

Note: this is the working, non-final, pre-review version of the paper DaSilva, Trkman, Desouza, Lindič: Disruptive technologies: A business model perspective on cloud computing. The paper was accepted for publication in Technology Analysis and Strategic Management journal

The paper is provided for non-commercial use. The final published version as it appears in the journal (PDF and HTML) will be available on a [Taylor & Francis Page](#)

## **Disruptive technologies: A business model perspective on cloud computing**

Carlos Marques DaSilva, Peter Trkman, Kevin Desouza and Jaka Lindič

A viable business model is crucial for the successful commercialization of disruptive technologies. The cloud computing industry provides an ideal example for exploring how various elements of a business model contribute to a product's success (or failure). We examine how Amazon.com, Salesforce.com and Siebel responded to the disruptive power of the cloud computing technology. Our findings suggest disruptive technology *per se* is not the reason for the collapse of large corporations, but rather the failure to adapt or create new business models to incorporate novel technology. Our findings have direct implications for strategic managers and entrepreneurs seeking to leverage disruptive technologies through the right business model.

**Keywords:** Business model, technology innovation, switching costs, cloud computing, Amazon.com, Salesforce.com, Siebel.

### **1. Introduction**

Designing viable business models remains a critical challenge for emerging and existing enterprises. Emerging enterprises often fail due to their inability to define a sound business model and established enterprises often suffer from their inability or unwillingness to change their business model (Al-Debei and Avison 2010; Casadesus-Masanell and Ricart 2011; Desouza et al. 2009). A viable business model must not only be sustainable from an economic point of view, but also aligned with the existing

market realities, customer expectations, and competitive pressures (Braganza et al. 2009; Christensen 1997). While acknowledging that designing business models is a serious undertaking in any industry, we assert that the current information technology sector has unique characteristics that make it an even tougher challenge. Business models built around successful products few years ago (i.e. GPS receivers, portable game devices) are rapidly becoming superseded by new and innovative ways of delivering value to customers (i.e. technological advances in Smartphone technology).

However, technology by itself has little value. Value is generated when technology is commercialized through a business model (Chesbrough and Rosenbloom 2002). Chesbrough (2010) emphasizes that technology commercialized in different ways will yield different results and that a company “has at least as much value to gain from developing an innovative new business model as from developing an innovative new technology” (p. 356).

In this paper we focus on the cloud computing industry due to its influence for the future trends of the development of IT and IT-related sectors (Low et al. 2011; Qing and Chun 2010). Forrester estimates the size of the cloud computing market at USD 40.7 billion (Ried 2011). The International Data Corporation (IDC) forecasts that by 2015 about 24% of all business software purchases will be cloud based (Mahowald et al. 2011). Moreover, a forecast by IBM reveals that the number of companies using cloud technologies to transform their business models will double by 2015 (Berman et al. 2012). Given the disruptive nature of the cloud computing technology (Sultan and van de Bunt-Kokhuis 2012), we decided to explore how different players have strategically reacted to its emergence and how their actions affected, and in some cases radically changed, the course of the customer relationship management (CRM) and data storage. We provide an explanation of why Siebel (now part of Oracle) lost its dominance over the CRM industry due to its inability to change its business model. Further, we discuss how Salesforce.com explored an uncontested market space by focusing its efforts on small and medium enterprises (SMEs). We also discuss how Amazon.com leveraged its own resources and experience in low-margin types of businesses to become one of the leading cloud computing service providers.

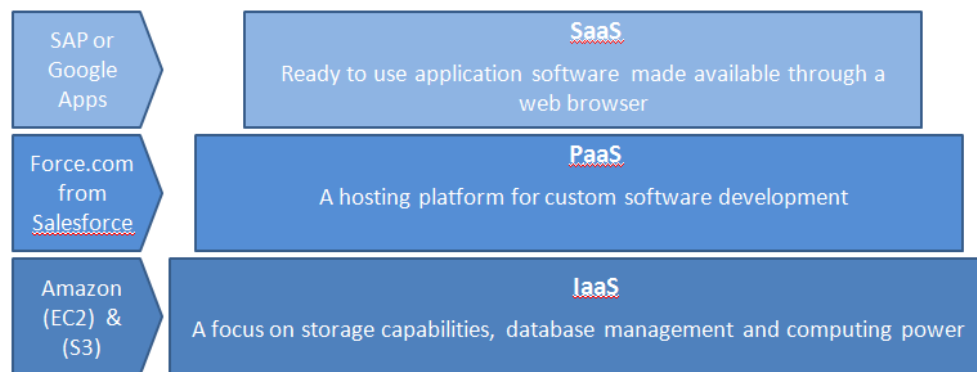
The rest of the paper is organized as follows: Section 2 provides an overview of the cloud computing industry and describes how cloud computing disrupted a well established player and how different business models generated different outcomes. Section 3 discusses the various lessons learned from the cases as well as its practical implications.

