Saimaa University of Applied Sciences
Faculty of Business Administration, Lappeenranta
Business Administration
International Business

Hendrik Wistuba

The Maturity of German Accountancy Actors in SaaS and their Readiness for Automated Integrations

In cooperation with Flashnode Oy

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Abstract

Hendrik Wistuba
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Instructors: Senior Lecturer Jukka Sirkiä, Saimaa University of Applied
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The purpose of this study was to determine the current situation on the German market of automated software integration for SMEs. This analysis contained the benefits and disadvantages of cloud-based applications, their future usage in the small and medium-sized business sector and the key players on the mentioned market. Also the readiness of the respective accountancy actors and their interest and acceptance of a straightforward Flashnode integration was analyzed.

The theoretical foundation for this paper was built upon previous research. This information was gathered from books, scientific articles, reports, blogs and other webpages. Based on that, an empirical study was conducted amongst German accountancy SMEs and software firms providing the sector with business solutions. The interviews were mainly conducted over the telephone.

The results of this study showed a clear difference in the development and the readiness between and within the different groups of market actors. As expected, the German small and medium-sized businesses were not well informed about automated integration and hence did not perceive the benefits of such optimizations. However, the software developers prepared solutions which are quick to implement and were contracting with partners and integrators to be ready when the demand grows.

Keywords: automated software integration, SaaS, XaaS, SMEs, Germany, accountancy, market growth, B2B

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1   Approach and purpose

The German economy has been a constant strong force in Europe over the past decades. For some, a major reason for this success is its unique structure. Three years ago, the Institut für Mittelstandsforschung Bonn determined that more than 55% of the net value added in Germany was generated by small and medium-sized companies. According to the Institute, this sector makes up for more than 99% of all German companies. In total, they accumulate more than a third of the total national revenue. Hence, the enterprises display major economic power and are important actors on the B2B market (Institut für Mittelstandsforschung Bonn 2016.)

Furthermore, small and medium-sized companies employ almost 60% of the German workforce meaning all individual suppliers on the labor market who are subject to social insurance (Institut für Mittelstandsforschung Bonn 2016.)

An SME factbook composed by the Federal Ministry of Economics and Technology of Germany correlates with this information. The authors add that the sector educates 83.2% of all trainees. In this way, the businesses do not only contribute to a low youth unemployment rate of under 8% but also may develop the future drivers of innovation in the German economy. Between 2008 and 2010 over half of the companies contributed to the market on an innovational method showing the progress in their field of expertise. The Ministry also presents a list of reasons for the overall high success of this economic sector. Many companies are still family-owned, i.e. they are either run by the founder or by a relative of his/her. This results in a long-term oriented business philosophy. Not only investment strategies but also all other business relations are planned with a strategic perspective. Approximately 54% of the total investments undertaken by SMEs are backed up with equity. Another example is the human resources policy characterized by supported employee development starting from entry-level positions on (Federal Ministry of Economics and Technology n.d.)

As illustrated in greater detail later, this preference of long-term partnerships is significant when new products or services for the B2B market are broadly established.

As a quick scan of supra-regional newspapers shows, politics and ICT providers are still working on increasing the availability of fast, stable and affordable internet access across the country. In addition, the usage of cloud services is only emerging in Germany (Frankfurter Allgemeine Zeitung, n.d.) (Die Zeit, n.d.). In 2013 BCSG researched the European market for cloud-based B2B services. They interviewed approximately 600 participating companies of different sizes across Europe. Their study takes the same theoretical approach as the previously depicted ones, stating that the owners are strongly connected to their businesses. This closeness becomes visible when observing the average time spent working. The majority of SME owners invest more than 40 hours per week into their business. Still the managers experience deficits in key figures such as the number of customers, available funds, time and organizational support. All of those shortcomings can be diminished with the correct implementation of cloud-based software as described later in this report (Davis 2015.)

This thesis study also crystalizes how significant these benefits are for accountancy firms in Germany and what other benefits may influence the decision about whether or not to apply automated integration.

John Davis and his team also found out that almost two thirds of European SMEs already use cloud-based applications. On average, companies implemented three applications. This reveals that this type of software service is already broadly accepted. Nevertheless, the researchers forecast a strong growth until 2017. By then, the rate of businesses using cloud-based software is estimated to rise to 88%. Those customers would then use seven applications on average. The market may reach maturity within next year. This offers plenty of potential for software developers and integrators (Davis 2015.)

The increasing number of applications which facilitate daily business causes additional administrative overhead. This development provides the opportunity to offer systematical and flexibly adaptable software integration. Software and database integration was previously realized by investing a high effort into manually transferring the respective information or by conducting an expensive and individual integration project (Muurikainen 2016.)

Nowadays, more and more companies develop solutions for automated integration. This thesis study was conducted in cooperation with Flashnode Oy. The company is a Finnish software integrator. They are mainly connecting Software as a Service (SaaS) systems using a flexibly and quickly adaptable service (Flashnode Oy n.d.)

Cloud-based software in general, and SaaS specifically, has various advantages. Most of those advantages are enumerated on the blog of Salesforce.com EMEA. Cloud-based software may increase the flexibility and scalability of a business, facilitate the control about how and where sensitive data is stored and decisively save costs, just to name a few of them (Salesforce UK 2015.) However, there is another twist to it. Cloud-based software applications are significantly faster and easier to integrate. This prerequisite influences the decision of SMEs to integrate essentially.

Another important point is that BCSG confirms the prudent and strategic behavior of small and medium-sized businesses. They state that SMEs are nearly 50 percent more likely to engage in a partnership when a larger corporation is involved (Davis 2015.) This may influence the decision of SMEs whether and with whom to contract.

Specifically for the German SME market, a previous market research was conducted in 2013. The focus was on web shop integration. The study determined four reasons for the strongly varying level of web shop integration usage that could be observed amongst small and medium-sized businesses in Germany and the UK. First of all, the implementation of web shop applications depends on a strong correlation: Larger enterprises are more concerned with using and integrating web shop applications than smaller ones. This also corresponds with the second finding. Companies employ different budgets for software systems. Therefore, they have different budgets for integrating this software. Thirdly, some applications are more difficult to integrate than others. Lastly and possibly most importantly, the actual organizational benefits and easements of software integration are not always transparent to business owners. This, of course, differs from sector to sector and depends on the progressiveness of the organization (Servia 2013.)

Previous studies, like the BCSG market research, determined the implementation of cloud-based applications at that time. Such software in business is already widely accepted, also amongst small and medium-sized enterprises. In general, solutions which facilitate teamwork, IT support and customer relationship management are especially demanded. On-premise applications are currently in use in over 90% of the businesses interviewed by BCSG. Cloud-based solutions, however, are mostly used for marketing and human resources tasks. On the one hand, this depicts a clear difference between the purpose of software in general and the purpose of cloud-based software in particular. On the other hand, the study states that companies are almost equally likely to implement cloud applications over all business functions. The approximate growth is forecasted to be 33% (Davis 2015.)

