Title of Thesis

Transformation from On-Premise Software to Cloud Computing-Based Services: A Case Study of SAP Practices

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Abstract

The enterprise application software market is facing a fundamental change from selling on-premises software products to cloud computing-based services with "pay-per-use" subscriptions. A novel conceptual framework is proposed to analyse this transformation process from the service business model to co-cocreate value across company boundaries. Based on an initial theoretical analytic framework, extant literature, and the resultant conceptual model, I propose a theoretical model–service transformation business model, comprised of three groups of 13 components refined from the literature on business models, servitization, and cloud computing, particularly business model transformation. The following findings of this study suggest that the traditional software product-based ecosystem has evolved from a PDL (product-dominant logic) ecosystem to an SDL (service-dominant logic) ecosystem: 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; indeed the cloud computing-based ecosystem has changed the roles, functions, and value relationship among stakeholders; 2) the emphasis has shifted from customer value to ecosystem value; 3) the critical success factors for transformation to cloud computing services are identified under the framework of a service transformation business model. Overall, the results of this study provide in-depth insights that enterprises can use when switching from on-premises software to cloud computing-based services.

Keywords: business model, business model innovation, service ecosystem, cloud computing, SaaS, servitization, value co-creation

Declaration

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institutes of learning.

Copyright Statement

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Chapter 1. Introduction

1.1 Overview and Motivation of the Research

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. Driven by the external environment and new customer demands, disruptive innovations often change the patterns and roles of market competition, leading to a new business model. With traditional product markets becoming saturated, many product-based companies find themselves moving from their traditional business model based on product sales and delivery towards models based on services, and thus needing to focus on services (Kindström 2010). 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.” Increasingly complex application functionalities are now handled by pre-configured process and standard practices; they can be turned into service offerings through low-cost, high-powered cloud computing (Parmar, Mackenzie et al. 2014)

In this sense, cloud computing is not a new technology but rather a new operation 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 (Floerecke & Lehner, 2016). From hardware companies such as IBM, HP, and Dell to software companies such as SAP, Oracle, and Microsoft, a number of companies are pouring into cloud computing. These technological advancements result in a cloud transformation that drives the changes in business models. Thus, cloud computing has caused the business model involved in the provision of enterprise software to evolve, while the

technology and platform of cloud computing are disrupting the on-premises business model by combining and integrating scattered products and services into one service. Unlike "on-premises" software, SaaS (Software as a service), based on the "as-a-service" paradigm, is 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 as one of the ecosystem partners (Hilkert et al., 2010).

In today's IT market, on-premises software still dominates the market of enterprise application software, but the software giants are reinventing themselves to respond to increasingly competitive pressures worldwide, moving from on-premises software to on-demand SaaS. The IDC (2013) reports show that 75% of new enterprise IT spending will be cloud-based or hybrid by 2016; 80% of new IT purchases will be made by the line of business; 60% of cloud spending will be for cloud apps (SaaS), and the cloud market scale will reach $200+ billion by 2018. The cloud is where the market is going, and the IDC (2015) reports and forecasts indicate that the SaaS business is growing five times faster than on-premises software and will overtake it worldwide in the next few years. On the one hand, an increasing number of software vendors and software giants are realizing that it would be very difficult to grow their business to scale while clients are asking for the IT TCO (total cost of ownership) to be lowered. On the other hand, with cloud computing and the new business model coming out, a new option can be provided for customers by integrating hardware infrastructure, system software, application software, software maintenance, and service implication with a subscription model in terms of "pay-per-use."

The traditional business model, which mainly specializes in providing software products, faces a huge challenge with the market conditions changing and new technology emerging. The business as we know it is permanently changing. Customer purchase behavior, characterized by long (capital expense) decisions, long time to

value, and risk-taking by the customer, is shifting to the "as-a-service" paradigm, characterized by short (operating expense) decisions, short time to value, and risk-taking by the provider. The product provider needs to rethink traditional sales methods and go-to-market strategies. Although it is still succeeding in navigating the current business, it no longer caters for customer needs. One thing has become clear: the selling, marketing, service, ecosystem, and innovation agenda for most companies is becoming increasingly complex, and delivering growth is a massive challenge for every organization (Wollan et al., 2013).

Today, the software company competition is not only confined to providing software product layers, but also the competition is extended to offer a comprehensive one-stop service for customers by integrating the resource, technology, and marketing and service innovation from the software company itself and its partner ecosystem. With cloud computing emerging, all worldwide software giants have all but based their company strategy around the cloud. The transformation to cloud computing is a trend of the IT industry and an imperative. Moreover, the terms of the debate have not remained on whether to shift to the cloud but how to transform the cloud business model successfully.

Therefore, cloud computing as a disruptive innovation requires software vendors to re-estimate their existing business models, seize the market opportunity, and create cloud ecosystems. However, much of the past debate in management literature focused on the transition from product manufacturing to service, with little attention being paid to the software industry. There are plenty of articles and working papers around cloud computing promoted by the major software vendors, consulting firms, and research firms publishing business analysis reports on the advantages and benefits of cloud computing. These journals have published journal papers on how cloud computing can drive technology innovation and the business impacts on customers and software

vendors themselves, etc. There is limited research about the evolution of business models with a service transformation perspective across the company's boundary involved in enterprise software, partners, and customers and the impacts on the relevant partner ecosystem caused by these changes. As software vendors are moving to the cloud, their ecosystems should be transformed into cloud-based ecosystems.

In addition, it does not matter whether for Microsoft, SAP, IBM, or Oracle, cloud transformation is still in relatively early stages. As a result, there is a lack of literature studying practical experience in realizing the cloud-based business model transformation. Literature relating to the practicality of business model innovation to realize cloud transformation is primarily derived from theoretical research. Some studies have reviewed SaaS transformation and innovation of the industry platform in the context of cloud computing and have speculated on the potential impacts of cloud transformation. However, these studies are mostly seen as superficial efforts by IT analysts, consultants, and software vendors without the corresponding theoretical depth.

A few academic research studies have attempted to fill this void by using business model and PSS (product-service system) frameworks to examine the impacts of cloud transformation, but most of these studies have focused either on a technology aspect or a business aspect of adoption and service implementation of cloud computing. While other academic studies of cloud computing and SaaS are emerging, there remains a lack of critical research addressing cloud-based business model transformation and transformational implications toward success factors.

This paucity in the academic literature and business practice related to cloud transformation is the motivation not only for revealing phenomena of business transformation but also the questions that shape this research – How does cloud transformation happen from a service business model perspective? What does the new cloud ecosystem paradigm look like? What is the 'secret' behind success factors toward

cloud models? How is value co-created with the relationship change among key actors? How to uncover the operating mechanism of the cloud business model leading to an innovative way to create a new business model?

This paper will present findings from case studies based on SAP practice focusing on a service business model perspective of the transformation from on-premises software to cloud service to explore and investigate the extent to which software and service should be integrated and the role the actors play in the cloud.

1.2 The Context of the Research

The traditional business model of the enterprise application system involves software license sales, service implementation delivery for on-premises software, and the subsequent AMS (application management service) to construct the enterprise information system and process management. With the rise of cloud computing, especially for emerging software vendors such as Salesforce, Workday, and ServiceNow, focusing on SaaS business, it is emerging that the new business models triggered by cloud computing technology and SaaS enable the deployment and use of an enterprise application system with an on-demand approach through the Internet. In this model, a provider delivers an application based on a single set of common code and data definitions consumed in a one-to-many model by all contracted consumers anytime (Seethamraju, 2015). The obvious advantage of adopting SaaS is helping customers concentrate on their own core business since it can help customers relieve the burden of financing, managing, and maintaining their own in-house IT application systems and infrastructure (Armbrust et al., 2009).

Because services are remotely used through the Internet based on utility models, cloud computing is driving the shifting from capital expenditures to operational expenditures.

In addition, the shared resource pool enables the increase of flexibility, elasticity, and availability; the resources of cloud computing applications can be scaled up and down easily in terms of the customer's requirements, while the upfront cost is lower. The key drivers for customers to adopt SaaS are that they provide instant value, reduce the lock-in effect of software vendors, and minimize capital expenditures, while on-premises software is required to invest heavily in building its IT infrastructure and enterprise applications beforehand. Compared to the "on-premises" model, SaaS-based solutions have shifted the value frontier and provide the same level of value at a lower price or more value at the same price (Lenart, 2011).

Furthermore, the concept of application service providers (ASPs) is considered the predecessor of the "as-a-service" paradigm (Hilkert et al., 2010). SaaS is often easily confused with the delivery model of ASPs, but SaaS is different from ASPs, making it possible to simply host enterprise applications in a third-party data centre with a single-tenant model without the benefits of economies of scale(Kranz, Hanelt, et al. 2016). Instead, it is built based on one instance with a multi-tenant architecture shared with a single set of common codes, allowing customers to use the shared application service resources at scale economically(McAfee, 2011). Compared to the ASP model, the SaaS model has a shorter implementation time, higher intuitive usability, and multi-tenant scalability (Ju et al., 2010).

1.3 Objectives of the Research Project

The main focus of this research will be in the field of the application software industry based on SAP practice. I will consider how they carry out business transformation and innovation, collaborating with their partners to create value for customers, and establishing a new service business transformation model based on cloud computing. The aims of the research are as follows:

1. To investigate the present condition of the software industry and understand the present software industry challenges faced and its future market development and trend.
2. To identify the research questions regarding cloud transformation by penetrating the phenome of interest and synthesizing the literature review.
3. To propose a conceptual business model framework based on the Business Model Canvas (Osterwalder & Pigneur, 2010), which aims to analyse software companies and their partners in light of SDL requirements to understand changes in the business model, business value, and service ecosystem.
4. To analyse the cloud-based business model transformation across company boundaries and study the cloud-based business operation model on how to co-create value among key players (e.g., SaaS provider, SI provider, IaaS provider, and customer) by orchestrating a cloud ecosystem.
5. To understand the difference between the cloud ecosystem and on-premises software ecosystem and further study how the relationship measured by value and importance has changed among the key stakeholders in the cloud ecosystem with the exchange of value and value co-creation.
6. To refine the proposed theoretical framework for service transformation of business model by examing an in-depth case study to understand the cloud-based business transformation, identifying key critical success factors when transforming to the cloud, and providing managerial implications for those companies moving to SaaS field and related services.

1.4 Structure of the Thesis

I base our analysis on a case study using SAP's migration from on-premises enterprise application software products to cloud platform-based services. In the remainder of this

paper, I first establish the theoretical foundations of our work in Chapter 2. Secondly, I design our case study strategy in Chapter 3 and synthesize a theoretical analysis framework based on the concepts of business model, business value, and service ecosystem in Chapter 4. Third, I conduct the case analysis in Chapter 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. Fourth, I figure out the six CSFs of enabling cloud transformation in Chapter 6. Finally, I discuss the theoretical implications and summarize the managerial implications in Chapter 7 and draw conclusions in Chapter 8.