## **2. The cloud computing industry**

Cloud computing delivers computational and communicational capabilities via the Internet. From processing and storing information to being able to access it from anywhere and at anytime, cloud computing represents a breakthrough concerning how

people and companies work and communicate through the internet. Organizations employ it in order to increase computational and storage capacity without having to invest in new infrastructures (i.e. servers), personnel (software specialists) or large upfront fee payments (pay-as-you-use model where organizations only pay for their real consumption). The cloud offers a scalable information technology (IT) system infrastructure that allows companies to rapidly build scalable businesses at a low starting cost (see Hugos and Hulitzky (2010)). Cloud computing can take diverse forms, including: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) (see e.g. Kai and Deyi (2010)). Although some (e.g. Armbrust et al. 2010) claim that there is no sharp distinction between SaaS and IaaS, we believe there are significant differences in the business approaches taken by companies operating with SaaS and IaaS (see Figure 1).

Figure 1. Cloud computing explained: The levels on the top incorporate functionality from the layers beneath



Although cloud computing is fashionable today, organizations are still wary of exchanging their entire traditional infrastructure for a cloud-based solution (Marston et al. 2010; Sultan 2010, 2011). For example, the US government cancelled its contract with the Harris Corporation, a highly secure data centre located in Harrisonburg, Virginia (Garling 2012). The stated reason was that for security reasons the US government prefers to have its most mission-critical applications hosted and run in-house. Much of the concern around cloud security is related to third party management, where important data is handled by the cloud service providers outside the client's organization (Dorey and Leite 2011; Lin and Chen 2012). As the US Department of Defense commented: "With the increasing frequency and sophistication of cyber attacks on defense systems, we are concerned with any new approaches that can introduce new risks" (Walsh 2011). Thus, there are still niche opportunities for players which do not focus on cloud computing to re-direct their efforts and target clients' specific needs and requirements.

## 2.1. Cloud computing business models

In order to explore how cloud computing disrupted incumbent companies and how different business models based on the same technology yielded different outcomes, the business model term needs to be defined. Nenonen and Storbacka (2010) define a business model as an expression of five elements: (1) customer value proposition; (2) earning logic; (3) value network; (4) resources and capabilities; and (5) strategic decisions (see Table 1).

Table 1. Elements that reflect the business model logic

<i>Customer value proposition</i>	Understanding and creating products and services that meet customers' needs and help them fulfil their goals.
<i>Earning logic</i>	Designing a revenue model leading towards a sustainable business.
<i>Value network</i>	Designing value-added relationships with partners that represent the extended enterprise of the organization.
<i>Resources and capabilities</i>	Leveraging and repurposing existing or acquiring new resources and capabilities to create products and services of value to customers and generate consequent revenue.
<i>Strategic decisions</i>	Decisions aimed at creating a sustainable competitive advantage.

In our analysis we first consider Siebel Systems, which was founded in 1993. The company started providing sales force automation software and soon became known for its CRM solutions. In 2002, Siebel achieved a 45% market share and branded itself as the leading CRM provider (Gilbert 2002). In 2005, the company was purchased for USD 5.8 billion by one of its long-time competitors – Oracle (Peters 2011). Siebel was a traditional software company that required customers to invest in: (1) a license fee; (2) support services; and (3) upgrades. The high costs required to purchase in-house computing resources, licenses, training and running the system committed customers to the service (Boulton 2012). However, the advantages of cloud-based solutions and the low switching costs associated with it made it a viable option (Marston et al. 2010). Several blogs and articles in the mid-2000s express the doubts of managers on whether they should renew their expensive legacy software packages from Siebel or try out the trendy cloud solutions. As the cloud model had proven its capability to handle high loads reliably, the real question to ask was whether Seibel was still relevant?

Cloud-based services positioned themselves as a modern alternative to Siebel with features such as social media integration, better user interfaces, and the removal of server maintenance. Siebel's past success and associated business model led the company to a doomed outcome when technology changed the rules of the game. While Siebel is progressively switching its offering to the cloud with Siebel CRM on Demand, it is still chained to an old business model and an outdated framework of resources, processes, and priorities.

### ***The Salesforce.com business model***

Salesforce.com is a web-based, on-demand and off-premise solution that allows customers to rent software. It offers a pay-per-month solution operated through the Internet (see Weinhardt et al. (2009) for more details on pricing models for cloud based companies) and is the fastest growing CRM providers in the United States (Wardley and Shirer 2012).

As innovative solutions often suffer from customer resistance (Xu 2012), Salesforce.com is facing resistance from some corporate IT departments. The reason is not technological, rather because Salesforce.com is disrupting the CRM industry and IT departments. Today, end-customers can dodge IT departments as no installation is required to use the service. The traditional IT department no longer controls the data and system – making its services less indispensable or even redundant. In fact, Salesforce.com main target customers for their CRM services are not IT departments but rather vice-presidents of sales within an organization (Irwin 2012). Table 2 shows the fundamental differences between Siebel and Salesforce.com.

Table 2. Core differences in the business approaches of Siebel and Salesforce.com

	<b>Siebel</b>	<b>Salesforce.com</b>
<b>Pricing mechanism</b>	Yearly fee – a large upfront payment required	Free trial + monthly subscription – No trial cost / low monthly cost
<b>Funding</b>	Capital expense (CAPEX)	Operational expense (OPEX)
<b>Total cost of ownership</b>	Higher – Dedicated infrastructure, dedicated personnel	Lower – A shared pool of virtual computing resources (networks, servers, storage)
<b>Access</b>	On premises hardware	Any mobile device or hardware
<b>Upgrades</b>	Non-frequent, manual and paid extra per upgrade	Frequent, automatic and free as part of the subscription
<b>End-user</b>	Normal for the industry	High due to mobile access and the