This thesis study estimates the future usage of cloud-based applications by SMEs. Moreover, the study aims to determine the key players on the market and find possible partners, customers and competitors of Flashnode Oy.

The current literature used in the study relates to the German SMB market in general. The study is limited to accounting and taxation firms. Working together with those companies is the main field of activity and expertise of the cooperating enterprise. This however, does not limit the type of integrable software to any business function, department or sector.

A few concepts can be derived from the literature on the current market environment. The cloud-based Software as a Service (SaaS) market is reaching the state of maturity soon. Software firms refocus away from developing applications. The already marketable solutions will be complemented with niche functions. This process is likely to be accompanied by the implementation of automated integration. So far, no trend towards in-house or contracted integration services can be determined with sufficient certainty. This study partly provides an answer to this by observing the software developers' interest in an integration solution such as the service offered by Flashnode Oy. The just given limitation results from an informational deficit depicted later. As stated above, the number of cloud-based applications will rise. Hence, the adaptability of integration services will increase in order to meet the software portfolios and the requirements of as many companies as possible.

In the following, the methodology of the research is described, the hypotheses are listed and a first outlook on the measured results of the study is given. The focus is following research questions, which form the foundation for the intent and purpose of this study:

- How ready are German accounting and taxation companies for automated cloud-based software integration from the software as a service point of view?
- How high would the overall acceptance of a straightforward, flexible and low-priced Flashnode integration service be?

2 Survey

The survey was conducted between 26 May and 26 August 2016. The interviews were mainly done via telephone and in the German language. In the case of one company, the interviewer talked to a representative of the international department in English. The other answers were individually translated afterwards. Especially amongst software developing enterprises, communication via email is favored. Therefore, some companies asked the interviewer to contact them electronically and/or to interview them via email. However, those answers often lacked details, while telephone conversations were more productive. The missing information could, nevertheless, be retrieved from the companies' websites. As a guidance during the conversations, a personally composed questionnaire was used.

The survey consisted of three parts: Applications, Integration, and Potential. The first part contained questions about the company itself. what kind of software they offer/use, and whether or not their applications are integrated. The middle part of the interviews discussed the possibly existing integration in more detail, for example what is currently supported and how the company integrates at the moment. Likewise, their interest in automated integration was assessed. In the third part of the survey, this interest was investigated further and the interviewees were asked to specify the organization's conception of automated integration, for instance the perceived advantages:

Applications → Integration → Potential

The process of the interviews varied insignificantly between software developers and accountancy companies. To provide a deeper insight on the character of the interviews, the questionnaire for a software developer interview is attached to this report in Appendix 2.

2.1 Hypotheses

As already explained above, the gathered data can veri- or falsify multiple hypotheses. These hypotheses are:

- SMEs are unaware of the connection services available.

- SMEs will increase their usage of software applications in the future.

- Software developers will outsource the integration of their software to partners.

2.2 Samples

As accountancy actors, only firms that offer accounting or taxation services but also companies that supply those firms with the necessary tools and software were considered. In total 29 companies were contacted. The focus was on larger businesses that, estimated by their approximate size, either offer or use integrational services themselves. The most commonly offered product/service by those companies is accounting software incorporating billing and invoicing functions. Regardless of the one-sided selection of contacted enterprises, this combination is required by most SMEs. Many developers also offer additional software applications providing multiple packages. Developers creating different software applications are less common. Keeping in mind that some German small and medium-sized enterprises do not generally engage in e-commerce, it is only logical to assume that the competition amongst accounting software, which is applied by a vast majority of SMEs, is higher.

Firms offering accounting services in Germany are often self-employed entrepreneurs with one office (Exact n.d.) Hence, the number of relevant accounting and taxation firms is relatively low. I also contacted 5 accountancy providers in addition to 24 software developers operating in different fields. A categorization of the enterprises by their main business field yields in the following ratios.

Companies	Interviewed	Contacted
Accountancy firms	1	5
Accounting developers	9	16
eShop developers	2	4
POS developers	1	3
CRM developers	1	1
Total	14	29

Table 1 – Types of companies interviewed

As Table 1 displays, most of the interviewed companies offer accounting software solutions. Many of those enterprises provide software that serves multiple business functions. This is further examined later. At this point, the offered software is briefly described to give a more insightful understanding of the main fields of business. Counting the firms who offer a product for a specific business unit resulted in the following list (multiple statements possible):

- accounting   9
- taxation   6
- CRM   4
- invoicing   3
- human resources   2
- controlling   2
- webshop   2
- POS   2
- others   6

To simplify this list, the differentiable parts of one solution were counted as single applications. This simplification allows to compare smaller software offerings with larger solutions. So, the result was that 13 software firms provide in total 36 applications.

In addition to accounting and taxation applications, the most common software solutions are CRM and invoicing applications. The category Others includes business units for which only one developer at a time explicitly offers an application, e.g. banking or profit center management.

2.3 Measures

As Table 1 illustrates, the most frequent cooperation can be observed amongst accounting software developing enterprises. To allow further evaluation and comparison of percentage ratios, the sample size is, unfortunately, too small. Furthermore, the willingness to participate in a survey cannot be used in the evaluation of the firm's readiness or interest in automated software integration. Nevertheless, an overview based on the personally received feedback during the telephone conversations can be given. Relative to their numerical share of the businesses contacted, software developers are more open and interested than accountancy firms. The early refusals of interview requests, as experienced when contacting Point of Sales software developing companies, could be observed in a similar fashion when contacting enterprises that offer accounting and/or taxation services. The demand side clearly lacks behind in development. Hence, the considerations rely on the data gathered from software developing firms at many points in the following analysis. Especially the interest, or the lack of it, expressed by accounting companies is analyzed below.

3 Analysis

Based on the study described above, the current state of the market is explained together with, the possible future extension of the software and integration service range, the advance of Integration as a Service, and any issues the participants in the study perceive on the market. This analysis should not only close gaps in previous literature but also facilitate the projection of opportunities and challenges a company such as Flashnode Oy could be facing on the German market.

3.1 Key players on the market

For clarification reasons, the meaning of the commonly used term *key player* is discussed here. According to the Cambridge Dictionary (n.d.), a key player is an indispensable natural and/or juridical person in a particular field of activity (Cambridge University Press n.d.) To qualitatively asses the position and approximate importance of a participant on the German cloud software integration market for SMBs, the interviewees were asked to self-assess themselves following these criteria:

1) How active is the firm's partner management?
2) How much does the firm work with existing integrations which can be applied directly *out of the box*?
3) How big is the firm itself?

At this point a few limitations have to be made. All of the answers are, by nature of the question, subjective, i.e. the answers are influenced by various factors including the corporate culture, the personal relationship of the interviewee to his/her company or the recognition of the question as an opportunity to advertise. This list of factors is not absolute but it is sufficient to give an idea of the numerous variables influencing not only those in question but all collected answers from the study.

To return to the above questions, one can claim that number 1, which concerns the partner management activity, is particularly vulnerable to subjective fining. Companies are unlikely to assess their partner management realistically when the result would presumably be perceived negatively.

