/colleagues and social advice.
By Insource-Package they generally made the decision in-house or from the technical people which software to choose. In the case of specialized developed software (Outsource-Custom) the needs and testing were still done by the start-up itself, the latter being pretty clear in their requirements and needs. This reveals that start-up nowadays no matter the industry are very conscious and informed on the software market offerings or generally have an employee/co-founder responsible for these operations from the beginning.

We slightly touched the case of Insource-Custom but in two different scenarios, one in the case of the company using open source software since they admitted that they changed the code to accommodate their needs and their ability to grow, suggesting for a slightly different model for start-ups regarding software acquisition. The other case was Insource-Custom in the sense that they developed an in-house software application as no available software packages satisfied their needs. As we didn't find many companies using these Insource-Custom solutions, we would suggest future research to further investigate this matter. It should be mentioned that in both these Insource-Custom cases, economical factors constrained their choices in available software on the market.

6.2 Fit-Viability Model

While researching motives behind software adoption and identifying drives behind which software applications to adopt, it became clear that Fit-Viability Model as described by Liang et al. (2007) was mostly applicable to our research. As explained before, this model consists of two parts, namely Fit and Viability. In the original model the fit aspect is composed of task characteristics and technology characteristics, and the viability aspect is composed of economic aspects, IT infrastructure characteristics and organizational characteristics. The only change we made to make it more applicable to our study, is that we left out the "Technology" aspect: The original model focused on mobile technology and therefore on mobile technology characteristics, however, we do not take into consideration specific technological settings, as we focus on software adoption. Therefore we chose to leave out this category. All identified motives of choosing to adopt specific software applications with a specific software acquisition method, could be classified in the Fit-Viability model falling into one of the remaining categories. In the following of this paragraph we will elaborate on the connection of our findings with the model itself which are summarized in figure 6.1.

6.2.1 Fit

The Fit aspect of the Fit-Viability Model (Liang et al., 2007) in our case will be composed of only the task category. Based on our results on the motivations behind software acquisition several factors fall into this category. These factors relate to start-up companies choosing their software to be the 'best' for them, having clear requirements what they want out of the systems they looked into their features. Although settling for something familiar that they had used before or a cheap option, the decision was founded in healthy arguments that the system actually provided what they wanted.
In cases when their tasks were critical and had to be available and reliable when serving customers, start-ups were willing to pay to get support from the software provider thus to fully meet the requirements of such crucial services for their business. Reliability, which means relying on the system to deliver the desired task every time you want to use the system, falls into this category as well.

Moreover since flexibility was mentioned to be another priority for start-ups, allowing them to grow and add new functionalities as their company expands, it adds another component while considering at what extend the software is fit for the task.

6.2.2 Viability

The Viable aspect of the Fit-Viability Model (Liang et al., 2007) can be divided in economic, IT infrastructure, and organization.

In case of the economic category, it seems that cost is not necessarily the top priority when selecting software however it is still important. Companies said to consider free software options in case alternatives meeting their requirements were available. Given the low budget dedicated for software acquisition it was still an important variable in consideration. Viable in this context means selecting budget wise options and considering the limitation of not being able to buy 'premium' products. The cases where companies paid for software was either because there were no other options, they wanted the ability to demand support and then having found the right alternative they were willing to pay. Relating to costs, a preference for flexible

licensing types or those without upfront costs was noticed, that made companies feel more in control of their spending.

When it comes to IT Infrastructure, viability in this category relates to how viable the software options are for the company's existing IT infrastructure. Therefore adopted systems should be easily integrated not only with existing systems but also with other third-parties with who start-ups need to communicate and collaborate. These factors were mostly evaluated by internal IT expertise that all companies resulted having at some level. Moreover viable means that adopted systems make it easier for the technical people to implement them in the company and work with them but also that offers technical possibilities to expand or be changed at some point in the future.

In terms of the organization category, viable software options for the company are those that are easy to use for almost all staff, just 'plug and play', easy to be explained to employees from various backgrounds, and easy to get working with. Previous familiarity and tradition using the software significantly affected adoption decisions, otherwise time would be required to learn to use new systems. Some companies also paid attention to what competitors were using or exchanged friendly advices which software to adopt. Subsequently organization as a whole plays a considerable role in acquisition motives too.

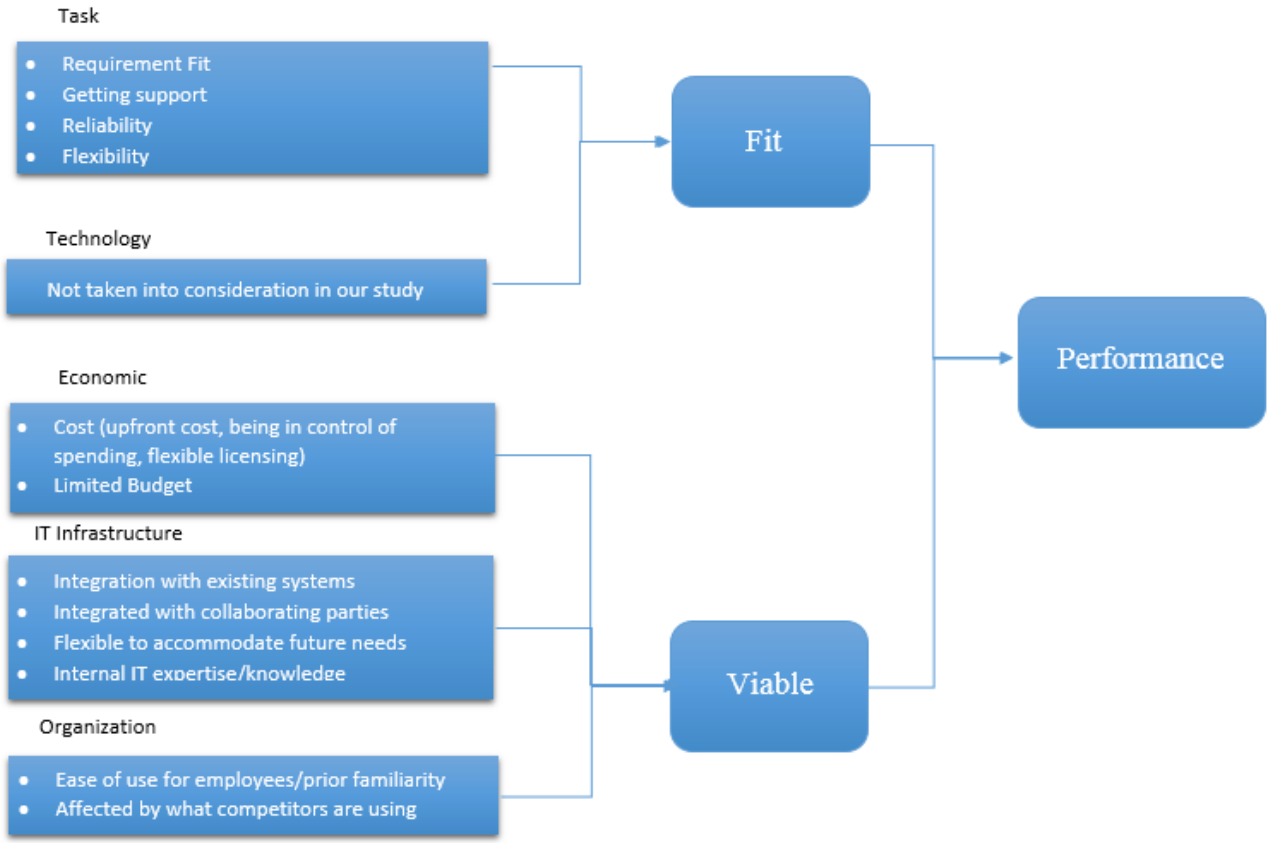

Figure 6.1: Summary of our results based on Fit-Viability Model

6.3 Comparison with previous related research

When our results are compared to earlier studies done on small companies and start-ups, we can see both some similarities and some differences. When we look at the reasons behind the choice for a specific software application, we see that they can easily be put in the categories as described by Thong (1999). For example, an important reason to choose for a specific kind of software often was ease of use or familiarity with the software. These can be put into Thong's (1999) category of both decision-maker characteristics as well as the category of organizational characteristics: on one hand the decision-maker (often the CEO) finds the software easy to use or is already familiar with it (decision-maker characteristics) and on the other hand sometimes the same reasoning goes for employees or co-founders (organizational characteristics). The other two categories are represented in our results as well: fit of requirements and reliability are considered to be important reasons to choose for a specific application and these aspects fall into the category of IS characteristics. Some companies choose for a specific software because third parties such as customers or competitors use it as well, which would be considered to fall into the category of environmental characteristics. However as described in the literature review (section 2.3 and figure 2.3), the model by Thong (1999) does not help explain the motivations behind the acquisition methods used when acquiring software. For example, taking into consideration costs and making a budget considerate decision when in between two applications that both satisfy requirements. This motivation cannot be supported by the model by Thong (1999).

The model by Harrison et al. (1997) is not applicable to our results, as it only focuses on software that offers competitive advantage for the studied companies. In our study we do not make such a distinction and therefore we found the model not to be applicable to our results.

Our results do not comply with the results on software acquisition by start-ups as found by Davila and Foster (2007). Our study shows that start-up companies mostly acquire software for communication, development, file management & storage, planning & finance, administration & organization and web presence. However, Davila & Foster (2007) found that the main purpose of adopted software is Human Resource Planning, Human Resource Evaluation and Strategic Planning. The differences between our findings and the findings by Davila and Foster (2007) can be explained by our research sample: While the companies that we studied had on average 6.7 employees and existed on average for 2.4 years, the companies that were studied by Davila and Foster (2007) had between 50 and 150 employees and furthermore existed on average for 5.47 years. It is clear that our companies were thus a lot smaller and younger and therefore this could be the reason that they did not consider Human Resource systems or Strategic Planning systems as much.

When comparing our results to the study by Daneshgar et al. (2013), we see some similarities and some differences. The factors that influenced the decision-making in terms of software acquisition in our study included, like in the study by Daneshgar et al. (2013), requirements fit, cost, scale and complexity, commoditization/flexibility and in-house experts. However, they also mention time, support structure and operational factors as aspects that influence the decision-making on software acquisition, while we didn't see these aspects that clearly in our results. This can again be explained by the different target population, as Daneshgar et al. (2013) focused on SMEs and we focused on start-up companies.

6.4 General Discussion

Since there is little prior study on software acquisition methods and almost none relating to the specific case of start-up companies, our study aimed to contribute some knowledge in this area. We explored the current software application trends and the relative important factors driving their usage but most importantly how these software applications are acquired. We hope that we can trigger some interest in the field for future studies and possible guidelines to be developed to help guide other start-up companies in their way.

In our study, we focused on the software acquired by start-ups, so our companies have passed all of the acquisition phases described by Daneshgar et al. (2013) but we try to figure out how companies went through each of them; at what extent the market was scanned to consider other software systems, different from the ones actually used (intelligence); which were the criteria important for the company so the choice could be made (design); who makes the acquisition decision (choice); and in what way the software system is financially acquired, meaning if a package was acquired or if a custom-made software solution was developed (implementation).

It was interesting to notice that the biggest number of emerging start-up companies operate in Information Technology related areas, probably supported by the fact that technology enhancements and developments open especially more possibilities in this area. Also our finding supports Knight and Cavusgil (2004) that today more companies are born global from start rather than traditional companies which firstly gain some success in local markets and then expand. Given the young age of the respondent companies in our study (Average age = 2,4 years) our companies are relatively very new and therefore the opportunities to use the latest software applications on the market can be considered to be really high.

Entrepreneur license which is a new type of licensing is not widely applied from start-ups, while we looked into the reasons why that was the situation, our respondents were all not familiar with this licensing type. Therefore it seems that there is a lack of awareness for this type of license.

6.5 Implications

In this section we will elaborate more on the implications of the findings of our study, both from an academic point of view and in a more practical way.

From an academic point of view our research presents an updated overview of the current situation of start-up companies in terms of software usage and acquisition. Furthermore we showed how the Software Acquisition Model (Nelson et al., 1996) applies to start-up companies by also emphasizing some slight differences in terms of acquisition decisions. Since this model is relatively old and our findings suggested that the model can be adapted to reflect software acquisition in more detail, we triggered some interest in the field to provide more support in updating this model.

Apart from the Software Acquisition Model we also analysed our results based on the Fit-Viability Model (Liang et al., 2007) and showed that this model applies to software acquisition and decision made on software acquisition by start-up companies as well. However since we

left out the technological aspect of fit in our study, further studies could be done to consider the full implications of adoption IS not just the software applications.

From a practical point of view we empower new start-ups with knowledge about the choices that start-ups make in terms of software acquisition, as well as the reasoning behind these choices. This knowledge can be used to make a better founded decision on this topic as a new start-up. Moreover by providing suggestions and needs that current start-ups experience, our findings can be of interest for software providers to target start-up companies more effectively.

Appendix A – Survey questions

Following the survey send to our respondents is presented.

Start-up Software Usage

Company Information
Please specify below some general information around your company.

1. Company Name (optional) :
2. Number of employees:
3. Year of foundation:
4. Industry:
5. If other industry, please specify:
6. Yearly Company Revenue/Turnover:
7. Where is your target market located:
8. If other target market, please specify:
9. What is your role/department in the company:
10. How many different software applications are approximately used in your company:

Please fill below some information about top five software applications used by your company.

11. Application 1

    Application Name:
    (e.g. Microsoft Excel, Oracle, WordPress, Outlook, etc.)

    Usage Purpose:
    (e.g. planning, transaction processing, finance etc.)

