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The Partner Ecosystem Evolution from On-premises Software to Cloud Services: a case study of SAP

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Abstract

The application software enterprise market is facing a fundamental change from on-premises software products to cloud-installed services based on 'pay-per-use' subscriptions. We propose a novel conceptual framework to analyze this transformation from an ecosystem perspective. Through a case study of SAP, we demonstrate that the cloud platform ecosystem differs from the on-premises software product ecosystem, with changed roles, responsibilities, patterns, and key stakeholder relationships. The findings suggest that the traditional product platform ecosystem has evolved in three directions: 1) the structures of partner ecosystems are changing, with partners and platform leaders forming a new micro-ecosystem as a basic unit to interact with customers; 2) the role and function of the traditional distribution channel have been eroded and weakened; and 3) the growing importance of platforms has changed the value relationships amongst stakeholders. Based on these findings, we discuss the managerial implications for the stakeholders in the cloud platform.

Keywords: Ecosystem, business model, cloud computing, SaaS, platform

Introduction

Cloud computing has dramatically changed the business world as a disruptive innovation, while flexibly providing customers with information technology services based on shared and configurable computing resources through the Internet. Disruptive innovations often change the patterns and roles of market competition, leading to a new business model. Simultaneously, the enterprise market of application software is facing a fundamental shift from 'on-premises' software products, which required the installation and complex configuration of a system, to cloud-installed services, consumed in terms of a subscription based on 'pay per use.' In this sense, cloud computing is not a new technology but rather a new operations model, in which a business ecosystem has evolved in which new types of market players have emerged, breaking up the traditional value chain of IT service provision (Floercke & Lehner, 2016). Thus, cloud computing has caused the ecosystem of business partners involved in the provision of enterprise software to evolve, whilst the technology and platform of cloud computing are disrupting the on-premises business model via combining and integrating scattered products and services into one service. Unlike 'on-premises' software, ecosystems based on the 'as-a-service' paradigm are characterized by the fact that the software is no longer sold directly to the customer as a product but operated to provide a service on the infrastructure of one of the ecosystem partners (Hilkert, Wolf, Benlian, & Hess, 2010).

In today's IT market, on-premises software still dominates the market of enterprise application software. The IDC (2016) reports and forecasts, however, indicate that the Software as a Service (SaaS) business is growing five times faster than on-premises software and will overtake it worldwide in the next few years. Therefore, cloud computing as a disruptive innovation requires software vendors to re-

estimate their existing business model and to seize the market opportunity and create cloud partner ecosystems. However, there is limited research about the evolution of the partner ecosystems involved in enterprise software and the impacts on the relevant business models caused by these changes. As software vendors are moving to the cloud, their partner ecosystems should be transformed into cloud-based ecosystems. The question thus arises of how cloud-based partner ecosystems differ from on-premises ones. To gain a more profound understanding of cloud partner ecosystems, our study focused on the following two research questions:

1. How does the partner ecosystem involved in enterprise information system delivery evolve when the delivery moves to the cloud?
2. What affects the relationships among the key stakeholders in the cloud ecosystem?

We base our analysis on a case study using SAP's migration from on-premises enterprise resource planning products to cloud-platform-based services. In the remainder of this paper, we first establish the theoretical foundations of our work in Section 2. Secondly, we design our case study strategy in Section 3 and synthesize a conceptual analysis framework based on the concepts of key partners, distribution channels, and cloud platforms in Section 4. Thirdly, we conduct the case analysis in Section 5, where our findings demonstrate that the cloud platform ecosystem is different from the on-premises software product ecosystem, with changes in the roles, responsibilities, and patterns of the key stakeholders and the relationships between them. Finally, we summarize the managerial implications in Section 6 and draw a conclusion in Section 7.

Theoretical foundations

Information technology developments have changed the partner ecosystems involved in enterprise software delivery from on-site hardware, software, and services at the customer location to cloud services provisioned by an on-demand subscription model deployed at a remote data center. This shift from products to services implies close ongoing collaboration between vendors, partner, and customers for co-creation of value, thus invoking principles from *service-dominant logic (SDL)* for interpreting the change in the partner ecosystems. Vargo and Lusch (2004) treat services as the application of specialized competencies, including knowledge and skills, through deeds, processes, and performances for the benefit of another entity or the entity itself. In contrast to *GDL (goods-dominant logic)*, SDL presents a service-oriented model, viewing services as independent from products. According to Lusch, Vargo, and O'Brien (2007); Ordanini and Parasuraman (2011), SDL supports the network view of service innovation by suggesting that the capability to involve business partners and use them as mechanisms to foster change is at the core of effective service innovation processes. SDL emphasizes that resources and capabilities are shared with a network of actors co-creating value for customers rather than residing within one actor. The value is offered to clients in the form of services instead of tangible products and that changes the partner ecosystem. Several complementary theories contribute to a new conceptual framework for the partner ecosystem. The business model canvas (Osterwalder & Pigneur, 2010) contributes the concepts of *key partner* and *distribution channel*, to which we add the *platform* as a new core element. In the following sections, we will further elaborate the three core elements: key partnership, distribution channel, and platform.