<b>adoption</b>		user-friendly interface
<b>IT Team</b>	Requires a specialized IT team	Minimal to non-existent
<b>Security</b>	Handled by the local IT team	Handled by the service provider
<b>Data storage</b>	On premises servers	The service provider's servers
<b>User interface</b>	Classic look and feel	A modern Facebook-like interface
<b>Maintenance</b>	High	Low to non-existent
<b>Implementation</b>	Normal for the industry	Very fast and easy
<b>Network</b>	Closed	Open to outside developers
<b>Initial strategic approach</b>	Targets mainly large corporations	Targets mainly SMEs

### *(1) Customer value creation*

Customers are always looking for an easy to use service with high benefits and low costs. Salesforce.com responds to this by offering a service that requires little start-up investment, practically no installation burdens, no need for maintenance or a skilled IT team, no requirement to purchase additional hardware and no minimum subscription period. Although certain customers were concerned by the off-premises data storage solution of Salesforce.com's model, the advantages of using salesforce.com over traditional providers soon outweighed such hesitation. An emblematic example is the company Haagen-Dazs based in Minneapolis and part of the Nestle USA group. The company's brand manager revealed it would have cost \$65,000 to set-up a custom-designed database to manage the Haagen-Dazs' retail franchises through a traditional CRM model. Instead, the company only invested \$20,000 to launch the same service with Salesforce.com and can instantly monitor all franchises across the United States (Hempel 2009).

Similarly RehabCare, a North American provider of medical rehabilitation services, built a patient admission application for clinicians within only four days using Salesforce.com's tools and services. The company revealed it would have taken six months to build a similar application using Microsoft development tools (Fowler et al. 2010).

### *(2) Earnings logic*

Salesforce.com disrupted the CRM industry in two different ways. First, it changed the earnings logic by applying the "rental" model (monthly payment billed based on the number of users) to an industry hitherto characterized by lump sum licensing fees (charged for a company as a whole). The company understood that not all small businesses could afford software costing many thousands of dollars. By offering an affordable solution (a monthly fee per user) to small and medium firms, Salesforce.com cashed on a significant blue ocean market (defined by Kim and Mauborgne (2005) as an

uncontested or underexplored market space) at the time deemed unattractive by large players as it could not be served with their current business models.

Second, Salesforce.com understood that prospective clients wanted to experiment with the product before committing to it. As a result, while other service providers were promising their clients a customized solution in exchange for commitment, the goal of Salesforce.com was to get prospective customers (specifically end-users) to try its product for free. During the trial period prospective clients have full access to the Salesforce.com suite of products and users' support. At the end of the trial period prospective clients have the option to purchase the application or simply walk away.

### *(3) Value network*

In 2007, Salesforce.com extended its services by launching Force.com – a customization platform for corporations. The company knew it could not provide a complete back-end customized solution. Thus, Salesforce.com opened its infrastructure to external developers by allowing them to supplement its own inputs. By making Force.com compatible with all major development environments and tools (i.e. .NET, Java, PHP, Ruby on Rails, among others), independent developers (i.e. those outside Salesforce.com) were able to integrate services ranging from simple email to Facebook and Twitter within the platform. Competitors became partners, allowing Salesforce.com to better serve existing clients and acquire new ones. In 2011, more than 340,000 developers were contributing to the Salesforce.com platform (Benioff 2011).

### *(4) Resources and capabilities*

The key resources of Salesforce.com are built upon its scalable technology and products (Schonfeld 2009). Salesforce.com spent several millions of dollars in order to build a unique state-of-the-art datacenter compatible with its clients' requirements (Tzuo 2007).

Besides technology, over the years Salesforce.com has built up a strong team of highly competent employees (Trefis 2011). While the technical departments were motivated to build an exceptional product, the sales and marketing departments created together a highly marketable product. The company understood that it needed to convert trial users into paying customers as well as to keep existing customers happy with the service. Salesforce.com attention to customers led it to create the "lead qualifiers" position (non-existing position until then in the industry), person responsible for contacting free trial users and identifying future paying customers.

### *(5) Strategic decisions*

Salesforce.com leveraged technological developments (i.e. faster, safer and more reliable internet connection) in order to strategically reach a blue ocean by targeting SMEs that until then had been ignored by large players. This strategic focus allowed it

to gain credibility and grow with its client base. Progressively, large corporations started implementing Salesforce.com in some departments – a commitment that soon spread throughout the whole company. Today, Salesforce.com services more than 3 million users ranging from start-up ventures to global corporations like Dell Computers and Toyota (Salesforce.com 2012).

### ***The Amazon web services business model***

Amazon followed a different path. Its online retail store required a sophisticated computing infrastructure in order to not only operate throughout the year, but also to deal with large seasonal variations on their website (especially the large peak in demand right before Christmas). As a result, early on it needed a very sophisticated, efficient and, most importantly, scalable computing system (Siegel and Gibbons 2008). In 2002, Amazon decided to rent out part of its computing platform to developers. This was the beginning of Amazon Web Services (AWS), a business foreign to its core activities until then. The results motivated Amazon to offer corporate customers the opportunity to use AWS and optimize their computing power by avoiding the waste associated with overcapacity and eliminating investments in computing hardware. As the CEO of Amazon Jeff Bezos said: “You don't generate your own electricity. Why generate your own computing?” (Reiss 2008). He went further to say that AWS has the potential to become as large as the company's retail business (Clayton 2011).