    License type:

    If other license type, please specify:

Indicate relative importance of above application:

	1	2	3	4	5	
Very important	○	○	○	○	○	Unimportant

12. Application 2

Application Name:
(e.g. Microsoft Excel, Oracle, WordPress, Outlook, etc.)

Usage Purpose:
(e.g. planning, transaction processing, finance etc.)

License type:

If other license type, please specify:

Indicate relative importance of above application:

	1	2	3	4	5	
Very important	○	○	○	○	○	Unimportant

13. Application 3

Application Name:
(e.g. Microsoft Excel, Oracle, WordPress, Outlook, etc.)

Usage Purpose:
(e.g. planning, transaction processing, finance etc.)

License type:

If other license type, please specify:

Indicate relative importance of above application:

	1	2	3	4	5	
Very important	○	○	○	○	○	Unimportant

14. Application 4

Application Name:
(e.g. Microsoft Excel, Oracle, WordPress, Outlook, etc.)

Usage Purpose:
(e.g. planning, transaction processing, finance etc.)

License type:

If other license type, please specify:

Indicate relative importance of above application:

	1	2	3	4	5	
Very important	○	○	○	○	○	Unimportant

15. Application 5

    Application Name:
    (e.g. Microsoft Excel, Oracle, WordPress, Outlook, etc.)

    Usage Purpose:
    (e.g. planning, transaction processing, finance etc.)

    License type:

    If other license type, please specify:

    Indicate relative importance of above application:

	1	2	3	4	5	
Very important	○	○	○	○	○	Unimportant

Contact questions

16. I would like to cooperate with a follow-up interview
    Yes _____ No _____
17. I would like to receive the results of this study
    Yes _____ No _____
18. e-mail address
    _____

Appendix B – Interview questions

Below the interview questions used for our interviews are presented.

Interview Questions master thesis startups

Thank you for cooperating in this interview! We are going to talk about the software you are using and how you decided to use these software applications over other alternatives. The interview will take a maximum of 1 hour and results will be treated in a confidential way. .Is it ok if we record the conversation so we can analyze the results easier?

1. The software applications that you filled in are mostly **[purpose]** related, do you use software for other purposes as well? If so, which software applications?

Considering the software applications in use by your company, we were curious to know how much you took also other systems into considerations and what is your purpose of selecting this specific systems.

2. You are using **[software]** for **[purpose]**, why? Have you also considered other alternatives? If so, why did **[software]** win over other alternatives? **(repeat this question for every software mentioned in the survey and in the answer to question 1)**
3. What aspects were most important when selecting software? (Cost, usage by competitors, flexibility for future needs, etc.)
4. How did you make the decision of acquiring your software (did you use any help e.g. consultancy or competitors or did you make the decision completely by yourself)
5. If the decision was made **in-house**, which employees were involved in the decision (e.g. IT guys, ceo, founder etc.)
6. **Outsourced**: If they outsourced anything, how much did you outsource (e.g. just advise or the entire acquisition, was it custom developed)

Licensing

7. Why did you decide to use mostly **(*License type*)** software (free or paid)?
8. What priority does software acquisition have in your budget planning?
9. If the company doesn't use entrepreneur licensing: Are you familiar with entrepreneur licensing? (E.g. by Microsoft and IBM) If so, did you look into this as an option to acquire software with your own company? Why didn't you choose this type of software acquisition?

Final Thoughts

10. In what ways could the current offering of software be improved to target startup companies more effectively? Is there anything missing/wrong/ etc based on your own experience?
11. Do you have any plans on acquiring software in the future? If so, for what purpose? How are you going to make the decision on which software it will be?
12. Is there anything that we didn't talk about that you feel is interesting for our study?

Thank you for your cooperation!

Appendix C – Survey results

In this appendix a more detailed view of the survey data analysis process performed for our study is shown.

Participant profile

Table C.1: Respondent Company Age

Start-up Time of Existence	
Average	2,42
Std dev	1,33
Median	2

Table C.2: Respondent Number of Employees

Number of Employees	
Average	6,88
Std dev	7,36
Min	0
Max	36
Median	5

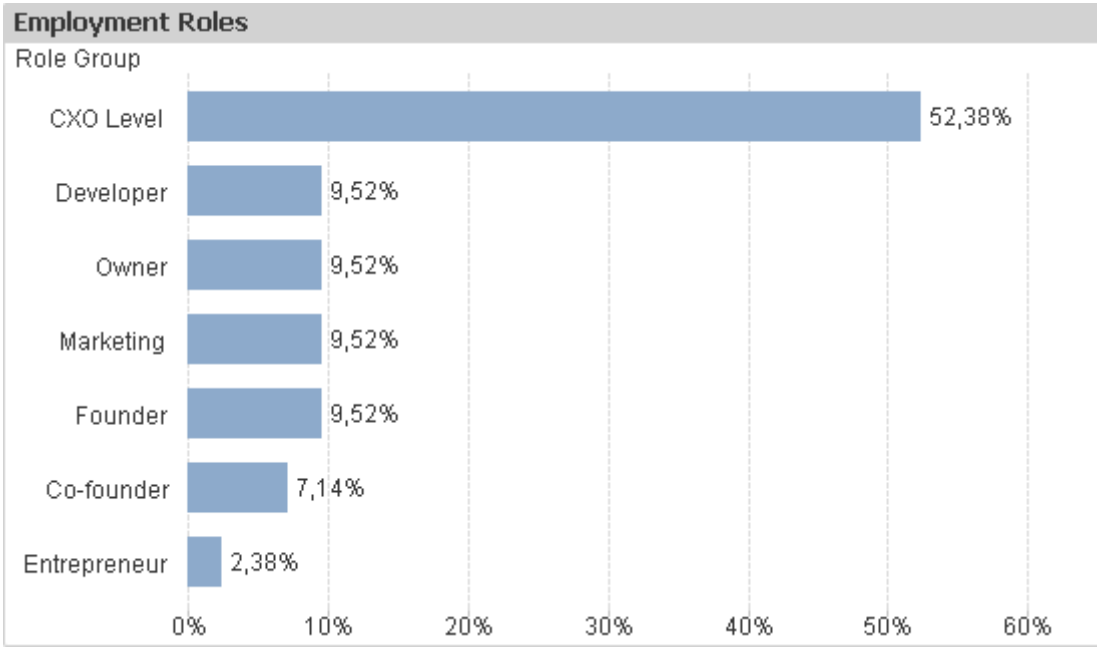

Figure C.1: Employment Roles Respondents

Figure C.2: Target markets of survey respondents

Used applications and their purposes

Table C.3: Google Apps product usage & Used Purpose Groups

Google Apps	Frequency	Percentage
	32	**100.00%**
Google Drive	8	25.00%
Google Apps	5	15.62%
Gmail	4	12.50%
Chrome	3	9.38%
Google Apps for Business	3	9.38%
Google Calendar	2	6.25%
Google Docs	2	6.25%
Google Analytics/ Adwords	1	3.13%
Google docs& sheets.	1	3.13%
Google drive	1	3.13%
Google Hangouts	1	3.13%
google maps & google places	1	3.13%

Google Apps Usage Purposes	Frequency
	32
Communication	10
File Management & Storage	10
Web presence	4
Administration & Organization	3
Planning	3
File Sharing	1
Integration	1

Table C.4: Microsoft Office product usage & Usage Purpose Groups

Microsoft Office	Frequency	Percentage
	24	100.00%
Microsoft Excel	9	37.50%
Microsoft Office	7	29.17%
Microsoft Word	5	20.83%
Microsoft Excel and Word	1	4.17%
Microsoft Outlook	1	4.17%
Microsoft Powerpoint	1	4.17%

Microsoft Office Usage Purposes	Frequency
	24
Planning & Finance	7
Administration & Organization	4
Communication	3
File Management & Storage	3
Data Analysis & Processing	2
Planning	2
Marketing & Human Resources	1
Other	1
Planning & Communication	1

Table C.5: Overview of Atlassian product usage & Usage Purpose Groups

Atlassian	Frequency	Percentage
	9	100.00%
Jira	4	44.44%
HipChat	3	33.33%
Atlassian	1	11.11%
Atlassian Confluence	1	11.11%

Atlassian Usage Purposes	Frequency
	9
Communication	4
Development	2
Administration & Organization	1
File Management & Storage	1
Planning	1

Table C.6: Applications used from the Adobe Package and Adobe Package Usage Purposes

Adobe Package	Frequency	Percentage
	8	100.00%
Adobe Photoshop	4	50.00%
Adobe	1	12.50%
Adobe CC	1	12.50%
Adobe Creative Suite	1	12.50%
Adobe InDesign	1	12.50%

Adobe Package Usage Purposes	Frequency
	8
Design	6
Marketing & Human Resources	1
Production	1

Table C.7: WordPress Usage Purpose Groups

Wordpress Usage Purposes	Frequency
	9
Web presence	8
CMS	1

Table C.8: Slack Usage Purpose Groups

Slack Usage Purposes	Frequency
	7
Communication	7

Table C.9: Trello Usage Purpose Groups

Trello Usage Purposes	Frequency
	8
Planning	5
Administration & Organization	2
Planning & Communication	1

Table C.10: Applications used for communication purposes

ApplicationGroup	Frequency
	33
Google Apps	10
Slack	7
Atlassian	4
Microsoft Office	3
Skype	3
MailChimp	2
Apple Email	1
Nexmo	1
Thunderbird	1
Twilio	1

Application Name	Frequency
	33
Slack	7
Gmail	4
Google Apps	4
HipChat	3
Skype	3
Microsoft Word	2
Apple Email	1
Atlassian	1
Google Apps for Business	1
Google Hangouts	1
MailChimp	1
Mailchimp	1
Microsoft Powerpoint	1
Nexmo	1
Thunderbird	1
Twilio	1

Table C.11: Applications used for development purposes

ApplicationGroup	Frequency
	23
Sublime Text	4
Apple x-code	3
Eclipse	3
Android Studio	2
Atlassian	2
Microsoft Visual Studio	2
Cyberduck	1
Emacs	1
MAMP	1
PHPstorm	1
Rational Software	1
Symfony	1
Vim	1

Application Name	Frequency
	23
Sublime Text	4
Apple x-code	3
Eclipse	3
Jira	2
Microsoft Visual Studio	2
android studio	1
Android Studio/Intellij	1
Cyberduck	1
Emacs	1
MAMP	1
PHPstorm	1
Rational software	1
Symfony	1
Vim	1

Table C.12: Applications used for file management & storage

ApplicationGroup	Frequency	Application Name	Frequency
	22		22
Google Apps	10	Google Drive	7
Dropbox	3	Dropbox	3
Microsoft Office	3	Google Docs	2
Vim	2	Microsoft Office	2
Atlassian	1	Vim	2
Box	1	Atlassian Confluence	1
FPCX	1	Box	1
Redis	1	FPCX	1
		Google drive	1
		Microsoft Word	1
		Redis	1

Table C.13: Applications used for planning & finance

ApplicationGroup	Frequency	Application Name	Frequency
	18		18
Microsoft Office	7	Microsoft Excel	7
MoneyBird	3	Moneybird	2
EPIC	1	EPIC	1
fortknox	1	fortknox	1
GnuCash	1	GnuCash	1
Perfman	1	MoneyBird	1
Pipedrive	1	Perfman	1
Salesforce	1	Pipedrive	1
Stripe	1	Salesforce	1
yuki	1	Stripe	1
		yuki	1

Table C.14: Applications used for administration & organization

ApplicationGroup	Frequency	Application Name	Frequency
	16		16
Microsoft Office	4	Microsoft Office	4
Google Apps	3	Google Apps for Business	2
Trello	2	Trello	2
Apple Email	1	Apple Email	1
Atlassian	1	Evernote	1
Evernote	1	Google Apps	1
Invision	1	Invision	1
limesco-infra	1	Jira	1
Redmine	1	limesco-infra	1
Work Flowy	1	Redmine	1
		Work Flowy	1

Table C.15: Applications used for web presence

ApplicationGroup	Frequency	Application Name	Frequency
	16		16
WordPress	8	WordPress	8
Google Apps	4	Chrome	3
AWS	1	AWS	1
Nginx	1	Google Analytics/ Adwords	1
Squarespace	1	Nginx	1
TransIP	1	Squarespace	1
		TransIP	1

Table C.16: Applications used for planning

ApplicationGroup	Frequency	Application Name	Frequency
	15		15
Trello	5	Trello	5
Google Apps	3	Asana	2
Asana	2	Google Calendar	2
Microsoft Office	2	Google docs& sheets.	1
Atlassian	1	Headquarters	1
Headquarters	1	Jira	1
OmniPlan	1	Microsoft Excel	1
		Microsoft Excel and Word	1
		OmniPlan	1

Table C.17: Applications used for data analysis & processing

ApplicationGroup	Frequency	Application Name	Frequency
	13		13
Microsoft Office	2	Apache Storm	1
MixPanel	2	Bitly	1
Apache Storm	1	Flurry	1
Bitly	1	Golang	1
Flurry	1	ImageJ	1
Golang	1	Microsoft Excel	1
ImageJ	1	Microsoft Word	1
Moses	1	MixPanel	1
Python	1	Mixpanel	1
suggestme backend/cms	1	Moses	1
Typeform	1	Python	1
		suggestme backend/cms	1
		typeform	1

Table C.18: Individual stated purposes within Communication purpose group

Application Purpose	Frequency
	33
Communication	12
mail	2
Collaboration	1
Collaboration acorss teams	1
communication	1
communication& analysis	1
daily communication w/ co-workers around the world	1
development chat & dev. tools	1
e-mail / office software	1
E-mail& Calender& Hangouts	1
e-mail& document sharing& shared document creation	1
Email / calendar / file storage etc	1
External communication	1
Internal communication	1
mail kalender	1
mailing to contacts	1
Meetings	1
Messaging	1
Presentation	1
sms-service	1
Writing	1

