

## Association for Information Systems AIS Electronic Library (AISeL)

---

PACIS 2015 Proceedings

Pacific Asia Conference on Information Systems  
(PACIS)

---

2015

# Managing Disruptive Change: Successful Transformation from On-premises to SaaS in B2C Software Companies

Natalie Kaltenecker

*Ludwig Maximilians Universitat, Munchen, kaltenecker@bwl.lmu.de*

Follow this and additional works at: <http://aisel.aisnet.org/pacis2015>

---

### Recommended Citation

Kaltenecker, Natalie, "Managing Disruptive Change: Successful Transformation from On-premises to SaaS in B2C Software Companies" (2015). *PACIS 2015 Proceedings*. 234.

<http://aisel.aisnet.org/pacis2015/234>

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2015 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# MANAGING DISRUPTIVE CHANGE: SUCCESSFUL TRANSFORMATION FROM ON-PREMISES TO SAAS IN B2C SOFTWARE COMPANIES

Natalie Kaltenecker, Ludwig-Maximilians-University Munich, Germany,  
kaltenecker@bwl.lmu.de

## Abstract

*Cloud Computing technology brings a fundamental change from On-premises software to Software as a Service (SaaS) within the software industry. To stay competitive, well-established companies need to transform and adjust strategies. Based on five case studies and Christensen's theory for managing disruptive innovations, this study focuses on software companies in the B2C market. The study analyses their transformation strategy in terms of an On-premises provider to a company offering SaaS. Although Christensen's recommendations are partly applicable there were additional strategies that proved to be valuable in practice. Eight strategies were derived for software companies in the B2C market to better cope with the transformation process. Finally, the study was able to draw a comparison between transformation strategies in the B2C and B2B market. Although the software market as a whole was affected by Cloud Computing technology, transformation strategies in these different markets varied significantly.*

*Keywords: Transformation Strategy, Cloud Computing, Theory of Disruptive Innovation, Business to Consumer.*

# 1 INTRODUCTION

With the rise of Internet technologies and the development towards Cloud Computing, an ongoing shift from classical On-premises software towards Software as a Service (SaaS) can be observed. This development implies a fundamental change within all segments of the software industry (Benlian et al. 2010). “Cloud Computing is a model for enabling ubiquitous, convenient, On-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction” (Mell & Grance 2011). The idea is not entirely new; it can be seen as a computing paradigm arising over decades out of other deployment models e.g. information technology (IT) outsourcing. The innovative character of Cloud Computing consists of continuously enhancing, linking and recombining those former trends and technologies towards a new concept (Weiss 2007; Weinhardt et al. 2009; Benlian et al. 2010). Cloud Computing has attracted increasing attention from both researchers and practitioners as a new paradigm of IT (Yang & Hsu 2011). The increasing success in the use of Cloud Computing generates business value and competitive advantage. Businesses are increasingly interested in successful designing, developing, and deploying cloud-based software. New business opportunities for companies evolve to commercialize IT services over the Internet (Jaeger et al. 2008) whereas IT acts as a driver of these opportunities, increasing the efficiency of business processes and enabling the transformation of enterprises (Proper 2013).

The implication behind this shift is striking since it essentially transforms the product-centred software industry into a SaaS industry (Jaeger et al. 2008; Brynjolfsson et al. 2010). Although classical On-premises solutions still represent the dominant distribution model (Pussep et al. 2013), the relevance of SaaS is steadily increasing. For example, Statista (2014) forecasts total revenues of 20.1 billion Euros; thereof 6.4 billion Euros in revenues in the B2C segment and 13.68 billion in revenues in the B2B segment by the year 2016 for the German market.

These figures clearly show the relevance of SaaS for software providers in both, B2C and B2B, market segments. There is therefore great debate over the potential of SaaS to disrupt the structures of the software industry (Lyytinen & Rose 2003; Keller & Hüsigg 2009; Sultan & van de Bunt-Kokhuis 2012; DaSilva et al. 2013; Kaltenecker et al. 2013).

Disruptive innovations have the potential to create a new market, to disrupt the existing market and to displace earlier technologies (Christensen 1997). A number of industries have proven that well-established firms are often not able to change strategies in spite of good management. Due to the different manner in using software under the Cloud Computing paradigm it would not be sufficient to merely transfer the On-premises' software product to the cloud without adaption. Instead companies have to revise their strategies in terms of product offering, business model and distribution. Adhering rigidly to old ways without evolving can lead to companies not surviving changes (Bower & Christensen 1995).

Despite the urgent need for resolution, very few studies in the area of information systems (IS) respond to the problem. The phenomenon of changing industries due to disruptive innovation has been well-known since Christensen (1997) introduced his theory of disruptive innovation. He explains disruption, what it means for companies, and gives some advice on how incumbents should deal with such situations. His recommendations on how well-established companies should handle the change are relatively general and chiefly address big players (Yu & Hang 2009). Researchers from innovation management have used them to give support to managers (Markides 2006; Yu & Hang 2009). Nevertheless, a literature review reveals that although there have been studies which focus on other industries (Chandy & Tellis 1998; Christensen & Overdorf 2000; Herrmann et al. 2007) scant research has so far been done concerning the software industry. As outlined above, a focus on the software industry is currently urgently needed. Kaltenecker and Hess (2014) investigated the Business to Business (B2B) software market concerning the management of disruptive innovation by the example of SaaS. As the shift from On-premises software towards SaaS is complex, multi-layered and differs from software segment to software segment, it cannot be reduced to a common denominator. B2C and B2B are different forms of commercial transactions. B2C - a process for selling services or

products directly to consumers - is in many ways not comparable to B2B - a process for selling services or products to business partners. The communications, transactions and sales administration systems behind B2B and B2C differ in complexity, scope, scale and cost (Linton 2015). Thus, profound differences between segments are therefore expected e.g. because of different target markets and software types (BITKOM 2010; Zhao & Guo 2012). Next to the B2B market, the shift from On-premises software towards SaaS is highly relevant for software providers in the Business to Consumer (B2C) market. Research is needed to investigate the B2C market within the software industry. By means of a qualitative case study approach with five B2C software companies the study aims to answer the following research question:

*How do software companies in the B2C market successfully manage the transformation from an On-premises supplier towards a company that offers SaaS?*

As an add-on, the study wants to shed light on the question of whether there are similarities and/or differences between B2C and B2B companies concerning their management of disruptive innovation by using the example of SaaS.