#### ***(1) Customer value creation***

At first, developers could use Amazon IT services to develop applications on top of Amazon's web store. Amazon gradually extended its computing and storage to SMEs that were able to leverage a robust large-scale computing infrastructure at a fraction of the cost of owning, upgrading and managing on-premises infrastructure. Besides helping established businesses, cloud computing and AWS removed a considerable entry barrier to start-up companies (Palmer 2012). Amazon now serves several large corporations including Samsung, Foursquare, and SEGA.

#### ***(2) Earnings logic***

Amazon's earnings logic is based on the freemium model. The service is free to use for new clients up to a year, in an effort to motivate companies integrate AWS (while free to subscribe, integrating AWS within a company takes time and effort, thus creating commitment). By offering a flexible on-demand pricing model, Amazon only charges customers for what they truly use with no minimum fees and no long-term commitments.



In an attempt to lock existing customers in to its service Amazon introduced “reserved instances” packages where customers pay a onetime fee (one year or three years term) get lower costs per usage (see “Amazon EC2 Reserved Instances” (2012)).

### *(3) Value network*

Initially, developers acted as partners on Amazon’s e-commerce platform. Developers were using Amazon’s resources to develop custom applications in order to sell products from third parties resellers on the retail store Amazon.com (see Bensinger (2012)).

As Amazon’s focus diversified to storage and computing, developers working for start-up and SMEs also became customers. Thus, developers became resellers of Amazon’s web services to companies seeking cloud-related services.

### *(4) Resources and capabilities*

Amazon developed infrastructure-related resources due to its own need for a very scalable infrastructure. Amazon started the IaaS business as a way to resell the hardware capacity that sits idle for most of the year (most of the hardware exists to absorb the increased load of the Christmas shopping period). In a nutshell, Amazon’s own gigantic requirements allowed it to strategically position itself in the cloud industry as the leading IaaS provider due to its economies of scale and brand name. Amazon’s CEO Jeff Bezos stated that IaaS is what it has “been doing for 11 years, operating a web scale application, a very complex one, that is based on a lot of transactions with high availability, reliability in a high volume, low margin business” (Bezos 2006). In addition, branding its service under the Amazon umbrella projects an image of credibility and reliability to possible target customers.

### *(5) Strategic decisions*

The AWS strategy is based on offering a basic infrastructure at the lowest possible price. The economies of scale that have been achieved have allowed Amazon to cut its prices 19 times since it started offering cloud services (Bass 2010). Amazon.com’s competitive strategy has always been to offer the largest possible selection of products at the most competitive prices (Casey and Carroll 2004). Thus, the Amazon AWS strategy is to become the basic infrastructure for other cloud services to build on.

To summarize, Salesforce.com and Amazon.com differ strongly in their approaches not only regarding the use of the technology itself, but also the way they apply it for commercial purposes (see Table 3 for a comparison of the two companies’ business models).

Table 3. Summary of the cloud computing business models of Amazon and Salesforce.com

	Amazon.com	Salesforce.com
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>Utility type</li> <li>Broad applicability</li> <li>Time and money saving</li> <li>Low entry cost</li> <li>No subscription period</li> </ul>	<ul style="list-style-type: none"> <li>Service type</li> <li>Narrow focus</li> <li>Time and money saving</li> <li>Low entry cost</li> <li>No subscription period</li> </ul>
<b>Earnings logic</b>	<ul style="list-style-type: none"> <li>Low differentiation – Low margins</li> <li>Billed per usage only</li> </ul>	<ul style="list-style-type: none"> <li>High added value – Higher margins</li> <li>Billed per user/per month</li> </ul>
<b>Value network</b>	<ul style="list-style-type: none"> <li>Developers as customers</li> </ul>	<ul style="list-style-type: none"> <li>Developers as partners</li> </ul>
<b>Resources and capabilities</b>	<ul style="list-style-type: none"> <li>Strong brand equity</li> </ul>	<ul style="list-style-type: none"> <li>Strong sales team and call center</li> </ul>
	<ul style="list-style-type: none"> <li>A state-of-the-art IT platform that is reliable, secure, scalable, and flexible</li> </ul>	
<b>Strategic decisions</b>	<ul style="list-style-type: none"> <li>A freemium model where customers can use the product up to a certain threshold for free – building up switching costs</li> <li>Offers the cheapest alternative to owning servers/data storage hardware</li> <li>offering the lowest priced option on the market</li> </ul>	<ul style="list-style-type: none"> <li>A focus on non-consumers (blue ocean) – SMEs that cannot afford complex competing solutions then move up market to replace existing solution providers</li> <li>A focus on selling its service to the end-user instead of the CIO</li> </ul>
<b>Main</b>	<ul style="list-style-type: none"> <li>IaaS</li> </ul>	<ul style="list-style-type: none"> <li>SaaS</li> </ul>

### 3. Lesson learned

In this section, we reveal how insights from the cloud computing industry may help managers in various industries deal with upcoming strategic challenges associated with disruptive technology.