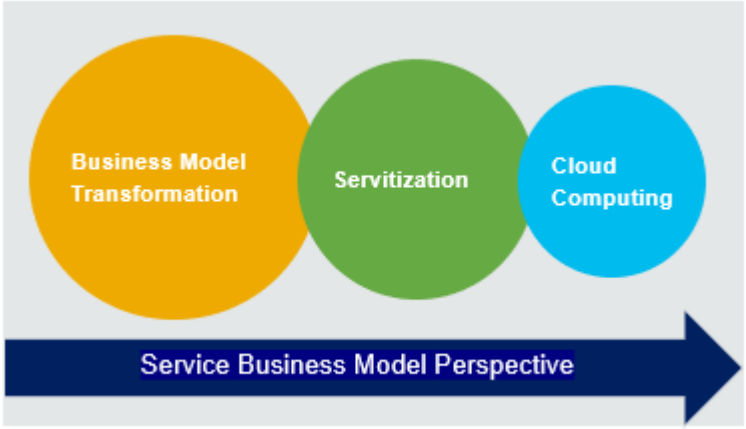
Chapter 2. Literature Review

The aim of this literature review is to present the current state of the art and then build up a foundation to develop theoretical frameworks applied to a case study. Given that the essence of moving from software to cloud service is a special form of transformation from product to service in the software industry, either software to cloud or product to service is a kind of business model transformation. In this section, I will employ a structured way to conduct a literature review, analysing the published articles covering the fields of business model, business model innovation, servitization, cloud computing, and SaaS beyond a narrow description of the software and cloud computing's literature as the keywords search used.

In order to present the full picture of the literature view, which reflects how the proposed research adds to, extends, and replicates the researches that have already been completed (Creswell, 2013), a literature map is designed as a valuable approach to serving this purpose. Hence, this literature review will start by setting out three research stages with a flow chart (Figure 1) to illustrate these stages. The main aims are as follows: (1) to review the top journal articles and highly cited articles in the business model field and to investigate the concept of business model transformation; (2) to identify the concept, definition, character, and classification of servitization; (3) to understand the concept and definition of cloud computing, in particular, its pattern and framework from software to cloud service; and (4) to identify gaps in the literature review. Moreover, in order to obtain more comprehensive literature and to avoid overlooking relevant literature, I also examine the bibliographies of the selected articles.

Figure 1

Flow Chart of Literature Review



2.1 Business Model

2.1.1 Defining Business Model

The concept of the business model originated from the writing of Peter Drucker over the last few decades, and the business model concept has become very popular and increasingly important and attracted significant attention from both academia and business. What is the business model? As Afuah (2004) stated succinctly, the business model is a framework for making money from the business perspective. From an academic viewpoint, the business model refers to the logic of the company, the way it operates, and how it creates value for its stakeholders (Casadesus-Masanell & Ricart, 2010).

According to Shafer et al., a business model is a tool that serves to represent the company's underlying core logic and to communicate strategic choices (Shafer et al., 2005). Osterwalder et al. (2005) further point out that the business model is taken as a conceptual tool, which is consistent with objects, characteristics, and their relationships, and it simplifies the description and representation of a company's business logic. In contrast, Casadesus-Masanell and Ricart (2010) argue that the business model is a

reflection of the firm's realized strategy in which external staff can observe the company's strategy via its business model. Chesbrough is one of the well-known figures that bring value creation and value capture together into the concept of the business model.

> *At its heart, a business model performs two important functions: value creation and value capture. First, it defines a series of activities, from procuring raw materials to satisfying the final consumer, which will yield a new product or service in such a way that there is a net value created throughout the various activities…… Second, a business model captures value from a portion of those activities for the firm developing and operating it.*

Osterwalder and Pigneur (2010) claim that a business model describes the rationale of how an organization creates, delivers, and captures value, and Elbers (2010) expresses a similar notion that a business model depicts how to create, deliver, and capture value in view of its strategic choices. In terms of the definition of the business model given above, actually, there is no unique definition or commonly accepted view of what the business model exactly should be. The definition of the business model concept is based on the different dimension's strategy view, a tool view, value view, innovation view, phenomena view, etc. The existing literature has not converged different approaches for conceptualizing business models into a common theoretical framework (Zott et al., 2011), but most scholars acknowledge that the notion of value creation, value capture, and value delivery lies on the centrality of the business model. Therefore, the discussion will focus on the value view's school of thought for the business model. Shafer, Chesbrough, and Pigneur are well-known figures in developing the business model. The concept of the business model presented by Shafer et al. (2005), Chesbrough (2007), and Osterwalder and Pigneur (2010) will be considered to classify it within one group. The reason for this classification is that defined notion of creation, capture, and delivery of value is not only the essence of the business model for the process analysis, but it also shapes the concrete elements that constitute the business model framework to

investigate and analyse the transformation of product to service. Moreover, their works are widely accepted by scholars and practitioners.

In order to analyze the business model and compare business model elements in a further review of the business model with the comparison from Shafer et al. (2005), Chesbrough (2007), and Osterwalder and Pigneur (2010). I find that Shafer et al. (2005) identify the four categories of business model components. Likewise, Chesbrough (2007) developed a specific working definition, and the functions of the business model are presented by six dimensions. Similarly, Osterwalder and Pigneur (2010) proposed nine elements that constitute the business model. These elements are described and compared in Table 1. It can be seen that most elements are the same or have a similar meaning in using different descriptions, e.g., value proposition, value network, ecosystem, value chain, revenue mechanism, revenue stream, etc. The main difference is that Shafer et al. (2005) do not break down the components into smaller elements, such as creating value, which can be decomposed into the elements of value proposition and value chain.

On the other hand, the concept of the component is not specified in the measurable elements, e.g., the revenue stream is more visible and measurable than the implication of capturing value. In addition, the target markets or customer segments mean the market segments in which solutions and offerings are proposed, and it is not also included and identified in Shafer's account of the business model. By contrast, Osterwalder and Pigneur (2010) do not take on the element of strategy, e.g., strategy choice and competitive strategy, in their account of the business model, while Shafer et al. (2005) and Chesbrough (2007) count it as the element of the business model.

Osterwalder and Pigneur argue that the concept of the business model is not the same as strategy, though they are related and connected. The distinctiveness of a business

model is to provide the "missing link" between strategy and tactics (Osterwalder & Pigneur, 2002). Although Osterwalder and Pigneur do not consider the competitive strategy as a separate key element, the elements of value proposition, customer segments, and cost structure suggest the linkages of a competitive strategy, which is comprised of differentiation, focus, and cost leadership (Porter, 1985).

Table 1

Business Model Element Comparison by Authors

Authors	Year	Components of business model
Shafer, Smith, and Linder	2005	1). Strategic choices; 2). Creating value; 3). Capturing value; 4).Value network
Henry Chesbrough and Richard S. Rosenbloom	2007	1). Value proposition; 2). Target market; 3). Value chain; 4). Revenue mechanisms; 5). Value network or ecosystem; 6). Competitive strategy
Osterwalder and Pigneur	2010	1). Value proposition; 2). Customer segments; 3). Distribution channels; 4). Revenue streams; 5). Key partners; 6). Key activities; 7). Key resources; 8). Customer relationship; 9). Cost structur

The comparison and analysis above are considered appropriate to analyse the enterprise business model transformation in this paper. It provides the analysis framework of the business model and embodies the process of business model development and management. Furthermore, there has been some empirical evidence supporting this model. There are also a number of scholars from academia and experts from enterprise and industry organizations who recognize their business model frameworks. Finally, given Business Model Canvas (Osterwalder & Pigneur, 2010) had already been adopted with the popularity in the IT industry, e.g., the Software as a Service business model (Luoma et al., 2012).

However, some inherent constraints are also revealed. For example, it seems unlikely that all nine elements work in isolation. Some of these elements might be associated with others, but what about their interrelationship, and how can the importance of its components in operating business models, etc., be evaluated? In particular, in terms of cloud services, they have also lacked the characteristics and attributes of being servitized. Hence, considering the pros and cons of Business Model Canvas(Osterwalder & Pigneur, 2010), I attempt to extend the content of the business model by adding new complementary elements and reclassifying these elements when designing the new theoretical framework based on the work of Osterwalder and Pigneur (2010).

2.1.2 Business Model Innovation

The business model (BM) and business model innovation (BMI) are distinct notions, but there is no doubt that they are equally relevant. While a business model depicts the logic of how a business creates and delivers value to customers (Teece, 2010), BMI is defined as an extension of the BM, which represents a novel and more holistic form of organizational innovation (Foss & Saebi, 2017). In the literature, BMI is the intersection of the notion of a business model and the domain of innovation.

BMI refers to the discovery of a fundamentally different business model in an existing business (Markides, 2006). It can be seen that a reconfiguration of activities in the existing business model of a firm that is new to the product service market in which the firm competes (Santos, Spector et al. 2009), and that a novel approach to commercializing its underlying assets, and a linkage between innovation and value creation through integration at different levels (Chesbrough & Rosenbloom, 2002; Gambardella & McGahan, 2010), or a process that deliberately changes the core elements of a firm and its business logic (Bucherer et al., 2012), generating new

sources of profit by finding novel value proposition or value constellation combinations (Yunus et al., 2010). BMI is critical to firm change, translating technical innovation into commercial performance (Teece, 2010).

Similar to the business model, there is no accurate definition of BMI either. Amit and Zott (2001) identified novelty, lock-in, complementarities, and efficiency as key dimensions of BMI. Schneider and Spieth (2013) proposed three streams addressing "prerequisites," "process," and "effects" as leading themes in BMI research. Likewise, Foss and Saebi (2017) provided a comprehensive notion that defined BMI as designed, novel, non-trivial changes revolving around two critical dimensions, namely key elements of the business model and architecture linkage among these elements, and they further categorized four streams of BMI research, which made important strides forward. These four streams are as follows: (1) Conceptualizing BMI, (2) BMI as an Organizational Change Process, (3) BMI as an Outcome, and (4) Consequences of BMI. Conceptualizing BMI focused on the definition of BMI, and the main argument is centred around the notion that either one element or several elements of a business model can consist of BMI or the overall architecture of the business model instead of one or several elements. BMI as an organizational change process, stresses learning mechanisms, leadership, and capabilities as key factors leading to successful BMI. BMI as an outcome indicates that the business model itself can be considered to be subject to innovation, and the consequences of BMI emphasize that BMI can lead to the effect of organizational performance.

Notwithstanding that Schneider and Spieth (2013) proposed three streams of BMI research and Foss and Saebi (2017) emphasized four streams in BMI research, both of them reached consensus on two streams: " Process of BMI" is aligned with BMI as an Organizational Change Process, while "Effects of BMI" is matched with consequences of BMI from the viewpoint of firms. BMI as an organizational change process provides a view of how BMI affects the organizational change process inside a firm. Going

beyond the three key factors above, what other key factors drive the change process? In addition, challenges and barriers of BMI are other important aspects that need to be addressed. Chesbrough (2010) identified barriers regarding BMI in extant firms. For example, barriers demonstrated the conflict in reconfiguring assets and processes and reflected the inertia of firms and staff, while managers and staff lacked sufficient cognitive capacity to fully understand the value potential of a new business model.

While I find that BMI is an important vehicle for organizational change and transformation, another important field relevant to BMI is servitization. Servitization is seen as a fundamental transition where BMI results from existing business model designs (Nair et al., 2013). In this article, in terms of the nature of business model transformation, I concentrate on BMI fields, which are related to servitization, to understand the success factors of transformation in conjunction with BMI as an organizational change process.

2.2 Servitization

The term “servitization” was first used by Vandermerwe and Rada (1988) in manufacturing, and it was widely accepted and recognized in the late 1980s. They defined servitization as a packaged solution, including product, service, and the combination of the two. This definition emphasizes service as a way to add distinctive value to the core product; “adding value” represents a view of product-dominant logic. The product is still in the centre with the dominant position in the early stage of the conception of servitization. Desmet et al. (2013) observed the industry changing and revealed the new tendency of servitization. They believe that servitization is a trend in which manufacturing firms adopt more and more service components in their offerings.