The remainder of the study is structured as follows: First, an overview concerning the theory of disruptive innovation and its proposed recommendations is presented. Next, the methodology – a case study approach - is described in detail. Based on the sample, the results are then presented. In this context, a successful company offers a robust version of its On-demand software; it already generates revenue with its SaaS, despite starting as a pure On-premises provider. Finally, strategies for software incumbents in the B2C software market are developed, and differences between B2C and B2B companies are highlighted. In the last chapter, a conclusion, an overview of the potential limitations of the study, and further research options are discussed.

## **2 THEORETICAL BACKGROUND**

### **2.1 The Theory of Disruptive Innovation**

Supporting the idea that SaaS is an innovation with a potentially disruptive character (DaSilva et al 2013), Christensen's framework was chosen to investigate the current change in the software industry. According to Christensen and Bower (1996), disruptive technologies disrupt an established trajectory of performance improvement, or redefine what performance means. Christensen (1997) clearly distinguishes disruptive technologies from sustaining technologies. Most new technologies foster better product performance in a distinct market and can be referred to as sustaining. They all share the aim of improving the product performance of an established product along the performance dimension that the mainstream customer values. By contrast, a disruptive technology is referred to as initially underperforming with regard to attributes that are valued by the mainstream market. It is often cheaper, more convenient to use, or incorporates simplified product architecture compared to the dominant technology. However, due to performance improvements, disruptive technology becomes fully performance-competitive over time and meets the performance requirements of the low-end and later the high-end of the market. Since disruptive technology carries some distinct superior features, it will inevitably replace the dominant technology in the long run. Christensen and Rosenbloom (1995), Christensen (1997), and Christensen and Bower (1996) note that new entrants in a market usually perform better, whereas incumbents often stay with the dominant technology for too long.

As only few technologies are intrinsically disruptive, the expression disruptive innovation seems more appropriate in many contexts. Often, the business model is seen as the enabler for the technology to become disruptive (Christensen 2006). Christensen's theory is well-established in management literature (Tellis 2006). Although there are critics of the theory (Danneels 2004; Tellis 2006; Yu & Hang 2009), and despite the fact that there might be alternative frameworks in place to investigate changing industries, e.g. the diffusion theory (Rogers 1995) or the concept of radical innovation (Chandy & Tellis 1998), this study decides for the theory of disruptive innovation. It seems to be a promising approach in order to investigate disruptive phenomena, especially when it comes to the issue of recommending strategies to management on how to transform a well-established company (Kaltenecker & Hess 2014).

## 2.2 The Theory's Recommendations

Managing disruptive innovation means transforming the company by drawing on successful strategies. The following four recommendations based on the theory of disruptive innovation serve as a starting point:

*Spin-off Strategy:* In larger companies in particular, investment decisions are usually sorted out during earlier decision-making processes by consultants or employees (Barnard 1968; Christensen 1997) who choose options that promise quick and high returns. Disruptive (and initially unprofitable) technologies are rarely suggested to the senior level management and therefore often remain unknown. A potential solution to the problem is the formation of an independent spin-off. This works independently from the established business and smaller successes are valued (Christensen 1997; Bower & Christensen 1995; Christensen & Bower 1996). For companies in the B2B market, the strategy turned out to be helpful, preventing resource allocation conflicts and following potentially disruptive innovation (Kaltenecker & Hess 2014).

*Leader Strategy:* Various studies have proven that being a first mover concerning disruptive technologies is important to finally succeeding in dealing with changes (Christensen 1997). Kaltenecker and Hess (2014) showed that software companies in the B2B market which had prepared for their transformation at an early stage profited from it. These companies gathered experience and used their time for developing prototypes before offering a mass market version.

*Expert Opinion Strategy:* Technical staff or employees from the research and development (R&D) department might recognize disruptive changes earlier and should be integrated in strategic investment decisions (Bower & Christensen 1995). Successful companies from the B2B market showed that gathering information from a wide range of sources and sticking to the adopted path despite resistance seemed to be a promising strategy (Kaltenecker & Hess 2014).

*Trial and Error Strategy:* Classical market research might fail when it comes to disruptive technologies. Therefore Christensen (1997) and Christensen and Bower (1996) propose a trial and error approach instead of a clearly defined marketing strategy. Kaltenecker and Hess (2014) supported this recommendation, stating that the integration of test products and test markets might prove helpful for companies in the B2B market.

Current state of academic research shows that Christensen's strategies hold true for the transformation from an On-premises supplier towards a company offering SaaS in the B2B software market. However, it is not self-evident that the same holds true for companies in the B2C software market as it builds on different drivers and types of software, and serves an entirely different customer group (BITKOM 2009; BITKOM 2010). Therefore, the extent as to which these strategies are successful in helping companies in the B2C market managing the transformation from an On-premises supplier towards a company that offers SaaS should be analysed.