Key partnership

The key partnership element describes the network of suppliers and partners that make the business model work (Osterwalder & Pigneur, 2010). The traditional on-premises product-centered partnership complements the software vendor with a service implementation (SI) partner certified by SAP to deliver the related service of implementing the software, a reselling partner to extend market reach via an intermediate channel to fulfil software license order, a technology partner to provide the hardware, and a third-party software partner to offer the additional software solutions. The collaboration between the partners and the vendors is based on a loosely coupled partnership to provide the system and deliver the value respectively. As before, the service implementation partner of the application software is the core partner with the leading position that accounts for the most of the client's IT application budget

spending in the traditional partner network, whereas the hardware partners do not play an important role in the partner ecosystem.

In contrast, in the cloud service delivery model, the key partnership is a platform-based ecosystem underpinned by SDL, which is more diverse and fluid than the product-based one (Williamson & De Meyer, 2012). Platforms seek to maximize the total value of an expanding ecosystem in a circular, iterative, feedback-driven process (Van Alstyne, Parker, & Choudary, 2016). Therefore, the platform vendor may occupy the central position in this ecosystem. The advent of cloud ecosystems has caused software providers to rethink how they operate their cloud business and engage with partners, opening their platforms to external entities to attain business objectives. Hilkert et al. (2010) see the SaaS-based ecosystem as different from the traditional ‘on-premises’ ecosystems and specify how the particular roles of the market players might change due to the increasing diffusion of the ‘as-a-service’ paradigm.

Distribution channel

The importance of distribution channels is reflected in accessing the external markets. In a broad sense, distribution channels consist of one or more companies or individuals who participate in the flow of goods, services, information, and finances from the vendor to customers (Coyle, Bardi, & Langley, 2003). In the context of the business model, the channel is a touch point representing the vendor's interface with the customer to fulfill the order and contract, and the concept of a distribution channel refers to the way in which a company communicates with and reaches its target customer market segment to deliver a value proposition (Osterwalder & Pigneur, 2010). When it comes to the software industry, the traditional indirect channel of a software company consists of a channel partner (reseller), value-added reseller, wholesaler, and distributor. In the context of the cloud ecosystem, the roles of the traditional indirect channel may change, and distribution channels can help software companies to extend their market access; nevertheless, SaaS vendors use direct sales channels, like websites, intensively to attract new customers and initiate a sales process supported by offering trial periods to potential customers (Stuckenberg, Fietl, & Loser, 2011).

On one side, web sales and application stores are more convenient and flexible as a new communication tool to reach out to customers; on the other hand, the SaaS model has been eroding the roles of the indirect channel partner by reselling the application software and hardware. According to the Accenture (2013) report, revisiting the channel strategy is among the top sales initiatives to transform the partner programme for technology companies. Hence, the shift to the SaaS cloud requires enabling the mind-set change of vendor's ecosystem & channel staff, and renewing the channel partners based on the design of the journey to the cloud.

Platform

Platform and platform-based technologies are becoming increasingly important in the IT industry and the information economy. McGrath (1995) indicates that platforms refer to a collection of common elements, especially the underlying core technology, which is implemented across an array of products. Boudreau (2008) defines platforms as a set of components used in common across a product family, the functionality of which can be extended by applications. The notion of platforms is derived from product development, design, and operations being conducted internally within one company (Boudreau, 2008; McGrath, 1995). Meyer and Lehnerd (1997) extend the concept of the platform from the perspective of the supply chain, defining it as a set of subsystems and interfaces forming a common structure in which a stream of derivative products can be developed and produced efficiently. Gawer (2009) proposes the notion of an industry platform as products, services, or technologies developed by one or more firms, which serve as foundations on which other firms can build complementary products, services, or technologies. In this context, the latter firms do not need to buy or sell from each other or the platform leaders; they instead work together to co-create value for customers.

Industry platforms (Gawer & Cusumano, 2014) have been profoundly changing the business patterns in which firms design, develop, and operate. Today, the enterprise competition is not confined to the level of firm vs. firm, as noted by Van Alstyne et al. (2016). The rise of platforms is transforming competition, and the move from the conventional ‘pipeline’ to platform businesses engages three key

shifts. (1) *From resource control to resource orchestration*: Traditional on-premises software providers remain the GDL model, in which the software product lies in the central position. Instead, cloud platform providers advance the resource exchange (e.g., the resources of consulting, infrastructure, and software applications) within a cloud ecosystem of actors. (2) *From internal optimization to external interaction*: Traditional on-premises software providers concentrate on software products per se to optimize the internal processes and resources; in contrast, cloud platform providers are committed to co-creating value by orchestrating external collaboration, cooperation, and interaction. (3) *From a focus on customer value to a focus on ecosystem value*: Traditional on-premises software providers only focus on customers and customer value, whereas cloud platform providers seek to maximize and satisfy the value of the whole ecosystem.