#### *Technology is disruptive but business models determine who wins*

Incumbent firms are usually not disrupted by technology per se, but rather by their inability to alter their existing business model or create a new one. Amazon.com understood early enough the potential of cloud computing. The company could have ignored its online store peaks in usage that involve up to 90% idle time and simply

consider it a cost of running its operations (Siegel and Gibbons 2008). Instead, Amazon realized that the excess processing power could be offered to other companies. Amazon transformed a required cost of operation into a new revenue stream. The willingness to divert from its core business and invest in a new experimental business model paid off. If Amazon had not taken the risk and implemented a business model foreign to its core activity and instead played waiting games (See Robinson et al. (2012)), it would have missed one of the biggest business opportunities of the 21<sup>st</sup> century. Managers must be willing to experiment and build side business models that can potentially respond to emerging technological changes.

### ***Success can be the enemy of progress***

Large companies sometimes get trapped by their own success. Part of the problem may be a lack of proper management and/or willful blindness regarding inevitable change (see Heffernan (2011) for a full discussion on why managers often do not recognize the obvious). Managers' usual response to increased competition is to optimize each element of the existing business model. As our case shows, simply improving existing processes may not be the answer. Siebel's failure to fundamentally address changes and its blindness to an emerging technological change led to its subsequent commercial demise.

Managers need to constantly monitor smaller players and industry trends. If a disruptive technology threatens their business, a larger organization with less flexibility should consider either acquiring or establishing strong partnerships with players that already leverage such technologies.

### ***Incremental changes to the existing business model are not necessarily the solution***

Siebel relied for many years on its business model where large players (such as IBM) would spend a large amount of resources in order to integrate Siebel within their corporate infrastructure. At the time, the lack of alternatives made this a rational investment. In the early 2000s, SaaS began to make ground in the CRM industry. Siebel took several years to realize the need to offer a similar product. Once it did, the company decided on a different strategic approach than established SaaS players. Instead of reaching out for new paying customers, Siebel decided to target its existing clients with an alternative cloud-based solution in the hope of not losing them. Yet this approach actually motivated Siebel's clients to question their existing provider and consider the competing cloud-based offers. May 2012 brought a major signal of Siebel's late response to the cloud and its wrong strategic decisions. It had lost a large and long-time client, IBM, company that had been running Siebel system for over 10 years (Burton 2012).

Siebel's late entry to SaaS and excessive focus on large corporations provided the perfect opportunity for new firms to attack a then untapped market – SMEs. Thus, SaaS

itself did not disrupt Siebel's success. Instead, the company's inability to reorganize its business model and strategic priorities led to this outcome. Managers must be ready to radically alter their existing strategies and build business models able to respond to technological changes.

### ***Focus on the blue ocean at first***

Offering a product for free as a trial had two key effects. First, it allowed SMEs to become familiar with a product they had not previously used (blue ocean market). Second, it worked as a lock-in mechanism. By allowing a trial user to insert their data (Salesforce.com) or build their application (Amazon.com) in the cloud for free, users not only became used to the platform, but also committed themselves by doing this. As a result, when the trial ends satisfied users will be inclined to keep the service given the non-monetary resources already invested. As innovative technology decreases and eventually eliminates marginal costs (see e.g. Anderson (2009)), managers should consider freemium revenue models in order to lure new users and convert them to paying customers.

### ***Invest in marketing early on***

Amazon's online store reflects a strong image that supports its claim of being a quality cloud computing provider. Besides credibility, its cloud service is consistent with its online retail store marketing mantra – “the lowest price possible”. By contrast, Salesforce.com had to build its reputation and it still invests nearly 50% of its revenue back into marketing (Bleeker 2011). Given the low switching costs and high levels of differentiation offered by various players in the SaaS layer of the cloud, Salesforce.com understood that marketing played a vital role in securing and keeping early adopters. Managers commercializing innovative solutions based on disruptive technologies should not underestimate the marketing efforts associated with building a brand as well as educating, acquiring and maintaining customers.

### ***Know your strengths and your industry***

Amazon understood the limited capacity of IaaS providers to differentiate their offerings beyond price. Due to its first-mover advantage, internal database of developers and strong brand equity, Amazon was able to capture a large pool of users very rapidly. Economies of scale gave Amazon a strong competitive advantage, which translated into low prices to its customers. With razor-thin margins, the IaaS layer of the cloud left little to no room for upcoming competitors.

Conversely, the SaaS layer offers more room for differentiation. Companies will choose a SaaS solution over another depending on several aspects such as: flexibility (pricing, contracts, etc.), compatibility (browsers, devices etc.), customization, e-mail

merge capacity, data import tools, after sales support, the availability of extensions and add-ons, among others (Cusumano 2010). Thus, late entrants aiming to cash in on a new technological trend must define where the window of opportunity is still open or allows room for differentiation, and where it has already closed.

### ***Focus on switching costs***

While switching costs in the cloud computing seem practically inexistent, Amazon was able to creatively build lock-in mechanisms. While a user can switch its IaaS provider anytime it is expensive and inconvenient to change once the system has already been set up. In addition, Amazon introduced pre-paid “reserved instances” packages that provide a discount on the regular per-usage rate. Similarly, Salesforce.com offered a free trial to new users which involved them having to insert their data into the system. By putting in time, there is less incentive to switch to another platform and re-insert all the data again. While innovative technology usually reduces transaction and switching costs, companies must devise creative ways to lock customers into their products through ways that go beyond pure financial commitments.

