Defining the Process of Acquiring Product Software Firms

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Abstract. Product software companies increasingly seek expansion by means of acquiring software products. For product software firms, the process of an acquisition is complex and challenging because acquisitions require complex processes, business risk, and life-changing decisions. The determinants that influence such acquisition decisions are rarely investigated. Prior research has focused on software acquisitions, but has not focused on software acquisition determinants during an acquisition process. In this study, the product software acquisition process has been defined and the determinants have been identified. Experts evaluated and assessed the acquisition determinants and the acquisition process, in order to find a critical determinant for each respective phase. Finally, a model is presented in which the most critical determinants are presented in the different phases of the acquisition process. The results provide an exploratory set of guidelines that help managers at product software companies through the complex processes of acquisitions in the product software industry.

Keywords: product software industry, software acquisitions, software acquisition determinants, portfolio extension, product software acquisition process.

1 Introduction

Mergers and acquisitions characterize the software industry. It is an industry that is consolidating continuously. Advantages of economies of scale, combinatorial sales, and strategic alignment of niche players in ecosystems of large software companies are some of the drivers of this consolidation. In this context the term acquisition refers to the situation where a company buys another company or a set of software product assets of a company, not the purchase of software products from software suppliers for operational use. Sometimes a company is built around one software product. During the acquisition of such a software product this leads to the takeover of the entire company. In general this paper focuses on the acquisition of a software product as an asset. Acquisitions are complex processes [7,12,19], where attention should be paid to different aspects. In the product software industry, attention should be paid to product software related

aspects besides financial, economical, political and legal issues. Software acquisition determinants are factors that are used by decision makers to decide whether an acquisition will proceed. These factors are rarely researched, although they are the determining factors for the process of software acquisition and for the success of such a project. On average, in the worldwide economy, about 20% of the mergers and acquisitions succeed [6], however, to our best knowledge, the ratio for the software industry is not yet documented. There is little scientific literature available about the process of acquisitions in the product software industry, which is remarkable because the industry is flourishing and the number of mergers and acquisitions is increasing: in 2012, the number of announced software M&A deals worldwide was approximately 1900, while in 2009 the amount was 1500 [22].

This study attempts to fill the gap in the body of knowledge concerning both the process of acquisitions in the product software industry, and the software aspects that are related to an acquisition. There are few studies focusing on acquiring software products from software vendors and on software quality assessment, but not specifically on product software acquisitions. The immature research that is done regarding product software acquisitions can therefore be identified as a gap in the body of knowledge, which this study starts to fill by defining the product software acquisition process, and identifying the most critical product software acquisition determinants that influence decisions during the complex process of software acquisitions. The results of this study can be used to help improve the understanding of acquisitions in the product software business.

This paper is structured as follows: we continue the discussion of related literature in Section 2 and highlight how and why the product software industry differs from other industries. In Section 3 the research method is described, including a detailed discussion of the interview process with eight European and American acquisition experts. In Section 4 the product software acquisition process is defined, based upon interviews and literature. The product software acquisition process can be considered as one of the key contributions of this paper. Section 5 highlights the product software acquisition determinants and the weights that they were assigned by the experts in the different phases of the acquisition process. We continue Section 6 with a discussion of the results and identify the weaknesses of the research. Finally, in Section 7 we conclude that the process and weighted determinants contribute to the body of knowledge on product software acquisition and expect that acquirers of software companies are helped by the insights provided in this paper.

2   Related Literature

The collection of scientific work on mergers and acquisitions is diverse, but the specific focus on software acquisitions - or mergers has not yet received a lot of attention. Best practices and standards from the ISO/IEC and the IEEE discuss software acquisition: the ISO/IEC 25040 [10] standard provides approaches for