## 3 METHOD

### 3.1 Case Study Introduction and Research Setting

Case studies are an appropriate approach to investigate this study's research question as they constitute a way of analysing phenomena in depth within their real life context (Yin 2009). Furthermore, case studies are valuable for analysing management problems and are particularly suited to answering how and why questions (Edmondson & McManus 2007; Eisenhardt & Graebner 2007; Yin 2009). Since the study is interested in deepening the understanding of the transformation process in the light of the theory of disruptive innovation, the approach can be classified as an instrumental case study design (Stake 1994). It consists of five cases, thus a multiple case approach was chosen. Cases were selected according to the following criteria: (1) The company was a well-established player in the B2C software market. (2) It had begun as a pure On-premises provider. (3) The company now offered a robust SaaS product. (4) Revenues were generated by both On-premises and SaaS products, or solely from SaaS products. With regard to other characteristics such as revenue, size and

age, a broader focus was chosen in order to achieve generalizability, i.e. transferring the results to a larger pool of B2C software companies.

Although Paré (2004) and Yin (2009) state that the sample size in qualitative studies depends on the researcher's judgment, experienced researchers in the field of qualitative methods know only too well that the sample size is mostly part of critical discussion. On the one hand, sample sizes may be too small to achieve either informational redundancy or theoretical saturation. On the other hand it may be too large to permit the deep, case-oriented analysis which is the reason of qualitative inquiry (Sandelowski 1995). It is important to evaluate the quality of collected information against the use to which it will be put. This study contains five case studies. As the interviewees were on a top management level and/or had detailed knowledge on the transformation process, they provided sufficient information to answer all questions. Besides, information from interviews was cross-checked and triangulated with secondary data.

The companies were multinational and had headquarters in different countries, which takes into account the heterogeneity of the B2C software segment. While companies A, C, D, and E were based in Europe, company B had its head offices in Japan. The companies offered software for desktop content security (A, B, C), mobile and platform security (D) and the multimedia (E). The founding dates of the companies ranged from 1988 to 2009 and all had originally started with pure On-premises software solutions. Apart from companies C and D, which had a pure B2C focus, the remaining companies also partly served B2B customers. The companies' sizes covered all ranges from small to large<sup>1</sup>. Table 1 provides an overview of the case study sample.

	<b>Company A</b>	<b>Company B</b>	<b>Company C</b>	<b>Company D</b>	<b>Company E</b>
<b>Job Titles</b>	Chief Executive Officer and Head of Sales	Security Evangelist and Press Spokesman	Head of Product Development	Chief Executive Officer	Director for Technical Services
<b>Foundation</b>	1990	1988	2002	2009	1995
<b>Headquarters</b>	Spain	Japan	U.K.	Czech Republic	Germany
<b>Employees</b>	800	5.137	100	25	410
<b>Revenues</b>	50-500 Mio. €	1.2 bn. US \$	17 Mio. US \$	< 50 Mio. €	29.97 Mio. €
<b>Cloud Revenue Share</b>	75%	Not available	Not available	80%	15%

*Table 1. The Case Study Sample.*

### **3.2 Data Collection and Analysis**

Data collection took place during summer 2014<sup>2</sup>. The author used semi-structured face-to-face interviews as well as interviews via Skype and telephone to collect data. The interview guide was subdivided into four parts and took up to two hours. After a short introduction and the collection of general information on the interviewee and the company, the second part of the interview aimed to examine the Cloud Computing technology, its potential and its risks. The third part analysed in-depth the company's transformation process. In this section the start of the transformation, the associated chances and risks, the specific actions to push the transformation, the integration of important stakeholder groups and the final evaluation of the process were discussed. The fourth part concentrated on differences and similarities between the B2B and B2C software market and the recent impact of Cloud Computing on these segments.

<sup>1</sup> Small company (revenues less than 50 Mio. €), Medium-sized company (revenues between 50 Mio. € and 500 Mio. €), Large company (revenues over 500 Mio. €).

<sup>2</sup> Data collection was supported by a master thesis conducted at the Ludwig-Maximilians-University Munich.

Interviews were recorded, transcribed and stored. The subsequent analysis was twofold. First, individual business strategies were investigated. Therefore summaries of each company were created concerning the background of the transformation as well as managerial and strategic decisions. The approach included going back and forth in data in order to develop a cohesive story. Second, a collective perspective was taken. Statements of the interviewees were attached to categories and sub-categories. At the end of the data coding process a table displayed all strategies that were found horizontally (including Christensen's four strategies). Vertically, interview statements were attached accordingly. These statements were evaluated collectively to find similarities and differences between the companies. In order to ensure a triangulation of findings (Yin 2009), additional data from websites, companies' annual reports, and official statistics was integrated. Following Benbasat et al. (1987) working with a second researcher ensures the quality of data analysis. Thus, a second coder took part in the process.

## **4 RESULTS**

### **4.1 Within-Case Results (Individual Business Strategy)**

In order to answer the research question, the five case studies are first presented separately (4.1). Then, the applicability of Christensen's recommendations to companies in the B2C software market is evaluated (4.2), followed by the collective case study results (4.3).

#### *4.1.1 Case 1: Company A*

*Recognizing the need to transform:* The year 2004 marked an important turnaround. At that time, the rapidly increasing number of new security threats caused the company to review its On-premises business model. By 2004 the company had documented a total of 50,000 security threats in its signature files that had to be delivered to the customers' On-premises security products via classic software updates. To this day, exponential growth of security threats has resulted in around 155 million documented threats. Company A realized, that its business model was not technically feasible any more. The pure amount of signature updates to be delivered in ever shorter periods of time as well as the amount of data being processed and stored could not be handled with the limited resources of the users' local systems.

*First steps toward cloud-based software:* In 2006 they developed a collective intelligence technology which formed the basis of its current cloud software. However, the company's developers realized that the reaction was not sufficient to counter the dramatic increase of threats. They pushed the development of automatic signature creation mechanisms and hit upon the idea of removing operations and functionalities from the customers' local terminals. As these systems were overloaded, the transfer into the cloud provided more processing and storage power. Consequently, the company commercialized its first cloud scanner in 2008. The cloud scanner was specifically designed to be as slim as possible and functioned with only 8 Megabytes of main memory. The collective intelligence technology performed the actual security scan in the cloud. It analysed potential security threats by means of crowd-sourced data from all decentralized users in real time.