This line of thought helps explain why the business model of another software provider, Microsoft and its Office Suite, remained largely untouched (that said: Office is moving into the cloud with its Office 365 solution). Despite the growth of the Internet and various competitors such as Open Office and Google Apps, Microsoft Office still holds a market share of over 90% (Fildes 2010). Microsoft has namely succeeded in increasing the switching costs of its users who become used to Office as part of their everyday life and will likely also ask for that same software at work. Moreover, documents and spreadsheets are frequently shared among people, often on an ad-hoc basis which creates an important network effect – the value of an individual’s use of Office depends on the number of others also using it. This makes initial economies of scale that much more important compared to e.g. Siebel where only a limited group of employees knew how to use the system.

## **4. Conclusion**

Cloud computing technology is here to stay and will continue to transform businesses in a wide variety of ways. As it opens new opportunities for entrepreneurial ventures to develop and grow, it will also bring about the gradual collapse of corporations unable to adapt their business model to the new technology early enough. Our case refers to Siebel and its slow response to technological changes, Salesforce.com’s blue ocean strategies as well as Amazon’s strategy that led the company to shape a totally new industry foreign to its then current core business. We summarized how different companies faced a disruptive technology. We started by referring to the importance of organizations questioning their existing business models in the face of technological

change. Then we discussed how Siebel lost its safe harbor in the market, a consequence of both technological change and especially its inability to respond to customers' demands (a shift in customers' value propositions). Since what customers value may change over time, companies must know what their core resources and capabilities are and adapt them accordingly. Amazon spotted an emerging customer need and leveraged its core capabilities and resources in order to enter and succeed in a new low-margin type of business. Finally, we revealed how switching costs can be abruptly reduced by technological innovations. By reaching non-customers (a strategic decision) and bringing switching costs down to nearly zero (innovative earnings logic) Salesforce.com has progressively become one of the main players in the CRM industry.

Through the lessons learned, strategic and innovation managers can understand not only how technological advances impact companies' performances, but most importantly how different business model approaches lead to different ways of leveraging the technology. As new disruptive technologies arise, managers need to be aware that simply incorporating new technology within their existing business model may not be enough. Congruent with Christensen (1997), late "me-too" entry strategies best outcome is survival, not thriving. Novel technology may require a totally new strategic approach that may at first seem controversial given the existing practices of the company, but necessary in order to ensure its long-term prosperity.

### **Acknowledgements**

Carlos Marques DaSilva gratefully acknowledges the financial support from the Portuguese Foundation for Science and Technology (grant ref. SFRH/BD/60200/2009).

Carlos Marques DaSilva and Peter Trkman acknowledge the financial support from the Research Agency of Slovenia (grant ref. J5—4012)

### **Notes on contributors**

**Carlos Marques DaSilva** is a Visiting Scholar at the University of Southern California in Los Angeles. Formerly, Mr. DaSilva held the position of strategic manager at a multinational company with headquarters in Eastern Europe. His present research interests dwell upon understanding the strategic influence of business models on innovation, entrepreneurship and start-up financing. He is presently a Ph.D. candidate at the Faculty of Economics at the University of Ljubljana. For more information, please visit: <http://www.cmdasilva.com>.

**Peter Trkman** is an assistant professor at the Faculty of Economics of the University of Ljubljana. He researches, consults and teaches on a wide array of topics including business models, supply chain, business process and operations management, web 2.0. and technology adoption. He has helped European and US companies to map, analyze and improve their business processes, mitigate the risks and measure the changes. He published over 70 peer-reviewed papers and book chapters and has been cited over 600 times. He received several awards for his research efforts and his publications are often used as required reading in management education.

**Dr Kevin C. Desouza** serves as the Associate Dean for Research at the College of Public Programs (COPP) and is an associate professor in the School of Public Affairs at Arizona State University. Immediately prior to joining ASU, he directed the Metropolitan Institute in the College of Architecture and Urban Studies and served as an associate professor at the Centre for Public Administration and Policy within the School of Public and International Affairs at Virginia Tech. From 2005-2011, he was on the faculty of the University of Washington (UW) Information School and held adjunct appointments in the UW's College of Engineering and at the Daniel J. Evans School of Public Affairs. At UW, he co-founded and directed the Institute for Innovation in Information Management (I3M); founded the Institute for National Security Education and Research, an inter-disciplinary, university-wide initiative, in August 2006 and served as its director until February 2008; and was an affiliate faculty member of the Centre for American Politics and Public Policy. He holds a visiting professorship at the Faculty of Economics, University of Ljubljana. He has held visiting positions at the Centre for International Studies at the London School of Economics and Political Science, the University of the Witwatersrand in South Africa, the Groupe Sup de Co Montpellier (GSCM) Business School in France, and the Accenture Institute for High Business Performance in Cambridge, Massachusetts (USA). Desouza has authored, co-authored, and/or edited nine books and has published more than 125 articles in prestigious practitioner and academic journals. Desouza has received over \$1.4 million in research funding from both private and government organizations. For more information, please visit: <http://www.kevindesouza.net>.

**Jaka Lindic** works at the Faculty of Economics, University of Ljubljana, Slovenia. He holds an EFMD award-winning PhD in innovations. He also founded and manages the largest European network of parenting portals. In addition, he is a board member of, and consultant to, several Slovenian high-tech companies.