Another important point is that some information is only revealed to potential partners and customers which is why the openly collected answers are not complete. Questions 2 and 3 serve as examples. Supposedly companies do not reveal the detailed structure of their partner network and the full range of products/services and partnerships they are currently developing.

Nevertheless, in many cases it became possible to validate and supplement the information using the companies' web presences. Based on those criteria, the following companies were classified as key players on the German market for SMEs:

Diamant Software GmbH & Co. KG, OXID eSales AG, Buhl Data Service GmbH, Microsoft Corporation (Microsoft Dynamics), Exact Software Germany GmbH, Datev eG

Diamant Software is the only company interviewed which already is offering a cloud-based software integration service specially designed for SMEs. OXID eSales is able to rely on a broad customer and partner basis which consists of businesses of all sizes. During the interview, Buhl Data Service claimed to be the biggest German software developer which is owned by the founders. Buhl's CTO outlined a 7-figure big customer basis, which, however, largely consists of self-employed entrepreneurs. Hence, Buhl still counts as one of the key players on the software market, although the company representative states that customers who use a single computer for all business matters do not need automated software integration. This statement is only partly correct. On the one hand, no data is shared between employees or devices. On the other hand, even two independent applications could potentially be integrated. This becomes especially apparent when the enterprise is maintaining a web shop or eCommerce system.

Microsoft and Exact are multinational software groups with a separate business unit for software solutions for SMEs (Microsoft Dynamics n.d.) (Exact n.d.) Datev eG is the leading firm for accounting software in Germany (Datev eG, n.d.). A vast majority of the companies interviewed stated to maintain an API especially for the connection to the Datev software. Unfortunately, it was not possible to collect information about the three companies mentioned in this paragraph.

3.2   The trend towards cloud-based software and integration

As already stated above, cloud computing is becoming increasingly important due to a number of advantages. The vast majority of software developing companies are offering cloud-based software. While some organizations provide their software as a service others are only offering a cloud backup service for their customers' data. The current development and percentage share of cloud-based software on today's market is described below.

A rising number of software developers offer cloud-based integration services in addition to their systems as a reaction to their customers. Office May for example is interested in using automated integration for their accounting software applications. However, this firm is an exception amongst accounting and taxation SMEs. The majority of the firms contacted are not interested in receiving information about the currently available integrational services. When contacting enterprises, the interviewer was, in some cases, advised to shift the focus of the study towards a different group of companies because automated integration is perceived to be secondary for accountancy companies. German SMEs do not live up to their reputation as drivers of innovation, as stated earlier. This position is noteworthy as accounting software developing companies have been, in overall, most enthusiastic about automated integration. Here persists an offset between interests.

Software firms are eager to offer a more flexible and adaptable service but only a few already do provide this kind of integration service to their customers, who do not, as depicted above, seem to be interested. Presumably, miscommunication is the reason for this issue. Mediation between technical possibilities and achievable advantages in business is urgently necessary. Only if advantages such as increased efficiency, safer and cheaper data storing and more flexible collaboration within one organization are communicated properly, a new industry-wide standard can be developed. The reason for the position of accounting/taxation enterprises can be described clearly.

As described above, multiple studies have shown that many German small and medium-sized enterprises are family-operated. Therefore, their focus is oriented along proven principles and the firm's performance is controlled with familiar instruments. Furthermore, those organizations are prudent. The philosophy to always orientate business decisions on strategic goals keeps many companies from trying more flexible structures and utilities.

Predictably, many smaller SMEs will decide to invest in automated integration when most connections have been programmed and strong partner networks between developers and integrators have been established. As already indicated above, even "small" integrations of two or three applications can be cost-effective when the connections have advanced to a level at which the necessary, individual adjustments are neglectable.

To return to the eagerness to offer automated software integration, a numerical overview of the enterprises interviewed over the course of the study is presented in the following. Out of the 13 software developing businesses, 12 are already offering some sort of software integration. The company not providing a solution to integrate their software is Buhl Data Service. According to the interviewee, this is not a profitable option for a firm with such a unique customer basis.

At this point it deserves mentioning that the conception of their integrational service varies from company to company. Some put the integration of their system into the hands of their customers by supplying them with an API. Others are ready to implement pre-programmed connections to APIs of their own or of third-party software. While the first group perceives this offer as an integrational service, the latter does not. This shows a clear disagreement between software developers on the nature of the current market standard. Two passive APIs are not sufficient to integrate two applications within one system (Stafford 2012.) A module, or as a module serving connector, is necessary to connect the 2 software applications using their APIs. The developed connections can be adapted to a new system and implemented into the system of another customer. Hence, long-term partnerships are important for software developing enterprises to reduce costs.

One company, OXID eSales, especially emphasized their active partner management with regard to their range of available out of the box connections. Nonetheless, the enterprise is still looking for more partners and possible connections. The firm's representative stated in this context that his company is regardless of their current position looking to offer a flexible integration service as the customer requirements strongly vary.

Solely one business interviewed, Diamant Software GmbH, is offering Integration as a Service to small and medium-sized enterprises. This aligns with the previously depicted concept of SMEs following prudent principles. Many software firms are willing to offer Integration as a Service but do not have developed or contracted such a service yet as the communication of potential advantages for organizations complicates and slows the sales process. The results of the study verify this assumption. Ten out of the 13 firms would be interested to offer a service such as Flashnode's. However, solely one of them is offering a similar service already. Leaving aside Buhl Data Services as they are not interested in offering any kind of integration, this leads to a percentage ratio of approximately 83%. It is almost equivalent to the ratio forecast for cloud-based software usage by European SMEs determined by BCSG for 2017.

To sum up, software developers recognize and react proportionally to the slowly rising demand for automated software integration amongst SMEs. However, no common approach can be clearly crystalized because some developers still pursue a different approach based on an active partner management and numerous integrational projects.

3.3 Applications in use

When examining the characteristics of the software applications currently used by small and medium-sized enterprises in Germany, the focus is put on the software solutions offered by the interviewed developers because the information basis on SMEs is too small to draw significant conclusions. However, a brief description of the applications used by Office May is provided before analyzing the offered software. Office May is an accounting service provider with four employees. When asked what software they currently apply, the firm's representative responded that the company uses mainly Lexware and Sage products complemented by various smaller applications. Both software developers offer modularly constructed, comprehensive solutions (Haufe-Lexware Group n.d.) (Sage One n.d.) The results from interviews with Sage and Lexware are included in the following.

As a service provider, Office May is using both software developed by Lexware or Sage, based on whatever system suits best for the organizations of their customers. It is noteworthy that the products of Sage and Lexware are cloud-based solutions and fall into the category of Software as a Service applications. Office May serves as an example for small and medium-sized enterprises that broadly utilize cloud-based software in the daily occupation.

Based on the interviews and the web presences of the respective businesses or business units, the following table was prepared. As indicated above, also the current state of cloud-based software on the market was examined. Therefore, the table contains a list of the offered software applications by company and a categorization into applications with a cloud service and those without.