Ren and Gregory (2007) developed the concept of servitization further, and they

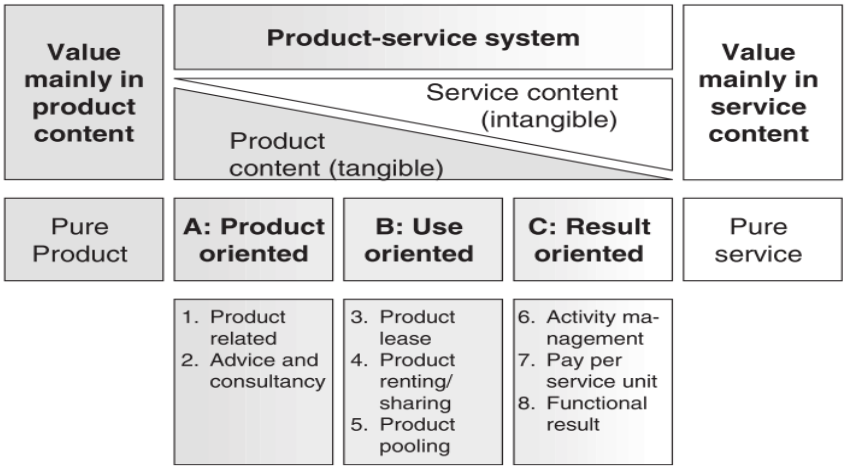
deemed it a change process wherein manufacturing companies embrace service orientation and/or develop more and better services, with the aim of satisfying customers' needs, achieving competitive advantages, and enhancing firm performance (Ren & Gregory, 2007). From this point of view, servitization is an innovation of business models to better create value through a shift from selling products to selling an integrated product and service offering.

Servitization and PSS (product-service system) have similar meanings; in particular, the concepts of servitization and PSS are closely related, and many of the principles are identical (Tukker & Tischner, 2006). Similar to the concept of PSS, servitization also originates from the manufacturing industry. In the literature on PSS, servitization is considered a special form of PSS. The slight difference between servitization and PSS is that servitization places more emphasis on the transition of product to service and reveals the process and journey from pure product provision to pure service provision – that is, service can substitute for the product per se in the end.

Sultan (2014) extends the notion of servitization to the IT industry. He depicts the emergence of cloud computing as representing a new paradigm of servitization, where a physical product (software or hardware) is transformed into service. In order to better embody the transition from software product to service, and to understand the journey of servitization to accord with the present study, I find it more useful and relevant that the IT industry and software context is introduced to Tukker's classification, which is widely accepted and used extensively in the literature (Tukker, 2004). This classification presents three categories: (A) product-oriented services (e.g., product-related), (B) user-oriented services (e.g., leasing, sharing), and (C) result-oriented services, pay-per-use). The following eight specific subcategorizations are shown in Figure 2.

Figure 2

Classification of PSS Proposed by Tukker (2004)



• Product-oriented services (POS): The ownership of the product is the customer, and the after-sales or product maintenance is a value-added service in addition to the product sales to ensure product functionality, durability, and upgrade delivered by the product provider. In essence, POS is based on transactions with GDL (goods-dominant logic), and service accounts for quite a small portion. For example, in the software industry, software vendors not only sell software products but also provide related software maintenance services. Software and software maintenance services are combined together, but software products remain central.

• User-oriented services (UOS): The ownership of the product is the product provider. The product provider doesn't directly sell products to customers; instead, they sell product use or functions by leasing, sharing, or renting. Castro-Leon and Harmon (2016) pointed out that UOS are primarily GDL in nature but share some SDL (service-dominant logic) qualities in terms of a focus on the user experience. This also happens in software solutions in which software vendors no longer sell software licenses to clients but only enable its usage for customers via a hosting model. The software product remains central.

• Result-oriented services (ROS): The most distinctive feature is that a product provider sells a result or competence based on the client's needs instead of products. Similar to UOS, the ownership of the product is the product provider, but customers and service providers agree on the desired outcomes. ROS exhibits the pattern of value-in-use with SDL, and service lies in a dominant position. For example, in the enterprise application software market, software providers offer a one-stop subscription pay-by-usage service model based on cloud computing rather than stand-alone software, software maintenance, or service implementation. ROS will focus on customer business needs without specifying the software products involved.

All three classifications, Product-oriented services, User-oriented services, and Result-oriented services, are in different stages of IT industry servitization from product to service, but ROS indicates the transformation from providing product to providing service. From the IT industry perspective, software to cloud service is a concrete reflection of the result-oriented service model, which manifests a new paradigm of servitization.

2.3 Cloud Computing and Business Model Innovation

2.3.1 Cloud Computing Definition

Over the past few years, cloud computing has risen significantly in the IT industry, and the use of the term "cloud computing" has become quite popular. What is cloud computing? Briscoe and Marinos (2009) say that cloud computing "..... can be seen as a commercial evolution of the academic-oriented grid computing, succeeding where utility computing struggled". Vaquero et al. (2008) see it as a combination of elements of virtualization, utility computing, and distributed computing. Actually, there is no established definition yet but put simply, according to Boss et al., the cloud is a pool of

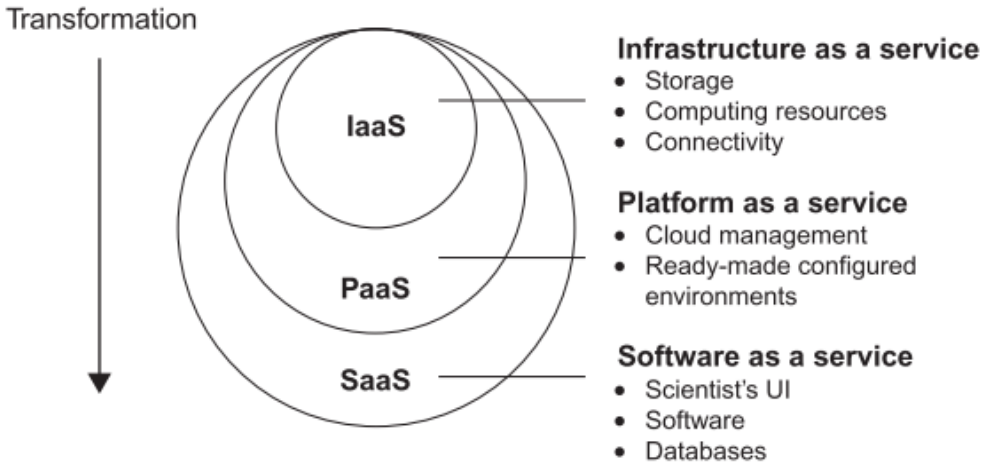
virtualized computer resources (Boss et al., 2007). The National Institute of Standards and Technology (NIST) provides a more comprehensive definition, which includes key common elements widely used in the cloud computing community. This study follows its ideas. Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Cloud services can be viewed as a cluster of service solutions based on cloud computing, and they can be divided into three layers as depicted in Figure 3 (Chenet al., 2015):

(1) Software as a service (SaaS) – application services delivered over the network;
(2) Platform as a service (PaaS) – a software development framework and components all delivered on the network;
(3) Infrastructure as a service (IaaS) – an integrated environment of computing resources, storage, and network fabric delivered over the network.

Figure 3

Cloud Computing



2.3.2 Software as a Service

Software-as-a-Service is taken as part of cloud computing, and it represents the software layer in the architecture stack model, which is on top of the middleware layer. According to Hoch et al., "SaaS is defined as an application or service that is deployed from a centralized data centre across a network, providing access and use on a recurring fee basis, where users normally rent the applications or services from a central provider" (Hoch et al., 2001). SaaS is also described as a software on-demand paradigm in which the required services are assembled and used (Budgen et al., 2004). Originally, SaaS was derived from the Application Service Provider (ASP) model, which hosts a software application in its centrally located servers and licenses the application service to multiple customers. In the SaaS model, the application service delivery is based on a single stance of the software platform, enabling multiple customers and clients to use the software application service on a pay-per-use basis or via a subscription model. In comparison with the traditional on-premises software model, its advantages are the shorter service implementation time of application software, higher intuitive usability, multi-tenant scalability, ease of use via a Web-based program, quick iteration and upgrade, total cost of ownership, etc. (Ju et al., 2010; Low et al., 2011; Waters, 2005).

2.3.3 Cloud Computing Platform and Business Model Innovation

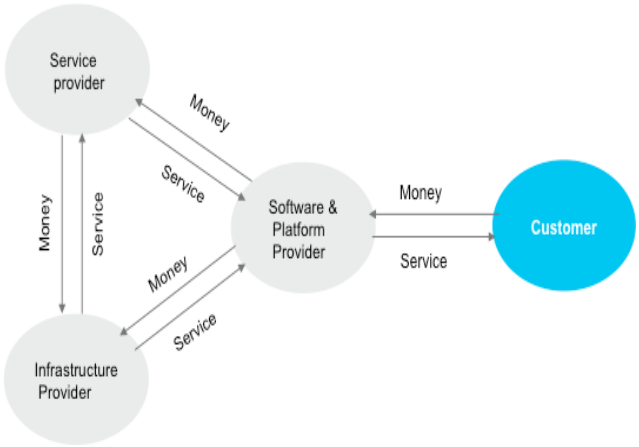
While platform-based technologies have increased in importance in the IT industry, inter-organizational cooperation and collaboration in the cloud computing era have become critical (Ceccagnoli et al., 2012), and it has been taken as a prerequisite in the platform ecosystem and business model innovation. Cloud computing enables software providers, infrastructure providers, and SI (System Integrator) providers as key actors to seek out the value co-creation and network effect. The solution offerings based on the cloud platform require a tightly coupled engagement among the key actors. The

value co-creation of a cloud platform that exceeds what an individual company can provide lays the foundation of the tightly coupled partnership. Therefore, the incentive for software providers, SI providers, and infrastructure providers to participate in cloud ecosystems lies in the generation of rents that cannot be generated individually by either alliance partner (Huntgeburth et al., 2015).

Inspired by the notion of the value chain and business ecosystem, Floerecke and Lehner (2016) depict the enhanced PaCE Model (Passau Cloud Computing Ecosystem Model), which comprises 26 different roles of market actors, grouped into five categories. However, it's too complicated to lose the focus on value co-creation. The notion of a value network is introduced to simplify the cloud ecosystem model and understand how key players participate in value co-creation. A value network refers to a "set of relatively autonomous units that can be managed independently but operate together in a framework of common principles and service-level agreements" (Peppard & Rylander, 2006). The platforms change the pattern of engagement beyond the traditional software provider–customer relationship structure to engaging with all actors in the value network (Castro-Leon & Harmon, 2016). The value network is employed to observe how key actors create and exchange value based on the cloud platform. Compared with the traditional on-premises business model, the cloud platform value network in Figure 4 comprises three major actors: Software provider, SI provider, and Infrastructure provider. In the following sections, I will describe each of them.

Figure 4

Simplified Value Network of Cloud Platform Based on Generic Value Network (Böhm et al., 2010)



The software provider plays dual roles in setting up the application provision in the SaaS layer and the technical platform environment in the PaaS layer. The role of application provision is to develop applications that are offered and deployed on the cloud platform, and the role of the technical platform is to offer an environment within which cloud applications can be deployed. When it comes to cloud services, the application provision is the most visible for customers. It is usually accessed through Web portals and thus builds the front end the user interacts with when using cloud services (Keuper et al., 2011). In comparing with the traditional on-premises software model, in which the software application is operated in the enterprise's own IT centre or hosted in the outsourced data centre, the application provision of SaaS is to provide the subscription service (e.g., monthly, quarterly, or yearly) for customers based on the multi-tenant mechanism with standardized solutions. Furthermore, SaaS providers configure, deploy, update, and maintain SaaS applications. PaaS providers offer a ready-made configured environment; specifically, it provides the programming environment of the cloud for developers and a set of APIs (application programming interfaces) for interacting with other cloud applications. The famous SaaS providers include the Salesforce.com CRM system; the Microsoft Azure 360 office system; and

the Workday HR system, which included the application platform and technical platform.