measurement and evaluation of software product quality. It is appropriate for acquirers, but does not give a clear overview of the process and the determinants. Another standard, developed in 1993, is the Recommended Practice for Software Acquisition, IEEE Standard 1062 [8]. It presents a set of recommended practices which can be applied on different types of software. The focus is on the software itself, not on the process and its associated determinants. An updated version of the IEEE Standard 1062 [8] is the IEEE Project P1062 [9]. It is a project containing best practices that help and support organizations to make a selection, evaluation and eventually help accepting supplier software for operational use. Furthermore, Nelson, Richmond and Seidman [14] developed a decision framework for a two-dimensional problem that they call the software acquisition problem. Although these related sources might be useful during the acquisition of a product software firm or software assets of a firm, they are too specifically focused on the acquisition of software packages from vendors for operational use, instead of actually acquiring specific software assets. Related work that lies more in line with this study is coming from The Software Improvement Group (SIG) [20], which conducted research on due diligence in the software industry. Nonetheless, the SIG does not cover the acquisition process. Related work that does relates to multiple aspects of this study is work of Popp [17]. Popp identified a software acquisition process, which is used to develop the acquisition process for this paper. Work of Popp [17] was found very useful and discusses software due diligence very extensively.

The product software industry differs from other traditional industries in various ways, which results in fairly complex acquisitions in the product software industry. Related work from Popp [17] shows that software ecosystems are self-organizing, something that makes predictions about the software industry complicated [17]. Software companies are often part of one or more software ecosystems, resulting in difficult predictions about the acquisition environment. Furthermore, when a software product is finished, the development of hundred or thousand of the same products costs almost the same, in other words "the cost of duplicating a software product is nearly zero" [21]. There is no other business that has a gross profit margin of 99 percent. Traditional manufacturing firms, where products are tangible, duplicating products is costly. The low cost of duplicating a software product results in a difficult determination of a software firms value, therefore making software acquisitions complex. Furthermore, according to Beizer [1] software is complex, hard to build and has no physical barriers. He notes that software strategies are often based upon assumptions that software will behave sensibly. Since the behavior of software is not comparable with physical objects, software is different from physical objects, and therefore the product software industry differs from other regular industries. Moreover, Popp [18] notes that the product software business has a high importance of workforce quality due to low automation in production. It originates from a statement that Nowak and Grantham [15] make: *The knowledge encapsulated in software will increasingly define the economic value of the intellectual capital it represents.* Software is built from human capital, which requires knowledge and

communication, thus there is less need of natural resources and physical labor. This makes the production process in the software industry difficult to automate and results in a high importance of workforce quality, therefore differentiating itself from several other industries. Furthermore, in most cases the vendor of product software retains ownership of the software product when the product is sold [25], opposed to for example manufacturing industries. Also, software often consists of multiple modules, developed by multiple firms, resulting in ownership issues. A consequence is a strong role of intellectual property rights in the product software business [18]. In addition, the diverse range of business, revenue and delivery models raise challenges in the area of finance and taxation.

All the above mentioned differentiators result in the need for a restructured view on acquisitions in the software industry, since these differentiators combined give a good view on how the product software industry differs from other industries and how some aspects make the industry quite complex.

3   Method

The empirical part of this study aimed at prioritizing critical determinants in the different phases of the product software acquisition process, which is described in Section 4. In order to do so, the 6-phase design science method has been used [3]. This method consists of a 6-phase process, in which a test artifact is created, evaluated and eventually finalized into a model. A prerequisite for collecting data for this study was a clear definition of the product software acquisition process and an initial list of critical determinants. A literature study was conducted to define the steps and activities of the product software acquisition process. The initial list of critical determinants has been based upon literature as well as on preliminary expert interviews. These critical determinants are particularly related to software acquisitions with portfolio extension associated incentives. Acquisitions with market consolidation related incentives probably have other determinants, and are outside the scope of this study. To evaluate the correctness, accuracy, and validity of the determinants and the process, an expert evaluation in the form of semi-structured interviews was performed. The main part of the study consisted of a cross-evaluation of the model by eight experts.