Research strategy

The case study is an inductive and exploratory research method that offers an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, programme, or system in a 'real-life context' (Simons, 2009). The research described here followed this method to investigate SAP's migration from the product to the SaaS model, aiming to understand the new partner ecosystem within the cloud-based business model. The case study method was selected because (a) the existing knowledge of partner ecosystem evolution is scarce; and (b) it enables a holistic perspective of partner ecosystem evolutions, helping to analyze the transformation of a partner ecosystem and provide valuable insights.

Case selection.

To learn about partner ecosystem evolution from on-premises software to cloud services, we chose SAP as a single locus for our case study for the following reasons. Firstly, SAP has defined a clear corporate strategy for moving to the cloud. Secondly, at present, SAP is on its journey towards cloud services, facing tremendous challenges during the business transformations. Thirdly, given SAP is one of the highest-profile companies in the enterprise application software, it is a suitable example of a large partner ecosystem of enterprise application software. Finally, the evolution of the SAP partner ecosystem is exerting an impact not only on the IT industries but also on a very sizeable set of customers running SAP.

Case background.

SAP is a German multinational software corporation founded in 1973 and headquartered in Walldorf, Baden-Württemberg, with regional offices in 190 countries. The company has over 55,000 customers and 17,000 partners across the globe, making it the world's leading business software company and the most prominent enterprise application software company worldwide. Indeed, 80% of Fortune 500 enterprises run SAP. Since 2012, SAP has been undergoing a business transformation, has changed its business strategy from an on-premises provider to a cloud-first company.

Data collection.

We collected case study data from four main sources: semi-structured interviews, observations, participant workshops, and archival documents. To ensure systematic data collection, we developed a protocol for the case study, aiming to increase the reliability of case study research by guiding the data collection from a single case (Yin, 2013). Our main data collection method was conducting in-depth interviews, yet we also used other data sources such as observations, participant workshops, and archival documents (both internal and external); and triangulated the data thus collected to maintain the integrity of the analysis (Miles & Huberman, 1994; Sliverman, 2006) and to enhance the validity of our findings (Yin, 2013).

Twelve in-depth interviews were conducted in the past two years from different business units and hierarchical levels of SAP plus key stakeholders from the SAP partner ecosystem. The interviews were conducted in China, UK, and the US. The reasons are that these markets present the different acceptance

degree of cloud transformation. A semi-structured interview was designed and used with nine of the twelve interviewees; the remainder were open-ended informal interviews. The one-on-one interviews were conducted with the following people on different occasions summarized in Table 1.

Table 1. Summary of interviews

Functional Position	Number of people interviewed	Interview time (hours)
Director, SAP Greater China	3	3.5
Vice President, SAP Greater China	2	3
Senior Vice President, SAP SE	1	1
Vice President, SAP SE	1	1
Principal, SAP SE cloud solution	2	2
Client Executive Engagement SAP Greater China	1	1
Senior Director, Accenture	1	1
General Manager, Gaia Works	1	1
Total	12	13.5

Conceptual research model

Most researchers focus on business ecosystems and software ecosystems, but they pay little attention to the evolution of partner ecosystems. Our literature review suggests that partner ecosystem evolution may best be understood by synthesizing the concepts behind the business model canvas (Osterwalder & Pigneur, 2010), SDL (Vargo & Lusch, 2004), and cloud computing (Venters & Whitley, 2012) discussed in Section 2. Figure 1 below demonstrates this synthesis into a novel conceptual framework that can serve as a foundation to analyze the evolution of a product-based ecosystem into a SaaS-based ecosystem, including changes in key players and their relationships.