*Challenges:* The manager was convinced that cloud-based solutions were the only way the dimension of security risks could be handled appropriately. To get to this point, the company had to put considerable effort into the transformation process e.g. in terms of hardware resources and server rooms. Furthermore, as a pioneer, the company had to struggle with scepticism from customers and the media. Computer journals and certification institutions reported poor testing results due to the fact that the testing mechanisms were not yet adjusted to SaaS. Only after an independent testing organization had been established, was the company able to improve its testing results. The manager admitted that a more intense collaboration with media representatives would have facilitated the market acceptance.

As a pioneer, the manager knew that the focus had to be on persuading the most important stakeholders. The company put great emphasis on the training of its own personnel and its sales department. For approximately one hour per day, employees were trained in persuading the

company's customers and in answering any concerns which customers might voice. The transformation caused important changes for all organizational units. The biggest changes occurred in the support centres. Support efforts were reduced by 80%. The know-how for SaaS was built up internally without making use of consulting services. The relationship with partners was also affected, as Company A gained more partners in the managed services sector. The transformation process was financed out of the firm's resources for R&D.

*Key to success:* The company was extremely technology-driven and did not put as much emphasis on marketing as many other companies in the industry did. The orientation towards R&D was the key to success for the transformation. It enabled the company to be visionary, recognize trends and needs early and empowered it to enforce technological or business model related changes even against obstacles.

#### 4.1.2 Case 2: Company B

*Recognizing the need to transform:* The update cycle in the 90's occurred every two days. Today, the company has to roll out updates every few seconds to deal with the huge increase of potential security risks. Triggered by this development, the company searched for a solution and became aware of Cloud Computing in 2005.

*First steps toward cloud-based software:* In order to keep established customers, Company B slowly introduced SaaS, offering two types of software. These models differed in terms of deployment and payment rates. There was a freedom of choice between a version where Cloud Computing was only used as a backend service to deliver the actual virus scan, while the frontend remained on the customers' local terminal and an entirely cloud-based model, where customers only paid for the actual required storage capacity and could flexibly chose the duration of desired usage. This strategy worked out well and persuaded more sceptical users.

*Challenges:* The transformation imposed knowledge-related challenges. The company had to learn everything from scratch, as well as build up technology-related know-how. This was a major challenge as the primary expertise consisted in software development. Building up a highly scalable, distributed hardware infrastructure required major development effort and also caused the company to work much harder in order to finally convince the development and operations team. Those scalable technologies imposed whole new requirements on software development which took time, money and effort. Today, Company B only focuses on its core competence (software development) and cooperates with specialized hardware service providers. The customers' and employees' acceptance towards SaaS was not a major concern; the transformation was self-financed and largely supported by the top management. External consultancy was only used for hardware-related processes but not for technical or business related aspects.

*Key to success:* The transformation succeeded because the company started the transformation very early and learned how to design a sustainable cloud environment.

#### 4.1.3 Case 3: Company C

*Recognizing the need to transform:* Company C became aware of Cloud Computing in the year 2009, which appeared to be a logical consequence of previous activities.

*First steps toward cloud-based software:* Before Company C actually introduced SaaS to its customers it gathered important experiences with related technologies. The company designed its first software as a pure Uniform Resource Locator (URL) listing web service because the query of a URL database works much faster than delivering the relevant information to the customer via signature updates. It then began to design more listing web services to balance out different detection mechanisms and to integrate all independent web services into a unified architecture that allowed for communication, information sharing and greater speed. Thus, the company had already made use of several web-based services before cloud-based solutions were used. The integration of those services into the unified cloud architecture appeared to be the last logical step.



*Challenges:* When the decision of designing the cloud architecture was made, the company started with the implementation of different versions of SaaS. This was a very iterative procedure with various failures to learn from. The required know-how was built up internally by software architects who attended conferences, read tutorials, or simply proceeded on a trial and error strategy based on their previous experiences. Most of the investment flowed into R&D and the installation of hardware infrastructure. The most affected departments were marketing, and product development. In addition, the company had to place emphasis on some technological changes such as scalability technologies and user interface. Throughout the process, the majority of employees agreed with the transformation. Company C's customers were also able to cope with the new software because the company did not change the software's frontend but only its underlying technology. As the backend was not visible to the customer, they largely agreed on the change.

*Key to success:* The company gathered important experience with the technology and was able to approach cloud-based software step-by-step instead of a fast and immature development.

#### 4.1.4 Case 4: Company D

*Recognizing the need to transform:* In 2013 the first SaaS was released. Interestingly, this company was driven by completely different circumstances with regard to its decision to transform. Since this company was relatively young, it was aware of Cloud Computing from the start. Nevertheless, the company began with On-premises software due to cooperation with a technology partner whose On-premises desktop application was acquired. The planning process for SaaS was thus only initiated in 2012. It recognized the influence of mobile devices and platforms on customers' behaviour. The usage diversification from desktop applications towards mobile usage appeared to be a new opportunity for the company. Cloud Computing seemed to be a way to meet market demand and exploit the mobile software market.

*First steps toward cloud-based software:* Company D tried to ease the transformation for customers by keeping the frontend of the product unchanged. However, the company added new cloud functionalities to the backend. Furthermore, in the beginning of the transformation, the On-premises usage was never fully eliminated and the company granted the opportunity to use the pure On-premises desktop application without making use of any cloud functionality. Although, this strategy was questionable in hindsight, as the goal was to simplify the product line rather than making it more complex, this double-tracked strategy helped customers to accept the new SaaS product, as it was introduced to them step-by-step.

*Challenges:* Employees were heavily involved in the transformation process. The interviewee reported a necessary change of the internal mindset of all employees. The most affected departments within the company were software development, the support team, and sales and finance. The latter two had to deal with the fact that the company was not selling a product any more, but a service. This required a different marketing strategy and a different concept of the finance perspective. Know-how was built up internally. Further external consulting services were only used regarding technical components e.g. server, hardware etc. These components were accessed through an external provider for a better scalability and reliability. The process was financed out of cash-flow, which was possible due to the profitability of the company from the very beginning.