## References

- Al-Debei, M. M., & Avison, D. (2010). Developing a unified framework of the business model concept. *European Journal of Information Systems*.
- Amazon EC2 Reserved Instances. (2012). Retrieved from <http://aws.amazon.com/ec2/reserved-instances/>
- Anderson, C. (2009). *Free: The future of a radical price*. Century.
- Armbrust, M., Fox, A., Griffith, R., Joseph, A. D., Katz, R., Konwinski, A., Lee, G., Patterson, D., Rabkin, A., Stoica, I. O. N., & Zaharia, M. (2010). A View of Cloud Computing. *Communications of the ACM*, 53, 50-58.
- Bass, D. (2010). Microsoft Woos Toyota, Duels Amazon.com in Cloud Bet - Businessweek. Retrieved March 31, 2011, from <http://www.businessweek.com/news/2010-10-28/microsoft-woos-toyota-duels-amazon-com-in-cloud-bet.html>
- Benioff, M. (2011). Salesforce.com Announces Fiscal Fourth Quarter and Full Year Results. Retrieved from <http://www.salesforce.com/company/news-press/press-releases/2011/02/110224.jsp>
- Bensinger, G. (2012). Competing With Amazon on Amazon. *Wall Street Journal*. Retrieved from <http://online.wsj.com/article/SB10001424052702304441404577482902055882264.html>
- Berman, S., Kesterson-Townes, L., Marshall, A., & Srivathsa, R. (2012). The power of cloud: Driving business model innovation. <http://www-935.ibm.com/services/us/gbs/thoughtleadership/ibv-power-of-cloud.html>.
- Bezos, J. (2006). *Web 2.0 Podcast: A Conversation with Jeff Bezos*. Retrieved from <http://www.oreillynet.com/pub/a/network/2006/12/20/web-20-bezos.html?page=last>
- Bleeker, E. (2011). How Does salesforce.com Keep Its Edge Over Larger Rivals? Retrieved May 3, 2012, from <http://www.fool.com/investing/general/2011/07/30/how-does-salesforcecom-keep-its-edge-over-larger-r.aspx>
- Boulton, C. (2012). Oracle Customers Rankled by Product Roadmap. *WSJ Blogs - The CIO Report*. Retrieved from <http://blogs.wsj.com/cio/2012/04/02/oracle-customers-growing-angrier/>
- Braganza, A., Awazu, Y., & Desouza, K. C. (2009). Sustaining innovation is challenge for incumbents. *Research-Technology Management*, 52(4), 46-56.
- Burton, G. (2012). Oracle loses its biggest Siebel implementation to SugarCRM. Retrieved from <http://www.computing.co.uk/ctg/news/2171998/oracle-loses-biggest-siebel-implementation-sugarcrm>
- Casadesus-Masanell, R., & Ricart, J. E. (2011). How to design a winning business model. *Harvard Business Review*, 89(1/2), 100-107.
- Casey, R., & Carroll, W. (2004). The Impact of E-Commerce Industry Turmoil on Amazon. com: A Strategic Perspective. *Journal of Internet Business*, 1(0).
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. *Industrial and corporate change*, 11(3), 529.
- Chesbrough, Henry. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, 43(2-3), 354-363. doi:10.1016/j.lrp.2009.07.010
- Christensen, C. M. (1997). *The innovator's dilemma: when new technologies cause great firms to fail*. Harvard Business Press.



- Clayton, N. (2011). Meet the Rainmakers. *wsj.com*. Retrieved from <http://online.wsj.com/article/SB10001424052748704739504576067580949404062.html?KEYWORDS=cloud+computing+microsoft+amazon>
- Cusumano, M. (2010). Cloud computing and SaaS as new computing platforms. *Communications of the ACM*, 53(4), 27–29.
- Desouza, K. C., Dombrowski, C., Awazu, Y., Baloh, P., Papagari, S., Jha, S., & Kim, J. Y. (2009). Crafting organizational innovation processes. *Innovation: Management, Policy & Practice*, 11(1), 6–33.
- Dorey, P. G., & Leite, A. (2011). Commentary : Cloud computing – A security problem or solution? *Information Security Technical Report*, 16(3–4), 89–96. doi:10.1016/j.istr.2011.08.004
- Fildes, J. (2010). Microsoft Office 2010 takes aim at Google Docs. <http://www.bbc.co.uk/news/10107799>.
- Fowler, S., Gownder, J. P., & Wiramihardja, L. (2010). *Case Study: RehabCare Extends Its Healthcare Offering Using iOS Devices*.
- Garling, C. (2012). “Cloud” Data Center Closes Because Federal Agencies Prefer Earth. *WIRED*. Retrieved May 23, 2012, from <http://www.wired.com/wiredenterprise/tag/harris-corporation/>
- Gilbert, A. (2002). Rivals vie for Siebel’s customer spoils - CNET News. *CNET*. Retrieved October 30, 2012, from [http://news.cnet.com/Rivals-vie-for-Siebels-customer-spoils/2100-1017\\_3-959878.html](http://news.cnet.com/Rivals-vie-for-Siebels-customer-spoils/2100-1017_3-959878.html)
- Heffernan, M. (2011). *Willful Blindness: Why We Ignore the Obvious at Our Peril*. Random House Digital, Inc.
- Hempel, J. (2009). Salesforce hits its stride. Retrieved from [http://money.cnn.com/2009/02/16/technology/hempel\\_salesforce.fortune/index.htm](http://money.cnn.com/2009/02/16/technology/hempel_salesforce.fortune/index.htm)
- Hugos, M. H., & Hulitzky, D. (2010). *Business in the Cloud: What Every Business Needs to Know About Cloud Computing* (1st ed.). Wiley.
- Irwin, S. (2012). Enterprise 2.0: Freemium first, enterprise second (Part 1 of 3). *GigaOM*. Retrieved October 30, 2012, from <http://gigaom.com/2012/04/28/enterprise-2-0-freemium-first-enterprise-second-part-1-of-3/>
- Kai, H., & Deyi, L. (2010). Trusted Cloud Computing with Secure Resources and Data Coloring. *Internet Computing, IEEE*, 14, 14-22.
- Kim, W. C., & Mauborgne, R. (2005). *Blue Ocean Strategy: How to Create Uncontested Market Space and Make Competition Irrelevant* (1st ed.). Boston: Harvard Business Press.
- Lin, A., & Chen, N.-C. (2012). Cloud computing as an innovation: Perception, attitude, and adoption. *International Journal of Information Management*, (0). doi:10.1016/j.ijinfomgt.2012.04.001
- Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management & Data Systems*, 111(7), 1006–1023.
- Mahowald, R.P., Konary, A., & Sullivan C.G. (2011). Market Analysis Perspective: Worldwide SaaS & Cloud Services, 2011: New Models for Delivering Software. <http://www.idc.com/getdoc.jsp?containerId=232239>.
- Marston, S., Li, Z., Bandyopadhyay, S., Zhang, J., & Ghalsasi, A. (2010). Cloud computing-The business perspective. *Decision Support Systems*.