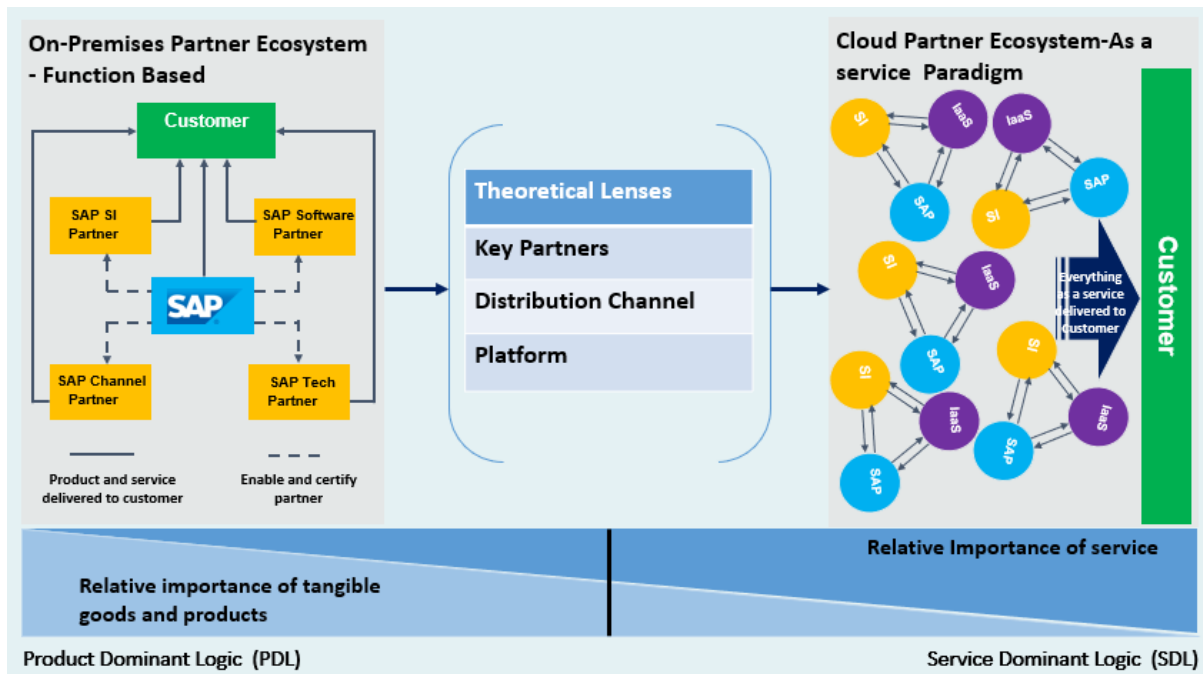


Figure 1. A proposed theoretical framework based on a pre-understanding of the literature influencing the evolution of the partner ecosystem

The framework demonstrates the transformation from “On-Premises Partner Ecosystem” in the context of PDL on the left of the figure to a “Cloud Partner Ecosystem” in the context of SDL on the right of the figure. The partner ecosystem is fragmented into atomic triples of the software vendor, service integrator and IaaS provider, interacting with the customer through a single point of interaction. The product and service are not provided by the software vendor and partners separately as in the PDL ecosystem, but as an integrated offering within the service paradigm orchestrated by key actors via the value co-creation in a network based on an SDL digital ecosystem. The digital service ecosystem as facilitating the exchange of service among loosely coupled heterogeneous actors through digital technology connects closely to an SDL perspective of a service ecosystem (Barrett, Davidson, Prabhu, & Vargo, 2010) Our proposed framework draws on three theoretical foundations: business model canvas, SDL, and cloud computing. Especially, it incorporates three related elements as the analysis framework.

Case analysis and findings

To analyze the data of the case study, both pre-set codes and open codes were used as a hybrid model in the process of creating codes. When conducting semi-structured interviews, we adopted the conceptual analysis framework presented in Figure 1 as a guide to making sure that our interview questions were related to our research questions. With the open-ended interviews, we followed Bardin’s (1977) notion suggesting three data codification rules: (1) meaning rules, (2) enumeration rules, and (3) categorization rules.

The evolving partner ecosystem.

A company cannot possess all the necessary resources for developing products and delivering services, and the aim of a partnership is to optimize and configure resources, reduce costs, share the risk of projects, and enhance the competitive edge. Williamson and De Meyer (2012) describe a vibrant ecosystem that can enable activities, assets, and capabilities to be reconfigured flexibly and constantly in response to the unexpected. The ecosystem is a vital part of the B2B business, and this is a key pillar

of an organization like SAP, which could not be successful without its partner ecosystem. Traditionally, SAP's partner ecosystem has consisted mainly of four kinds of partners distinguished into function-based categories: a) software license resellers, b) service implementation partners, c) technology or hardware partners, and d) third-party software partners.

Analysis

The transition to cloud services requires SAP to upgrade and change its partner ecosystem. The four types of SAP partners were created in the context of the on-premises software model: software license resellers are designed to resell SAP software licenses to customers as a middleman; service implementation (SI) partners refer to the partners who are certified by SAP to deliver the related service implementation of software; technology partners are the leading global vendors of hardware, databases, storage, and networks; and third-party software partners are certified by SAP to provide software related to SAP and integrate it into SAP software solutions as a whole for customers. However, our interviews showed that in the cloud computing context, the actors of the SAP partnership and their roles are changing while the partner ecosystem is evolving rapidly. The partnerships are not clustered around the functions of the legacy IT, like software, hardware, and technology, but are based on customer-oriented services in a three-layer cloud computing stack. Infrastructure as a service (IaaS) provides a technical infrastructure and environment to consume the computing resources – computing processing, networks, storage, and so on; SaaS enables the software application functionality provided as a service based on Service Oriented Architecture (SOA); and Platform as a service (PaaS) is a layer between SaaS and IaaS to offer an environment for the SaaS application being deployed. With the shift to the cloud platform and services, the roles, responsibilities, and the structure of SAP's partner ecosystem have changed fundamentally.