Company	Software applications offered	Cloud-based or local applications
SEVENIT GmbH	Accounting, Invoicing, CRM, Logistics	Cloud-based
Diamant Software GmbH & Co. KG	Accounting, Controlling, Profit Center Management	Cloud-based
Agenda Informationssysteme GmbH & Co. KG	Accounting, Taxation, Human Resources	Cloud-based
CVS Ingenieurgesellschaft mbH	Accounting, Taxation, CRM, ERP	Local
FibuNet GmbH	Accounting, Taxation, Controlling	Local
Sage GmbH	Invoicing, CRM/SRM, Accounting, Taxation, Human Resources	Cloud-based
Haufe-Lexware GmbH & Co. KG	Invoicing, Banking, Accounting	Cloud-based
Wieland Direkt Steuerberatergesellschaft mbH	Accounting, Taxation	Cloud-based
xt:commerce	Webshop	-
OXID eSales AG	Webshop B2B/B2C, POS	-
PosBill GmbH	POS	Cloud-based
SugarCRM Inc.	CRM	Cloud-based
Buhl Data Service GmbH	Accounting, Taxation, Offce	Local

Table 2 - Current applications offered

To continue the previous thought, many companies offer in addition to their application a cloud-based service. This service supplements and/or supports the functionalities of the applications. At this point, it must be emphasized again that those services may vary from the possibility to back up the data into a secure, external data storage to a flexible contracting and payment model to provide full adaptable and scalable integration in every situation.

The interviewed enterprises providing web shop software and templates offer by nature of their business sector cloud-based solutions. Excluding Buhl Data Services briefly depicted above, solely two companies do not offer any kind of a flexible cloud solution. Thus, as Table 2 shows, approximately 76% (10/13) of the interviewed software developers provide such a service. The compared surveys are of entirely different qualities. Therefore, presumption that the German market for cloud-based SME software is still going to grow by more than 20% until reaching forecasted maturity in 2017 cannot be clearly and definitely made. Furthermore, no information about the customer numbers of the software developers is available. A few providers could serve most customers on the market. Information about the demand on the SME side to effectively determine the current state of the market was not available.

Another important point is that many companies offer software which supports more than one business function. Sometimes those functionalities are all part of one application. In other cases, developers provide customers with multiple applications. Often those two cases cannot be clearly delimited from one another. For example, some enterprises offer modularly constructed complete software systems presenting the customer with the choice of which modules or applications to demand.

At this point, the current offerings, the functions currently supported by companies' integrational services, certain, yet uncovered functions and the potential they withhold are described.

Before examining the results from the study in detail, it deserves to mention that the way developers handle the integration of their software varies substantially at the moment. Their portfolios of currently supported applications differ alike.

Diamant Software, who are the only interviewed firm providing Integration as a Service, are offering an integration service for every application without limitation. Nevertheless, also other firms claim to provide integration for almost every application. In those cases, they mostly connect passive APIs in integrational projects. One company stated that parts of their integration consists of manual data import and export, which is a rudimentary form of integration. Besides those cases, ERP systems, Billing/Invoicing, and Datev integrations are commonly listed connections. For example, firms usually stated SAP and PayPal as the most frequently offered extensions. Solely two developers offer the integration of all functions of ERP systems. However, many developers integrate multiple functions which could be counted as part of an ERP system. The Datev software was the most commonly named by four companies in total. Another company is currently developing a connection. This makes Datev eG a key player on the market. Two software developers connect billing and invoicing applications to their software.

The responses were highly diverse as the foci are different. Some developers integrate mail clients, time tracking software or human resources software. Others connect online catalogues and web shop software.

As predicted, enterprises are more open to talk about the current possibilities than about points that lack connectivity at the moment. Nine out of the 12 developers which stated they offer integration claimed that no function is missing in their services even though only three firms explained earlier that they offer integration for every kind of application. The remaining three businesses acknowledged that functions or applications are not connected to their software.

The functions currently missing are:

- task management, cloud data storage
- human resources, salary
- POS solutions, eCommerce

Integrators who already maintain partnerships with developers of such software applications have an essential lead over the competition when negotiating further partnerships with German software developers.

3.4 Possible fields of application for cloud-based software

As stated above, the current supply of software applications covers every business function. There is no untapped niche market for software developing enterprises yet left to explore. Even though some developers stated that certain connections are missing others claimed they are able to integrate every application. All in all, every connection is currently covered. However, not every application is cloud-based at the moment, i.e. developed directly for cloud usage and not just cloud compatible. In a commentary on the blog techtarget.com, Tom Nolle (2013) states that future business applications will be directly developed to be sold as a service. This results on the long run in a new standard for software architecture optimized for cloud applications. Once this standard is reached, developers may provide full flexibility in all aspects related to a software system and its usage. According to Jan Stafford (2012), this new type of software alters the challenges of integration. Traditional API development is no longer a sufficient way to integrate an application. This, again, confirms the necessity for specialized integrators who connect different cloud applications.

One part of the study concerns where or how companies would typically apply automated integration. Five of the interviewed software developers would use a service such as Flashnode's to connect their software with ERP software. Many developers added that they would also connect accounting, web shop, CRM or invoicing applications with their system. After ERP applications, many firms would integrate the CRM, web shop and billing solutions. Integrations with banking applications, support software and other marketing applications were less commonly mentioned.

3.5 Connection as a Service

Before examining the study results in detail, I briefly describe other common service models in cloud computing as defined by the National Institute of Standards and Technology of the U.S. Department of Commerce, Figure 1 shows three common service models according to their flexibility and possible implementation: IaaS, PaaS and SaaS. Even though numerous classifications exist, the focus is on those three.
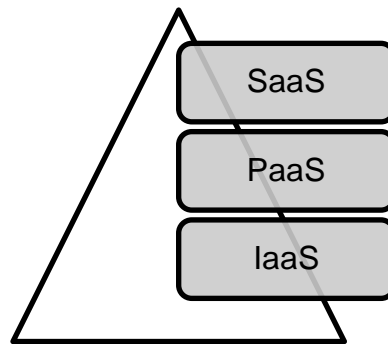

Figure 1 - Cloud service models (NIST 2011)

The most general and underlying service offering concept is Infrastructure as a Service (IaaS). The provider grants his customers access to hardware on which the customers can remotely run whatever software they like. In certain cases, the provider only offers an environment in which the customers can design, develop and operate a web-based service. This is called Platform as a Service (PaaS). By far the largest group of services offered is the customer-oriented model SaaS. To repeat, Software as a Service is the concept of providing user access to a web-/cloud-based application (National Institute of Standards and Technology 2011.) As already said above, SaaS facilitates effectively the development of an integrational connection. However, SaaS also implies disadvantages, which are examined later.

Only one out of the 12 currently integrating developers interviewed for this study is offering Integration as a Service. The company's representative claimed they support the connection of every kind of software application without limitation.