*Key to success:* Although the company invested in On-premises software before, it was able to observe the market and recognize upcoming trends. The flexibility, rigor and will to constantly innovate were the key to transformation.

#### 4.1.5 Case 5: Company E

*Recognizing the need to transform:* The company initiated the expansion of its product portfolio towards hosted solutions in 2010. Company E observed the growing importance of location-independent mobile usage of applications on multiple platforms and devices. Additionally, Company E had new product ideas that were only realizable with a cloud technology.

*First steps toward cloud-based software:* In the beginning, Company E did not fully eliminate its On-premises version but instead enhanced it in terms of new cloud-based usage options. Customers were granted the choice of using the new functionality or staying with the old desktop version. During the product design phase, some outdated functionalities of the old On-premises version were cleared up in order to simplify the product and to make room for more cloud-based functionalities, such as streaming of content. Through this strategy, it was possible to retain established customers during the transformation. However, the manager admitted that the commercialization would have profited from longer beta phases. This would have enabled the company to gain more time for testing SaaS. Today, the company offers three license models that entail more functionality such as cloud storage or platform independent browser integration.

*Challenges:* The company decided to build up relevant knowledge internally without making use of any consulting services. This aspect was a major challenge for the company, whose development structure had historically evolved on PC platforms such as Windows. The development department had to build up a totally different skill set in order to deal with mobile platforms such as Google Android and Apple iOS. Several developers had previous experience with commercializing applications in App Stores, which facilitated the process. To further support the acquisition of knowledge, additional developers were employed and close contacts with business partners in the PC manufacturing industry were established. There was a strong consensus among employees that the transformation towards cloud solutions was a necessary step to stay competitive, although the transformation also caused some employees to leave the company due to their inability to adapt to the new conditions. Persuading customers proved difficult, especially as the company's main user group was predominantly aged over 40. It was important to keep products simple in order to be presented in a comprehensible way. Partnerships essentially remained the same due to the fact that these partners also tried to move to cloud business. Nevertheless, the company made use of external business partners such as Amazon Web services for the entire hardware operations. Thus, Company E was able to focus on its core competence.

*Key to success:* The key to a successful transformation was the strong consensus present among the internal staff. They saw Cloud Computing as an opportunity and pulled together.

## **4.2 Applicability of Christensen's Recommendations**

This paragraph focuses on Christensen's four strategies. With the individual case analysis in mind (4.1) their applicability on software companies in the B2C market is investigated.

*Spin-off Strategy:* The companies emphasized that SaaS was the only way to survive and thus, required all employees to take part in the transformation. In addition, the companies did not wish to create winner and loser teams as this might have risked resentment and resistance from employees. Furthermore, Company D was a very small company, not having enough resources for a separate organizational unit. Thus, the establishment of an independent organization was not the case for these five companies. However, Company B remarked that the development department was allowed the freedom to design the process internally and the formation of independent teams for the development of technological know-how. Thus, Christensen's idea must be treated with caution and might not always be applicable for B2C companies in the soft-ware industry e.g. because of their size.

*Leader Strategy:* Company A and B stepped into the cloud market very early. Company A saw the exponential growth of security threats by the year 2004. Company B stated that the key to a successful transformation was the early start of the transformation process in 2005. Thus, the companies early learned how to design a sustainable cloud environment. While 2009 was the key year for Company C, Company D and E seemed to fall out of this series. It is, however, notable that their transformation decision was triggered by another fact. They focused on a new market - mobile devices and platforms - and were leaders in that segment. Thus, the leader strategy might be applicable to well-established B2C companies in the software market. Apart from these findings it is important to mention that although being a leader is important, every technology and every trend has its time. A company can only lead a market when the market is ready to absorb to product or service.

*Expert Opinion Strategy:* As staff from the technology, or R&D department, might be the first to recognize what was coming next, their opinion should be integrated into investment decisions. Company A followed this strategy as the orientation towards R&D was their key to success. Also Company C and E emphasized the know-how of a wide range of experts and integrated their expertise into the transformation process. The other two companies (B and D) showed a slightly different approach. Although they integrated their employees, decision making was a top down process, initiated by the top management. Although this is a slight deviation from the expert opinion strategy, it turned out to be successful in order to accelerate processes. Thus, the expert opinion strategy can only be confirmed partly and the influence of top management seemed to be a crucial point and a key to faster transformation processes in some B2C software companies.

*Trial and Error Strategy:* This strategy focuses on the usage of test markets or test products. The sample companies followed this strategy. Company A first developed a collective intelligence technology and Company C initially developed an URL web service. Company D followed a double-tracked strategy and also Company B tried to find a market by offering different types of software products. Further Company B tested its products in the company's domestic market in Japan and Company C uses a risk procedure by geographically deploying the products country by country. Thus, the importance and applicability of the trial and error strategy concerning our five case studies could be confirmed and might be extended to the double-tracked strategy as this seemed to be a reasonable adjustment for companies in the B2C software segment.

### **4.3 Collective Case Study Results**

*Staff Integration Strategy:* The integration of stakeholders was one of most important issues concerning the transformation process. The staff's close integration represented an important success factor for all companies. Although the management had to defend or at least explain the need for transformation, no company reported serious resistance by its employees. Only minor problems were reported by Company B concerning the employees' acceptance in specific departments. The degree of acceptance depended on the degree of change for that respective department. Besides, the case studies were in line with academic research. The case studies showed that companies are able to transform successfully when they promote innovative employees and build an ecosystem where their ideas are heard (Boh 2014).