The change in roles and responsibilities in the partner ecosystem are exemplified by the transformation of the partnership between SAP and its SI partners, as discussed with four of our interviewees. Traditionally, the SI partners were responsible for the result of the overall project delivery, occupying the leading position with customers, whereas SAP took a backstage role and a transactional relationship with customers. SAP's SI partners enjoyed the benefits of the large-scale service implementation triggered by SAP's on-premises software license sold to customers. However, under SaaS, the customer-facing position has shifted from SI partners to SAP, seen now as a SaaS cloud and platform leader by providing simplified and standardized software as a service. This has eroded the service implementation revenue compared to on-premises software using pre-configurations to standardize SAP applications and simplify the cycle of service delivery. One of SAP's cloud strategy experts explained:

This is a market trend; the market of traditional service implementation focusing on the configuration of application software has shrunk and will even not exist in the future.

On the one hand, SAP's partner ecosystem transformation to the cloud requires the development of new SI partners based on SaaS solutions for agile delivery in case the traditional SI partners have not yet prioritized SAP cloud services as their business strategy and focus or cannot keep up with SAP's pace in deploying the SaaS solutions. On the other hand, it is also necessary for SAP to answer two essential questions: a) how can it upgrade the existing SI partners with a new skill set for SaaS cloud solutions; and b) how can it enable SI partners to create new revenue streams by substituting the traditional service implementation, which is showing declining revenue and continued market contraction?

The changes in the structure of the partner ecosystem concern the vendor connection which has moved from a simple bilateral partnership to a multi-lateral relationship, where partners and software vendors tie the service together with a network structure, converging on the cloud. Products and services are not provided separately to customers by multiple vendors but as an integrated service leveraging the new micro-ecosystem as a basic unit together with a three-party partnership to interact with customers by offering the outcome. Three key actors-SI, IaaS provider, and SaaS provider are orchestrated within this network of value to create the triangular partnership within a micro cloud ecosystem. One of SAP's channel directors of cloud partners stated that:

The actors (partners) in the cloud ecosystem not only play the role of providing cloud technology support but also synthesize services like demand generation, sales origination, and go-to-market initiatives to bundle and cross-sell integrated service offerings.

SAP plays the roles of SaaS provider and platform leader to exchange services and value with its SI partners and IaaS partners, and SAP's SI partners and IaaS partners interact and work together by exchanging services and value to interlink with SAP. The partner-vendor relationship will become closer and enhance the collaborative process in the search for mutual interests to deliver a joint service for customers because customers need an integrated service based on an outcome orientation.

Findings

The cloud-enabled technology has accelerated business model innovation, triggering fundamental changes in the partner ecosystem covering the entire value chain, including the changes in roles, responsibilities of the partner, and the structure of the system itself. Changes in the roles and responsibilities include shifting the customer contact and income generation opportunities from SIs to the SaaS provider as a platform leader, whilst the changes in the structure lead to the new patterns of cloud collaboration based on a micro-ecosystem comprising a multi-lateral relationship between groups of at least three stakeholders, instead of a bilateral alliance between the firms. In addition, the emerging PaaS cloud delivers a new participant in the cloud ecosystem, the development partner providing new added-value services using the PaaS platform. When an industry's or an individual customer's specific needs cannot be met adequately by SAP's standardized SaaS cloud application, the development partners powered by the SAP PaaS cloud represent a new cloud community to address such challenges.

Promoting digitized channels.

The transformation to the SaaS cloud is changing how customers buy and use the software solutions and services, enabling software vendors to re-evaluate the roles and capabilities of their channel partners to adapt to the evolving cloud market. The SAP distribution channel is mainly comprised of two types of channel partners – distributors and value-added resellers (VARs). The traditional distribution channel played a vital role in helping SAP to expand the customer base access, as SAP could not approach the targeted market segment directly, but, when moving to the SaaS cloud marketplace, SAP faces a challenge in relation to enabling the transformation their distributors and VARs. We analyze two aspects: the roles of the channel partners and the creation of a digital sales channel.

Analysis

The roles of channel partners have been weakening during the move to the cloud. As discussed with the interviewees, previously SAP's channel partners used to receive a percentage of the initial software license and software maintenance purchase, yet these income streams are not easily replicated within the SaaS cloud marketplace. The reasons are twofold: firstly, considerable system integration effort has been substituted by SAP providing the full stack of cloud computing services. Distribution channel partners are thus selling software without the lucrative system integration work in the process losing influence with the customers. Secondly, SAP has become the dominant platform leader and has furthermore developed the direct sales approach tuning its sales and marketing methods to a SaaS marketplace. This means it is growing rapidly through a marketing-driven yet low-touch sales approach. SAP's Greater China VP said:

In the cloud era, it is quite hard for SAP to point out how to get the channel partners involved to earn money to make them survive by reselling SaaS cloud applications.