3.1   Experts

In total, eight experts have contributed to this study by participating in semi-structured interviews. We defined an expert as someone who had been involved in several software acquisitions, in which the expert fulfilled an advisory or decisive role. These experts have been carefully selected based upon experiential and educational relevance: they were working or had worked at different sizes of software business related companies and institutions, and most of them have been graduated in the field of finance, economics or a technology related study. All together, the experts had been involved in more than 250 software related acquisitions, and in total have more than 50 years of experience in the field

of mergers and acquisitions. More information about each expert has been presented in Table 1. The experts fulfilled several roles during these acquisitions, from Lead Advisor (LA) to Leading Due Diligence (LDD), and from Lead Director (LD) to activities regarding Post Merger Integration (PMI). They were involved in deals with for example Sybase, Hybris, Technidata, Twinfield, Addison, FRS Global, Google, Microsoft, Intel, Symnatec. The name on the bottom row is confidential and therefore a generic descriptive term (Leading Electronical Equipment Provider) expressed in italics is used. Other confidential information is indicated with a hyphen (-).

Table 1. The current function and company of the involved experts in this study

Company	Current function	Role during M&A's	# of acquisitions
SAP	Senior Director M&A	LDD & PMI	25
SoftwareAG	Director M&A	LA	-
ISVWorld	Founder & CEO	LA	80
Accountview	CEO	LDD	6
Corum Group	President	LA	100+
Atego Group	President Strategy	LD	30
Arma Partners	Associate	LDD	8
LEEP	Senior advisor M&A	LA & PMI	5

3.2   Materials

In the phase prior to the data collection, Microsoft Excel has been used to share the initial list of determinants with the experts. The interviews used for data collection have been recorded with a smartphone audio recorder and a program called Skype Call Recorder, which has the capability to record both the video and audio of a Skype call. During the interviews, the model was presented to the expert in a spreadsheet of the on-line collaboration service from Google, called Google Drive. This particular software offered the possibility for us to work in the same document as the expert simultaneously. Seven of the interviews have been performed via Skype, and one interview has been performed via a landline telephone.

3.3   Protocol

The evaluation of the correctness of the initial list of determinants was performed by two experts, who received the Excel-spreadsheet via email. When the experts finished their evaluation of the process and the list of determinants, they returned

the Excel-file via e-mail. During a Skype-conversation, the comments were discussed and processed. Based on these preliminary results a selection was made of 20 determinants which were used in data-collection-phase. The data-collection-phase of the study involved the participation of eight experts in interviews that lasted for 50 minutes on average, with the shortest interview being around 30 minutes and the longest interviews about 90 minutes. The interviews consisted of three parts: firstly, the expert received an introduction about the study and the purpose of the interview. Then some questions were asked to create a context of the experts experience and education. Thirdly, participants received an on-line spreadsheet, in which the test model was depicted and described. Before starting the actual data collection, the on-line spreadsheet was exemplified to the expert. The participant was asked if he was missing any relevant determinants and understood the present determinants. In addition, the expert was asked if he understood and agreed upon the defined acquisition process depicted in the spreadsheet. Eight experts were requested to rate the determinants for each phase of the acquisition process, from 0 to 10, whereby 0 would refer to not taken in consideration and 10 would refer to highly critical. The experts were asked to think aloud while filling in the spreadsheet, and to argument and motivate their choices. The conversations have been recorded and anonymously transcribed for later analysis. When experts were missing certain determinants in their opinion, there was the possibility to add them and rank them accordingly. If such a change was made to the test model, afterwards the determinant was taken into consideration and possibly added to the test model. This has led to an incremental and iterative growth of the model. When a determinant was added after an expert had participated in the study, the expert was requested to evaluate and rate the new determinants in the same on-line spreadsheet. This was done to assure that all experts reviewed all determinants, thereby cross-evaluating the model. The readability of the model was improved by splitting the determinants in two groups: software product properties and business environment properties.

4   Product Software Acquisitions

An incentive for acquisitions is growth [4], because at the end of the day a company only wants to increase its value [2,13]. Synergistic benefits are incentives as well [4,13,2,24]. Other incentives are diversification of a companys products [4] and expanding the product portfolio [17]. An incentive that belongs to a more long-term strategy is to seek for early winners. Potential successful companies that deliver products with possibly high values are called early winners [11]. When an acquirer recognizes potential growth, long before others do, the acquirer can make an acquisition at a relatively reasonable price and gain advantage of the acquisition later [4,24,11]. Another incentive is to buy a company for gaining knowhow advantages and skills. This includes acquiring technologies faster and at lower cost than they can be built by the acquirer itself. It results in low development costs, the risk of building a bad solution will be avoided and the knowhow of the R&D department is improved. In addition, there will be a

faster innovation of products by continuously buying new emerging ideas [4,11]. One or more of these incentives will eventually lead a company to identifying possible acquisition targets, which is the first phase of the acquisition process. This process will be discussed in the next paragraph. As Gomes et al. [5] describe, there is no clear defined consensus of the phases of a merger & acquisition process. This is the result of the possibility to perform different aspects of an acquisition simultaneously [5].