Table C.19: Purposes in companies with an International market

Purpose group for International market	Frequency	Percentage
	112	**100,00%**
Development	17	15,18%
Communication	13	11,61%
File Management & Storage	13	11,61%
Data Analysis & Processing	9	8,04%
Planning & Finance	9	8,04%
Administration & Organization	7	6,25%
Design	7	6,25%
Planning	7	6,25%
Database & Storage	5	4,46%
Source Control	5	4,46%
Web presence	4	3,57%
Infrastructure	3	2,68%
File Sharing	2	1,79%
Monitoring	2	1,79%
Production	2	1,79%
CMS	1	0,89%
CRM	1	0,89%
Integration	1	0,89%
Marketing & Human Resources	1	0,89%
Planning & Communication	1	0,89%
Support	1	0,89%
Testing	1	0,89%

Table C.20: Purposes in companies with a Dutch Market

Purpose group for Dutch market	Frequency	Percentage
	60	**100,00%**
Communication	10	16,67%
Planning & Finance	7	11,67%
Web presence	7	11,67%
Administration & Organization	6	10,00%
File Management & Storage	6	10,00%
Development	5	8,33%
Planning	4	6,67%
Data Analysis & Processing	3	5,00%
Design	2	3,33%
Marketing & Human Resources	2	3,33%
CRM	1	1,67%
Database & Storage	1	1,67%
Marketing	1	1,67%
Monitoring	1	1,67%
Other	1	1,67%
Planning & Communication	1	1,67%
Support	1	1,67%
Testing	1	1,67%

Table C.21: Purposes in companies with a European Market

Purpose group for European market	Frequency	Percentage
	23	**100,00%**
Communication	6	26,09%
Web presence	3	13,04%
Administration & Organization	2	8,70%
CRM	2	8,70%
File Management & Storage	2	8,70%
File Sharing	2	8,70%
Planning	2	8,70%
Data Analysis & Processing	1	4,35%
Development	1	4,35%
Modeling	1	4,35%
Support	1	4,35%

Table C.22: Purposes in companies with a Swedish Market

Purpose group for Swedish market	Frequency	Percentage
	19	**100,00%**
Communication	4	21,05%
CRM	2	10,53%
Marketing	2	10,53%
Planning	2	10,53%
Planning & Finance	2	10,53%
Web presence	2	10,53%
Administration & Organization	1	5,26%
File Management & Storage	1	5,26%
File Sharing	1	5,26%
Other	1	5,26%
Source Control	1	5,26%

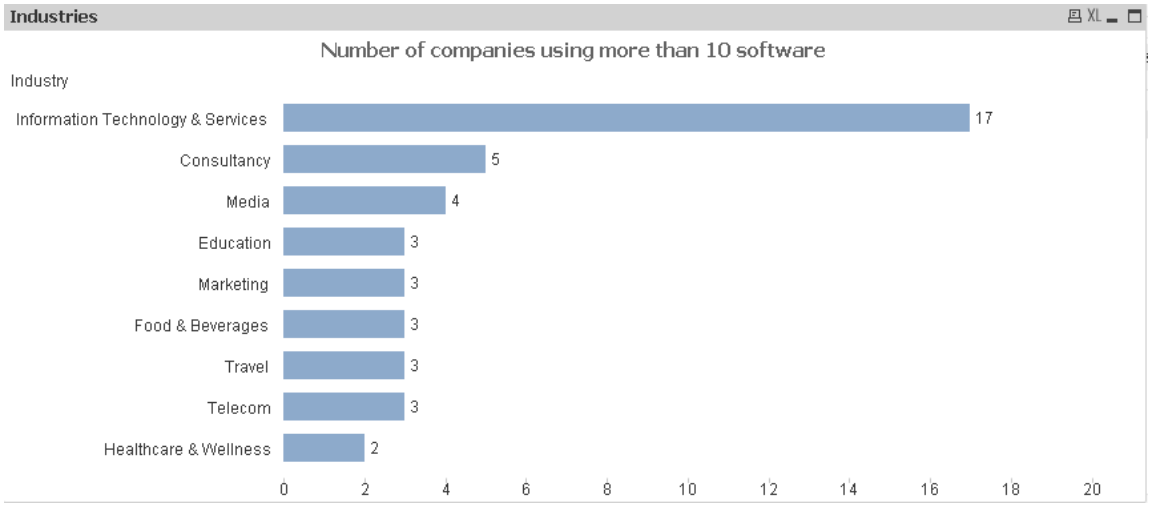

Figure C.3: Number of companies with more than 10 software applications adopted per industry

Table C.23: Purposes used in Consultancy

Consultancy Usage Purpose Group	Frequency	Percentage
	24	**100.00%**
Communication	4	16.67%
File Management & Storage	4	16.67%
Data Analysis & Processing	2	8.33%
Design	2	8.33%
Other	2	8.33%
Planning	2	8.33%
Web presence	2	8.33%
Administration & Organization	1	4.17%
CRM	1	4.17%
Development	1	4.17%
File Sharing	1	4.17%
Marketing	1	4.17%
Source Control	1	4.17%

Table C.24: Purposes used in Media

Media Usage Purpose Group	Frequency	Percentage
	18	**100.00%**
Web presence	5	27.78%
Communication	2	11.11%
Development	2	11.11%
Planning	2	11.11%
Planning & Finance	2	11.11%
Administration & Organization	1	5.56%
Design	1	5.56%
File Management & Storage	1	5.56%
File Sharing	1	5.56%
Source Control	1	5.56%

Table C.25: Single license software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Single License	Percentage
	42	**100,00%**
Planning & Finance	7	16,67%
Design	6	14,29%
Communication	4	9,52%
File Management & Storage	4	9,52%
Development	3	7,14%
Web presence	3	7,14%
Administration & Organization	2	4,76%
Marketing & Human Resources	2	4,76%
Other	2	4,76%
CRM	1	2,38%
Database & Storage	1	2,38%
File Sharing	1	2,38%
Infrastructure	1	2,38%
Marketing	1	2,38%
Monitoring	1	2,38%
Planning	1	2,38%

Table C.26 Open source software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Open source	Percentage
	31	**100,00%**
Development	6	19,35%
Data Analysis & Processing	5	16,13%
Database & Storage	5	16,13%
Web presence	4	12,90%
File Management & Storage	3	9,68%
Source Control	3	9,68%
CMS	1	3,23%
Infrastructure	1	3,23%
Modeling	1	3,23%
Planning & Finance	1	3,23%
Support	1	3,23%

Table C.27: Pay per use software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Pay per use	Percentage
	23	**100,00%**
Communication	6	26,09%
Planning & Finance	3	13,04%
Administration & Organization	2	8,70%
CRM	2	8,70%
Data Analysis & Processing	2	8,70%
Development	2	8,70%
File Management & Storage	1	4,35%
File Sharing	1	4,35%
Infrastructure	1	4,35%
Integration	1	4,35%
Marketing	1	4,35%
Web presence	1	4,35%

Table C.28: In-house developed software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method In-house developed	Percentage
	4	**100,00%**
Administration & Organization	1	25,00%
Data Analysis & Processing	1	25,00%
Planning	1	25,00%
Planning & Finance	1	25,00%

Table C.29: Unspecified software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Other	Percentage
	8	**100,00%**
Communication	2	25,00%
File Management & Storage	2	25,00%
Administration & Organization	1	12,50%
File Sharing	1	12,50%
Marketing	1	12,50%
Planning & Finance	1	12,50%

Table C.30 Shared license software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Shared License	Percentage
	21	**100,00%**
Administration & Organization	3	14,29%
File Management & Storage	3	14,29%
Data Analysis & Processing	2	9,52%
Development	2	9,52%
Planning	2	9,52%
Planning & Finance	2	9,52%
Web presence	2	9,52%
Communication	1	4,76%
CRM	1	4,76%
Planning & Communication	1	4,76%
Source Control	1	4,76%
Support	1	4,76%

Table C.31: Subscription software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Subscription	Percentage
	13	**100,00%**
Design	3	23,08%
Communication	2	15,38%
CRM	2	15,38%
Administration & Organization	1	7,69%
File Management & Storage	1	7,69%
Planning & Finance	1	7,69%
Production	1	7,69%
Support	1	7,69%
Testing	1	7,69%

Table C.32: Entrepreneur license software acquisition method vs Purpose Group

Purpose Group	Frequency software acquisition method Entrepreneur License	Percentage
	4	**100,00%**
Development	2	50,00%
Monitoring	1	25,00%
Planning	1	25,00%