Hence, the firm is not interested in a service such as Flashnode's because they already offer an in-house developed solution. As stated in numbers above, the majority of software developers are interested in such an automated integration service. These enterprises would mainly use it for integrating ERP software or components of such software, including CRM, billing or logistics. They would only contract for such a service at a suitable price if they perceived a number of advantages for their customers and themselves. This suitable price is discussed later as it influences the decision to internally develop or externally contract a solution. The mentioned advantages are numerous and interlink with one another. However, three of the 11 interested companies had difficulties to pinpoint the advantages they expect. Another four businesses aim to outsource their integration to an integrator or intermediary who provides touch points and facilitates the connection. Additionally, they intend to optimize their processes and save time necessary for every integration. Another important advantage is to utilize the partnership with an integrator as a sales argument and therefore win customers. Moreover, the value for existing clients can be enhanced by increasing the possible connections. One CTO pointed out that many integrational services known to him lack functionality. This statement needs to be seen very critically as, presumably a flawed product would quickly disappear from any market. Hence, the actual problem may be a different one. The expectations of the manager are probably set by optimistic marketing and thus differ from the delivered services in matters such as implementation effort. This issue is analyzed more closely below.

3.6 Current issues with cloud applications and their integration

Jan Stafford (2012) describes common problems which occur when integrating SaaS and on-premise applications. Stafford collects those issues in the following list:

- guaranteeing flawless transformation between on-premise and cloud systems
- upholding the same level of security for sensitive data
- matching data with the most suitable type of connection
- managing a comprehensive integration scheme to transmit the right data to the right system avoiding data silos

In short, she isolates four problem areas: capabilities of transformation, security, volume and orchestration. Businesses do not only need to configure their integrational service once when beginning to utilize the connection but also have to monitor and control the accuracy, quality and security of their software integration. Therefore, Stafford says a user-friendly interface to orchestrate this is required (Stafford 2012.)

Stafford (2012) refers to a quote by Benoit Lheureux and argues that software developers should provide the customer with more capabilities to integrate. She states most of the firms have not done so yet. Hence, specialized integrators offering flexible integration currently drive the market. By not offering solutions themselves, the software providers might force SMEs to contract with a third party, which is potentially disadvantageous for the businesses. This argument is examined later.

At this point, the disadvantages of Software as a Service are described as one of them is related to a major issue. Gaebler Ventures (n.d.) lists the following five drawbacks:

- loss of control
- limited applications
- connectivity requirements
- variable functions & features
- slower speed

First of all, businesses only apply cloud applications. As a customer, they do not fully control the used software (Gaebler Ventures n.d.)

Secondly, Gaebler Ventures (n.d.) claims not every business software is available as a cloud-based solution. Thus, SMEs have to apply both on-premise and cloud-based software. This brings additional costs. Thirdly, cloud applications require a stable internet connection at all times. Even though a basic access is available nearly everywhere the speed of the connection might be insufficient for a greater amount of data. Fourthly, Gaebler Ventures advises SMEs to expect slower computing speeds. SaaS might be slower. Nonetheless, the author admits that the difference to a locally hosted software is almost unnoticeable. Lastly but most importantly, SaaS applications often lack features or possibilities to customize the software compared to on-premise software (Gaebler Ventures n.d.)

However, from an integrator's point of view, customizability increases the complexity of connections. Moreover, enterprises use their software adapted to their business processes. Therefore, the systems and their functionalities are sometimes used in an unsual manner. Such specialties complicate and slow the individual integration. As a result, the functionality of an automated integration service expands proportionally with the number of connected partners and customers. In early stages, such a service requires more individual adaptation. This decreases over time because the solutions for previously corrected discrepancies can be reused. As indicated above, one developer claimed that most automated integration services known to him display deficiencies in functionality. Interpreting the statement in this context, it can be stated that the connectors presented to him have been at an early stage in development. His disinterest identifies the company as very conservative and, predictably, they will follow the trend as soon as a service has reached full potential. When searching for partners, integrators have to strategically prioritize software developing firms to not only acquire the most customers but also to drive the development of their own automation.

3.7 Hypotheses and key concepts

Based on the findings above, the following assumptions can be confirmed. As depicted above, BCSG state that the European markets for automated software integration for SMEs is maturing within the next year.

Pointing out the interest of software developers, the validity of this analysis for the German market is confirmed. The current offerings and the overall interest of software developers in cloud applications and automated integration clearly confirms this trend. However, the scope of this study does not suffice to accurately estimate whether the predicted usage of on average seven applications per enterprise will be observable. Nevertheless, German small and medium-sized businesses will expand their current usage of cloud-based software in quality and quantity. The widespread disinterest amongst accounting and taxation companies is only momentary. The demand is expected to grow significantly. This point is further analyzed below.

As examined in detail above, many firms stated that every kind of an application is connected to their system or that only smaller modules are missing. However, they are still interested in offering an integration service. With automated integration, the developers would mainly connect their software to ERP solutions and offer applications with multiple modules. The results show that software companies do not only plan to integrate what they currently do not provide but also broaden the spectrum of their offerings in choice and detail. Hence, this verifies the assumption that software developers are starting to redirect their main focus on the complementation of their system. Software developers will shift from developing applications towards the supply of a more comprehensive service. As a result, automated integration as a part of this complete service is becoming increasingly important and demanded. A closer analysis on whether or not developers will outsource the integration of their software to partners, is presented below.

3.8   In-house development or outsourcing

As already implied above, no trend towards in-house development or outsourcing of automated integration could be definitely determined. Many companies are interested in the offered services and only a few enterprises internally develop a solution. However, only very few businesses requested additional information about the cooperating company. In the following, economic reasoning is applied the decision-making process in software developing organizations as far as this is argumentatively possible.

In the following analysis, I apply neoclassical theory. Both the purchasing SMEs as well as the software developing firms are organizations. In economics, it is not fully reasoned how organizations are ought to be seen. Therefore and for the purpose of simplification, organizations are further regarded as single profit-maximizing entities.

To describe the behavior of SMEs as buyers on the market for automated integration, Ordinal utility theory is applied. To repeat, software developers are profit-maximizing organizations. The decision on whether or not to develop an integration is solely based on the higher, achievable profit. If the profit from offering an externally contracted connection P_E is higher than the profit from selling an in-house developed integration P_H, then the firm will contract such a service.

Before examining the profit function of a developer in the case of a contracted solution more closely, an analysis is provided on the business of developing an integrational service from the perspective of a software developing firm. The profit is the result of revenue minus costs of this venture $P_H(R_H, C_H) = R_H - C_H$.

The connection is sold at a price which increases stepwise with the amount of connections included in the integration. It is assumed that every service is executed on a real-time basis and the service is not limited to a certain number of transactions. Therefore, the revenue R_H depends on the price per connection p, the average number of demanded connections n, the number of sales x and the factor Q. The quality factor incorporates aspects such as the security of the data, the availability and connectivity of the service, and the reputation of the seller. A rational buyer does not qualitatively make a difference between an in-house developed integration and an equal outsourced service. However, BCSG determined that businesses are more likely to engage in a partnership when a major enterprise is involved.

When a customer's utility is indifferent as regards internal or external integration services, Q equals 1. Following the earlier described argumentation by Stafford and Lheureux, SMEs benefit from buying automated integration from software firms directly instead of contracting with an integrator themselves. This claim is supported by the fact that German SMEs are interested in long-term partnerships. Nonetheless, this criterion is also fulfilled when a software company cooperates with integrator(s).