Because phases can overlap, Gomes et al. [5] eventually try to sketch three separated phases: pre-merger, ownership transfer, and post-merger. In order to define a new software acquisition process, several kinds of acquisition processes that are described in literature [16,23,17] have been combined to create an product software acquisition process that we think gives the best representation of an actual acquisition. The process is presented in Figure 1.
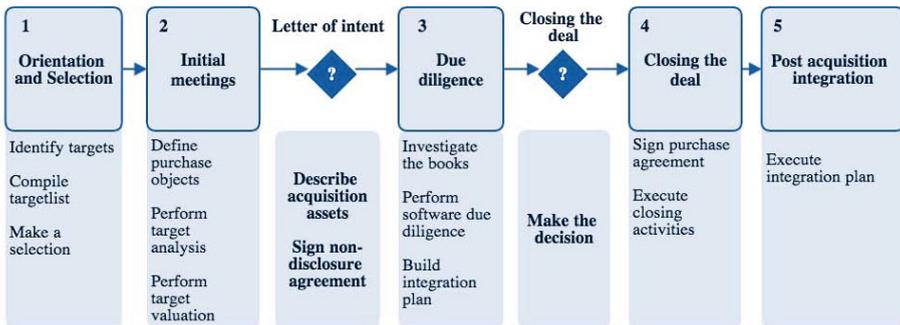
Fig. 1. The product software acquisition process, consisting of five phases, identified from literature and expert evaluation

Phase 1 of the acquisition consists of identifying possible targets, compiling a target list and making a selection. An analysis of alternatives should be made by the acquirer. When a selection has been made, the acquirer should approach the possible target and start initial meetings. During phase 2, the various objects of the purchase will be defined based upon several initial meetings that have taken place. The acquirer has to make a target analysis and do a target valuation, activities that can be performed simultaneously. If the negotiations between the firms are progressing well and the acquirer is satisfied with the result of the target analysis during phase 2, a letter of intent has to be sent to the target. In this letter the objects of the acquisition are further described, including all the contingencies associated with those items [16]. In this letter of intent the two firms agree on a non-disclosure agreement and confirm that they proceed to the following phase of the acquisition process. In phase 3 due diligence activities will take place. Popp [17] notes that the goal of due diligence activities is the ability for the acquirer to make an informed decision about whether to continue.

Besides normal due diligence, the Software Improvement Group [20] states that *software due diligence provides insight into the costs and risks that impact the future of the software investment*, and therefore it indicates important issues when doing software specific due diligence. These issues can be found in documents of the Software Improvement Group [20] and need to be considered when going through the due diligence phase. Furthermore, Popp [17] states that intellectual property due diligence is an important part of software due diligence and needs to be done to *safeguard the existing business of the target, future business and to safeguard that the target really owns their software products.* Paulson [16] and Popp [17] both state that constructing an integration plan during due diligence is crucial for the success of an acquisition in the software business. When the due diligence process is finished the acquirer must decide to continue or stop the acquisition process. This is an important go/no go decision, as a negative outcome ends the whole acquisition. By signing the definitive agreement in phase 4, the deal will be closed [16,17]. This agreement contains several terms and conditions that the buyer and seller will eventually have to agree on. Subsequently, the acquisition price must be defined [16,23]. Both parties need to agree on the integration plan and execute closing activities. The closing conditions must be met before the deal can be closed. When both parties agree on the agreement and the deal is closed, the post acquisition stage is entered. During the post acquisition stage phase 5 - the integration plan is further executed to make effective use of the acquired technology. Depending on the incentive of the acquirer the acquired company is now adapted and aligned to the needs of the acquiring company. This is done by combining or adapting different software structures, solving managerial and cultural issues, directing the orientation and interaction of new employees, implementing procedures and techniques, and arranging any remaining legal problems [23]. Paulson [16] mentions that underestimating the pitfalls in this stage can lead to making serious mistakes.