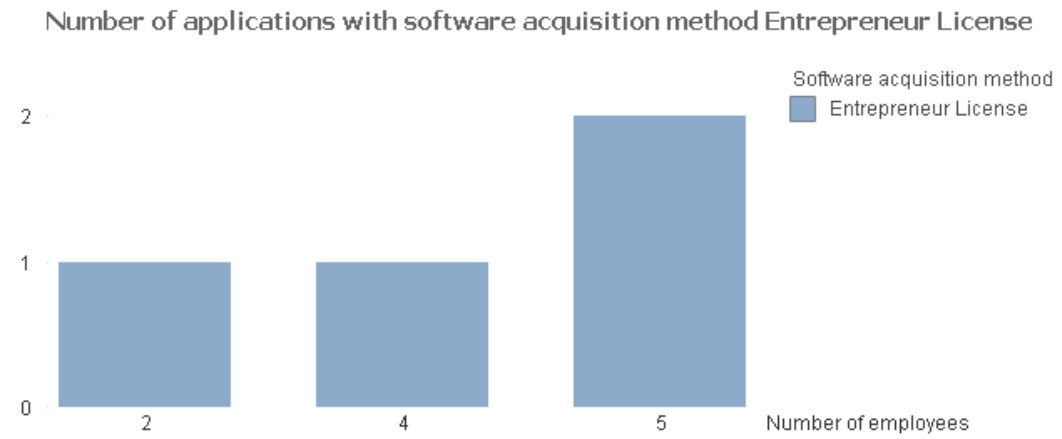

Figure C.4: Entrepreneur License software acquisition method vs employee number

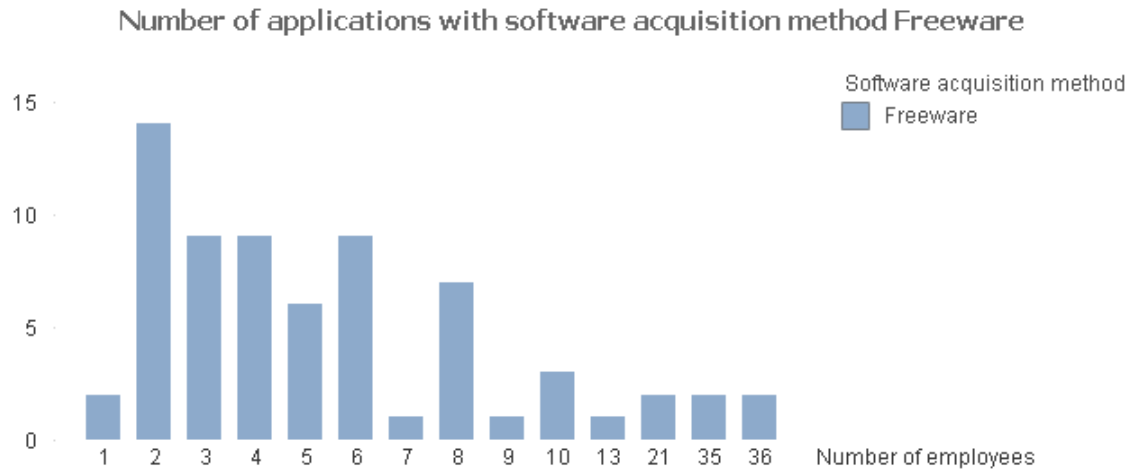

Figure C.5: Freeware License software acquisition method vs employee number

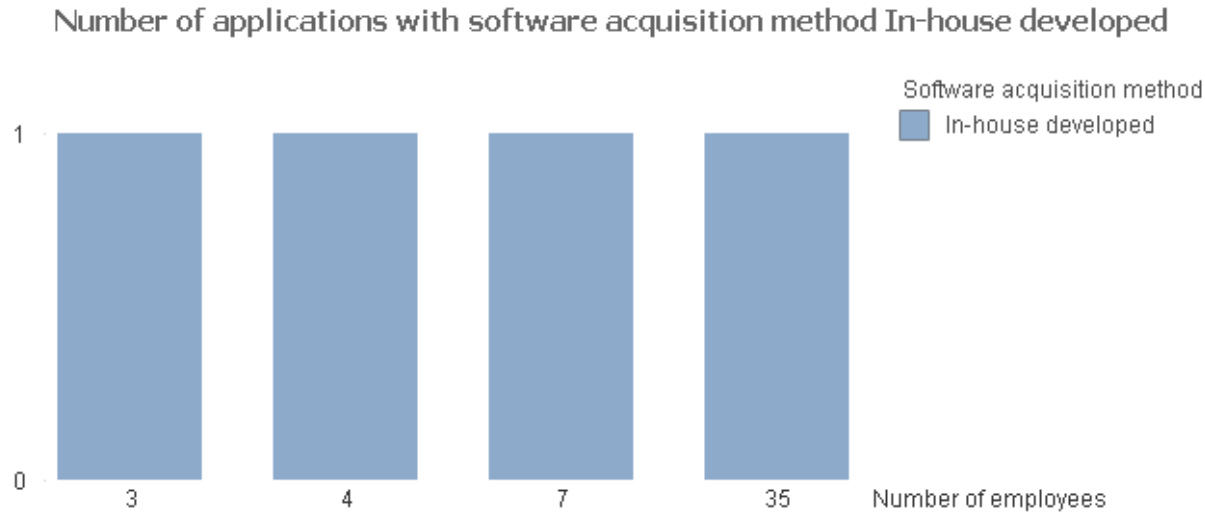

Figure C.6: In-house developed software acquisition method vs employee number

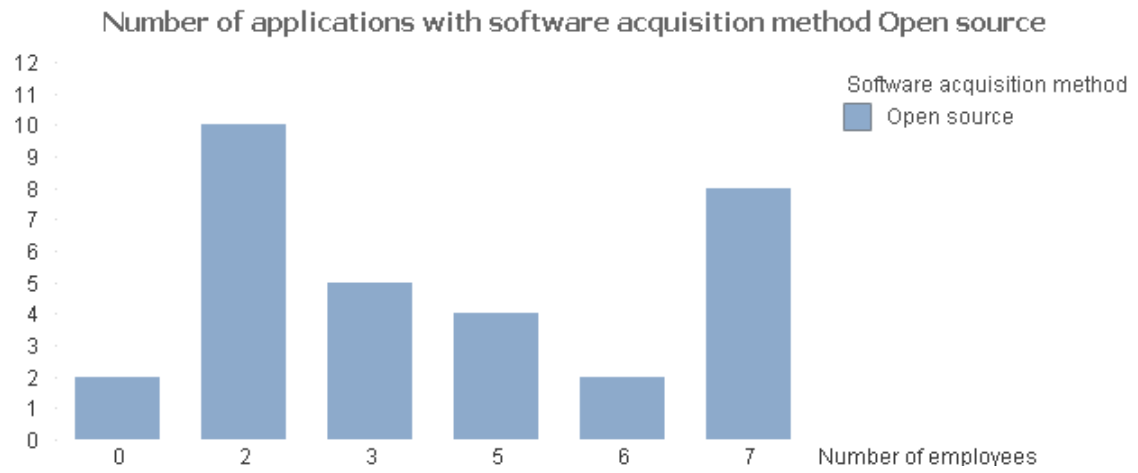

Figure C.7: Open source software acquisition method vs employee number

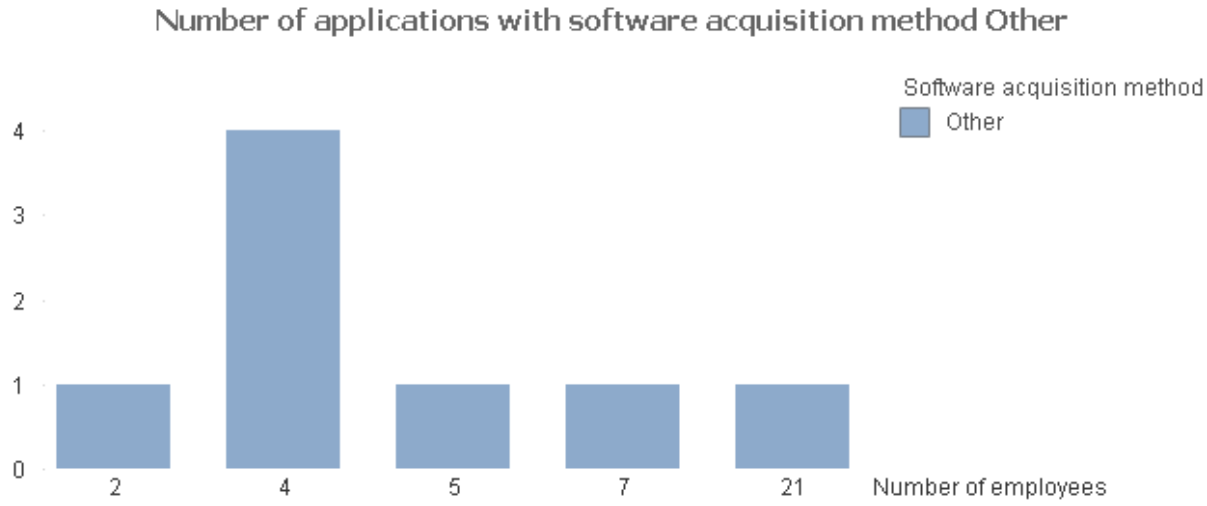

Figure C.8: Other software acquisition method vs employee number

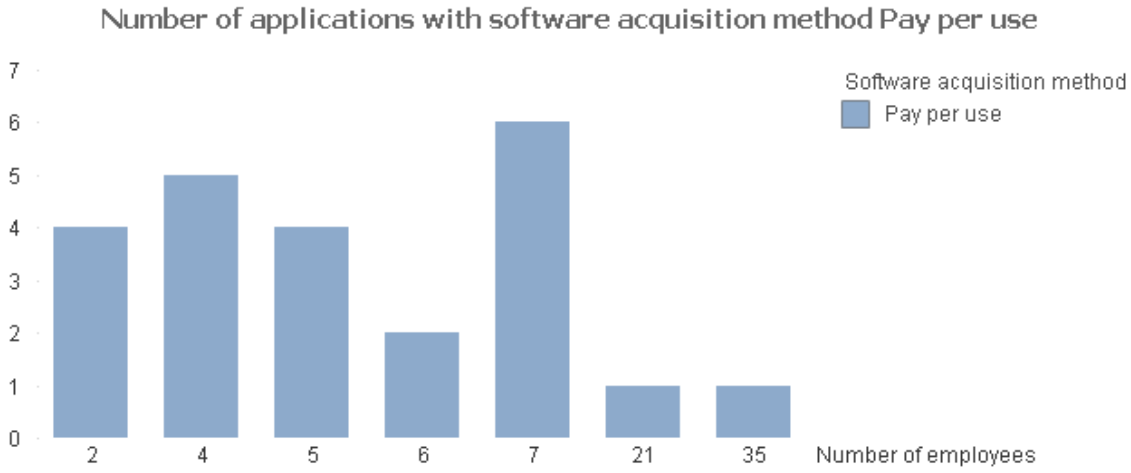

Figure C.9: Pay per use software acquisition method vs employee number

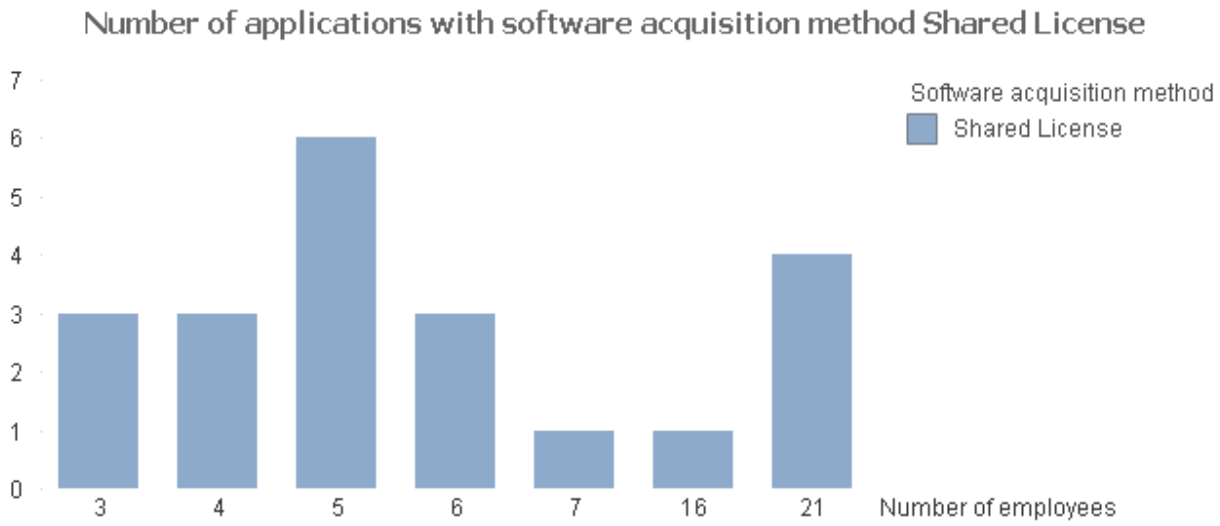

Figure C.10: Shared License software acquisition method vs employee number

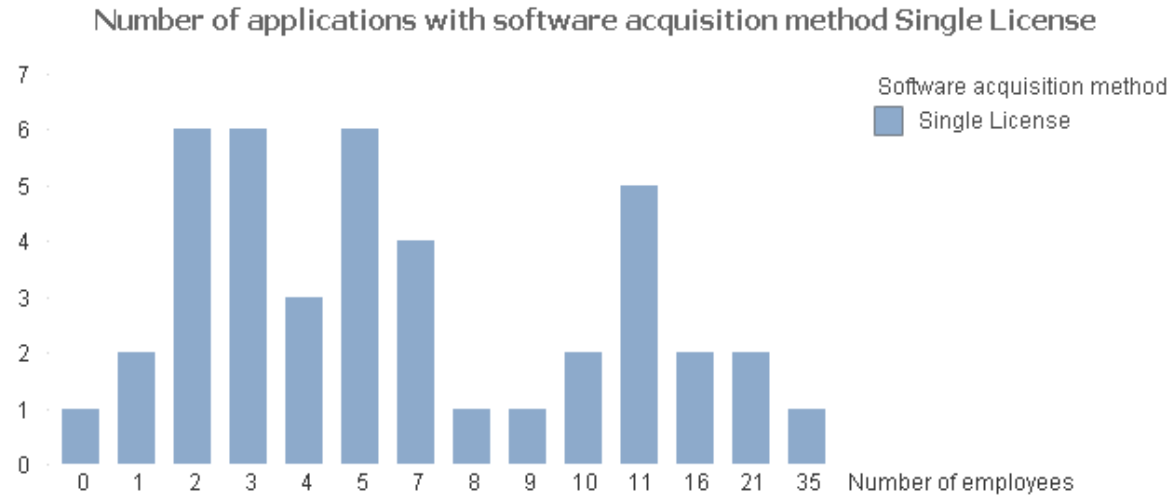

Figure C.11: Single License software acquisition method vs employee number

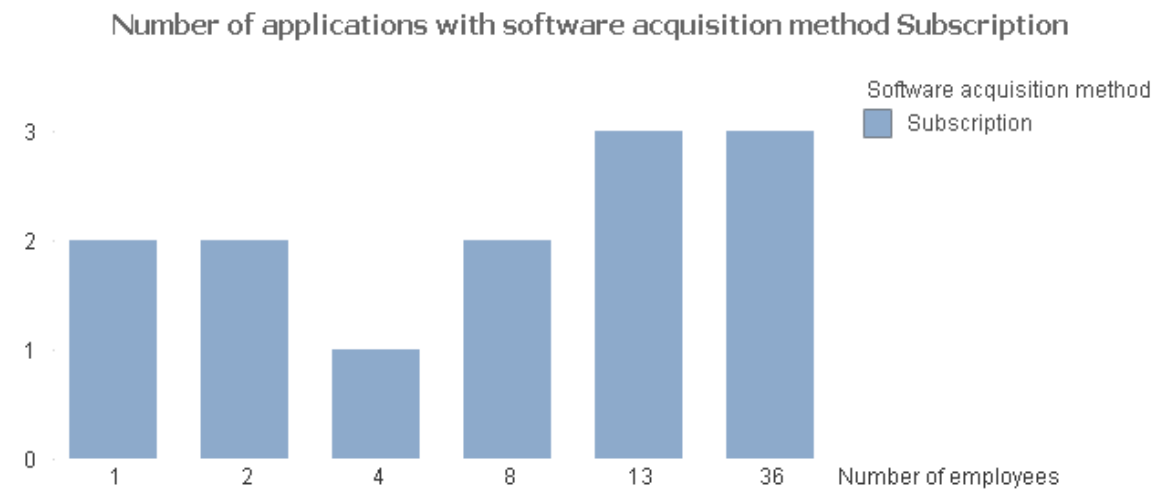

Figure C.12: Subscription License software acquisition method vs employee number

Table C.33: Usage Purpose Group distributed by companies

Purpose Group	No Companies	Number of Apps
	50	**214**
Communication	25	33
File Management & Storage	19	22
Development	18	23
Planning & Finance	18	18
Administration & Organization	14	16
Web presence	14	16
Planning	13	15
Data Analysis & Processing	7	13
Design	7	9
Source Control	6	6
CRM	6	6
Database & Storage	5	6
File Sharing	5	5
Marketing	3	3
Infrastructure	3	3
Support	3	3
Marketing & Human Resources	2	3
Monitoring	2	3
Testing	2	2
Planning & Communication	2	2
Other	2	2
Modeling	1	1
Integration	1	1
CMS	1	1
Production	1	2

Appendix D – Interview transcripts

In this appendix the four interview transcripts will be shown.

Interview transcript 1

The interview was conducted on 28th April 2015 by Blerta Deliallisi and Pien Walraven and we will refer to our interviewee at C1, since we want to keep his anonymity.

Pien, Blerta = Interviewer
Respondent = C1

Table D.1: Transcription of interview 1

1	Interviewer	So, ehm first of all ehm the software applications that you filled in, are mostly development related, like Vim and Eclipse, and ehm MySql, and Nginx. And we were wondering, do you use software for other purposes as well? Ehm except for development?
2	C1	Yeah, we use software for email and word-processing and so on.
3	Interviewer	Okay.
4	C1	And ehm that's, it's the same software?
5	Interviewer	It's all the same software?
6	C1	Yeah, Vim for example is used for email and for ehm for documents as well.
7	Interviewer	Okay okay, okay. So you don't use other software applications for those purposes?
8	C1	No.
9	Interviewer	Okay. Mmm. Just wait a second Pien. Yeah.
10	C1	Or ehm or we used great software for the tasks, so it can happen that we use different software but mostly those software applications.
11	Interviewer	Okay okay. Ehm in considering the software applications in use by your company, we were curious to know, ehm how much you also took other systems into consideration ehm when you, selected those systems to use? So, for example you are using Vim for text editing, have you also considered other alternatives?