*Customer Integration Strategy:* Interestingly, B2C customers were not directly integrated in the transformation process. Private customers could only be approached indirectly and were mainly driven by product test results that cannot actively be managed (Company A). According to Company A and C, private customers foremost concern was about convenience and performance, and only then about the underlying technology. The need to include them in the software development process was therefore not necessary. The result showed that the companies paid less attention to the customer's integration than to the employee's integration. However, the interview partners admitted in hindsight that the acceptance on the customer's market was sometimes difficult. Company A had to work hard for the user's acceptance and Company D feared the rejection of its installed user base. Thus, a more intensive integration of customers could have facilitated the rollout of SaaS and could have avoided initial misunderstandings.

*Internal Resource Strategy:* Next, all companies built up the know-how internally. Consulting services if used at all served as a validation and not of the development of technological know-how. A similar picture could be drawn in the case of financing the transformation process. All companies reported that the process was self-financed.

*Cooperation Strategy:* Further communalities were observed concerning the affection of partnerships. The transformation did not bring significant changes within established cooperation, rather new cooperation with professional server hosting services was built.

Lastly, the interviewees were asked: Does SaaS have the potential to change the whole software industry? Some affirmed that soon SaaS will entirely replace On-premises software. Others agreed that On-premises software will never be substituted entirely because of security reasons. According to the interviewees, the National Security Agency (NSA) affair could be seen as a major obstacle for the

adoption of SaaS and was responsible for some natural scepticism and hesitation towards cloud service provider - especially in the European market as opposed to the U.S. market. Thereby, the main customer-related problem associated with SaaS is the loss of control and the transfer of responsibility over personal data towards third-party providers. In this regard, the question of data security is actually an intermediate step, while the trustworthiness of the suppliers is the aspect that matters in the end (Company B). Therefore, it is important to comply with data protection rules, not to transfer any personal data and to publicly address this aspect repeatedly to gain credibility (Company A).

## 5 CONCLUSION

### 5.1 Strategies for Companies in the B2C Market

The paragraph summarizes what we learned from software companies in the B2C market and their transformation strategy in terms of an On-premises provider to a company that offers SaaS.

Strategy	Explanation
Spin-off	The company's size and the danger of creating loser and winner teams should be borne in mind when thinking about the foundation of a separate spin-off.
Leader	Being a leader and stepping into the market as a first mover might be a wise strategy.
Expert Opinion	Gathering information and opinions from employees and experts is important. However, the management must often decide top down to enforce and accelerate the transformation process.
Trial and Error	Test products and test markets are essential to a successful transformation. Additionally B2C software companies might profit from a double-tracked strategy.
Staff Integration	Integrating the staff into the transformation process and communicating with them openly is advisable in order to prevent resistance.
Customer Integration	Actively addressing private customers concerning the compliance of data protection rules might be helpful to foster credibility during the transformation process.
Internal Resource	In order to stay independent throughout and after the transformation, it might be advisable to build up know-how internally and access financial means from own resources / cash flow.
Cooperation	The concentration on core competences and outsourcing technical components to specialized cooperation partners might be a promising strategy.

*Table 2. Strategies to support a successful transformation in B2C software companies.*

Due to the five case studies and the research setting described above, the study finds that Christensen's four strategies were either entirely applicable (Leader Strategy), applicable with some adjustments (Expert Opinion and Trial and Error Strategy) or should be treated with caution (Spin-off Strategy).

Besides, the study found that there were additional strategies that proved to be valuable for our case studies in practice and should therefore attract attention (Staff Integration, Customer Integration, Internal Resource, and Cooperation Strategy). Table 2 gives an overview over the derived strategies and what they mean in concrete terms. Looking at these eight strategies from another perspective, one may argue that the four additional strategies seem to fall into the concept of dynamic capabilities whereas Christensen's strategies are more about strategic postures e.g. market positions, launching new products. In that sense, further investigation should enlighten underlying dimensions i.e. what companies need to execute throughout the transformation process, regardless of their strategic choices versus different strategic choices that companies can choose from and follow accordingly.

All five case studies are located in the B2C software market and show similarities in important sample criteria (see 3.1). However, they differ in other characteristics such as revenue, size, age, and historical evolution. That is the reason why they constituted different factors as key to a successful transformation. However, despite their differences in contextual factors, all these case studies have strategies in common (see table 2). The strategies listed in Table 2 indicate that they might be

important for every well-established software company in the B2C market concerning a successful transformation from an On-premises provider to a company offering SaaS.

## **5.2 Comparison to the B2B Market**

As an add-on to these study's results, the derived transformation strategies from the B2C market are now contrasted with Kaltenecker and Hess's (2014) findings who investigated transformation strategies on the B2B market. Interestingly, there are not only similarities but also serious differences.

Full compliance could be found within the following strategies: Leader Strategy and Expert Opinion Strategy (Kaltenecker & Hess 2014).

Overall agreement was found within the Staff Integration Strategy, Cooperation Strategy, and Trial and Error Strategy. Particularly noteworthy are the parallels between the double-tracked strategy in B2C business and the step-by-step strategy (Kaltenecker & Hess 2014) in the B2B market. While B2C companies offer different versions to private costumers in order to slowly persuade them to take up the SaaS product, B2B companies focus on smaller software solutions in the beginning. In the course of time, the smaller On-demand version could grow with its first business customer and finally gain the attention of larger clients.

Differences between the B2C and the B2B market could be observed concerning the Spin-off Strategy and the Customer Integration Strategy. B2B companies opt a lot more easily for the foundation of an independent organizational unit compared to B2C companies. B2B companies were convinced that this was the only way to prevent resource allocation conflicts. With regards to customer integration in the B2C market, it is important to emphasize the suppliers' trustworthiness.

The most striking difference was found within the Internal Resource Strategy. While B2B companies acquired innovative and experienced staff externally (Kaltenecker & Hess 2014), B2C companies built up knowledge internally. An explanation for the deviation might be that requirements in the B2B business are much higher in terms of correctness and freedom from errors. Bugs could lead to significant financial damage in the customers' companies. Therefore, experts must be consulted in order to come up with new products. In the B2C business the freedom to experiment and trying new things out is higher and a company can built up expertise on its own.