The SI provider offers the consultant service and implements software application products on the cloud platform. From the consultant service layer, customers would like to ask for SI providers to provide the expertise first when setting up a cloud project. Consultants can provide customers with information about a company's business processes regarding cloud computing offerings as well as industry knowledge and best practice in introducing or recommending suitable cloud solutions and services (Böhm et al., 2010). As for the service implementation layer, the SI provider plays the role of delivering a software implementation service, which not only requires the conversion of in-house data on the existing system and migrating it to the cloud environment but also integrates cloud solutions into the existing IT landscape, developing APIs (Application Program Interfaces) into the cloud and/or on-premises applications (Böhm et al., 2010). Going beyond the integration project, the SI provider also provides the subsequent application management service and training service, etc.

An infrastructure provider is considered to provide the technical backbone (Keuper et al., 2011). The infrastructure provider supplies all the computing, virtual hardware, network connections, and storage needed to run applications within the cloud. Within this new value network, the service created is valuable for each actor. Infrastructure services are basic for other actors within the value network consuming this service to provide their service offering. As cloud computing matures, there are more and more infrastructure providers to offer potentially different SLAs to their customers, e.g., in terms of availability and performance (Lin et al., 2009). In addition, from the viewpoint of the customer, customers can run applications and have control over the hosting environment and operating systems but do not control the underlying infrastructure (Hogan et al., 2011).

According to our understanding, different actors play different roles in the value network of the cloud computing ecosystem. Within this value network, the value is generated by each of the elementary services. All actors exchange services for money, add value for other actors through service refinement and eventually provide services that fulfill the customers' needs (Keuper et al., 2011). In cloud business practice, one firm can play either a single role or several roles. For example, cloud giants can be both software providers and infrastructure providers. SAP can play dual roles as SaaS providers and IaaS providers in parallel when playing multiple roles in the cloud marketplace.

SAP can set up their own data centre to run their cloud solutions to provide cloud services to customers; when playing a single role as a SaaS provider, of course, SAP can also adopt third-party infrastructure providers like Amazon AWS, Microsoft Azure, and Google cloud platform, etc. to provide cloud services for customers by hosting their cloud solutions on top of those infrastructures. Comparing the SaaS model with the on-premises software model, the main characteristics of cloud computing are providing the flexibility of deployment via virtual resources and services, quick application updates to speed up the time to value for customers, and adopting pay-per-use based on subscription business models.

2.3.4 Business Perspective of Cloud Computing

The cloud isn't so much about technology, but rather it is about the business model. We often associate a company's transformation with the adoption of new technologies. It is incontestable that new technologies are usually the main cause, but they have never independently transformed a company through the technology itself. Achieving this transformation is a business model that connects new technologies with the needs of emerging markets.

Today, although on-premises enterprise software still dominates the enterprise application market, the provision of enterprise software applications is increasingly changing from packaged software to a platform and service orientation. Compared with on-premises software, on-demand software (SaaS) provides alternatives to serve multiple customers with the multi-tenant model.

From the perspective of the customer, on the one hand, customers give more attention to their core business and how enterprise application systems can better sustain the business operation with lower TCO (total cost ownership) instead of the form and deployment of IT infrastructure and application. In particular, while IT spending in enterprises increases annually, clients seek alternative options to reduce the cost and spending on IT infrastructure, application software, and related service implementation and lower the TCO of IT investment accordingly. According to IDC's (2009) reports, competitive pricing is rated as the most important attribute. On the other hand, customers are interested in the success factors that drive cloud computing and SaaS adoption. Garrison et al. (2012) suggest that the relational capability characterized by trust between customer and vendor, technical capability, and management capability has a significant impact on successful cloud deployment and adoption. Similarly, according to Koehler et al., the financial factor (e.g., cost reduction, pricing tariff choice) is not listed as the top consideration when selecting the cloud provider. The average reputation of the cloud service provider is the most important attribute (Koehler et al., 2010). Additionally, Zissis and Lekkas (2012) highlight the concerns over the security issue of cloud computing in dealing with the integrity, confidentiality, authenticity, and availability of data and communications.

From the perspective of the software vendor, at the business model level, cloud computing includes new types of price and revenue models. The shifting from software

product to cloud service will enable the software vendor to provide the application, service implementation, and deployment, and infrastructure management services, as well as ongoing maintenance and support for an “end-to-end” solution via a subscription-based rather than a product provision only, and also helps clients benefit from the flexibility, rapid time to value, and “pay-as-you-go economics” of the cloud (Guo yonggang, 2016). At an operational level, SaaS can reduce IT use costs and can help turn the company’s capital expenses (CAPEX) into operational expenses (OPEX). At the same time, software vendors need to balance the deployment and rhythm between on-premises software and on-demand software (SaaS) because there is direct competition between on-premises software and SaaS in the marketplace. Fan et al. (2009) point out that short- and long-term competition by using a game-theoretical approach to examine between SaaS and on-premises software, and the results show SaaS company can effectively differentiate its product by lowering software implementation cost. Simultaneously, software implementation cost and the SaaS firm's service operation cost significantly determine whether the firm can compete effectively with the on-premises software company.

From the perspective of the partner, according to Huntgeburth et al., the information system (IS) literature on cloud ecosystems is scarce (Huntgeburth et al., 2015), and there are very few articles published, providing only limited insights into transformation to the cloud from the perspective of the cloud ecosystem. Demirkan et al. (2010) compare the performance between a SaaS provider and an IaaS provider with a bilateral strategy alliance, but the research is only narrowed down to the bilateral alliance rather than the cloud ecosystem, which includes all key actors. Leimeister et al. (2010) focus on the identification of actors and roles in cloud ecosystems described as technology partners, consulting partners, and channel partners, etc. Boillat and Legner (2013) investigate the implications of cloud computing from the perspective of enterprise software vendors and customers. Böhm et al. (2010) further describe the roles

of seven different market actors, namely application provider, platform provider, infrastructure provider, consulting firm, aggregator, integrator, and consumer, with a generic value network of cloud computing using the e³-value method. Based on the above research, Huntgeburth et al. (2015) developed a framework for explaining how value is co-created in different types of cloud ecosystems and the success factors of these different types of cloud ecosystems.

However, the existing literature either focuses on the identification of actors in cloud computing, or the view of the software vendor, partner, and customer only, or actors' interrelationship and value exchange, or value creation as one piece of the business model of the cloud ecosystem. Although Böhm et al.'s (2010) research outline the generic value network of cloud computing actors, it might be limited in employing the value chain concept to present and depict the cloud ecosystem. To sum up the extant literature, Table 2 shows the heat map of existing literature that prior studies take a partial view from the customer, software vendor, partner, value chain, and cloud ecosystem on the theme of business model, success factor, security issue, and competition between on-premises software and SaaS, etc. In this regard, few scholars have found that value co-creation in the cloud ecosystem can't be generated by individual alliance partners and what the success factors of these different types of cloud ecosystems are (Huntgeburth et al., 2015), but it does not reflect why and how the software companies change their on-premises software business model into the SaaS model from the business angle – a service business model view which is defined to co-create value across company boundaries as a whole –, and what the critical success factors are in the business transformation. However, research using a holistic perspective on business transformation that determines how software giants adopt a service transformation business model is scarce.

Table 2

Business Perspective Heat Map of Cloud Computing

Authors	Focus	Research Method	Perspectives				
			Customer	Software Vendor	Partner	Value Chain	Cloud Ecosystem
Garrison, Kim et al. (2012)	Success factors for deploying cloud computing	Quantitive Method	√				
Koehler, P., et al. (2010)	Cloud Services from a Consumer Perspective	Quantitive Method	√				
Zissis and Lekkas (2012)	Addressing Cloud Computing Security Issues	Qualitative Method	√				
Fan, Kumar et al. (2009)	Short-term and Long-term Competition Between Providers of SWS and SaaS	Quantitive Method		√			
Demirkan et al. (2010)	Coordination Strategies in an SaaS Supply Chain	Quantitive Method			√		
Leimeister et al. (2010)	The Business Perspective of Cloud Computing: Actors, Roles, and Value Networks	Qualitative Method			√		
Boillat and Legner (2013)	From On-premises Software to Cloud Services: The Impact of cloud Computing On Enterprise Software Vendors' Business Models	Qualitative Method	√	√			
Böhm, Koleva et al. 2010	Towards A Generic Value Network For Cloud Computing	Qualitative Method				√	
Huntgeburth, Blaschke et al. (2015)	Exploring Value Co-Creation in Cloud Ecosystems—A Revelatory Case	Qualitative Method					√

2.4 Gaps in Literature

Overall, this study embarks on a literature review from the perspective of the business model, product to service, and software to cloud service in sequence. Essentially, software to cloud service implies the transformation of the enterprise business model. Software to cloud is one of the special forms of product to service, but it is not confined to the form of product to service since the software can be a product or a service. When software is considered to provide a form of service, the software to cloud means the shifting from providing a form of service to delivering an outcome service, which differentiates the tangible product from service. In the extant literature, Barquet et al. (2013) propose a new framework to support the adoption of PSS employing the business model concept, but it is limited to the manufacturing industry. The case study is illustrated by a machine tool manufacturer with different features and characteristics than the software industry. Boillat and Legner (2013) address the shifting from on-premises software to cloud service from the perspective of enterprise software vendor's business models, but they don't introduce servitization theory or an analysis framework

to figure out the characteristics and journey of transition from pure product content to pure service content.

Some scholars have completed researches on value co-creation in platform ecosystems of ERP standard software (Ceccagnoli et al., 2012; Huanget al., 2012; Sarker et al., 2012). Similarly, value co-creation has also been discussed and explored via a single-case study of an IaaS provider in the cloud platform context (Huntgeburth et al., 2015). These studies discuss value creation in the context of cloud computing but do not research the holistic business model transformation in relation to a service system journey, pointing out the difference in collaborative business patterns between on-premises software and cloud services, discovering the formula of business transformation, and manifesting the change in ecosystem structure and participants' relationship through the mechanism of value co-creation.

Hence, there has been little literature published to synthesize the business model, servitization, and cloud computing into a new theory or framework to research business model transformation based on cloud computing. This finding provides one of the directions for further research on new theory development and integration. In addition, concentrating on the business perspective from software to cloud service, the results of the literature review indicate that the key actors in cloud computing still remain at a conceptual level, and they have not been discussed extensively.

2.5 Research Questions

There are a number of articles about cloud services and SaaS from the viewpoint of customers and software vendors. In contrast, there are very few articles derived from the viewpoint of the cloud ecosystem, which comprises customers, software vendors, and partners, etc. Although Huntgeburth et al. (2015) explain how value is co-created

in different types of cloud ecosystems and success factors of cloud ecosystems, and Böhm et al.'s research (2010) presents the generic picture of the value network of cloud computing actors, they do not provide further information on what the interrelationship is between the actors, what significant impacts happen for key actors, what the implication is from the viewpoint of the cloud ecosystem, and how value exchanges among the actors in the context of the transition from software to cloud service.

Therefore, this literature gap just creates another opportunity to refine my research topics from the cloud ecosystem perspective and leads to the development of research questions. The term "cloud ecosystem" refers to software vendors (platform providers), partners, and customers and can be depicted as a kind of ecosystem that is brought to the business and cloud technology context in terms of a biological community, including the surrounding environment. This study was organized around three research questions:

RQ1: How does the ecosystem involved in enterprise application system delivery evolve when transforming from on-premises software to cloud services?

RQ2: How are values jointly created and shared, and their relationship changed amongst the key players in a cloud ecosystem (e.g., service provider, software providers, and infrastructure providers) and later delivered to customers?

RQ3: What are the challenges faced, and what CSFs are behind making the transformation successfully and smoothly to the cloud services?