12	C1	Yeah sure. But..but the learning curve is too high. You if you are already fluent in Vim there is no need to change.
13	Interviewer	So, so the reason why you chose Vim, is because you were already familiar with it? If I understand correctly?
14	C1	Correctly.
15	Interviewer	Okay and ehm the same question for Eclipse, have you considered other development environments?
16	C1	No, it's the same thing there.
17	Interviewer	The same reason? Okay. Same questions for the MySQL for databases, did you consider other alternatives?
18	C1	Yes, we did. That's a bit other. Because both Eclipse and Vim, its ehm we know it beforehand that, the reason we know it, is because is that we have chosen that software for the task previously.
19	Interviewer	Okay.
20	C1	But with MySQL there is a bit different, because, that's not the necessarily the best software, ehm to use, but it's widely adopt, so we can standardize and we can exchange data with other providers, in on its way.
21	Interviewer	Okay. So the reason why you chose MySQL for database it's because it is widely adopted?
22	C1	Yeah.
23	Interviewer	Okay. The same for Nginx as a web server, have you considered other alternatives?
24	C1	Yes, but Nginx is simpler and better.
25	Interviewer	But why it is better, in your opinion?
26	C1	It's faster, less resources, demands ehm yeah demands less resources.
27	Interviewer	Okay, okay. What aspects were most important when selecting your software, in general?
28	C1	Something that works, and second of that it's its cost. We don't have any money to buy premium products.
29	Interviewer	Ehe. Ehm, so you say something that works? In what way do you mean, something that works?

30	C1	Yeah, we need good software, so that we don't need to.. have to, put a lot of timing making the tools work, that's first. Ehm. So it's most important to have stuff that is good, and yeah, mm first class software. Yeah, that's the main goal. And we can get and cheap software at the same time.
31	Interviewer	Okay
32	C1	And to us it's a huge benefit that its, the software is open source, because we have knowledge to modify it if we need to.
33	Interviewer	Ehe.
34	C1	That's also an important part for us.
35	Interviewer	Okay. How did you make the decision of acquiring your software? And then I need to say, did you use any help or did you make the decision just yourself or with your colleagues?
36	C1	Actually, we didn't do that much of decision, we just took the tools we already used.
37	Interviewer	Okay.
38	C1	In the case we needed to collaborate like MySQL, we did a five minute chat about which alternatives do we have, which is best, so just internal.
39	Interviewer	Okay okay. And were all employees involved in that chat? Or was it just a few people or?
40	C1	Just the technical people.
41	Interviewer	Just the technical people?
42	C1	Just the ones that had to work with the tools.
43	Interviewer	Okay. Okay. Ehm let's see. Ehm so, we have already talked about this a bit. Did you, except for cost reasons, did you have any other reasons to use mostly free software?
44	C1	Yeah, as I said, not free software, but open source software. Ehm because we know that we can grow with it, and we know that we can make the modifications. And we know that, the software will not be modificated without our consent. We will never be forced to upgrade, and have costly upgrades, just because..yeah.
45	Interviewer	Yeah. Okay. So also another factor ehm is flexibility in this situation, right? So that you feel flexible with this open source, that you can modify according to your needs in the future?
46	C1	Yeah.

47	Interviewer	Okay. Ehm, well since you don't spend any money on software acquisition. Do you spend any money on any type of software or is, literally everything that you use open source?
48	C1	Everything is open source
49	Interviewer	Okay.
50	C1	We just hosting and thing like that but no software.
51	Interviewer	Okay. We read about entrepreneur licensing, for example Microsoft offers Bizpark to Entrepreneurs. Are you familiar with this type of licensing?
52	C1	Ehm no.
53	Interviewer	Okay. Ehm yeah then this question is not relevant. Right? Ehe. Okay. And then in what ways can the current offerings of software be improved to target start-up companies more effectively, do you think do you have any ideas on that?
54	C1	Yeah they can be open source.
55	Interviewer	So any software should be open source in your opinion?
56	C1	No, but that the software we need to use as a start-up need to be it, because we need the freedom.
57	Interviewer	Okay
58	C1	Ehm yeah.
59	Interviewer	Okay. Do you have any plans on acquiring software in the future?
60	C1	No. We will probably will get a copy of OSEx, for example, to do Apps Development, so yeah if you count that as software, yes. But we have to buy it bundled with hardware's. So..
61	Interviewer	Okay.
62	C1	But we need to have some software that is not open source to be able to work with our customers.
63	Interviewer	Yeah and how will you make that decision which software that will be?
64	C1	The standardized software.
65	Interviewer	Standardizes software?
66	C1	Mm some common that everybody uses.

67	Interviewer	Okay, okay. Ehm. Is there anything that we did not talk about that you feel is interesting for our study?
68	C1	I am not sure about your study. I think your study might be, from a point of view, from the Microsoft style of selling software. Ehm how have you think about software as a service and ehm stuff like that?
69	Interviewer	-Yeah. We look at Open Source and Freeware to begin with. And then there is different types of licensing types indeed the basic licensing types used by Microsoft such as Single Licenses and shared Licenses, but we also included Software as a Service or ehmm.. What do you call it? Pay per use, subscription and this entrepreneur License. Yeah. But we were wondering, like to make this question clear, we were wondering if you as start-up and you company in regards of software acquisition, what problems did you face or what..if you had any reserves regarding this area?
70	C1	Yeah. The biggest problem we did encounter it's the licensing problem. Because most of our software is GPL. And you know about GPL, right?
71	Interviewer	Yes.
72	C1	And that could be a problem for us, to distribute our software in the future. We are lucky, we are not going to distribute our software. Ehm but that would have been a factor otherwise. Because than we have to look more carefully and choose MIT style license.
73	Interviewer	Okay.
74	C1	And the reason not to buy software, it's not the price thing, and it's not the licensing thing, it's more like we don't like the software, it's harder for us to work with.
75	Interviewer	Okay.
76	C1	So it's about the quality of the software than it is about the licensing or the cost.
77	Interviewer	And the quality of software you mean ease of use and also flexibility? Or is it, or can you elaborate more like what do you understand if you say quality of the software?
78	C1	Yeah, flexibility.
79		Mostly flexibility. Okay. Do you have anything to add Blerta? No. I don't think so. Okay then I think this is already the end of the interview. So thank you very much for your time. And ehm yeah we will finish our thesis, we expect to

		finish it in June so we can send you the result if you are interested in it later?
80	C1	Yeah, just do.
81	Interviewer	Okay, then we will do that. Thank you very much again and have a nice day! Bye.
82	C1	Bye!
83	Interviewer	Okay thank you! Bye!

Interview transcript 2

The interview was conducted on 29th April 2015 by Pien Walraven and we will refer to our interviewee at C2, since we want to keep his anonymity.

Pien = Interviewer
Respondent = C2

Table D.2: Transcription of interview 2

1	Interviewer	So the software applications that you filled in in the survey are Microsoft Excel, Google Apps, Box, Microsoft Word and Dropbox.
2	C2	yeah
3	Interviewer	I was wondering do you use software.. other software, for other purposes as well?
4	C2	I have specialized software ..
5	Interviewer	okay
6	C2	For my instrumentation
7	Interviewer	okay
8	C2	yeah so eh that's perhaps three or four very specialized software applications
9	Interviewer	okay, ehm, and are those paid for or is it open source or.. how did you acquire those software applications?
10	C2	Ehm one is made especially for me
11	Interviewer	okay

12	C2	one is.. was following the instrumentation so I don't know the price
13	Interviewer	okay
14	C2	and the third one was acquired and paid for
15	Interviewer	okay and the one that was custom-made for you, how eh.. how did that go, did you talk to an external party or did you develop that in-house or..
16	C2	It's an external party so to say, it's freelance consultancy, very good at software programming
17	Interviewer	okay
18	C2	so he made the program especially for me.
19	Interviewer	okay. Ehm, let's see. And then for the other software applications. You're using Microsoft Excel for data analysis
20	C2	Yes
21	Interviewer	Have you considered other alternatives for that purpose?
22	C2	I tried, I think it's called open office.
23	Interviewer	hmhm
24	C2	that has very similar functions and modules like Microsoft office
25	Interviewer	hmhm
26	C2	But it's a problem when you distribute excel files with others
27	Interviewer	okay
28	C2	You need to cooperate with other external parties
29	Interviewer	yeah
30	C2	and then they don't know what to do with the open office files so.
31	Interviewer	okay
32	C2	Microsoft Office is just easier to collaborate with others.
33	Interviewer	okay so that's also the reason why you chose Microsoft Excel in the end over open office.
34	C2	Yeah.
35	Interviewer	okay. Ehm, the same question for.. You are using Google apps for e-mail and calendar.

36	C2	hmhm
37	Interviewer	Did you consider other alternatives for that purpose?
38	C2	Not really.
39	Interviewer	No?
40	C2	No
41	Interviewer	Okay, is there any special reason why you chose Google Apps for this purpose?
42	C2	Well I was a Google-user before
43	Interviewer	okay
44	C2	And I just checked out what they have in the pipeline to help me as an entrepreneur.
45	Interviewer	Okay and you're using.. you filled in you are using a shared license, for that, or a business license for Google Apps, so it's not the standard version.
46	C2	No I prefer to pay for something so I know it will work and they will have support for it so it is a business application
47	Interviewer	yeah
48	C2	Paid per user
49	Interviewer	Okay. Ehm, we saw that you are using two software applications for cloud and data storage and sharing, namely Box and Dropbox
50	C2	Hmhm.
51	Interviewer	Why are you using two different ones?
52	C2	I actually use three
53	Interviewer	Three, okay
54	C2	Yeah so I have one called sugarsync as well
55	Interviewer	hmhm
56	C2	and I use box for my companies' data storage
57	Interviewer	hmhm
58	C2	So that's my own company cloud server, but then I collaborate with other companies and persons and partners, they're using dropbox and they're using

		sugarsync, I don't think it's.. you can have ten cloud services, it doesn't really matter. As long as they work and they are easy to work with.
59	Interviewer	Okay, so the reason you use several is because it depends on which other parties you're working with.
60	C2	Yeah.
61	Interviewer	Okay, ehm, let's see. Why did you choose Box for your internal data storage?
62	C2	Long story, basically I know that …… and …… , two major Pharmaceutical players, are using Box for data sharing with external parties.
63	Interviewer	okay
64	C2	And also that Box has very good… detailed access specification for each user.
65	Interviewer	hmhm
66	C2	So it's very.. you can detail every folder so to say.
67	Interviewer	okay
68	C2	Very detailed
69	Interviewer	Okay, ehm, let's see, you're using Microsoft Word for reporting, ehm, have you considered other alternatives for that?
70	C2	Not really
71	Interviewer	No
72	C2	No
73	Interviewer	Okay any special reason why you chose Microsoft Word for reporting?
74	C2	Tradition and the same goes with Word as for the Excel
75	Interviewer	Yeah okay, let's see, what aspects were most important when selecting your software.. in general?
76	C2	Ehm.. They must function every day
77	Interviewer	hmhm
78	C2	They must be very easy
79	Interviewer	hmhm
80	C2	And obvious how to work with them, I have different kinds of persons in my small company and it should be.. just plug-and-play
81	Interviewer	okay

82	C2	And I think that Google and Box is quite good at that
83	Interviewer	okay
84	C2	hmhm
85	Interviewer	Okay, let's see.. How did you make the decision of acquiring your software, and with that I mean to say ehm.. did you make the decision in-house, or did you ask help from outside, for example from consultants, or from other companies or..
86	C2	No, I.. those kinds of decisions I take that, it is not that complicated today, just.. you do that online
87	Interviewer	hmhm
88	C2	all the payment and yeah
89	Interviewer	So it's you that takes the decisions?
90	C2	yes
91	Interviewer	Do you collaborate with your colleagues for taking these decisions or is it just you?
92	C2	No, I think I'm a dictator in that sense
93	Interviewer	Okay, to get back to the custom made software
94	C2	Yeah
95	Interviewer	You told me that you asked some consultancy company to develop it for you
96	C2	hmhm
97	Interviewer	ehm, what about the requirements gathering and analysis, did you do the preparations yourself, or was it a collaboration, or did you ask them to do it?
98	C2	ehm, it was a collaboration, and interaction and iteration
99	Interviewer	yeah
100	C2	so, it was not a formal work really that we had a long list of detailed specifications that must be fulfilled.
101	Interviewer	yeah
102	C2	It was just a talk over a cup of coffee
103	Interviewer	okay
104	C2	You should have this one and then I tested the first version

105	Interviewer	okay
106	C2	and gave feedback and that was it so it's quite an informal way really
107	Interviewer	okay let's see.. yes.. why did you decide to use mostly paid software over for example open source or freeware?
108	C2	I have a feeling that if you are a private person you can use open source software, free software
109	Interviewer	hmhm
110	C2	but when you're in a company you.. I really want to really pay for something
111	Interviewer	okay
112	C2	so I can really demand service on it if something goes down
113	Interviewer	yeah
114	C2	So that's the main reason.
115	Interviewer	So, if I understand correctly, you have the feeling that there is better support for paid software, is that the only reason or are there other reasons?
116	C2	No, it's not.. I don't think.. I think the support is quite equal, if I drive my company as normal Google users or I pay for a Google license, business package, I get the same support, I think so. But I have a feeling that if I pay for something, I can phone them or contact them and demand them to solve the problem that I have.
117	Interviewer	okay, yeah
118	C2	So I prefer to pay something for it.
119	Interviewer	okay. What priority does software acquisition have in your budget planning?
120	C2	Ehm.. I mean the actual costs is not that much regarding what other things cost in the company.
121	Interviewer	yeah
122	C2	But it has a priority because generating data is extremely valuable for a company like me.
123	Interviewer	yeah
124	C2	I'm selling data, since I'm a consultancy company
125	Interviewer	yeah exactly
126	C2	So I'm selling data and having control over the data is very important.