Acquisition Determinants. The main deliverable of this study is a model that describes the most critical determinants of a software product during the different phases of an acquisition process. As there currently is no definition of product software acquisition determinants, we defined product software acquisition determinants as: *Software product and software business environment related characteristics that exert influence on the decisions that are being made regarding the takeover of product software assets or firms.* Risk factors of an acquisition might incorrectly be considered as product software acquisition determinants, but are not incorporated in this definition. Risks are not a driving factor in acquisitions; rather the outlook to get rid of some risks might be in some case. The initial list of critical determinants has been based upon a literature study as well as on expert knowledge, as described in the method part of this paper. The final list of determinants is constructed as follows:

- **Product Technology:** Describes the technology that is used in a software product, including platforms, standards and operating systems.

- **Source Code Quality:** The quality of the source code, which substantially determines the performance of a software product.
- **Total R&D Investment:** Refers to the relative ratio between research and development investments and the products current value.
- **Business Model:** Describes the strategies and models with which a company attempts to create value.
- **License Model:** The methods and strategies that a company uses for licensing.
- **Profit Margin:** Describe the ratio of profitability, which gives insight in which of the revenues turn into profits.
- **Payment Model:** A companys payment model determines when and what customers pay for the service or product.
- **Key Cost Drivers:** The cost drivers that use most of the companys resources. They give insight in the financial situation of a company or a product.
- **Asking Price:** The initial negotiation price the target firm asks is the asking price.
- **Percentage of Recurring Revenue:** Refers to the revenue that is recurring in a financial year, compared to the total revenue. Recurring revenue often is steady revenue.
- **Revenue Synergies:** Revenue synergies describe the increase of revenue of a company as a result of combining two or more businesses.
- **Cost Synergies:** Describe the extent to which a company can eliminate costs throughout the organization as a result of combining two or more businesses.
- **Market Share:** Describes the percentage of an industrys total sales that is collected by a software firm in a certain time frame. Software firms can achieve a high market share, without actually provide a large part of the users in the industry with their software. If the total of an industrys sales was very low, a high market share does not imply a large user base.
- **Product's Potential Customers:** Describes the potential customer group of the product that is to be acquired. The potential customers can deliver critical information about the potential results of the product.
- **Installed Base:** Refers to the share of customers within a certain industry that are currently owning or actively running the product. A high market share does not imply a large installed base.
- **Intellectual Property Rights:** Intellectual property rights allow creators to protect their ideas and creations.
- **Cost of Mandatory Future Upgrades:** Refers to the projected expenses of future maintenance.
- **Portfolio Fit:** Describes whether the software product that is to be acquired fits in the current portfolio, to a technological and strategic extent.
- **Available Alternatives:** Refers to the existence of alternatives for a particular target product.
- **Key Employee Retention:** Key employees have extensive knowledge of the software and this knowledge about the product makes them valuable

for the acquirer. Retention of employees makes updating and managing the product more efficient.

- **Company Culture:** Describes the conflicting company cultures. Race, hierarchy, beliefs and design culture are examples of conflict topics.
- **Employee Integration:** Describes the difficulty and possibility of the integration of employees into the acquiring company.
- **Cooperation Partners:** Describes the extent to which the target has outsourced the development activities and other processes.
- **Support Model:** Contains the existing collection of support activities the target company currently delivers, to keep the product running as advertised.
- **Services:** Describes the activities of the target company that are performed on top of support activities. Supplementary courses and training programmes are examples of services.

To avoid ambiguity regarding the meaning of a determinant, each factor has been described in the abovementioned list. Each determinant individually exerts influence on the decision-making during an acquisition, and therefore each determinant should be analyzed, guided by the description in the list above.