In general, the factor of a software developer is different than the one of an outside integrator. As a result, the revenue function for in-house development is as follows:

$$R_H(p, n, x, Q_H) = p * n * x * Q_H \; ; \text{n} > 0 \; ; \text{Q} > 0$$

The cost of an integration C_H can generally be divided into four parts: development costs D, implementation costs I, maintenance costs M and onboarding costs O. To simplify, it is assumed that the price for one hour of labor is the same for every developer at any time. It is not affected by differences in quality. Consequently, every developer requires the same amount of time to program a fully functional core integration system, to develop the connections from and to the individual applications, and to maintain this system. Hence, the development and the maintenance costs are fixed and equally expensive for every company. The costs of implementation depend on the number of applications that are connected and the difficulty of realizing these connections. In general, they can be described as the number of connected applications m multiplied with the average costs of implementation per connection k or:

$$I(m, k) = m * k \; ; \text{m} > 0 \; ; \text{m} \in \text{N} \; ; \text{k} > 0$$

As illustrated in detail above, the composition of applied software systems and the deviating usage adds an uncommon factor s_j to the onboarding costs. This factor is different for almost every client.

To recognize the exact same pattern is highly unlikely in the beginning but it slowly becomes more likely as the development of the integrational service is complemented. Hence, the individual onboarding costs O_j for customer 1 are expressed with:

$$O_1(o, n, x_{s_1}, s_1) = \left. o * n * s_1 \middle/ (1 + x_{s_1}) \right. ; x_{s_1} \geq 0$$

In sum, the total onboarding costs are calculated with: $O = \sum_{j=1}^{y} O_j$ where y is the number of customers. The total costs of selling an in-house developed integration service include all those addends and are described as:

$$C_H = D + M + I + O$$

$$C_H(D, M, m, k, O) = D + M + m * k + \sum_{j=1}^{y} O_j$$

As a result, the formula for the profit of an in-house developed integration service from the perspective of a software developer P_H is:

$$P_H(p, n, x, Q_H, D, M, m, k, O) = p * n * x * Q_H - D - M - m * k - \sum_{j=1}^{y} O_j$$

In this case, the software developer accounts for all the revenues and costs. This is not the case when a software firm decides to contract an integration. There are many different models of distribution for the costs and the revenues. Which model is applied is negotiated while contracting. In the case of a fully outsourced integration, a software developer solely needs to control the contract and in the case of complaints renegotiate with the integrator. Therefore, the cost function for an externally contracted, integrational service C_E does not contain any of the previous cost categories, only the contracting costs C ($C_E = C$).

Likewise, the revenue is altered. By adding an integration to the current offerings, a software developer increases his current revenue R_0 by an additional amount. This amount is determined by two factors.

One factor is the earlier mentioned quality, security and reliability, Q_E. The other factor r is the percentage of additional revenue obtained by simultaneously offering an integration. Hence:

$$R_E = R_0 * r * Q_E \; ; 0 < r < 1 \; ; Q_E > 0$$

This results in the following profit function for P_E:

$$P_E = R_0 * r * Q_E - C$$

At this point, a close look is taken on two cases. One case when the compared revenues for the software developer are equal and the customers have no preferences in quality towards his or an outside integration and the other case is when the revenues are equal but the customers prefer an in-house developed integration. In the first case, the comparison of the profits can be reduced to the comparison of the costs. When $R_H = R_E$ and no reputation is at stake ($Q_H = Q_E = 1$), then the developer solely considers the costs:

$$P_H \quad \leq or \geq \quad P_E$$

$$D + M + m * k + \sum_{j=1}^{y} O_j \quad \leq or \geq \quad C$$

This reveals that, even though it is possible, it is highly unlikely that the contracting costs are higher than all the costs of establishing and marketing such a service. In other words, an outsourced integration achieving the same goals as an in-house developed service is more profitable and hence preferred by software developers.

In the second case, the software developing company needs to consider the composition of the revenues. When $R_H = R_E$ but $Q_H > Q_E$ then the essential part of the addition revenue $R_0 * r$ is higher than the essential part of the revenue from selling their own service $p * n * x$.

A fundamental issue is whether or not a limited rational profit-maximizing organization values their own positive reputation. Without further discussing this, presumably it does. Inherently, the comparison of the profits P_H and P_E becomes secondary and is replaced by another consideration. To sum up, the return is equal in both cases. The costs are different. The perceived quality is different. Hence, the point is whether the software developers will focus on the cost difference or on the quality difference when making their decision.

$$(R_H - C_H) - (R_E - C_E) \quad \le or \ge \quad (Q_H - Q_E)$$

Another important point to be examined in greater detail is the price per connection because it is a decisive part of the revenue as shown above. In the analysis above, the typical pricing model was mentioned. The characteristics are further analyzed below. Twelve of the interviewed firms were willing to reveal their customers' estimated buying potential. One underlying concept mentioned earlier is the fact that companies apply budgets for software and as a result also for software integration. This means that the prices for SaaS strongly influence the prices for automated integration.

Before analyzing the answers retrieved from software developers, the interviewed accounting firm is described. Office May would use automated integration for their accounting software. As already stated above, they are, amongst others, currently using a Sage application. Sage 50 is designed for 1 to 20 employees and costs between 21.42€ and 47.60€ per month and user when rented as a service. The interviewee indicated that the company is willing to pay up to 50€ for automated integration per month (Sage One n.d.)

This is identical with the amounts most software developers estimated for their customers. At this point, it must be mentioned that the gathered results depend on the size of the developers' customers. However, there is a clear trend. This trend becomes apparent by simply illustrating the absolute frequencies of the answers from software firms.

Table 3 shows the results from the study and the frequency in which they were stated. Table 3 displays that most software developing companies estimate their customer to pay up to 50€ for automated integration every month. Those figures are further analyzed later.

p in €	10	30	50	80	100	1000
H(p)	1	1	6	1	1	1

Table 3 - Absolute frequencies of stated prices

As shown above, the more automated a connection is and the more often the service has been sold, the cheaper it can be offered. As a result, automating an integration service cannot be done whenever there are free resources left. A whole business or business unit needs to be employed with this.

Many of the interviewed software developers provide a passive API to their applications but they do not operate an integrational core system themselves. Therefore, the majority of software companies is inclined to outsource automated integration. Due to the numerous possible combinations, solely implementing an API into an already existing system is overall more efficient than developing an integration system especially for one application or set of applications.

Hence, software firms are interested in offering automated integration. Due to the multiple reasons described above, only a few enterprises engaged in internally developing their own solution. Outsourcing the integration is more preferred but still not widely applied. Based on the companies' keen interest in external integration services, it can be predicted that companies will concentrate on maintaining their developed software. Their partners, specialized integrators, will connect different services.