127	Interviewer	okay
128	C2	So it's high priority but it's not that high costs I would say
129	Interviewer	no, okay. Are you familiar with entrepreneur licensing? For example Microsoft has Microsoft BizSpark?
130	C2	No
131	Interviewer	No, okay, ehm.. let's see. Then some final thoughts. In what ways do you think could current offering of software be improved to target Start-up companies more effectively?
132	C2	Ehm.. I think a flexible eh.. pay system, that is based on numbers of users and not that you're going from a private license for instance and going into a business license..
133	Interviewer	hmhm
134	C2	For some software eh providers, that is a big jump, both in numbers of users and in terms of money.
135	Interviewer	Okay
136	C2	So it should be a more gradual increase, so I like the way that Google.. they invoice per user, not as a business package
137	Interviewer	yeah
138	C2	for say, a hundred users directly.
139	Interviewer	yeah
140	C2	So a gradual scale
141	Interviewer	So for example you could say I want a license for five users, or for ten users, not…. To make the jump less big.
142	C2	Yes, the steps on the stairs should be small not big.
143	Interviewer	Yeah exactly, exactly.. Anything else that could be improved? Or any problems that you encountered for example when acquiring your own software?
144	C2	No but I mean, I like to work with computers, I like software, I like to do some small programming in macro in Excel for instance
145	Interviewer	yeah
146	C2	so I'm a… I'm a.. I sort out a problem until it's sorted out.
147	Interviewer	yes

148	C2	So I'm perhaps not a normal user, I'm more computer experienced than the average person, I think
149	Interviewer	yeah
150	C2	eh.. so I don't… no I haven't really had some big issues with software so I.. and I don't hire consultants to solve.. to get the right software for me.
151	Interviewer	hmhm
152	C2	I do this so.. by my own. Because I think it's fun to do it.
153	Interviewer	yeah
154	C2	So what kind of cloud provider should you have for instance, and reading about ten different cloud suppliers is.. I think it's fun, but other people think it's extremely boring probably.
155	Interviewer	Yeah, okay. Ehm, do you have any plans on acquiring software in the future?
156	C2	Hmm.. no, not really
157	Interviewer	Okay, and If you would have plans, would you make the decision the same way as you did it in the past or would you change it a bit?
158	C2	No, I mean, if I can, I take the decision by my own
159	Interviewer	yes
160	C2	Perhaps, interviews with some colleagues around the.. the coffee breaks and stuff like that but I would not be.. do a formal request on another company that do the service
161	Interviewer	Okay
162	C2	There is another software I've just purchased, it's called Spotfire
163	Interviewer	hmhm
164	C2	It is analysis of big data
165	Interviewer	yeah
166	C2	to make graphical illustrations of excel files, so it's the next step after excel to visualize your data.
167	Interviewer	Yeah
168	C2	So that's.. could perhaps be inserted up here in your earlier..
169	Interviewer	So you are using that?

170	C2	Yes I'm using that
171	Interviewer	It's called spotfire?
172	C2	Spotfire.
173	Interviewer	Okay, is that a paid software as well?
174	C2	Yes.
175	Interviewer	And it's for visualizing big data you said?
176	C2	Yes.
177	Interviewer	Did you.. did you consider any other alternatives for that?
178	C2	Yes, I checked out and downloaded three demos, ehm, one is Tableau
179	Interviewer	Oh yeah I know it I've worked with it
180	C2	Yeah, and QlikView.
181	Interviewer	Oh yeah I've worked with that one as well.
182	C2	Yeah. And I compared those three and saw that Spotfire was the most easiest way to work for me and eh, so I bought it and skipped the rest.
183	Interviewer	Okay so if I understand correctly the main reason why you chose Spotfire over QlikView and Tableau is because found it easier to work with.
184	C2	Yes
185	Interviewer	Any other reasons why you preferred that one?
186	C2	No, I didn't really investigate.. I mean I could download a private license of QlikView, that is more or less for free
187	Interviewer	Yeah
188	C2	But this costs much more, so.. but it's not really the money that.. I mean a couple of thousand euros, in the end it doesn't really make a difference
189	Interviewer	Yeah
190	C2	It's most important that you have something that you can work with
191	Interviewer	Yeah
192	C2	So hmhm
193	Interviewer	So to conclude, is there anything that we didn't talk about that you feel is interesting for our study?

194	C2	No..
195	Interviewer	okay
196	C2	So this is gonna be a report or something?
197	Interviewer	Yes
198	C2	It's your master..
199	Interviewer	It's our master thesis, so we are gonna write a report of the entire study, including the results of the survey and the interviews, we're doing four interviews in total
200	C2	hmhm
201	Interviewer	And of course we can send you the final report if you would be interested in that
202	C2	Yes, I want to see that.
203	Interviewer	Yeah we expect to be done in the beginning of June so you can expect it around that time
204	C2	Hmhm so in PDF or something like that would be fine
205	Interviewer	Yeah exactly. Okay then I want to thank you very much for your cooperation and your time, it helps a lot!

Interview transcript 3

The interview was conducted on 4th May 2015 by Blerta Deliallisi and Pien Walraven and we will refer to our interviewee as C3, since we want to keep his anonymity.

Pien, Blerta = Interviewer
Respondent = C3

Table D.3: Transcription of interview 3

1	Interviewer	Okay, it's recording now. So ehm, yeah we looked at the software applications that you filled in in our survey and we were curious to know how much you also took a look at other systems and yeah how did you make the choice for the specific systems. So for example, you filled in that you are using Google Drive for sharing documents
2	C3	Yeah

3	Interviewer	. . which is a freeware, ehm have you also considered other alternatives for software to share documents?
4	C3	Ehh we are using Dropbox as well, a little bit
5	Interviewer	okay
6	C3	But that's only for.. mainly for like presentations and stuff that are a bit heavier
7	Interviewer	okay
8	C3	I think that's basically gonna be the only other.. option that we use and the reason why we prefer Google Drive is because it's a lot more flexible, you can work at it at the same time it's available easier on the phone and everything is just a little bit easier.
9	Interviewer	okay. Ehm so if I understand correctly the reason that you use Google Drive over other options is that it's flexible?
10	C3	Yeah, flexible, ehm I mean it's.. everyone kind of understands Google well, extra, their features and what they do and also that it's free of course.
11	Interviewer	yeah
12	C3	Yeah it's just.. it's just easier together.
13	Interviewer	hmh okay. So and you filled in that you are using Slack for communication purposes
14	C3	hmhm
15	Interviewer	which is also a freeware, have you considered other alternatives for communication purposes?
16	C3	eehh, at first we used a lot of.. we used like a Facebook group, a closed group, then we used a lot of e-mail of course, we've been using skype before, but when we started thinking about what we needed we saw that we needed a chat in the Facebook group.. so we needed a chat in the group and also one-on-one, that is good. We like in e-mail that it's more.. it feels more confidential in a way
17	Interviewer	Yeah hmhm
18	C3	It's more a system that you only use for work and not for other activities and it's searchable, as in mail you can search for words, which is good
19	Interviewer	yeah

20	C3	and I mean Skype.. the only good thing with skype is sort of.. when you have it open then it's pretty good but still it seems that it hasn't been.. sort of improved for like ten years, it's the same system since I started using Skype
21	Interviewer	okay hmhm
22	C3	So yeah therefore I looked around a little bit and found Slack, we also looked a little bit to HipChat and a few others but I found Slack to be the best one for us.
23	Interviewer	Okay and is there a specific reason why you chose a freeware for communication purposes, instead of a paid software?
24	C3	Yeah, budgetwise of course
25	Interviewer	haha yeah okay fair enough Ehm yeah then you filled in that you are using Zendesk for CRM purposes
26	C3	yeah
27	Interviewer	Have you considered other alternatives for CRM purposes?
28	C3	Hmhm, I've been starting using Groove, in another project and it's way better
29	Interviewer	okay
30	C3	So we're probably gonna switch
31	Interviewer	okaayy
32	C3	yeah, but it's also Groove has.. it's a little bit.. if you're a really small team then Groove is a little bit more expensive. At Zendesk we pay like two dollars a month. So it's nothing. At Groove you pay a minimum of fifteen dollars I think per agents, where it begins. But I think as soon as.. yeah we'll probably switch soon to Groove.
33	Interviewer	Okay and is there a reason why CRM… why you choose paid software for that purpose?
34	C3	Eh because I haven't found any other good one that is for free.
35	Interviewer	Okay so if there would be freeware then you would choose that over the paid software?
36	C3	I would probably consider it at least, but then also.. as when it comes to the CRM, it's a bit different from what we use internally, because.. internally we can kind of figure things out, but when it comes to the customers it's really important that it works
37	Interviewer	yeah

38	C3	so I think we would most likely use a paid software for something at least that would be updated and that we would have support whenever needed and stuff like that so
39	Interviewer	yeah
40	C3	As for the CRM it's a little bit more important that it works.
41	Interviewer	okay. And then the next one, you are using MailChimp for e-mail marketing
42	C3	hmhm
43	Interviewer	which is also a paid software, ehm have you considered other alternatives for mailchimp?
44	C3	Yeah I've been actually looking around quite a bit.. ehm but I haven't found anything that seems easier, at the moment for us, ehm and as far as the.. for freemiumwares I haven't found anything that anyone recommend
45	Interviewer	okay
46	C3	yeah so yeah that's basically the purpose. And it works pretty good for us at the moment as well.
47	Interviewer	So in this case if I understand correctly the main.. the reason why you have a paid software here is because you didn't find a suitable free option?
48	C3	Yeah I would assume so yeah. And also that it's basically like everyone uses it so it's in a way proven that it works
49	Interviewer	yeah
50	C3	which is good.
51	Interviewer	okay and then you are using Stripe for payments
52	C3	yeah
53	Interviewer	which is also a paid software
54	C3	hmhm
55	Interviewer	have you considered other alternatives for Stripe?
56	C3	We started using a Swedish company called Modeda in the beginning
57	Interviewer	hmhm
58	C3	it didn't work at all for us, mainly not because of them but because they have.. they work with banks and with credit card companies et cetera and in this case they couldn't.. the bank wouldn't.. so they were a bit conservative in which industries they wanted to work with

59	Interviewer	okay
60	C3	So and then.. and Modeda didn't really get back to us and yeah it didn't work out. So we called Stripe and we were up and running in like fifteen minutes so.
61	Interviewer	Okay, yeah. And how did you get to Stripe, how did you find them and how did you choose for them?
62	C3	I think I first heard of them in some broadcast or something like that
63	Interviewer	hmm
64	C3	yeah and then I, then we asked for experts and advice hmm… and most of them would recommend Stripe for our kind of business.
65	Interviewer	okay, okay. Ehm is there a reason why you are paying for this type of software except for that maybe you didn't find free options?
66	C3	I actually don't know, I think that's more or less the way it goes and also that it's flexible, you pay.. we didn't pay any upfront costs so it's only pay-per-use basically
67	Interviewer	okay
68	C3	Which is good for us to have I mean we can pretty much decide for our own price so..
69	Interviewer	yeah, that makes sense
70	C3	yeah
71	Interviewer	so are there any other software applications that you are using that you didn't fill in the survey and that we didn't talk about already now?
72	C3	ehhhh we started using MixPanel, eh we just got going with it so we're.. and the best is also its free up to a certain amount of data points and after that you pay
73	Interviewer	hmhm
74	C3	so we.. now we are evaluating if it's better than Google Analytics at least and it's.. it seems like you can do a lot of stuff with it so I think we'll continue with MixPanel, we'll see. So meanwhile the developers are evaluating now to see what we can do with it.
75	Interviewer	okay. Ehm and then in general, what aspects are most important when you select your software?
76	C3	Ehh easy to set up. I think that's the main thing. That it's really easy to get going. Ehh and that you don't really have.. need to have.. as few development hours as possible

77	Interviewer	okay
78	C3	that's good
79	Interviewer	Yeah What about after you install them?
80	C3	ehhh well then it's super easy to explain to my team members how it works, why it's good.
81	Interviewer	yeah
82	C3	So it's ehh it's nice with the software applications that I have if they have a short introduction or something that is send in mail and it kind of takes the new user just through it and whenever they finish with that introduction they sort of understand the value, I think that is also the major part, that I can get help to communicate why this is important.
83	Interviewer	Yeah Okay ehhm.. okay yeah so how did you make the decision of acquiring your software and with that I mean to say.. ehm did you make the decision on your own, or did you ask your colleagues for help, did you maybe ask for outside help, for example from other companies, consultancy companies or something?
84	C3	Ehm the only help we did from outside is more you know like familiar advice
85	Interviewer	hmhm
86	C3	I would call someone or run into someone at the coffee machine or whatever and ask what are you using, what are you using for this and can you recommend something
87	Interviewer	hmhm
88	C3	And eh within the team I think it's been a little bit different, usually at least I just take the decision on my own but I usually consulted one of the other, like, founders, or all of them, depending a little bit on what kind of system it is. So say that it's been more.. in this case the MixPanel, which is a little bit a tech system, then I've been talking to one of the developers, eh.. and when we started using Slack it was sort of I who posted the idea in our Facebook group
89	Interviewer	yeah
90	C3	and then the rest of us got a chance to get into it and read about it and then we just tried it out. As far as the Google Drive, I think yeah it just happened to be so that we started using it for placing documents in it
91	Interviewer	hmhm