Chapter 3. Theoretical Framework

Building *a priori* theoretical framework will make the theoretical view more explicit. Such a theoretical framework is conducive to analysing and viewing the link between context, content, and process in academic research. In this thesis, the Business Model Canvas(Osterwalder & Pigneur, 2010) is chosen as the foundation for the theoretical framework of this thesis. It has been enriched with the characteristic of servitization and is used to analyse the case to understand the transformation from software to cloud service. The choice is based on the following considerations: First, it synthesizes the advantages of other business works, e.g., Shafer et al. (2005), Chesbrough (2007), and Zott et al. (2011), and comprises most of the business model's components. Second, it has covered the partial field of servitization strategy being considered as a business model innovation to create value. For example, the categories of servitization in the financial factor driver and marketing factor driver have been included in the Business Model Canvas(Osterwalder & Pigneur, 2010). Third, it has been identified as an essential means in the strategy literature and being adopted particularly appropriate in describing the business model transformation and the servitization of the software industry.

Having adopted the Business Model Canvas(Osterwalder & Pigneur, 2010) based on the literature review, it was applied to a preliminary analysis of the case study of this thesis. Some drawbacks became immediately transparent, confirming criticisms in the literature. First, key resources like technology, products, facilities, equipment, etc., are just physical resources, and resources per se don't generate value. Instead, the value can only be generated by key capabilities to use and leverage the resources. Second, the traditional financial measurements, like cost structure and revenue stream, etc., are insufficient.

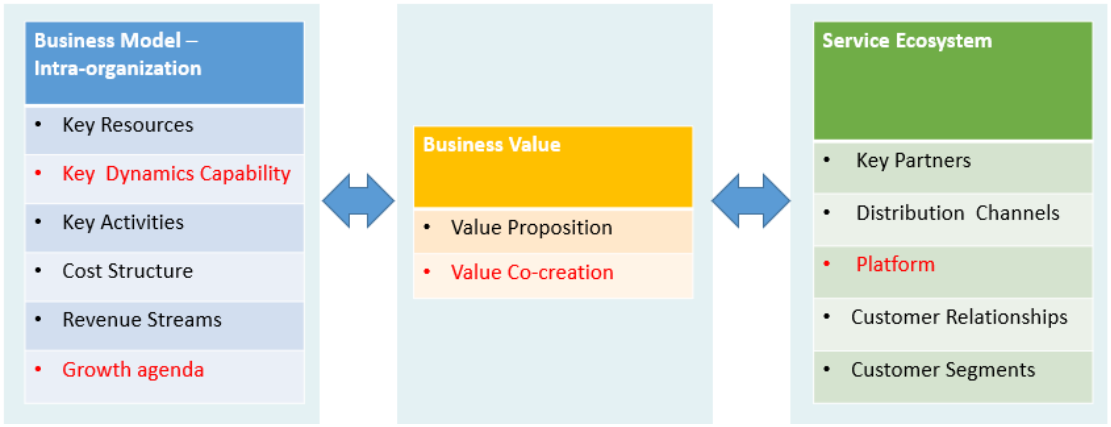
In contrast, non-financial measures are the leading indicators before reporting on the results from pre-actions. Solely relying on financial indicators could promote behavior

that sacrifices long-term value creation for short-term performance (ACIPA, 1994; Porter, 1992). Third, it may be useful in representing a business model, but it misses the key dynamic elements of working business models – it does not present coherence (Euchner & Ganguly, 2014). Therefore, recognizing that there are some defects rooted in the business model element design, the introduction of key capability as a new element in the redefined Canvas theory is to complement and improve the effectiveness of the business model. The fourth is challenged in being restricted to intra-organization. The value proposition element addresses the customer value from the firm's internal organization but not being adaptive to inter-organization collaboration. The elements of value co-creation and platform are introduced to improve the application of the ecosystem-wide view. Furthermore, inspired by the notion of a balanced scorecard, operational measures, e.g., the growth rate of non-financial indicators as another new element, is introduced to the new business model.

In order to increase the linkage of business model elements and embody the relevance of elements, three building blocks, namely *business model, business value,* and *service ecosystem*, are created by reclassifying nine elements from the Business Model Canvas(Osterwalder & Pigneur, 2010), and adding four new elements: key dynamic capability, growth agenda, value co-creation, and platform. The resultant theoretical analytic framework is shown in Figure 5. The elements of the theoretical framework are as follows.

Figure 5.

A Theoretical Analytic Framework Based on Business Model Canvas



3.1 Business Model

The Business Model Canvas (Osterwalder & Pigneur, 2010) contains nine elements. This section argues that four out of these nine elements are particularly relevant, namely key activity, key resource, cost structure, and revenue stream. Two additional elements are also brought forth, i.e., key dynamics capability and growth agenda, which jointly constitute the new business model focusing on the intra-organization from the perspective of resources and finance in this paper. Figure 6 summarizes the resultant six elements of our draft business model.

Figure 6. *Business Model – Intra-organization*

3.1.1 Key Resources

The business model needs the resources to make it work (Osterwalder & Pigneur, 2010). The key resources are assets such as the people, technology, products, facilities, equipment, channels, and brand required to deliver the value proposition to the targeted customer (Johnson et al., 2008). The resource-based view school of thought indicated that companies could acquire competitive edges while controlling valuable, scarce, and inimitable assets (Van Alstyne et al., 2016).

Within the cloud computing context, the cloud architecture stack requires the resources to be built on all three layers: SaaS, PaaS, and IaaS. Cloud platform providers must make considerable investments in the infrastructure, data centre, and human resources or leverage alliance partners' resources to obtain the infrastructure to operate the cloud business as a centralized platform to the cloud service based on "pay-per-use" for customers, whereas, for the on-premises application software deployment model, the application software and hardware are provided as a kind of product separately for customers. Therefore, a shift from on-premises software to cloud platform and service is required to make adjustments accordingly in the organizational process, human resources, leadership, and organizational culture, and to train employees, recruit new staff, and develop new capabilities to handle customers.

3.1.2 Key Dynamic Capability

There is an essential difference between resources and capabilities. Resources are input into the production process, and a capability is the capacity for a team of resources to perform a particular task or activity (Grant, 1991). The complex business model can't be fully explained since the resource itself does not add value to customers without use, and value is generated by the "resource service" (Demil & Lecocq, 2010), which

evolves as dynamic capabilities. Helfat and Peteraf (2009) viewed dynamic capabilities as the “capacity” of an organization to purposefully create, extend, or modify its resource base while matching a changing internal and external environment.

Dynamic capability stresses the need to sense early and seize opportunities and detect related challenges. Teece (2007) states that dynamic capabilities can be decomposed into the “capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through integrating, enhancing, and protecting, when necessary, reconfiguring the business enterprise’s intangible and tangible assets”. Numerous cases can illustrate the rationale of dynamic capability, e.g., cloud computing is a kind of SDL paradigm in comparison to software products, and cloud services based on subscription are a more stable source of revenue than products. On-premises software providers sense, identify and seize the opportunity by establishing a cloud service business to compensate for the volatile product business.

Moreover, cloud computing complies with the notion and principle of the dynamic capability to reconfigure resources dynamically. It is designed and developed to provide flexible and elastic computing capabilities for clients in response to the dynamic business needs in demand. Microsoft, SAP, and Oracle built up their excessive dynamic capabilities, which present a strategy choice to shift from an on-premises software business model to a cloud business model in response to customer need changes and the external market competition environment. Somehow, dynamic capability manifests a firm’s or an organization’s ability while achieving new and innovative forms of competitive edge (Leonard-Barton, 1992).

3.1.3 Key Activities

When depicting firms' activities, it would be conceptually challenging to identify technologically and/or strategically distinct activities because they are often quite large for potential activities (Zott & Amit, 2010). The business model includes a number of activities that a company undertakes to create, develop, sell, market, and deliver its offerings to customers. In addition, key activities often involve a firm's organization, culture, norms, rules, etc. Successful firms always identify and execute those key activities in a timely manner, enabling them to deliver value while operating the business model. In the SaaS context, key activities in go-to-market strategy are relevant to marketing, sales and pre-sales, service delivery, and customer success, etc., because they are crucial for platform providers to create, capture, and deliver value to customers.

In comparison with on-premises software, although SaaS software also provides a core function with the standardized package, the most essential and important activities happen in sales and marketing and the cloud platform during the stage of service provision and usage. For example, the process of sales and marketing for cloud offerings has changed. When the sales cycle is extended to the stage of service provision and delivery, the design of the cloud platform is based on criteria like reusability, flexibility, and on-demand, etc. The examples of service provision are based on the subscription and "pay-per-use" model – widely used technology like SOA (service-oriented architecture) and multi-tenancy.

3.1.4 Cost Structure

The cost structure is comprised of direct costs, indirect costs, and economies of scale and will be predominantly driven by the cost of the key resources required by the business model (Johnson et al., 2008). While operating a business model, creating,

delivering value, maintaining customer relationships, and generating revenue all incur costs (Osterwalder & Pigneur, 2010). Firms selling enterprise software have unique features. The high initial cost in the R&D stage and nearly zero marginal cost characterize such information production and dissemination (Mahadevan, 2000).

Compared to an on-premises license model, SaaS providers suffer an increased cost pressure since they have to compete with traditional enterprise application providers and invest in quick software development iteration, updating, and quality control of the software to be competitive with instant value, but at the same time deal with operational costs (Stuckenberg et al., 2011). The competition between the SaaS (on-demand) and traditional on-premises software reflects the operational expense versus capital expense from the customer's viewpoint. SaaS providers need to create a balance between the increased cost pressure of the short term and the growth agenda of the long term. Financial and accounting practices need adaptations since the timescale of financial flows changes considerably from an almost immediate return of capital to an extended usage period (Mont, 2004).

3.1.5 Revenue Stream

According to Mahadevan, the revenue stream is stated as a plan for ensuring revenue generation for the business, and he further added that revenue stream is nothing but the realization of the value proposition in the short term, usually on a yearly basis (Mahadevan, 2000). This reveals the linkage between revenue stream and value proposition in the business model. Osterwalder and Pigneur (2010) state that revenue streams represent the cash a company generates from each customer segment. In the enterprise application software industry, the revenue stream of on-premises software providers is mainly derived from the software license fee and the related software maintenance fee. The increase in software license revenue is vital for the growth and

development of the software vendor since the growth of software maintenance revenue, which accounts for the most considerable portion of the software firm's revenue, relies heavily on the net new software licenses sold.

The revenue stream of the SaaS model is different from the on-premises one. Instead of one-off payments of license fee transaction revenues resulting from one-time customer payments, the SaaS provider is committed to building long-term relationships to generate revenue streams. The long-term relationship between SaaS providers and their clients suggests that firms must build new revenue models based on the utility model – recurring revenues resulting from ongoing payments – to either deliver a value proposition to customers or provide post-purchase customer support (Osterwalder & Pigneur, 2010). The recognition of revenue is based on the availability of the product and/or service, on how often the product and/or service is used, and on the end result of the use of products and/or services (Tan & McAloone, 2006).

Cusumano (2008) believed that traditional product sales and license fees have declined, and product company revenues have shifted to services, especially in the enterprise application software industry. There is a marketing trend emerging where service-based revenue is replacing software product revenue. However, there is no linear relationship between a product firm's fraction of total sales coming from services and its overall operating margins (Suarez et al., 2013) when a firm moves to the SaaS model from the on-premises model. This finding shows that additional services can exert a negative impact on overall profitability when a software firm is a product-focused business.