Pure-play VARs are not also succeeding in today's SaaS marketplace channels. The low-value functions and roles like order fulfilment and installations have vanished, and VARs need to transform themselves to fill a high-value role as industry experts, systems integrators, and trusted advisors, focusing on industry know-how and customer business process management. Therefore, they are evolving into multi-skilled consultancies and systems integrators like Accenture, IBM, and Deloitte and playing a

multitude of roles: cloud service implementation provider, consulting service provider, system integrator, management consultant, and so on. In addition, the functionality of the SaaS cloud is still in the process of evolving, and SAP does not have in-depth expertise to cover each market segment; this provides a real opportunity for channel partners to establish themselves in the SaaS cloud marketplace as providers of market-specific extensions and add-ons, which is based on PaaS to develop software on top of the SAP cloud platform, then deploying these extensions as applications in SAP apps store. These extensions evolve into a repeatable, scalable, and packaged offering that forms new recurring revenue attached to the SAP core SaaS cloud. In this sense, channel partners will become more likely as an independent software vendor (ISV). Generally, the boundaries between partner roles are becoming more blurred, and partner types are converging.

With the emergence of the digital channel, customers' B2B buying habits have changed, and they no longer rely on the traditional sales channel. Instead, they can obtain related information quickly and conduct most of the analysis and research by themselves. SAP is trying to drive its SaaS cloud applications to be sold via digital channels and developing social selling tools such as LinkedIn Navigator to build relationships with prospects and customers. Attending SAP's global partner summit 2018, one of SAP's cloud experts demonstrated how to use LinkedIn Sales Navigator to create a personal profile with SAP's solution expertise to attract potential customers to connect with him. When he was asked about the reason for adopting social media as a new channel to generate leads and build a pipeline, he explained:

Customers don't like to be disturbed and pushed by cold calling, which is often considered as a sales call to sell products and services on purpose; a social media tool like LinkedIn Navigator can provide a social platform by exhibiting industry expertise, personalized insights, thought leadership, and hobbies with the pull model rather than the push model to socialize with prospects and customers.

In fact, the creation of a digital sales channel provides an opportunity to help customers gain relevant business insights and then connect with them directly offering a solution to their issues. At the same time, it offers an excellent opportunity for SAP to gather leads via social media platform using comments, likes and other social network effects. The SAP cloud solution principal stated:

We do not heavily rely on the traditional channel for lead generation, and 70% of SaaS cloud leads originated from social media, the website, and the home page.

Findings

With the increasing use of sales automation and the digital channel, the roles and functions of the traditional distribution channel partners have been eroded, and the basic fulfillment, installation, and upgrades are no longer necessarily performed via channel partners. The basic configurations of SaaS applications are made by the systems integrator or service implementation provider, and less room is left for the traditional distribution channel. In addition, the digital sales channel is steadily replacing the traditional ones. SAP needs to realign its distribution channel programmes and drive the realignment of channel partners from reselling products to delivering result-oriented service business.

Building cloud platforms.

Platforms have become increasingly important for IT enterprises as markets and technology have evolved. The notion of a platform has evolved from an internal product-centered platform to an external industry-oriented platform. SAP was traditionally seen as an enterprise application software company, but it is becoming a real platform company, providing a cloud platform to support the rise of the digital economy. In terms of SAP's company development path, historically, SAP called itself a platform company in the 2000s, but the platform in that period meant a product platform. It is now providing an industry or cloud platform, which has a foundation technology opening to ecosystem partners.

Analysis

SAP was quick to enter the cloud market and to develop its first SaaS application – Business by Design – in 2007. However, the increased competition faced in the 2010s caused the earnest shift in its corporate strategy towards the Cloud, driving its transformation to SaaS in 2012. As discussed with the interviewees, SAP takes on a dual role in the cloud marketplace, by acting as both a cloud platform provider and a SaaS provider. It thus integrates both IaaS and SaaS (software as a service) into a solution offering for customers. This means that the customers' IT spending, previously split into hardware, database and operation systems, middleware, network and security, application software, software maintenance, service implementation, and AMS (application management service), has now been simplified into two categories of expense subscriptions and service implementation. This has led to a structural change between SAP and its SI partners in the following three aspects affecting the exchange of value between them: a) marketplace creation, b) software configuration, and c) training.

Marketplace creation. In the cloud platform model, SAP is not only building a new growth engine delivering cloud service implementation opportunities to its SI partners but also is creating a new marketplace – the SAP apps store. This is based on its cloud platform and serves to open the platform to SAP's SI partners, enabling them to develop extension solutions to the platform. These are offered and deployed on SAP's cloud platform extending SAP's core SaaS offerings to cater for industry-specific requirements. Notably, they also serve as a feedback channel since the platform allows customers to comment on those extensions. For example, Accenture offers the extension solutions HR Audit & Compliance, Clone Test, and Document Composer surrounding SAP's SFSF solutions. In comparison with SAP's on-premises applications where individual customers can only use customized solutions; SAP's cloud platform offers greater value, allowing wide distribution of any certified extension solutions attached to the SAP SaaS cloud. In this sense, SAP is creating a new revenue stream for SI partners, and the SAP–SI partner relationship is further enhanced.