3.9 The awareness of SMEs about the current supply of integration services

Throughout the paper, the mismatch between the interests of both sides, software supply and demand has repeatedly been described. Based on the little information from the accountancy companies, a disinterest in automated integration could be observed. Presumably, small and medium-sized businesses in Germany do not realize the potential automated software integration withholds. Hence, they do not inform themselves about software integration even though most of them are applying more than one application in their daily business.

Tomi Räsänen, CBDO at Flashnode Oy, confirms this assumption in a personal interview. Based on his many years of experience in web software development and integration, he emphasizes the importance of automated software integration even for companies of small size. Räsänen describes automated integration as a major part of an organization's process optimization. Similar to the findings of BCSG, Räsänen explains that SMEs are constantly facing shortcomings and thus have a work load far above the average. He adds that they are not realizing the potential benefits of process optimization in general and automated software integration in particular (Räsänen 2016.)

Räsänen continues by pointing out the importance of the active initiatives of software developers, accounting and taxation firms and integrators. Showing SMEs the benefits of automated integration in a non-technical language is crucial. Then they will recognize previously unseen opportunities. He summarizes:

"SMEs think they lack the time and resources to optimize their processes although process optimization is part of the solution not their problem and so is automated integration (Räsänen 2016.)*"*

3.10 Customer readiness for automated software integration

The following considerations have already been addressed at various points throughout the paper. So, a summary of the previous arguments is sufficient here. Many firms use software which offers at least cloud support or cloud data backup. This foundation facilitates a change towards automated integration. However, this change is far off for many SMEs. Businesses do not realize the potential within their organization and do not inform themselves about process optimization and automated integration. Automated integration does not provide a clearly visible, strategic perspective which is essential for small and medium-sized enterprises in Germany.

Excluding the technological side of the issue, the SMEs as customers are mostly not ready for automated software integration. Even though some are still improving, all technical factors are, in general, sufficiently developed: the cloud infrastructure, the cloud-based software applications and the partnerships between developers and integrators. As mentioned before, the benefits of automated integration need to be communicated with a higher effort.

3.11 The acceptance of a subscription fee based integration service

This strategic orientation of German SMEs also influences the pricing of integration services and vice versa. A company that has never heard of software integration before might be put off by a monthly fee and hence might disregard this option without even knowing about the potential benefits.

Returning to the price information gathered in the interviews. Table 3 contains an extreme value. 1000€ per month was stated in one interview. Even on repeating the question and anew emphasizing the interest in the monthly budget, the interviewee reproduced her earlier statement. Supposedly, the person was thinking in obsolete patterns of costly integration projects.

The following boxplot illustrates that the extreme value can also statistically be seen as an outlier:
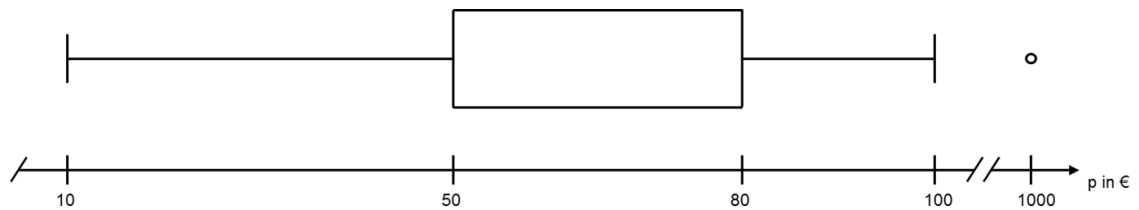

Figure 2 - Boxplot based on Table 3

Figure 2 examines the numerical data using its quartiles. In this particular case, the median and the first quartile share the same data value of 50€. The third quartile is located at 80€. Hence, the interquartile range (IQR) is 30€. The lower whisker ends at the value 10€ and the upper one at 100€ leaving the only once stated 1000€ far off the boxplot. This proves the previous reasoning that the price estimation of 1000€ is a statistical outlier. Therefore, it is excluded from the further analysis.

Leaving the outlier aside, the expected value is 52€, which is equal to the arithmetical mean. Moreover, the standard deviation is approximately 23.152€. In relation to the expected value, this is high. According to the organization's web presence, Flashnode's flexible integration service costs 49€ per connected data type including real time integration for an unlimited amount of transactions per month. This equals the most common response.

Taking a look at Flashnode's competitor Pipemonk, their service also costs 49 USD per month. However, the service includes unlimited integrations but the synchronization is only scheduled for twice a day. Likewise, this offering is limited to businesses with up to 500 orders (Pipemonk 2016.) Another integrator, OneSaas Pty Ltd., offers their service at a lower price. The medium package is available for 34€ per month. It includes a basic number of connections with an hourly scheduled integration. This offering is exclusive for enterprises with up to 600 transactions (OneSaas Pty Ltd. 2014.)

Following the previous argumentation, OneSaas already is more advanced than its competitors as their more automated system enables them to offer at a lower price.

Various different service models exist. Another factor influencing the price of an automated integrational service excluded from the in-house/outsourcing analysis above, is the frequency of data interchange. Some providers run scheduled integrations whereas others offer real time connections. This drastically changes the character of the service itself and thus influences its price.

In general, the high standard deviation indicates that the average price is going to change in the future. This change will assumingly be reciprocal to the overall progress of automatization in the industry as depicted above. At the moment, a subscription fee based payment model of approximately 50€ per month is widely regarded as realistic and appropriate. This price needs to be reassessed when the market reaches maturity.

4 Opportunities

At this point, not only the limits of this study and the opportunities to extend this research but also the further opportunities for a company such as Flashnode are discussed. Before examining the study in general, the situation of an example enterprise is put into the context of the current market development. Many authors have studied the meaning of innovations in economics. Therefore, many ideas have been discussed in the past.

A controversial work is *Diffusion of Innovations* by E.M. Rogers first published in 1962. His concepts are as often applied as they are criticized. In a Finnish working paper from 2001, the authors Lyytinen and Damsgaard examine to what extent his research is applicable for theoretically depicting innovation in EDI technology. The researchers state that diffusion of innovation theory is insufficient to illustrate a collective adoption and the various factors influencing innovations in electronic data interchange technology, e.g. standards, critical mass and network externalities (Lyytinen & Damsgaard 2001.)

Nonetheless, Rogers' categorization of adopters according to their innovativeness provides a general overview of the market situation. The economist divided the market participants into *Innovators* (A), *Early Adopters* (B), *Early Majority* (C), *Late Majority* (D), and *Laggards* (E). To graphically break down those groups, Rogers uses a statistical density function for the probability of an economic actor entering the market. This way, he also maps the different phases of market growth. The author separates the groups at the median and at the median ± the single or double standard deviation. Figure 3 displays Rogers model (Figure 7-2) in the context of this study (Rogers 1983.)