When a software firm relies more heavily on services, a specific inflection point happens when services reach approximately 56% of a software product firm's total revenues (Cusumano, 2008; Suarez et al., 2013). In addition, the shift toward SaaS might be bad news for dedicated SI service companies (Cusumano, 2008) since the

traditional partner's SI service revenue from installing, configuring, integrating, and customizing enterprise systems has been replaced to a large extent by SaaS.

3.1.6 Growth Agenda

Revenue, cost, and profit are well defined as the traditional financial KPIs (key performance indicators) in financial reports to measure the firm's performance and estimate the health status of the enterprise. However, given today's business environment, it's not sufficient to evaluate the success of an enterprise via financial KPIs, especially in the growing period of the enterprise. Operational measure-oriented KPIs might reflect whether a firm will have the potential for growth in the future before what the traditional financial KPIs can present.

Traditional financial performance measures worked well for the industrial era, but they are out of step with the skills and competencies companies are trying to master today (Kaplan & Norton, 2005). In the software industry, a high potential growth firm in the initial stage has a faster growth rate, but it may not be profitable. For example, Salesforce is a leading SaaS provider and is well recognized as a high potential growth company; the market value has embodied its huge success in the capital market, but so far, Salesforce has not been profitable. Davidsson et al. (2009) found that unprofitable growth may lead to future profits via increasing market share, etc. There is a view that the use of sales growth is considered to be the most effective growth variable since it translates easily across countries and industry contexts (Hoy et al., 1992).

Here, I argue that sales growth is just a reflection of past business performance with a backward-looking focus and not a fundamental driver of future financial performance. Therefore, I introduce and define a new type of growth rate, which is based on the conception of SVA (shareholder value analysis). SVA is a new attempt to make the

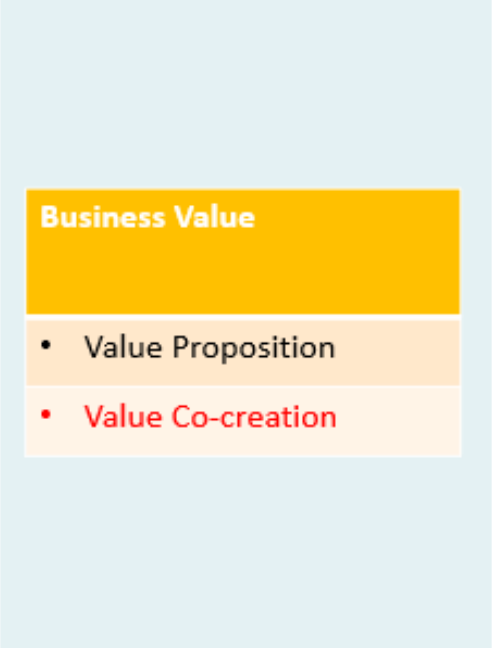
financial analysis more forward-looking via forecasting future cash flows (Kaplan & Norton, 2005). The growth rate here is measured by customer revenue growth, the level of growth of customer acquisitions, and the retention rate of customers. Hence, the growth rate is introduced to remedy the inadequacies of a new component from the perspective of the growth formula.

3.2 Business Value

There are two elements: value proposition and value co-creation. They form the business value. The value proposition is introduced from the business model and reclassified into a separate pillar business value. Value co-creation is an additional element that forms the key connection with the ecosystem to co-create value. The business value in Figure 7 is the public property to connect with the intra-organization of the business model and service ecosystem.

Figure 7

Business Value



3.2.1 Value Proposition

The value proposition is related to the value provided by a bundle of products and/or services on selective market segmentation to meet customers' needs (Barquet et al., 2013). Why does a company need a value proposition? The value proposition can be seen as the difference from the perspective of competitive advantage. It is the root reason why customers turn to one company over another in the process of seeking to problem-solve (Osterwalder & Pigneur, 2010). In the software industry, SaaS does not play a subordinate role in adding value to a product-service system but rather aims to replace the software as a disruptive innovation.

The subscription based on the "pay-per-use" model demonstrated reusability, scalability, and availability as distinctive characteristics of the value proposition. In this sense, SaaS consists of the results-oriented model of PSS classification (Tukker, 2004), and it can be seen as a paradigm of servitization in the software industry. SaaS platform providers can differentiate their offerings from traditional on-premises software providers and offer the advantage of lower implementation costs based on SOA (Fan et al., 2009).

Cusumano (2008) takes a general perspective that a dramatic shift is underway in the enterprise software industry as established vendors embrace services in the wake of declining product revenues. For example, a well-known case is that Salesforce developed the SaaS solution of customer relationship management (CRM), which is not deployed on the client's site but centralized in the Salesforce.com data centre to allow clients to access through the web service. Simultaneously, Amazon AWS and Microsoft Azure have opened up cloud infrastructures to host outside enterprise applications as well as their own productized online services (Cusumano, 2010).

3.2.2 Value Co-creation

The idea of co-creation was introduced as a business strategy by Normann and Ramirez (1993). The original purpose was to provide an alternative for clients in creating value for themselves. Ballantyne and Varey (2006) extended the original notion of value co-creation that it is an overarching construct that captures the evolution of organizational entities towards developing a higher relational orientation and more in-depth interaction with their customers. Grönroos (2008) argued that the firm is fundamentally a value facilitator, implying the firm's responsibility to provide all resources to the customer for value co-creation. The traditional value creation process is that the company creates value within the enterprise and then exchanges value with customers in the market. Now, the value must be created jointly by companies and customers. Novani (2016) claimed that value co-creation is the heart of S-D logic, which emphasizes that we need active participation from the customers along with the provider to create value in the marketplace.

With the development of the cloud ecosystem, resources are highly integrated, and the value co-creation in the cloud ecosystem attracts public attention. The emergence of cloud technology enhanced the collaboration and interaction among the key stakeholders that connect and integrate the resources, e.g., software providers, SI providers, IaaS providers, and customers within a value network. Cloud computing offers a platform and service system to co-create value. The cloud platform can be regarded as a cooperating technique, combining the resources and allowing participants to share their information and experience. This argument is also supported by Yazdani (2012), who states that a firm and a customer need an "encounter platform" to access and share these resources. The cloud platform can be used as a communication intermediary to enable participants to participate in the process of resource integration and realize the common creation of value. The participants can realize high value through interaction with others on the cloud platform. Thus, the cloud platform can act

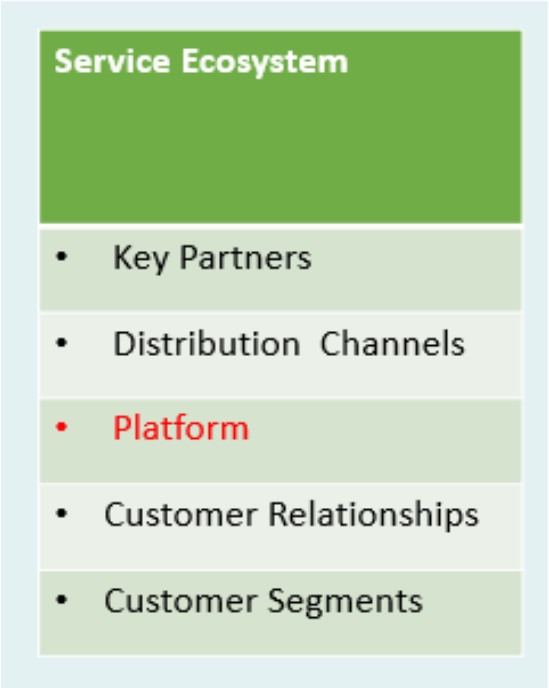
as the communication intermediary, enabling the participants to take part in the process of resource integration and achieve value co-creation. Castro-Leon & Harmon (2016) think that the success of value co-creation depends on the integration of resources.

3.3 Service Ecosystem

The service ecosystem provides a more comprehensive consideration of the structural details that include the service network actors, technology, institutions, and institutional arrangements that serve to facilitate value co-creation (Gawer, 2009). As argued in this section below, five elements constitute the cloud-based service ecosystem, which is depicted in Figure 8: key partner, distribution channel, platform, customer relationship, and customer segments. Four out of five elements are introduced by the Business Model Canvas(Osterwalder & Pigneur, 2010). The platform is a new additional element serving as a common structure combining products, services, and technologies.

Figure 8

Service Ecosystem



3.3.1 Key Partners

The value proposition through application software products embraces the partner networks and competencies. For both an on-premises partner ecosystem and a cloud ecosystem, the establishment of a partner network or ecosystem requires different kinds of partners. Traditional on-premises partners centred on software products are mainly comprised of a service implementation partner, a reselling partner, a technology (hardware) partner, and a third-party software partner. The collaboration model between partners and vendors is based on a loosely coupled partnership to provide the service and deliver the value, respectively.

The service implementation partner of the software application is the core partner with the leading position, which accounts for most of the client's IT application budget in the traditional partner network, whereas the hardware partners don't lie in the inner circle of the partner ecosystem playing the critical role. The cloud model of partners may differ from the traditional on-premises or partner model, and its partner network is a platform-based ecosystem with SDL, which is more diverse and fluid than a bilateral partnership (Williamson & De Meyer, 2012). Platforms seek to maximize the total value of an expanding ecosystem in a circular, iterative, feedback-driven process (Van Alstyne et al., 2016). Therefore, the platform vendor may take the central position with customers.

The functional role of the conventional service implementation partner, who is responsible for configuring software and service delivery, and the channel partner (or value-added reseller) will weaken or decrease since most of these services are replaced by SaaS vendors themselves. For example, the complex software configuration and service have been simplified without professional service support, and the channel partner is not critical to extending the market access route while the SaaS vendor attempts to build up a direct connection with customers.

The advent of cloud ecosystems has caused the software provider to rethink operating cloud business and engaging with partners, opening their platforms to external entities to attain business objectives. Hilkert et al. (2010) indicated that the SaaS-based ecosystem is different from the traditional "on-premises" ecosystems and how the particular roles of the market players might change due to the increasing diffusion of the "as-a-service" paradigm. On the other hand, security and risk consulting, cloud consulting, cloud audit services, and industry solution services based on PaaS and SaaS, etc., are emerging.

3.3.2 Distribution Channel

The channel is a touchpoint that is usually considered to be a vendor's interface with a customer for fulfilling an order and/or contract. According to Osterwalder and Pigneur, a distribution channel refers to how a company communicates with and reaches its target customer market segment to deliver a value proposition (Osterwalder & Pigneur, 2010). The traditional indirect channel consists of channel partners (resellers), value-added resellers, wholesalers, and distributors. In the context of the cloud ecosystem, the role and function of the traditional indirect channel may change. On the one hand, social media, Web sales, and application stores will be more convenient and flexible as the new communication tool in reaching out to the customers. On the other hand, cloud computing and the SaaS model have been eroding the role and function of the indirect channel partner by reselling the application software and hardware. Hence, the shift to the SaaS model requires enabling the channel staff to improve their skill sets and expand the channel partner's business fields based on the design of the journey to the cloud.

3.3.3 Platform

Platform and platform-based technologies are becoming increasingly important in the IT industry and information economy. McGrath (1995) indicated that platforms refer to a collection of common elements, especially the underlying core technology, which is implemented across an array of products. Boudreau (2007) defined platforms as a set of components used in common across a product family whose functionality can be extended by applications. For both McGrath (1995) and Boudreau (2008), the notion of platforms is derived from product development, design, and operations internally within a company.

Meyer and Lehnerd (1997) extended the concept of the platform from the perspective of the supply chain that the platform is defined as a set of subsystems and interfaces forming a common structure where a stream of derivative products can be developed and produced efficiently. Gawer (2009) proposed the notion of the platform (industry platform) from the perspective of the industry ecosystem that platforms are products, services, or technologies that are developed by one or several firms and that serve as foundations upon which other firms can build complimentary products, services, or technologies. The key difference among the definitions of the platform of Gawer (2009), McGrath (1995), and Boudreau (2008) is that, in the context of an industry ecosystem, the firms (actors) who develop complementary products and innovative add-on solutions don't need to buy or sell from each other. Rather, they work with platform leaders to co-create value for customers based on the platform and ecosystem.