Software configuration. SAP's SaaS cloud is a standardized software solution based on SOA, deployed on a data center infrastructure and used by clients via the web browser. Therefore, the software configuration has been vastly simplified through the business process-oriented design compared to the on-premises offering, and the service delivery cycle by SI providers has been shortened accordingly, with customers paying less than before.

Training. SAP's SaaS solutions' emphasis on user experience has simplified the style of the interface and system configuration. This has led to easier training content and reduced timescales for training and enablement compared with SAP's on-premises applications. In this context, customers can even take a learning course to master the application functions without the support of SAP and its SI partners. Hence, the training and enablement in the cloud platform model offer less value to SI partners than those for on-premises applications.

SI Provider and Infrastructure Provider constitutes an actor to actor relationship within the value network of cloud computing. We converge the analysis on two aspects: (a) managing consulting service and (b) infrastructure service.

Managing consulting service. In order to strengthen its attraction to customers and gain a competitive advantage against their rivals. IaaS providers certified by SAP are more eager to put the industry-specific solutions into their cloud infrastructure platforms. They assure that the consumption of the underlying IaaS service will lose its source without the driving of top-level application service. The more industry solutions on its platform are available, and the more are attractive for customers to consume IT service. Therefore, the managing consulting service in the cloud model offers more value to IaaS provider than those for the deployment of on-premises hardware.

Infrastructure service. Infrastructure service has been simplified by the centralization, and reconfiguration and virtualization of hardware resource, compared to the traditional hardware system configuration of on-premise. The value of hardware or Infrastructure configuration service provided by the consulting firm has been shrunk and substituted by IaaS provider when moving to the cloud. The senior director in charge of Accenture SAP cloud business echoed:

The consulting firm must completely give up the deployment service of on-premise

hardware system configuration and sizing, moving to the service of infrastructure consulting and cloud integration.

In addition, the cloud platform imposes a new relationship between SAP and IaaS providers. Here, we will focus on the analysis of the following three aspects influencing the value exchange in this relationship: (a) trust building, (b) installation and configuration of the hardware system, and (c) certification of the infrastructure system.

Trust building. A need has arisen to build deeper trust between SAP and IaaS providers. SAP's SaaS cloud is run on the data center of IaaS providers, providing the cloud service via the mechanism of multiple-tenant technical architecture with the virtual instance based on the common hardware infrastructure. When all the SAP SaaS applications of a customer are centralized to run on the same hardware infrastructure, this increases the risk and responsibility based on the reliability and security of the hardware supporting the SAP's SaaS application. It is thus necessary for SAP to form a dedicated P&I (product and innovation) team working with IaaS providers and build deeper trust based on a longer-term collaboration to ensure high stability and reliability of the hardware. Hence, it can be assumed that the value needed for building a trustful relationship between SAP and IaaS providers in the cloud platform model is greater than that between SAP and hardware providers in on-premises software products.

Installation and configuration of the hardware system. Since SAP's SaaS is centralized to operate on a data center infrastructure, customers do not need to purchase the hardware separately. Thus, it is unnecessary to install and configure hardware systems to run SAP's application software on the customers' site, which was a key part of costs and effort within the on-premises delivery. Hence, SAP's cloud transformation is leading to the disappearance of the traditional services ensuring the installation and configuration of the hardware system. The value generated by SAP for hardware or IaaS providers in the cloud platform model is insignificant compared with SAP's on-premises software product model.

Certification of the infrastructure system. The traditional SAP hardware partners have almost disappeared during the move to the cloud. The requirements for SAP might enable and certify a set of emerging IaaS providers (e.g., AWS, Azure, Google, and Alibaba) to support the SaaS cloud on the cloud platform. The certification process of SAP's cloud platform is not limited to the testing of individual hardware sizing and functions but can also be extended to the testing of the performance and security of its overall infrastructure running SAP cloud solutions to meet the application requirements of super-large-scale customers. Therefore, the complexity of the certification and investment in the required resources in the cloud platform model are far higher than those for on-premises software products; so the value of certification from SAP to IaaS providers is greater than that from SAP to hardware providers of the on-premises model.

Findings

All three actors are not limited to exchange service for money, but to co-create value within this value network by refining the service offering, and eventually, provide the end to end service via the platform leader for customers. For the detailed findings, the results of the relationship analysis between the platform leader, the SI partners, and the IaaS partners are summarized in Table 2.