92	C3	And we used dropbox before and then we took a decision within the team that right now we're using Google Drive for everything we can. For everything that has to be put in Dropbox we put it there.
93	Interviewer	okay
94	C3	yeah
95	Interviewer	Ehmm.. so.. eh you do make most decisions in terms of software within your company if I understand correctly, ehm, without..
96	C3	Can you repeat that question again I lost you for a few moments
97	Interviewer	Of course. Ehm so the.. if I understand correctly most decisions are made within the company by either you or you and some colleagues.
98	C3	yep.
99	Interviewer	And you also mentioned it a bit but so the employees that are involved in that decision are employees on any levels so for example co-founders, but also developers..
100	C3	Yeah in our case we are all co-founders so that's eh yeah
101	Interviewer	Oh yeah okay. And do you all have technical expertise or mixed?
102	C3	No, mixed. So eh we have two people, are.. who only work with technology. And then we are two people working more with business development. But I'm sort of a.. more on the product side, so I like the products and I like technics, I like to know about the technical stuff even though I don't program.
103	Interviewer	Okay. Ehm let's see ehm yeah you already answered this a bit as well, but still, you decided to use a mix of free and paid software
104	C3	hmhm
105	Interviewer	Yeah and if I understand it correctly that's mostly because the software applications that you pay for, there's no suitable free option for it.
106	C3	Yeah I would say so, and as long as they are as cheap as they are for small-scale use, then it's fine. I think if I had one that costs 15 dollars a month and one that is free, I would probably choose the one that is best value and not the one that is free.
107	Interviewer	okay and what priority does software acquisition have in your budget planning?
108	C3	Eh not much, it's more a.. As far as this project has a budget, yeah marketing tools so that we need to get going with even more e-mail marketing
109	Interviewer	hmhm

110	C3	and then we.. we of course have a budget for that.
111	Interviewer	okay
112	C3	**not hearable, connection is bad**
113	Interviewer	Could you repeat that last question?
114	C3	Yeah so everything that is more related to business, or, you know, talking to customers or selling it has a dedicated space in the budget. The rest is something that we more.. make on the fly so to say.
115	Interviewer	okay
116	C3	yeah
117	Interviewer	okay, ehm, yeah we saw that you don't use entrepreneur licensing, are you familiar with the concept of entrepreneur licensing?
118	C3	nope
119	Interviewer	okay ehm then we can skip this question.. yeah and then some final thoughts, ehm, in what ways could current offering be improved to target start-up companies more effectively in your opinion?
120	C3	I think eh.. some of the software applications could be.. could have easier integrations or automatic integrations from the beginning. Even though a lot of them now have good APIs eh so that you can work together, it would be nice to standard.. or if they could bundle up a package. Say Slack for example, they have so many customers at the moment, or Zendesk, whatever, so that they say allright, if you purchase this package, the startup package whatever, you will get these and these and these integrations included and all set up for you. Ehh that would be very nice.
121	Interviewer	okay
122	C3	So for example it would be nice to have some kind of data analytics that would be linked to the e-mail system, and also linked to the CRM system. If you could get that in one package that would be pretty cool. Eh, and I think most would be willing to pay for it as well.
123	Interviewer	hmhm ehm so integration could be improved
124	C3	hmhm
125	Interviewer	Is there anything else that is missing or wrong based on your own experience or that could be improved in any way?
126	C3	Ehm one second my battery is running low
127	Interviewer	oh

128	C3	Yeah I think some of the sort of introduction plans or whatever that say that you have a basic plan or sort of a startup-plan or yeah.. Some of those plans in for example ZenDesk are eh too limited
129	Interviewer	hmhm
130	C3	So they give us.. they give us sort of an easy way to start off the program but it's also.. it's very limited in functionality and it.. in this case, with Zendesk for example, they send.. all the mails go from Zendesk mail addresses and it's like, everything looks pretty ugly for the user or for the one that sends the mail to us eh and I think so you sort of have to pay a lot to don't get that
131	Interviewer	okay
132	C3	That is sort of one thing that I think is a bit sort of.. yeah it's not really the best way to do it, eh.. it's probably better to sort of, instead make it really good from the beginning but then we have to pay more the more users we have, stuff like that.
133	Interviewer	yeah
134	C3	So those are like things I think for those companies who really… and then sort of I pay whenever I need to scale it up and stuff.
135	Interviewer	hmhm okay. Ehm, do you have any plans for acquiring software for your company in the future?
136	C3	Eh yeah we probably will, I think we will revalue.. quite a few things but yeah one of the things we will probably look into a bit more is the eh the MailChimp situation. Because we are looking at something that is more integrated with an app
137	Interviewer	hmhm
138	C3	eh yeah so that we can do, all of the mails and push notifications and everything from one system
139	Interviewer	yeah
140	C3	Which would be nice, so that is one thing that we will look into during summer. Eh we probably come up with a few other things as well as soon as we scale up but this is the first thing.
141	Interviewer	Okay and how will you make the decision on which software that will be eventually?
142	C3	I will probably have a chat with the developers to see what works with our technology and what doesn't, and what we think we can do ourselves, or what is sort of messier. But it would probably be to have a chat here.

143	Interviewer	Okay! So is there anything that we didn't talk about that you feel is interesting for our study?
144	C3	Not on top of my head I think.
145	Interviewer	okay
146	C3	Seems like you covered most of it
147	Interviewer	Yeah. Okay then this is the end of the interview, unless you have something? *looks at Blerta* No, eh maybe just a little bit about.. you are going to move from Zendesk to Groove
148	C3	yeah
149	Interviewer	And eh, like, as I understood the reason to do this is because Zendesk is not fit with some of your requirements, you want it like, to.. is there any other reasons or eh have you considered other alternatives except for Groove maybe?
150	C3	Eh yeah we looked into, looked into eh desk.com as well and a few hours of Googling around a little bit, but now eh, the thing is we started using it for our company and it works really really well eh so then I think it's ... We don't really have the time to be looking around more so
151	Interviewer	okay
152	C3	That's probably it. And we plan for Zendesk to get the same thing that we get with Groove for say fifteen dollars a month is like sixty-eight dollars a month with Zendesk, so
153	Interviewer	ooh okay yeah
154	C3	So that's basically yes. That is the reason I think. I think Zendesk could probably provide us some things but then it would cost a lot more.
155	Interviewer	Okay. Ehhh No, so thank you very much for you time, yes.
156	C3	Thank you, and good luck
157	Interviewer	you helped us a lot.
158	C3	Im looking forward to reading it when it's finished
159	Interviewer	yes. Eh we expect to finish it in the beginning of June so we will send you the final thesis in a PDF file by that time.

160	C3	Sounds cool
161	Interviewer	Okay thank you very much! Have a nice day. Thank you
162	C3	Bye

Interview transcript 4

The interview was conducted on 8th May 2015 by Blerta Deliallisi and Pien Walraven and we will refer to our interviewee as C4, since we want to keep his anonymity.

Pien, Blerta = Interviewer
Respondent = C4

Table D.4: Transcription of interview 4

1	Interviewer	So, you filled in a few softwares in the survey, it was Microsoft Office, Epic, Google Apps, Trello and WordPress. Except for that software, do you use other software for other purposes as well?
2	C4	Ehm..yeah, administration software, it is called CashWeb, but we don't use that much, or at least I don't. And Software like Gmail and that stuff.
3	Interviewer	And for what purpose do you use CashWeb?
4	C4	So, Administration software.
5	Interviewer	Okay. Is that a paid software or is it free or?
6	C4	It's paid.
7	Interviewer	Paid software, okay. And did you consider other software for administration as well?
8	C4	Yes we did. We tried out, I think 2 or 3 packages, one of them was Exact Online and the other one… I don't even remember.
9	Interviewer	Okay! And why did you choose this software, in the end?
10		(Connection went bad. We called him again)
11	Interviewer	So, to get back to CashWeb, you did consider other software?
12	C4	Yes.
13	Interviewer	And why did you choose CashWeb in the end?

14	C4	It was the most complete package. And with the other software solutions we have to use not all are packages. It is a whole package.
15	Interviewer	Okay. And then considering the software applications that you filled in the survey. Ehm for example, you were using Microsoft Office for creating content?
16	C4	Yes.
17	Interviewer	that's a paid software. Have you also considered other alternatives for creating content?
18	C4	Yeah we use open office and also the google drive solutions
19	Interviewer	So you use both of them?
20	C4	Yeah, I don't, but all the other employees do.
21	Interviewer	Okay. But why do you use different versions?
22	C4	People get used to something, so that they want to keep on using that.
23	Interviewer	But is that a problem when you exchange documents?
24	C4	Oh no, not at all. It works fine together, so.
25	Interviewer	Okay! And then you are using your in-house developed system, Epic for ERP solutions, so Planning and Finance and Project Planning. Have you considered other alternatives for ERP?
26	C4	Yeah we did. But they were all way too expensive and they didn't match with our with what you wanted to do with it. So we decided to build it ourselves.
27	Interviewer	And I assume that you already had the people with technical skills in the company and at that time? Or did you hire people for that?
28	C4	That's myself.
29	Interviewer	Oh Okay, so the main reason you decided to develop something for yourself is because the other options were too expensive and they did not meet the requirements?
30	C4	Yes, indeed.
31	Interviewer	Okay. And then you are using Google Apps for email, calendar and hangouts. And we saw that is paid per use. So is this Google Apps per business then?
32	C4	No it's the free version.
33	Interviewer	Okay so the free version. Okay. Did you consider other alternatives for email calendar and hangouts?

34	C4	No, actually not.
35	Interviewer	Okay. So why did you choose to use this?
36	C4	Ehm..because we are using it for years now.
37	Interviewer	Okay.
38	C4	and it worked well for us. So we just sticked to it.
39	Interviewer	Yeah, and then you are using Trello for planning for development?
40	C4	Yes.
41	Interviewer	And that's freeware?
42	C4	Yeah.
43	Interviewer	Okay. Have you considered other alternatives for planning for development?
44	C4	Yeah we tried …but it was so badly designed and therefore we went back to Trello.
45	Interviewer	So why exactly did you choose Trello?
46	C4	Ehm. It just does just what the products needs to do, and it's free so..
47	Interviewer	Okay, and then you were using WordPress for your website?
48	C4	Yeah.
49	Interviewer	And its freeware?
50	C4	Ehe.
51	Interviewer	Have you considered other alternatives for your website?
52	C4	Yeah, we had to the first website we build totally ourselves, but we got to limitations with that so WordPress was just better.
53	Interviewer	Okay and why was it better?
54	C4	Yeah. WordPress is an all in one solution, and you can do everything you want with it. Instead of developing everything yourself.
55	Interviewer	Okay. So it's less effort to build?

56	C4	Yeah, indeed.
57	Interviewer	Okay. Ehm and then more in general what aspects are most important for your company when selecting software?
58	C4	Ehm that it meets all our requirements, that's the most important thing, and also the price.
59	Interviewer	Okay! But are this requirements for you clear from the beginning? Or do you explore? And are you clear later what you want?
60	C4	We try the trial versions and yeah, and I have an idea what it should do and then we try them out, and yeah we look for what's best and what's.. yeah
61	Interviewer	Okay. Ehm. Let's see, how did you make the decision of acquiring the software and with that I mean to say, did you use any help for example, from your colleagues or from outside sources, like friends or maybe even professional sources?
62	C4	Yeah, we have a lots of conversations in our company, so with all the employees about how the system should work. And then we made a plan for it, so we designed it, and then we go back to employee is that the way you wanted and then we started building it. We build the best thing and improving it.
63	Interviewer	Okay. This is for the cases that you build it in-house?
64	C4	Yes.
65	Interviewer	What about the cases that you buy, because you are paying for some software, I think?
66	C4	Only for Microsoft word.
67	Interviewer	So that's it, you are paying just for it.
68	C4	Yeah and also CashWeb also.
69	Interviewer	I am sorry can you repeat that?
70	C4	Excuse me.
71	Interviewer	Can you please repeat that? For which software?
72	C4	Cashweb.
73	Interviewer	So the decision for buying CashWeb. Was it internal decision from the technical people or did you have some advice or consultancy?
74	C4	No it was a decision of our directors and the guy that does all the requirements for us.
75	Interviewer	Okay. Yeah! So for the in-house developed system, all the employees were involved in the process?

76	C4	Not all of them but most of them.
77	Interviewer	Is there a specific reason why did you decided to use a mix of free, paid and in-house developed software?
78	C4	Ehmm no not actually.
79	Interviewer	Okay,
80	C4	I think we just do what stands
81	Interviewer	And what priority does software acquisition has in you budget planning?
82	C4	Very low actually.
83	Interviewer	Very low, okay! And then one question? Are you familiar with the concept of Entrepreneur Licensing?
84	C4	Ehm no.
85	Interviewer	Okay then we can skip that question.
86	Interviewer	Before this, I want to ask you something about your ERP system, since you say that your budget for software acquisition is pretty low but to develop something in-house, we were wondering how much did it take you to develop something in-house, did you have enough resources.
87	C4	Yeah I built it myself.
88	Interviewer	Yeah, so I mean in terms of time, how much time did it take for you?
89	C4	I think, I'm now on a few hundred hours, 300-400 hours, total development time
90	Interviewer	Okay. And are you planning to sell it or?
91	C4	Yes, as soon as we think it is good to go. We are going to bring it to the market.
92	Interviewer	Okay! Yeah, and then some final thoughts. In what ways do you think could current offerings of software be improved to target start-up companies more effectively?
93	C4	What we noticed, there are a lot of software for start-ups actually. But we noticed that none of them could really say what they are doing. We have to try them out to see how does it work and what does it do. I would think in the way of communicating to the start-ups they could improve a lot
94	Interviewer	So communicating functionalities of the software?
95	C4	Yeah, indeed.