Distributing SaaS directly was also recommended for B2B businesses. This point did not occur throughout the B2C study at all, determined by the fact that in the B2C market, mostly software used to be distributed directly.

Although the software market as a whole was affected by Cloud Computing technology, strategies for affected and well-established companies in different markets were only partly the same. This finding underlines the importance of investigating different software markets. With this study, a comparison between the B2C and the B2B market was drawn. Similarities and differences were presented in detail.

## **6 DISCUSSION, LIMITATIONS, FURTHER RESEARCH**

Nowadays, companies are in a constant state of flux. New technologies and new markets require enterprises to transform themselves to deal with these challenges and new realities. Management needs to make decisions about the future path. However, the path is not always obvious and managers need strategies in order to find a way though. Thereby, different aspects of a company, such as business processes, employees, and the underlying IT infrastructures should all work together to be successful in the end (Dietz et al. 2013). Some traditional approaches to management focused on budgets, resource use, and deadlines which may actually not contribute to the overall transformation goal (Lahrman et al. 2012). However, based on Christensen's (1997) theory of disruptive innovation and additional strategies for a successful transformation, there is an instrument that might support management throughout hard times and help in coordinating the transformation. The study tries to make a contribution to this important area.

The main objective of this study was to investigate transformation strategies of well-established software companies in the B2C market and how they behave successfully in a changing software market. The results were also brought in line with the theory of disruptive innovation. A successful transformation strategy consists of Christensen's recommendations as well as some additional strategies that were valuable in practise. In the end, eight strategies were developed for software companies in the B2C market to better cope with the transformation process.

An additional objective of the study was to contrast the results with Kaltenecker und Hess's (2014) findings from the B2B market. Interestingly, next to some similarities, serious differences were observed. This led to the conclusion that although the software market is affected by Cloud Computing as a whole, well-established companies from different market segments might profit from different strategies concerning their transformation management.

Therefore, from a practical point of view, the study provides support for managers of well-established B2C software companies to better cope with the transformation process from an On-premises supplier to a company offering SaaS. From a theoretical perspective, the study provides a deeper insight into the area of a software company's transformation strategy, especially in the SaaS business. Furthermore, the study proves that derived strategies for a specific market can by no means be generally applied to the whole software industry.

However, there are a number of limitations that the present paper must acknowledge. Qualitative research is always open to questioning when it comes to the generalizability of finding (Myers 2013). Nevertheless this study tries to counteract such doubts. A multiple case study approach (Eisenhardt & Graebner 2007) was chosen, which included five organizations. As the interviews were conducted at a single point in time and after the transformation process was performed, this study relies on retrospective data and interviewees might only imperfectly recall decisions or events. However, this study tries to counteract this fact by triangulation e.g. integrating objective data from other sources. This study should encourage researchers to perform research on this important and interesting topic (Bower & Gilbert 2005). However, further research on the topic should take more cases from various B2C branches into account in order to validate this study's results. Although the study at hand provides a relatively comprehensive overview concerning the description of the five cases, further research should go further to realize its identified potential to contribute even more to both theory and practice. In that sense, further research could analyze how the five companies deploy their strategies and answer questions such as: In which strategy laid the key thrust in making the transition and which strategy was the least useful? From there, further research could proceed to distill the conditions and properties of the companies that led to specific portfolios of strategies in managing potentially disruptive innovation. Besides, for future research, it might be interesting to go beyond mere description of strategies and focus on possible dependencies and influence across different strategies.