Platforms (industry platforms) 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 and has been extended to the layer of the platform to platform and ecosystem to ecosystem. There have been a number of examples of platform businesses existing, from Amazon AWS to Google Platform to Microsoft

Azure, and from Apple App Store to Uber to Airbnb, whose spectacular growth driven by disruptive innovation unexpectedly subverted their industries. Firms will not be able to compete for long and survive if they can't create platforms and acquire new capabilities and strategy rules. As noted by Van Alstyne et al. (2016), the rise of platforms is transforming competition, and the move from the conventional "pipeline" businesses to platforms involves three fundamental shifts:

(1) From resource control to resource orchestration: The traditional on-premises software provider still remains the GDL, in which software product lies in the central position with the aim of transforming resource inputs into software product outputs. On the other hand, the cloud platform provider advances the resource exchange (e.g., consulting and SI resource, infrastructure resource, and software application resource, etc.) 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 internal processes and resources. In contrast, cloud platform providers are committed to co-creating value by orchestrating external collaboration, cooperation, and interaction in the cloud ecosystem.

(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 whole ecosystem value.

In addition, network effects are considered one of the distinct attributes characterized by platforms. Gawer and Cusumano (2014) stated that the more customers adopt a platform, the more valuable the platform becomes to its ecosystem since increasing the access to the customer network often leads to a growing set of complementary

innovations. In turn, the platform with a growing set of complementary innovations also generates more extensive networks to attract customers. Therefore, the positive effects can be enhanced further in a circular and iterative process.

3.3.4 Customer Relationship

Osterwalder and Pigneur (2010) state that customer relationships are the types of relationships a company establishes with specific customer segments. Customers are always the core of the business, and how to build up close and long-term customer relationships is crucial for SaaS vendors for business success. This enables the development of long-term relationships instead of short-term and transaction-based relationships typical of the traditional "product sale" context (Mont, 2004; Williams, 2006). Building up a close and long-term relationship with customers is necessary to enhance the operational link, information exchange, and legal ties and to establish the rules of engagement (Matthyssens & Vandenbempt, 2010).

In the SaaS context, the transaction of software products does not represent the final delivery for customers. The outcome of the service delivered is the destination. SaaS aligns with the context of SDL (service-dominant logic), and software product providers need to shift from reliance on one-off deal transactions to strategic partnerships with clients, and finally to ROS (result-oriented service)-based value co-creation with the cloud ecosystem. This requires the SaaS platform provider to be committed to investing in building long-term and close relationships with customers to increase loyalty since lower switching costs will lead to increased investments in customer loyalty (Hilkert et al., 2010). On the other hand, the impact pattern of customer relationships has changed in the industry and ecosystem. While the influence of SI vendors on customers is declining, SaaS vendors are becoming more influential.

The accumulated responsibility of the complete architecture stack in the role of SaaS vendors strengthens their position in the industry (Stuckenberg et al., 2011).

3.3.5 Customer Segments

Customer segmentation can have a great effect on customer management. By dividing customers into different groups that share similar needs, the company can market to each group differently and focus on what each kind of customer needs at any given moment. In order to meet customers' needs better, a firm needs to consider how to set up customer segments aimed at common requirements. Tukker and Tischner (2006) indicate the presence of different target groups with distinct ideas about product ownership.

Osterwalder and Pigneur (2010) define the different groups of people or organizations an enterprise aims to reach and serve. A firm can serve one or several customer segments; however, the company's C-level executives need to make a thoughtful decision on which customer segments to serve, whether a client's requirements call for a different offering, whether a client's access needs the other channel or the creation of a different relationship, and whether clients are willing to pay for distinctive offerings, etc. Focusing on the aspect of SaaS, in terms of the current literature in the field of SaaS, it seems that there is a preference whereby SaaS is more suitable for SMEs (small and medium enterprises), in spite of the fact that there is no assumption limiting a company's size.

The evidence shows that clients in the large enterprise segment have begun to adopt the SaaS solution. Anding (2010) indicates that additional revenues may also be generated from customer segments, previously not able to afford complex solutions. SaaS and traditional on-premises software have distinctive characteristics and features. The target

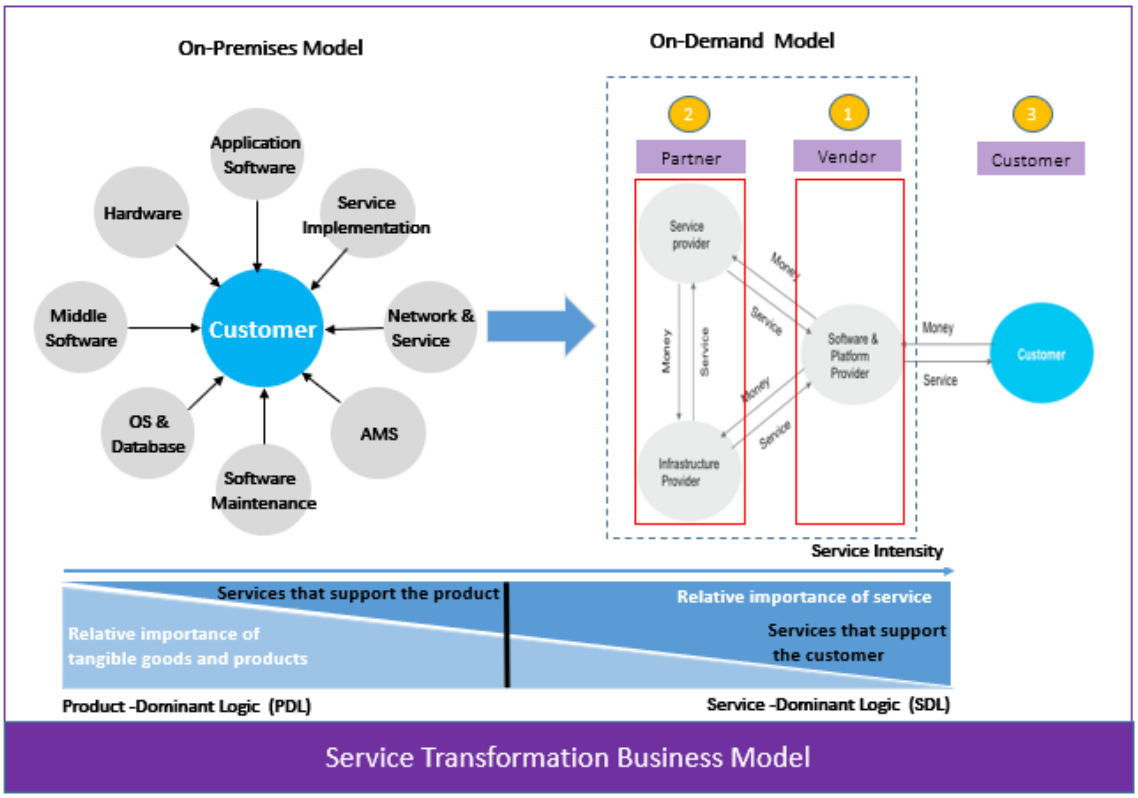
customer segments are within the different sectors according to the client's requirements, behavior, and habits, because the SaaS model has changed the ownership of software products, expanded the responsibility of software vendors, and reconfigured the cost structure and revenue stream of the vendor.

3.4 Conceptual Research Model

The literature review presented earlier suggests that business model transformation may be understood by synthesizing several aspects of the literature to shape a conceptual research model. These aspects are categorized by business model, servitization, cloud computing, and ecosystem (for details, see Chapter 2). Figure 9 illustrates the transformation from 'on-premises' business to 'on-demand' business, to analyse who the key players are, what is new in the cloud service model, and how the exchange of value and service happens among the key actors from the perspective of vendors and partners to elicit the success factor of the transformation. This study proposes a new conceptual research framework, depicting how the application software vendor is evolving from the 'on-premises' model, where customers are required to deploy its infrastructure and applications in-house, lying at the centre to purchase discrete products and services beforehand separately, to a cloud platform model that is mainly composed of the value network of three major actors: SI provider, software and platform provider, and infrastructure provider as a utility model for interacting with customers. Such a transformation from "on-premise" model to "on-demand" model with a servitization journey is underpinned by the service transformation business model.

Figure 9

Illustration of Transformation from On-premises Business to On-demand Business

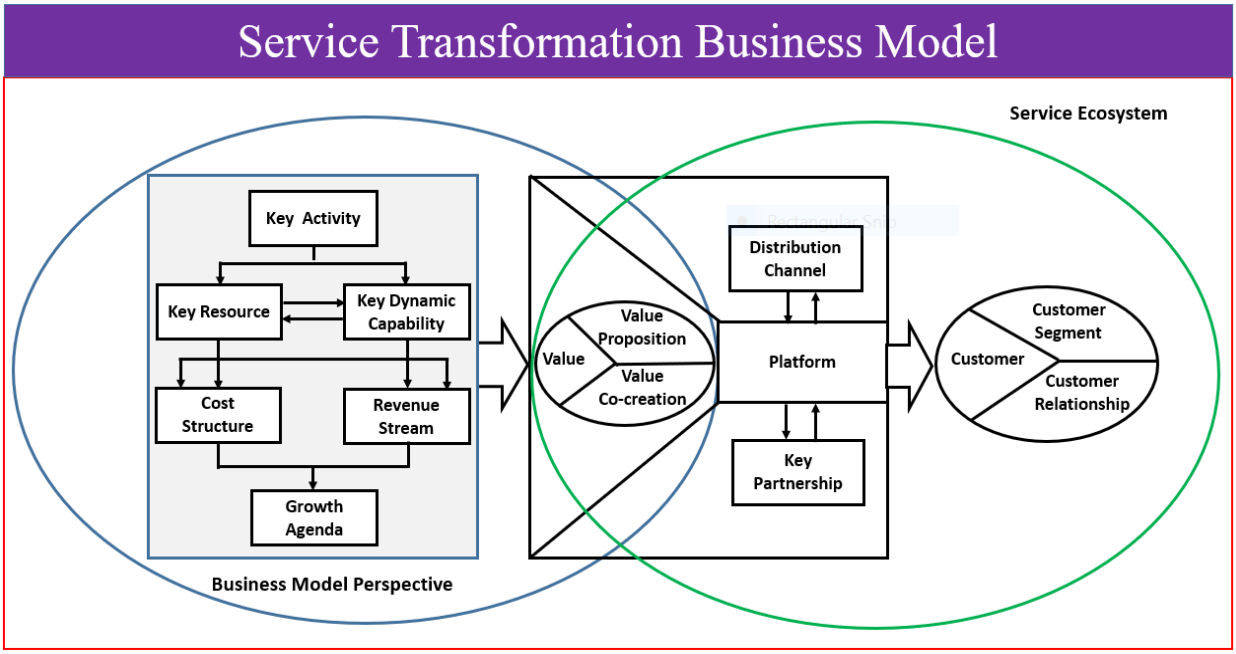


In conjunction with the prior theoretical analytic framework at the beginning of this chapter and the literature review of servitization and cloud computing, Figure 10 further illustrates what the service transformation business model looks like. The proposed theoretical framework includes the three building blocks, namely a) business model, b) business value, and c) service ecosystem, which not only lies in intra-organization to analyse and address enterprise transformation but also has an extended inter-organization ecosystem view to explore the business transformation in the digital era. The building block of the business model is more intra-organization oriented to see the business model transformation from the elements of key activities, key resource, key dynamics capability, cost structure, revenue stream, and growth agenda; the building block of business value, including the two key elements of value proposition and value co-creation, is a core connector and pivot to link business model and ecosystem together via value co-creation based on the industry platform; the building block of service

ecosystem, including the elements of distribution channel, platform, key partnerships, customer segments, and customer relationship, is to serve on how to orchestrate with external partners and customers together during the period of business transformation as a whole.