96	Interviewer	Is there anything else that could be improved?
97	C4	Yeah I think the pricing model..bought it per user what you see. when you have 30 employees for something for which only a few are really using it and some of them need it but don't use it that much its gets expensive quite quickly, and still you don't use it that much actually. So it seems to me a waste of money.
98	Interviewer	So, more concrete what paying model should be offered then?
99	C4	I think, just a plan for one company in total, and not for how many people are using it inside the company.
100	Interviewer	Okay. Ehm yeah! And then do you have any plans on acquiring more software in the future for your company?
101	C4	Ehm not at this moment.
102	Interviewer	Okay, and if you would ehm how would you make the decision on which software it would be?
103	C4	Yeah.. then we just need first, yeah, what do we need as software, and we first would look if we can build it inside EPIC, because all a package is more effective. We want to build as much as possible in EPIC.
104	Interviewer	Okay.
105	C4	If it is not possible then we are going to look what software is there out there, so.. and then we are going to try them out.
106	Interviewer	Okay, so you try first in-house solutions and then you look for available?
107	C4	Yeah, indeed.
108	Interviewer	Even if there are free, free modules that can do that functionality?
109	C4	Yeah, it depends on functionality, because all of the functionality needs also the information from the ERP system. Yeah so inside of the ERP, for the workflow it is more efficient.
110	Interviewer	Okay, so if we understand correctly is that this integration part is really important for you for the existing?
111	C4	Yeah.
112	Interviewer	Yeah and then to conclude, is there anything that we did not talk about, that you think is interested our study?
113	Interviewer	So start-up and software.
114	C4	Puhh
115	Interviewer	It is a little general. Yeah.

116	C4	I don't know actually.
117	Interviewer	Okay. Then..do you have something to add?
118	Interviewer	I don't know. I was expecting maybe you had some suggestions, or some general thought what do you find that is lacking, maybe in terms of what you expressed before, in terms of licensing something more flexible is missing or something that targets start-ups? But apart from the licensing, maybe there is something else that you thought or maybe that you experienced difficulty in finding something? For example when you searched for the for the ERP system that you wanted to use. But you found difficulty, do you think that something is missing for start-ups?
119	C4	Yeah, Maybe a good place to compare all the software, in terms of functionality and prices.
120	Interviewer	Okay. Then we think that we are in the end of the interview already. So thank you very much for you time and for your cooperation. We expect finish our thesis in the beginning of June and we will send you the final version in a pdf file by that time.
121	C4	Okay.
122	Interviewer	Yeah, so thank you again and have a nice day.
123	C4	You too and good luck for your thesis.
124	Interviewer	Thank you and bye!

Appendix E – Interview coding

Below an overview of the interview coding process is shown in a table categorized by factors included in the interview guide.

Table E.1: Interview coding process

Row No.	Criteria behind Software Adoption	
1	Ease of use	C1: *"so that we don't need to.. have to, put a lot of timing making the tools work, that's first"* C1: *"It's faster, less resources, demands ehm yeah demands less resources"* C2: *"obvious how to work with them, I have different kinds of persons in my small company and it should be.. just plug-and-play"* C2: *"was the most easiest way to work for me"* C3: *"...everyone kind of understands..their features and what they do..easy to set up. I think that's the main thing...easy to get going...then it's super easy to explain to my team members how it works, why it's good"* C3: *"if they have a short introduction or something that is send in mail and it kind of takes the new user just through it and whenever they finish with that introduction they sort of understand the value, I think that is also the major part.."* C4: *" Yeah. [...] is an all in one solution, and you can do everything you want with it. Instead of developing everything yourself."*
2	Reliability	C1: *"Something that works"* C2: *"They must function every day"* C3: *"internally we can kind of figure things out, but when it comes to the customers it's really important that it works"*
3	Affected by Competitors	C2: *"basically I know that ... and ..., two major .. players, are using..*" C3: *"I would call someone or run into someone at the coffee machine or whatever and ask what are you using, what are you using for this"*
4	Compatible with others	C1: *"But we need to have some software that is [...] to be able to work with our customers."* C2: *"You need to cooperate with other external parties [...] is just easier to collaborate with others."* C3: *"some of the software[...] could have easier integrations or automatic integrations from the beginning"* C4: *"Yeah, it depends on functionality, because all of the functionality needs also the information from the […] system."*

5	Financial factor not a primary factor but still important	C1: *"and second of that it's its cost"* C3: *"and also that it's free of course"* C4: *"Ehm that it meets all our requirements, that's the most important thing, and also the price."*
6	Flexibility	C1*: "we know that we can grow with it, and … the software will not be modificated without our consent. We will never be forced to upgrade, and have costly upgrades.."* C3: *"prefer ..because it's a lot more flexible"* C4: *" we had to the first website we build totally ourselves, but we got to limitations with that so […] was just better."*
7	Requirements	C3: *" It's more a system that you only use for work and not for other activities and it's searchable, as...can search for words"* C3: *"it's available easier on the phone"* C4: *"It just does just what the products needs to do, and it's free so.."* C4: *"Ehm that it meets all our requirements, that's the most important thing, and also the price."* C4: *"We try the trial versions and yeah, and I have an idea what it should do and then we try them out, and yeah we look for what's best and what's.. yeah"*
8	Familiarity	C1:*"You if you are already fluent in [...] there is no need to change"* C4: *"People get used to something, so that they want to keep on using that."*
	Extent of consideration of other options	
9	Reasons for not considering	<u>Familiarity</u> C1:*"You if you are already fluent in [...] there is no need to change"* C2: *"Not really […] tradition and the same goes with [...]"* C4: *"No, actually not[...]because we are using it for years now."* <u>Lack of time</u> C3: *"we started using it for our company and it works really really well... We don't really have the time to be looking around more so"*
10	Considered but..	<u>Lack of time</u> C1: *"Yeah sure. But..but the learning curve is too high"* C3: *"we started using it for our company and it works really really well... We don't really have the time to be looking around more so"* <u>Ease of use</u> C2: *"I checked out and downloaded three demos"* C2: *"[...] was the most easiest way to work for me and eh, so I bought it and skipped the rest"* <u>Requirement Fit</u>

		C3: *"..at first we used [...], then we used [...] but when we started thinking about what we needed […]"* C3: *"So yeah therefore I looked around a little bit and found [...] and a few others but I found [...] to be the best one for us."* C3: *"[…] now we are evaluating if it's better than [...] we'll see. So meanwhile the [...] are evaluating now to see what we can do with it."* C3: *"We started using a […] in the beginning [...] it didn't work at all [...] so they were a bit conservative in which industries they wanted to work with"* <u>Costs</u> Interviewer: *"..so if there would be freeware then you would choose that over the paid software?"* C3:*"I would probably consider it at least"* C4: *"Yes we did. We tried out, I think 2 or 3 packages"* C4: *"Yeah we did. But they were all way too expensive and they didn't match with our with what you wanted to do with it. So we decided to build it ourselves."* <u>Flexibility</u> Interviewer: *"Have you considered other alternatives for your website?* C4: *"Yeah, we had to the first website we build totally ourselves, but we got to limitations with that so […] was just better."*
Making the Acquisition Decision		
11	Internal or Individual Decision	C1: "*we didn't do that much of decision, we just took the tools we already used.*" C1: "*In the case we needed to collaborate..we did a five minute chat about which alternatives do we have, which is best [...] just the technical people [...] the ones that had to work with the tools*" Interviewer: "*Do you collaborate with your colleagues for taking these decisions or is it just you?"*C2: *"No, I think I'm a dictator in that sense"* C3*: "usually at least I just take the decision on my own but I usually consulted one of the other, like, founders, or all of them, depending a little bit on what kind of system it is."* C4: "*Yeah, we have a lots of conversations in our company, so with all the employees about how the system should work."* Interviewer: "*Okay. Yeah! So for the in-house developed system, all the employees were involved in the process?"* C4: *"Not all of them but most of them"*

12	Internal IT Expertise	C1: *"the software is open source, because we have knowledge to modify it if we need to"* C2*:"So I'm perhaps not a normal user, I'm more computer experienced than the average person..so I.. and I don't hire consultants.. to get the right software for me"* C3*: "..I first heard of them in some broadcast or something.."* C3: *"So meanwhile the developers are evaluating now to see what we can do with it"* Interviewer: *"And do you all have technical expertise or mixed?"* C3: *"No, mixed. So eh we have two people, are.. who only work with technology. And then we are two people working more with business development"* Interviewer: *"And I assume that you already had the people with technical skills in the company and at that time? Or did you hire people for that?"* C4: *"That's myself."* C4: *"[…] I have an idea what it should do and then we try them out, and yeah we look for what's best […]"* C4: *"No it was a decision of our directors and the guy that does all the requirements for us."*
13	Consultancy for custom made software	C2: *"collaboration, and interaction and iteration...it was not a formal work really that we had a long list of detailed specifications that must be fulfilled...it was just a talk over a cup of coffee"* *C2: "You should have this one and then I tested the first version...and gave feedback.. so it's quite an informal way really"*
Entrepreneur License Knowledge		
14	None	C1: *"Ehm no"* C2: *"No"* C3: *"nope"* C4: *"Ehm no."*
Acquisition Approach		
15	Why they pay for software	<u>Getting support</u> C2: *"I prefer to pay for something so I know it will work and they will have support for it...I have a feeling that if I pay for something, I can phone them or contact them and demand them to solve the problem..."* C3: "*so I think we would most likely use a paid software for something at least that would be updated and that we would have support whenever needed and stuff like that so"* <u>No free option</u>

		C3: *"Eh because I haven't found any other good one that is for free."* <u>Pay-Per-Use</u> C2: *"so I like the way that [...] they invoice per user, not as a business package"* C3: *"that it's flexible,.. we didn't pay any upfront costs so it's only pay-per-use basically"* C3: *"Which is good for us to have I mean we can pretty much decide for our own price so.."*
16	Quality comes first and then money	C1: *"the reason not to buy software, it's not the price..not the licensing...it's more like we don't like the software, it's harder for us to work with"* C2: *"..but it's not really the money that...a couple of thousand euros, in the end it doesn't really make a difference"* C3*: "I think if I had one that costs 15 dollars a month and one that is free, I would probably choose the one that is best value and not the one that is free"* C4: *"Ehm that it meets all our requirements, that's the most important thing, and also the price."*
17	Software Budget Planning	C1:*"We don't have any money to buy premium products."* C2: *"I mean the actual costs is not that much regarding what other things cost in the company"* C3: *"Eh not much"* C4: *"Very low actually."*
18	Custom Made Software	C2: *"I have specialized software .. for my instrumentation..perhaps three or four very specialized software applications"* Interviewer: *"Have you considered other alternatives for […]?"* C4: *"Yeah we did. But they were all way too expensive and they didn't match with our with what you wanted to do with it. So we decided to build it ourselves."*
19	Why use open source	C1: *"because we know that we can grow with it, and we know that we can make the modifications"* C1: *"We will never be forced to upgrade, and have costly upgrades"*
20	Why they choose not to pay	Interviewer: *"Okay and is there a specific reason why you chose a freeware for communication purposes, instead of a paid software?"* C3: *"Yeah, budget wise of course"* C4: *"Ehm. It just does just what the products needs to do, and it's free so.."*
Future plans for software acquisition		
21	No plans	C1: *"No"* C2: *"Hmm.. no, not really"* C4: *"Ehm not at this moment."*

22	Yes	C3:*"yeah we probably will, I think we will revalue.. quite a few things..we probably come up with a few other things as well as soon as we scale up.."*
23	How the decision will be made	C1: *"standardized software...some common that everybody uses"* C2: *"Perhaps, interviews with some colleagues around the.. the coffee breaks ..not.. do a formal request on another company that do the service"* C3: *" I will probably have a chat with the developers to see what works with our technology and what doesn't...but it would probably be to have a chat here."* C4: *" Yeah.. then we just need first, yeah, what do we need as software, and we first would look if we can build it inside […], because all a package is more effective."*
Other Future Suggestions / What do start-up need		
24	More open source	C1: *"..they can be open source...the software we need to use as a start-up need to be it, because we need the freedom."*
25	More flexible licensing	C2: *"for some software eh providers, that is a big jump, both in numbers of users and in terms of money. So it should be a more gradual increase, so I like the way that... they invoice per user, not as a business package ... so a gradual scale"* C4: *"Yeah I think the pricing model […] I think, just a plan for one company in total, and not for how many people are using it inside the company."*
26	More functionalities from the start and then pay as you go	C3: *"it's probably better to sort of, instead make it really good from the beginning but then we have to pay more the more users we have…and then sort of I pay whenever I need to scale it up and stuff...more functionalities from the start"* C3*: "So they give us.. they give us sort of an easy way to start off the program but it's also.. it's very limited in functionality and it.. everything looks pretty ugly for the user or for the one that sends the mail to us eh and I think so you sort of have to pay a lot to don't get that"*
27	Easier integration	C3: *"some of the software applications could be.. could have easier integrations or automatic integrations from the beginning. Even though a lot of them now have good APIs eh so that you can work together, it would be nice to standard.. or if they could bundle up a package..If you could get that in one package that would be pretty cool.."*
28	Better communication about software requirements	C4: *"I would think in the way of communicating to the start-ups they could improve a lot "* Interviewer: *"So communicating functionalities of the software?"* C4: *"Yeah, indeed."* C4: *"Yeah, Maybe a good place to compare all the software, in terms of functionality and prices."*

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