Based on the previous analysis, the German market of automated software integration for SMEs is estimated to be still growing. Taking both supply and demand into account, the current state of development is somewhere within the interval of X_1 and X_2. However, the market growth is accelerating exponentially. Therefore, market maturity will soon be reached. As soon as the late majority has entered the market, the growth will marginally approach 0.
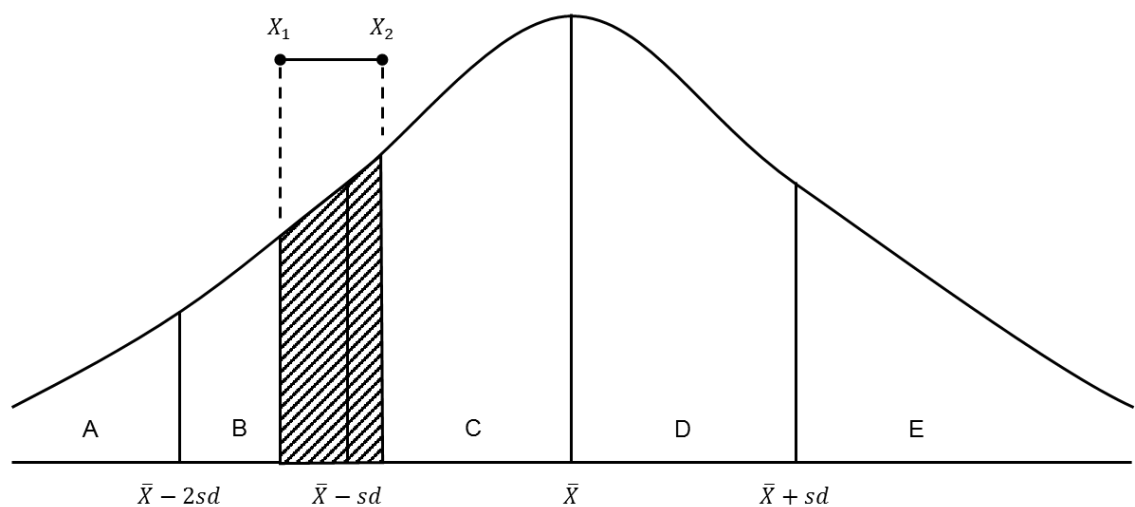

Figure 3 - Adopter categorization with the current state of the market

In the previous years, innovators like Flashnode Oy have developed different systems and pricing methods, as depicted above. Based on this success, many more customers may be served in the future. Integrators are now racing for the early majority of customers.

A further study on the demand side of the market set into contrast with this paper would yield significant additional information about the current market situation. Trends could be forecasted with more precision. When the market is fully developed as described above, more research on the market equilibrium may be conducted.

Moreover, a bigger national or even international scope of survey would increase the generalizability of the findings. In fact, the research ought to be broadened in the future. This study analyzes the German market in particular. However, software services are independent of most local or geographical conditions. The only prerequisite is a sufficient internet connection. As companies such as Flashnode or ZapStitch Technologies demonstrate, integration services may be sold on international markets without the same restrictive conditions as consume goods, for example.

5 Conclusion

The aim of this paper was to update and supplement information on the market situation. Based on previous literature, an empirical study was conducted on the market for automated software integration for SMEs. The study was focused on Germany in particular, because small and medium-sized enterprises are a driving force within the German economy. A vast number of software applications are available for this type of companies.

Furthermore, many software developers offer more than one application. Sometimes, this results in modularly constructed systems which are, in many cases, cloud-based. Previous research revealed that SMEs generally use multiple applications. The usage of cloud-based software services will even increase in the future. Due to this growing customer basis and periodical process optimizations in their organizations, software firms are able to make their services more affordable. Companies who already use some applications will implement additional solutions into their daily business. Others who cannot afford extensive software packages may enter the market. This trend accelerates the demand growth even further.

This study shows that many developers provide a cloud-service with or alongside their software. The German market for cloud-based software is maturing. The competition between software providers is increasing likewise. With regards to that, companies like Diamant Software GmbH & Co. KG, OXID eSales AG, Datev eG and Exact Software Germany GmbH currently have a strong market position. Because of this overall development, software firms will refocus from producing applications to complementing them. The higher the utility of a software system is the more competitive and attractive it is on the market. One part of this is the connection of the included modules. The most flexible way to realize that is to automatically integrate the single applications. Furthermore, this allows the integration the integration of third-party software. This way the software and the integration system become essential and indispensable to the enterprise.

Therefore, partners a carefully chosen with the prospect of a long-term cooperation. This long-term orientation is noticeable not only on the supplier side but also on the customer side. German SMEs plan investments strategically. Likewise, the businesses experience high workloads and hence do not concern themselves with optimizing their processes. As a result, many companies are reserved to try an integration service in their organization. Moreover, some enterprises are uninformed about the available connections. Even though software integration, in today's business world, is a significant part of an organization's process optimization, it is yet a rather technical topic. Hence, SMEs operating in non-technical fields often do not consider the opportunity in the first place.

Nonetheless, software firms are eager to provide their customers with automated integration although they are currently not highly interested. This difference in interests is determining the current market situation. Developers prepare for an expected demand which will set in when the benefits of such services can be successfully translated to the business owners.

Software companies estimate the price of automated integration to be approximately 50€ per month, adding that it depends on the sum the purchasing enterprise is paying for the integrated software. The price of integrational services is likely to fall when the market reaches maturity. By then, the integrators will operate more efficiently.

Another issue which has been considered in this paper is the decision of software developers to compete or to cooperate with integrators. Two decisive aspects could be crystalized: the reputation of the supplier or the perceived quality of the service, and the financial return. Keeping the above-mentioned long-term orientation in mind, the reputation of software developers and integrators is important to sustainably attract customers. The perceived quality of a service strongly influences the expected buying behavior of enterprises and hence the decision to outsource integration to a partner.

When the reputation of a potential partner is sufficient for starting a cooperation, the integrational service is contracted and not internally produced. In this case, the additional revenue is relatively low in the beginning but also the costs for the software firm are limited to the costs of contracting.

In the case of offering a self-produced service, the additional revenue for the software firm is significantly higher than in the other case but also the costs rise exceedingly. Developing a fully functional automated integration system requires high effort. Reaching a critical number of implemented applications is crucial. The developing and/or contracting phase is time-consuming. Therefore, it is only understandable that software developers are progressively thinking ahead of their cautiously prudent customers.

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dresultsize=%24boostedresultsize&from=TT.MM.JJJJ&to=10.06.2016&chkBox
_2=on&chkBox_3=on&chkBox_7=on&BTyp=redaktionelleI
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Appendix 1 – Tables and figures

Appendix 2 – Questionnaire for software developers

Created and translated by H. Wistuba 2016

1. Name of the Company?
2. What kind of software services are you offering at the moment?
3. Is your software already connected with/integrated to other software?
4. Which software/types of software are supported?
5. Are some software types (web shop, accounting, warehousing, etc.) missing?
6. How do you handle the connections/integrations now if a customer requires one?
7. Are you and your customers happy with this model?
   - Regarding implementation, time, costs and effort
8. Considering that there would be a service connecting your software to any other would you be interested in offering such a service to your customer?
9. What would be the main benefits of such a service for you?
10. What would be the typical cases of usage for connecting the applications?
    - What data would be most often transferred from a software to another one?
11. Imagining those integration projects are finished and the connections are available as a service, what would be the price your customers would be willing to pay?