Table 2 Results of relationship analysis between key actors

Value between SAP and SI Partner	Value needed in on-premises software product	Value needed in cloud platform	SI Provider to SAP	SAP to SI Provider
Creation of marketplace	Lower	Greater	Providing resources and capability of service implementation and enabling business transformation with SAP to co-create value for customers	Providing new marketplace and business opportunity and creating new revenue stream for partners
Service implementation	Greater	Lower		
Training and enablement	Greater	Lower		
Value between SI and IaaS Partner	Value needed in on-premises software product	Value needed in cloud platform	SI Provider to IaaS Provider	IaaS Provider to SI Provider
Managing consulting service	Lower	Greater	Providing industry and functional application solutions and offering best practice, industry know-how and assets on top of IaaS platform	Providing the application and infrastructure outsourcing service, and creating managing consulting service of cloud integration
Infrastructure service	Greater	Lower		
Value between SAP and IaaS Partner	Value needed in on-premises software product	Value needed in cloud platform	IaaS Provider to SAP	SAP to IaaS Provider
Trust building	Lower	Greater	Sharing the risk and cost, providing the multiple choices for customers, and offering the IaaS service being integrated with SaaS as one service for customers.	Buying the service of IaaS, and creating the new marketplace and revenue model of IaaS service consumption
Certification of infrastructure	Lower	Greater		
Installation and configuration of hardware	Greater	Lower		

Managerial implications

Our findings regarding the changes in the ecosystem structure, which is not limited to the case of SAP, but can be generalized to the software industry, e.g., other software giants, Microsoft, Oracle, and Adobe, etc. The shift to direct channels and the platform-based changes in the value relationships between partners bring to the fore several managerial recommendations and suggestions for guiding the transition from on-premises to cloud-based enterprise software.

Conducting transformation in a holistic manner.

The Cloud SaaS ecosystem for enterprise application software is radically different from the partner ecosystem established for on-premises software delivery. Therefore, the traditional channel partners and service implementation partners are seeing their business disrupted, as the SaaS Cloud simplifies the purchasing and use of enterprise application software, including the removal of the majority of installation and configurations activities of hardware and software systems required for on-premises implementation.

These changes require a holistic approach to the SaaS transformation, where the interaction with and collaboration between the software vendor and its partners play an essential role. On one side, the channel partners need to reinvent themselves to meet the new needs of the cloud marketplace. On the other hand, it is necessary for SaaS vendors to support their channel partners in their quest to expand their offerings into specific industry markets. Channel partners would thus become strategic advisors for specialized markets.

Development of the cloud ecosystem.

The transformation to the cloud not only reflects the changes in the functions and roles of the partner ecosystem but also influences its structure. There is a strong need for SAP to develop new IaaS providers as strategic partners, while the traditional global hardware vendors are gradually fading out of the cloud market. A multiple cloud infrastructure strategy requires collaborations with IaaS partners, such as Amazon and Azure, to share the risk of running and operating data centers and to provide the flexibility of ramping up and down the hosting requirement with real cost implications. Simultaneously,

when the traditional SI partners are still reluctant to transform the existing service market of the composition and configuration of on-premises software, it is imperative for SaaS vendors to establish the cloud ecosystem. The cloud ecosystem based on outcome-oriented services requires tightly coupled relationships and collaboration among key stakeholders to integrate the different layers of service components and interact with customers, presenting the transition from value-in-exchange to value-in-context (Vargo, Maglio, & Akaka, 2008).

Creation of a new revenue stream.

When the composition and configurations of software are substituted by the SaaS cloud, the related revenue of service implementation for partners is reduced accordingly. However, the SaaS cloud shapes new business opportunities and marketplace enterprise application stores by incubating cloud ecosystem partners to develop innovative solutions and industry extensions based on the cloud platform to create new revenue streams. The cloud platform, which brings together software providers, SIs, and IaaS players as a new business value network, has been developing into an innovation and growth engine. The more SaaS extensions surround the cloud platform, the more attractive it will be to customers and developers. This pattern will present a direct network effect and transform the competitive landscape of the ecosystem.

Conclusions

This paper adopted the perspective of the ecosystem and used a conceptual framework to analyze the impact of shifting enterprise application software delivery from on-premise model to the Cloud SaaS model. We employed a case study of SAP, comparing the models of on-premises software and the Cloud-based SaaS delivery. Firstly, our study showed that the structures of the partner ecosystem have changed and that partners and software vendors are forming a multilateral, tightly coupled relationships with a network structure when shifting to the cloud. This also confirms the view of cloud ecosystem integration, which is a multifaceted model of cloud-related value co-creation, in which multiple complementary cloud parties amalgamate IT infrastructure, data, and software resources in a mutually reinforcing manner (Huntgeburth, Blaschke, & Hauff, 2015). Secondly, the role and function of a traditional distribution channel have been weakened in the Cloud SaaS model, with the digital sales channel gradually replacing it. Thirdly, the relationships among the key stakeholders in the cloud ecosystem have changed as measured by value, with a decrease of the value exchanged between platform leader and partners in aspects of composition and configuration of system, training, and enablement. Stuckenberg et al. (2011) reinforce these points by citing interviewees who stated that ‘the partners, whose business model targets making money from configuration or the infrastructure, won’t exist anymore in the future’, whereas the value in the market creation of the marketplace, trust building, and certification is growing. SAP’s striking success with its on-premises ecosystem partners over the last decades has formed a new challenge in shifting to the Cloud-based SaaS delivery.

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