5   Results

In Table 2 the results of the interviews have been combined. The table shows all determinants, including the following determinants that have been added during the data collection: percentage of recurring revenue, revenue synergies, cost synergies, company culture and employee integration. As mentioned in the method section, all determinants have been cross-evaluated by all experts to ensure the validity of the results. The determinants have been weighted by importance from 0 to 10. Each weight in Table 2 is the average weight of all weights that have been given for that determinant in the associated phase. As stated, the numbers in the cells are based upon the average of the ratings that the experts gave to each determinant, for each phase.

In the first phase Business Model was rated an 8,63, thereby being the highest weighted determinant in its phase. Asking Price received an average weight of 8,13 in the second phase. Intellectual Property Rights was rated a 9,00 in the third phase, and the fourth phase had a relative high weight for Key Employee Retention with 7,38. An average weight of 8,88 was given to Revenue Synergies and Employee Integration in the fifth phase. Table 3 presents the answer to the incentive of this study, by indicating the most critical software acquisition determinants of each phase of the acquisition process.

Business Model was perceived as most critical determinant of phase 1, as many experts noted that it is counterproductive to transform an on-premise based business model to a SaaS business or the other way around. Therefore, this determinant might have a large influence on the process of selection in the first phase. The high weight of Portfolio Fit in the first phase suggests that it is a critical determinant during the selection of potential targets. Experts noted

Table 2. The weights of product software acquisition determinants in each phase, given by eight experts

Phase	1	2	3	4	5
Software product properties					
Product Technology	6.75	7.00	7.38	2.63	5.63
Source Code Quality	1.63	2.50	8.25	4.00	4.88
Total R&D Investment	4.38	5.13	5.63	2.63	3.13
Business Model	8.63	6.38	6.25	1.75	5.88
License Model	3.00	3.75	3.88	1.63	3.88
Profit Margin	4.88	4.13	6.25	2.75	4.63
Payment Model	1.63	3.25	3.25	1.25	4.13
Key Cost Drivers	1.88	3.50	6.88	2.13	5.63
Asking Price	4.75	8.13	3.88	5.38	1.38
Percentage of Recurring Revenue	6.25	6.50	7.13	4.00	5.13
Revenue Synergies	3.63	6.63	6.25	4.63	8.88
Cost Synergies	2.25	4.00	5.13	4.50	7.38
Market Share	6.75	5.38	3.63	2.50	4.00
Product's Potential Customers	7.38	5.13	5.75	2.50	5.13
Installed Base	7.13	5.13	6.25	3.75	4.88
Intellectual Property Rights	6.25	5.75	9.00	7.25	4.88
Cost of Mandatory Future Upgrades	2.13	3.75	6.25	2.50	5.00
Business environment properties					
Portfolio Fit	7.50	7.50	4.25	3.00	5.88
Available Alternatives	7.38	4.13	2.50	3.25	0.13
Key Employee Retention	1.50	3.25	6.38	7.38	8.13
Company Culture	3.00	5.00	6.50	3.75	7.75
Employee Integration	0.75	2.63	4.63	2.88	8.88
Cooperation Partners	2.50	4.50	5.38	3.25	5.38
Support Model	2.38	3.63	3.50	1.75	5.63
Services	3.88	2.88	4.50	1.63	4.75

that firms that want to acquire search for companies that have products that match the product portfolio, and often base decisions upon this determinant. Products Potential Customers also received a high weight during the first phase, which suggests the potential customers of a target company or product are of importance when selecting a target. Due to the fact that the acquirer can sell already existing products to a network of potential customers, distribution synergies are achieved. Surprisingly, the determinant with the highest weight in the phase of initial meetings was Asking Price, what might seem early on in the process. Experts clarified the high weight of the determinant: if the target firm has an initial asking price that is too high in the eyes of the acquirer, then the process will probably stop after one meeting. We find a lower weight of Asking Price in the due diligence phase, but an increased weight in the closing phase. Negotiations about the price might push the weight of this determinant up in the closing phase. Product Technology also received a high weight in the second phase. If an acquirer has built every product on Java, and the target company