- Nenonen, S., & Storbacka, K. (2010). Business model design: conceptualizing networked value co-creation. *International Journal of Quality and Service Sciences*, 2(1), 43–59.
- Palmer, M. (2012). Cloud computing cuts start-up costs. *Financial Times*. Retrieved from <http://www.ft.com/intl/cms/s/0/fc871bca-58e1-11e1-b9c6-00144feabdc0.html#axzz1sF3KKgmi>
- Peters, B. (2011). Software PACMAN - Forbes. *Forbes*. Retrieved October 30, 2012, from <http://www.forbes.com/sites/bradpeters/2011/12/15/software-pacman/>
- Qing, L., & Chun, Y. (2010). Development Trends of MIS Based on Cloud Computing Environment. *Information Science and Engineering (ISISE), 2010 International Symposium on* (pp. 145–148). Retrieved from [http://ieeexplore.ieee.org.libproxy.usc.edu/xpls/abs\\_all.jsp?arnumber=5945072](http://ieeexplore.ieee.org.libproxy.usc.edu/xpls/abs_all.jsp?arnumber=5945072)
- Ried, S. (2011). Sizing The Cloud | Forrester Blogs. Retrieved May 23, 2011, from [http://blogs.forrester.com/stefan\\_ried/11-04-21-sizing\\_the\\_cloud](http://blogs.forrester.com/stefan_ried/11-04-21-sizing_the_cloud)
- Robinson, D. K. R., Le Masson, P., & Weil, B. (2012). Waiting games: innovation impasses in situations of high uncertainty. *Technology Analysis & Strategic Management*, 24(6), 543–547. doi:10.1080/09537325.2012.693661
- Salesforce.com (2012). <http://www.salesforce.com/ap/showcase>
- Schonfeld, E. (2009). TechCrunch | The Efficient Cloud: All Of Salesforce Runs On Only 1,000 Servers. *TechCrunch*. Retrieved from <http://techcrunch.com/2009/03/23/the-efficient-cloud-all-of-salesforce-runs-on-only-1000-servers/>
- Siegel, M., & Gibbons, F. (2008). Amazon Enters the Cloud Computing Business.
- Sultan, N., & van de Bunt-Kokhuis, S. (2012). Organisational culture and cloud computing: coping with a disruptive innovation. *Technology Analysis & Strategic Management*, 24(2), 167–179. doi:10.1080/09537325.2012.647644
- Trefis. (2011). Rising Operating Expenses Threaten Salesforce.com Profits. *Rising Operating Expenses Threaten Salesforce.com Profits*. Retrieved April 18, 2012, from <http://www.forbes.com/sites/greatspeculations/2011/03/24/rising-operating-expenses-threaten-salesforce-com-profits/>
- Tzuo, T. (2007). Entrepreneurial Thought Leaders Lecture: Salesforce.com. Ecorner Stanford University's Entrepreneurship Corner. Retrieved from <http://ecorner.stanford.edu/authorMaterialInfo.html?mid=1664>
- Walsh, S. C. (2011). Federal Push for “Cloud” Technology Faces Skepticism. *The New York Times*. Retrieved from <http://www.nytimes.com/2011/08/22/technology/federal-push-for-cloud-technology-faces-skepticism.html>
- Wardley, M., & Shirer, M. (2012). *The Fight for CRM Applications Market Leadership Gets Tighter, According to IDC*. Retrieved from <http://www.idc.com/getdoc.jsp?containerId=prUS23539412>
- Weinhardt, C., Anandasivam, A., Blau, B., & Stosser, J. (2009). Business models in the service world. *IT professional*, 11(2), 28–33.
- Xu, X. (2012). From cloud computing to cloud manufacturing. *Robotics and computer-integrated manufacturing*, 28(1), 75–86.