## References

- Barnard, C. I. (1968). *The Functions of the Executive*. Boston: Harvard University Press.
- Benbasat, I., Goldstein, D. K. and Mead, M. (1987). The Case Research Strategy in Studies of Information Systems. *MIS Quarterly* 11 (3), 369-386.
- Benlian, A., Hess, T., and Buxmann, P. (2010). *Software-as-a-Service*. Wiesbaden: Gabler.
- BITKOM (2009). *Cloud Computing- Evolution in Technology, Revolution in Business* Bitkom Guideline. Berlin: BITKOM.
- BITKOM (2010). *Cloud Computing- What decision makers should know*. Berlin: BITKOM.
- Boh, W. F., Evaristo, R., and Ouderkirk, A. (2014). Balancing breadth and depth of expertise for innovation: A 3M story. *Research Policy*, 43(2), 349-366.
- Bower, J.L. and Christensen, C.M. (1995). *Disruptive Technologies: Catching the Wave*. Boston: Harvard University Press.
- Bower, J. L. and Gilbert, C. G. (2005). *From Resource Allocation to Strategy*. New York: Oxford University Press.
- Brynjolfsson, E., Hofmann, P., and Jordan, J. (2010). Cloud Computing and Electricity: Beyond the Utility Model. *Communications of the ACM* 53 (5), 32-34.
- Chandy, R. K. and Tellis, G. J. (1998). Organizing for Radical Product Innovation: The Overlooked Role of Willingness to Cannibalize. *Journal of Marketing Research* 35 (4), 474-487.
- Christensen, C. M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston: Harvard Business School Press.
- Christensen, C. M. (2006). The Ongoing Process of Building a Theory of Disruption. *Journal of Product Innovation Management* 23 (1), 39-55.
- Christensen, C. M. and Bower, J.L. (1996). Customer Power, Strategic Investment, and the Failure of Leading Firms. *Strategic Management Journal* 17 (3), 197-218.
- Christensen, C. M. and Overdorf, M. (2000). Meeting the Challenge of Disruptive Change. *Harvard Business Review* 78 (2), 66-77.
- Christensen, C. M. and Rosenbloom, R. (1995). Explaining the Attacker's Advantage: Technological Paradigms, Organizational Dynamics and the Value Network. *Research Policy* 24 (2), 233-257.
- Danneels, E. (2004). Disruptive Technology Reconsidered: A Critique and Research Agenda. *Journal of Product Innovation Management* 21 (4), 246-258.
- DaSilva, C. M., Trkman, P., Desouza, K., and Lindič, J. (2013). Disruptive technologies: a business model perspective on cloud computing. *Technology Analysis & Strategic Management* 25 (10), 1161-1173.
- Dietz, J. L., Hoogervorst, J. A., Albani, A., Aveiro, D., Babkin, E., Barjis, J. and Winter, R. (2013). The discipline of enterprise engineering. *International Journal of Organisational Design and Engineering* 3 (1), 86-114.
- Eisenhardt, K. and Graebner, M. (2007). Theory Building from Cases: Opportunities and Challenges. *Academy of Management Journal* 50 (1), 25-32.
- Herrmann, A., Gassmann, O. and Eisert, U. (2007). An Empirical Study of the Antecedents for Radical Product Innovations and Capabilities for Transformation. *Journal of Engineering and Technology Management* 24 (1), 92-120.
- Jaeger, P. T., Lin, J., and Grimes, J. M. (2008). Cloud Computing and Information Policy: Computing in a Policy Cloud? *Journal of Information Technology & Politics* 5(3), 269-283.
- Kaltenecker, N., and Hess, T. (2014). From on- Premises to on- Demand: Learning from Two Cases of Transformation of Software Companies. In *Proceedings of the ECIS 2014 European Conference on Information Systems*. Tel Aviv: Israel, 1-16.
- Kaltenecker, N., Hüsig, S., Hess, T. and Dowling, M. (2013). The Disruptive Potential of Software as a Service: Validation and Application of an Ex-Ante Methodology. In *Proceedings of the ICIS 2013 International Conference on Information Systems*. Milan: Italy.
- Keller, A. and Hüsig, S. (2009). Ex-ante Identification of Disruptive Innovations in the Software Industry Applied to Web Applications: The Case of Microsoft's vs. Google's Office Applications. *Technological Forecasting & Social Change* 76 (8), 1044-1054.
- Lahrman, G., Labusch, N., Winter, R., and Uhl, A. (2012). Management of Large-Scale Transformation Programs: State of the Practice and Future Potential. In *Trends in Enterprise*

- Architecture Research and Practice-Driven Research on Enterprise Transformation. Berlin, Heidelberg: Springer, 253-267.
- Linton, I. (2015). Differences Between B2C & B2B in Business Systems. Hearst Newspapers, LLC. Found 30<sup>th</sup>, April 2015 under <http://smallbusiness.chron.com/differences-between-b2c-b2b-business-systems-39922.html>.
- Lyytinen, K. and Rose, G. M. (2003). The Disruptive Nature of Information Technology Innovations: The Case of Internet Computing in Systems Development Organizations. *MIS Quarterly* 27 (4), 557-596.
- Markides, C. (2006). Disruptive Innovation: In Need of Better Theory. *Journal of product innovation management* 23 (1), 19-25.
- Myers, M. D. (2013). *Qualitative Research in Business and Management*. California: Sage Publications.
- Mell, P. and Grance, T. (2011). *The NIST Definition of Cloud Computing - Recommendations of the National Institute of Standards and Technology*. Gaithersburg: U.S. Department of Commerce.
- Paré, G. (2004). Investigating Information Systems with Positivist Case Study Research. *Communications of the Association for Information Systems* 13 (1), 233-264.
- Proper, H. A. (2013). Business Informatics for Enterprise Transformations. In *Service-Oriented Computing and Applications (SOCA)*, 6th International Conference on IEEE.
- Pussep, A., Schief, M., Weiblen, T., Leimbach, T., Peltonen, J., Rönkkö, M., and Buxmann, P. (2013). Results of the German Software Industry Survey 2013. Darmstadt: Technische Universität Darmstadt, 1-35.
- Rogers, E. (1995). *Innovation of Diffusion*, 5th Edition, New York: Free Press.
- Sandelowski, M. (1995). Sample size in qualitative research. *Research in nursing & health*, 18 (2), 179-183.
- Stake, R. E. (1994). Case Studies, in *Handbook of Qualitative Research*. In N. K. Denzin and Y. S. Lincoln (eds.). Thousand Oaks, California: Sage Publications, 236-247.
- Statista (2014). *Cloud Computing- Statista Dossier 2014*. Hamburg: Statista GmbH, 1-52.
- Sultan, N. and van de Bunt-Kokhuis, S. (2012). Organisational Culture and Cloud Computing: Coping with a Disruptive Innovation. *Technology Analysis & Strategic Management* 24 (2), 167-179.
- Tellis, G. (2006). Disruptive Technology or Visionary Leadership? *Journal of Product Innovation Management* 23 (1), 34-38.
- Weinhardt, C., Anandasivam, A., Blau, B., Borissov, N., Meinl, T., Michalk, W., and Stößer, J. (2009). Cloud Computing- a Classification, Business Models, and Research Directions. *Business & Information Systems Engineering* 1 (5), 391-399.
- Weiss, A. (2007). Computing in the Clouds, *netWorker* (11), 16-25.
- Yang, S. O., and Hsu, C. (2011). The organizing vision for cloud computing in Taiwan. *Journal of electronic commerce research*, 12 (4), 257-271.
- Yin, R. (2009). *Case Study Research: Design and Methods*. 5th Edition. Thousand Oaks, California: Sage Publications.
- Yu, D. and Hang, C. (2009). A Reflective Review of Disruptive Innovation. *International Journal of Management Reviews* 12 (4), 435-452.
- Zhao, L., and Guo, S. (2012). The Value Creation of B2B2C E-Business Mode based on SaaS. *Journal of Electronic Commerce in Organizations* 10 (3), 1-12.