Table 3. The most critical software acquisition determinants

	#1	#2	#3
Phase 1	Business Model (8.63)	Portfolio Fit (7.50)	Product's Potential Customers (7.38) & Available Alternatives (7.38)
Phase 2	Asking Price (8.13)	Portfolio Fit (7.50)	Product Technology (7.00)
Phase 3	Intellectual Property Rights (9.00)	Source Code Quality (8.25)	Product Technology (7.38)
Phase 4	Key Employee Retention (7.38)	Intellectual Property Right (7.25)	Asking Price (5.38)
Phase 5	Revenue Synergies (8.88) & Employee Integration (8.88)	Key Employee Retention (8.13)	Company Culture (7.75)

has built everything on .NET, then that could cause severe integration problems and costs. Experts referred to this problem as oil and water, not only being a product challenge in terms of integrating things but also a cultural challenge to the extent that attitudes towards standards and platforms may differ between employees of both companies. The due diligence phase did not yield surprising results, as highest-weight determinants are related to software quality and intellectual property. One expert surprisingly mentioned that Source Code Quality was not critical since the cost of deeply investigating the source code would not outweigh the added weight of the acquisition. Opposed to this expert, the other experts mentioned that software due diligence is a critical activity of the acquisition process, in which the source code quality deserves a main focus. The findings for the fourth phase support the related work from Nowak and Grantham [15] who state that software is build from knowledge, which requires human capital and communication. They argue that human capital is valuable in software. The determinant Key Employee Retention received a high rating in the fourth phase of the acquisition process, most likely since employees know all the ins and outs of a product or company, making them valuable assets of a company and therefore need to be retained as long as possible, according to the experts. Retention of key employees is done in the closing phase, since contracts are signed in this phase. As expected, Asking Price and Intellectual Property Rights are in the top three of critical determinants for this phase. The last phase contains two determinants with the highest identical weight: Employee Integration and Revenue Synergies. Experts mentioned integrating the retained employees is even more important than only retaining them, since retained employees that are not being integrated well, will leave the company sooner. According to the experts, Company Culture plays a significant role when trying to integrate employees into the acquirers firm, and therefore received a high weight in the integration phase.

6   Discussion

Firstly, the possibility exists that economical changes in this industry can cause the acquisition process to change, and technological changes can cause a shift in perceived importance of certain software acquisition determinants. This might lead to different results when conducting the same study again. These influencing factors are circumstances beyond our control. Secondly, the use of different experts plays an important role to improve the reliability of this study and attempting to avoid skewed results. Further, in order to preserve validity, each determinant was clearly defined in a note that was attached to each item in the list. Biases might have been avoided using experts from different industries, with different backgrounds and educations. However, experts in the domain of acquisitions in the product software industry are scarce and a larger sample group might have yielded enough data to perform statistical analysis/quantitative research. A limitation might have been caused by possible pressure that the expert perceived during the interviews. The interviewers could have influenced the attitude and the behavior of experts, as experts could have had the idea that they had to conform to certain expectations. In the attempt to eliminate this limitation, the interviewees were told the data was completely anonymous, in order not to build the pressure. In addition, experts were told to think aloud while evaluating the model, and were not guided by the interviewers when filling in the weights. Despite these efforts to overcome this limitation, it is not entirely negligible, as human beings cannot be entirely objective. Due to the scarceness of experts on this topic in the Netherlands, experts from Germany, England and America participated in this study. Some of the experts had English as a first language, while some of the experts had English as second language. These differences in languages might result in limitations regarding the interpretation of the English and German language.

7   Conclusion

As stated in the introduction of this paper, mergers and acquisitions are very complex activities, where attention should be paid to a variety of different aspects of a company. The findings of this study suggest that software acquisition determinants play a key role during acquisitions in the product software industry. This paper presents the product software acquisition process and the determinants that play a role in the different phases of software acquisition. We expect that acquirers of software companies are helped by the insights provided in this paper, and that the results provide an exploratory set of guidelines that help managers at product software companies through the complex processes of acquisitions in the product software industry. The product software acquisition process and the accompanying determinants are an interesting topic of study, which offers a variety of research challenges. Interesting results could probably be discovered in a study that examines the relation between the size of the company where an expert works, and the rating that is given to each determinant. In

addition, a study that explores statistical correlations or dependencies between determinants might as well be very valuable. It might also be interesting to perform a study on what the results would be if this research focused on market consolidation based acquisitions, as well as what the differences between both types of acquisitions would be.

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