Figure 10

Proposed Theoretical Framework for Transformation of Business Model



The service transformation business model includes 13 elements, combining the four new redefined elements with nine existing elements. Two new elements (key dynamic capability and growth rate) lie in the building block of the business model; one new element (value co-creation) is introduced into the business value, and the platform as a new element is added for the service ecosystem perspective in conjunction with the context of cloud computing and platform economy. To demonstrate this notion further, this theoretical framework will be applied to the case study of SAP cloud transformation.

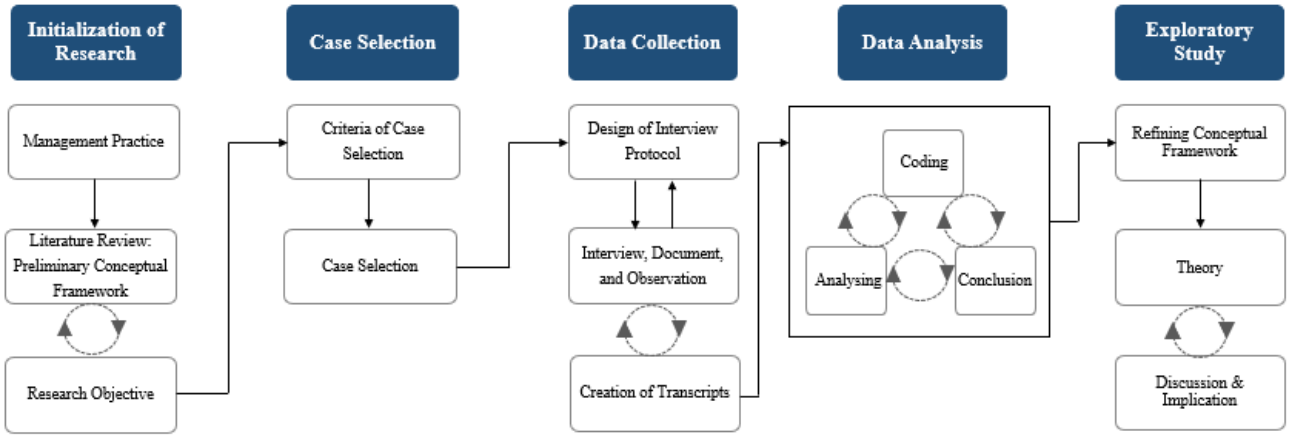
Chapter 4. Research Design

Business and management research is related to one or more business management disciplines, and this research focuses on information systems, strategy, marketing, and operation. Qualitative research aims to study real situations with different paradigms, e.g., positivist, critical research, exploratory research, and interpretative research. This research falls into the category of exploratory research because it tries to help understand the transformation of a business model toward the cloud service paradigm from an ecosystem viewpoint, what CFSs are being studied in promoting the transformation, theoretical implications for scholars, and managerial implications for practitioners.

This study aims to develop a new cloud-enabled business transformation model. I was motivated by the needs of the management practice of cloud transformation, guided by the literature review in shaping the preliminary conceptual framework and research objectives as a start to drive the research process. This case study is employed to evaluate the proposed theoretical framework for the transformation of the business model. The research process is a key part of research design, identifying research objectives and problems, proposing the conceptual framework to address the research problem, examining and evaluating the theoretical framework via a case study, and refining the theory. In this study, the research process includes five phases: a) initialization of research, b) case selection, c) data collection, d) data analysis, and e) exploratory study, which are reflected in the structure of Figure 11.

Figure 11

Research Process



4.1 Initialization of Research

This research follows an inductive and exploratory method, going through a specific case to understand the "secret" success factor of the cloud transformation and new cloud ecosystem patterns. Cloud transformation is not a technical phenomenon, but it raises the urgency of management practice and implications around the cloud-enabled business model. Practitioners from software giants are keen to understand what business model can be adopted as appropriate in supporting SaaS transformation, what a new cloud ecosystem pattern looks like, and what success factors of cloud-enabled business model transformation can be taken to make the transformation successful from an ecosystem perspective.

The literature review presents the current state-of-the-art work, but the insufficiency of existing knowledge in exploring the success factors of cloud transformation inspires the development of a conceptualized framework, which will be used to complement the theory in a case study. Although a case study is generally considered a qualitative method, Yin (2011) argues that case study research can be either qualitative or quantitative or mixed in nature. However, a case study tends to be qualitative, primarily

in most academic research (Benbasat et al., 1987). Qualitative methods are used for studying a phenomenon and for understanding the activities of institutions as well (Fink, 1998). Our purpose in this research is to build a theoretical framework to explain the complexity of cloud transformation. A case study with qualitative methods connected is an appropriate approach because it aims to create a holistic view to address the challenges and success factors of cloud transformation.

4.2 Case Study Research Method

Qualitative research is appropriate for addressing "how" and "why" questions to understand the world from the perspective of informants. The advantage of a qualitative study is that it is especially suited to researching new relationships between phenomena and understanding the process through which events and actions take place (Maxwell, 2005). This paper will adopt a single in-depth case study method; the main reason for using a single-case study is to take it as a basis to draw inferences in exploring and developing the understanding of the new business model with the transformation from on-premises software to a cloud platform and service.

According to Simons, the case study is a kind of research method and is 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). Similarly, Yin (2009) redefined the concept of a case study as being twofold in nature: in terms of the scope, a case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life; in terms of technical definition, a case study inquiry copes with distinctive situations in which there will be many more variables of interest than data points, and as one result.

However, performing case studies still involves a number of challenges. There has been an extensive ongoing debate: a considerable number of scholars deem the case study to be a soft science. In particular, doing a single-case study is not sufficient and convincing enough to generate significant findings. In fact, the rationale for doing case studies is not to consider statistical generalization as an approach to generate findings. The case used should not be seen as a sample; instead, its rationale and logic are based on analytic generalizations, which draw inferences beyond special cases. Yin (2011) argued that case studies tend to be generalized to other situations on the basis of analytic claims, whereas surveys and other quantitative methods tend to be generalized to populations on the basis of statistical claims.

Smith (1989) claimed that the validity and reliability of inferences from one or multiple cases don't rely on the sampling representativeness of this case at the statistical level, but the persuasive relevance with logical reasonings adopted in depicting results from the case to draw inferences and conclusions from these results. A similar point is made by Yin (2011), who emphasized that a single-case study is just like a single experiment, and many of the same conditions that can justify a single experiment can also justify a single-case study.

Hence, in this paper, the generation of success factors, lessons, and managerial implications may also apply to interpreting other cases while using the form of statistical hypothesis testing as another approach. The interpretive analysis under the guidance of the theoretical framework is beyond the individual case from the concrete case situation to social totality (Walsham & Waema, 1994).

When further investigating and uncovering the formula for the critical success factor of enterprise business model transformation, the research questions can be broken down further into the elements of the business model. For example, from the resource-based

viewpoint, the change of key resources is relevant to the new specialized organization design. This kind of element change requires responses to the questions of why and how, which need to deal with the linkages of players. In addition, it is more of a qualitative nature to focus on contemporary events. Therefore, the applicability of the case study to study the enterprise transformation from software products to cloud service is given to learn more insights from which successful factors of transformation require investigating the important contextual situation and process.

Given that cloud computing and its business model are profound changes as a disruptive innovation, our research is an exploratory approach, which is comprised of three stages: (1) defining a conceptual research model; (2) conducting the case study; and (3) generating the theoretical and managerial implications from the results of the case study (Eisenhardt, 1989; Yin, 1981 1994). This is a common scheme for an exploratory inquiry, and following this principle, I operationalize the three concrete steps to proceed accordingly: (a) case selection; (b) data collection; and (c) data analysis.

4.3 Case Selection

Whether or not it is convenient or whether access is available to collect data is one of the key criteria for case selection, but selecting the cases for a case study should not simply be a matter of finding the most convenient or accessible case from which you can collect data (Yin, 2011). In the IT industry, there have been several established SaaS giants in the field of application software, e.g., Salesforce, Workday, and ServiceNow, etc., but all three of these vendors are cloud-born companies, which are not suitable for performing a case study on SaaS transformation, whereas SAP, Oracle, and Microsoft are the leaders in the field of on-premises software worldwide, and are on the way to transforming themselves into the leading SaaS vendors.

Microsoft is the biggest software company globally. Oracle is the biggest global business software company and the second biggest enterprise application software company, and SAP is the biggest enterprise application software company globally. The enterprise application software is the most complex, industry-focused, and customization-oriented, spanning an array of enterprise functional fields compared with system applications, database software, and office systems. In this sense, SAP SaaS transformation is more complicated, difficult, and representative than among other software giants.

In order to learn about success factors in the transformation from on-premises software to cloud services, I chose the SAP platform as a single locus for a case study for the following reasons. First, SAP has set a clear corporate strategy for transforming to the cloud business. Second, SAP is in the process of transforming itself away from a product-oriented software company into a service-oriented SaaS company, in which SAP faces tremendous challenges and experiences the labour pains of business transformation. Third, SAP – a high-profile company – is a leader representing a reasonably broad sample of enterprise application software providers worldwide. Last of all, SAP transformation not only has profound effects and significance in the software industry and IT industry, but it impacts millions of enterprise customers running SAP application software systems.

Moving to the cloud is not a new topic in the academic and business fields. There are a number of studies on the customer view focusing on SaaS, a few studies on the vendor view, and very limited studies on the cloud ecosystem, but there is no study that synthesizes the two combined dimensions of the vendor's view and the partner ecosystem's view to investigate and analyze the cloud transformation. Therefore, the selective case research will not be confined to one angle in this paper. To dig out the insight and understand the linkages and dynamics of value creation and exchange

leading to success among key players based on the cloud platform and service model, I will investigate the case based upon the vendor and partner view as an integrated scheme.

4.4 Data Collection

I collected case study data from four main sources: semi-structured interviews, observations, participant workshops, and archival documents over four years. To ensure systematic data collection, I used a conversational framework and developed a protocol comprised of general information about research topics and context, the interview guidance, research questions, research method, and the structure of the case study, ensuring that our interviews elicited information and insights relevant to our research questions while aiming to increase the reliability of case study research by guiding the data collection from a single case (Kvale, 1996; Yin, 2011).

Our main data collection method was conducting in-depth interviews, as the interview is often considered a common technique for data collection, and by containing open-ended questions, it can be used to elicit rich and detailed data (Blaikie, 2000). Interviews can be categorized as structured, semi-structured, or informal. A structured interview is constrained to a series of formal questions, whereas an informal interview often starts with open questions and gives more freedom to scholars in discussing various topics. The semi-structured interview is in between, using a predefined structure and questions to keep the scopes consistent across all interviews. At the same time, it also maintains a less formal nature, allowing new topics to come into being during the period of the interview. In this paper, I mainly use semi-structured interviews, given their advantage of having some degree of flexibility to initiate conversations with interviewees in terms of participants' preferences, situations, and occasions. In addition,

to address the related ethical issues of conducting research, the following guidelines, and principles (Yin, 2009 were used:

- The research topic and context were presented to the interviewees in advance.
- A broad outline of the interview and a synopsis of the research proposal to be discussed were provided to the interviewees beforehand.
- The interviews were conducted face to face or by telephone after obtaining each of the participant's consent in the research.
- A clear statement of how their responses would be presented in the final thesis (e.g., the anonymity of the interviewees, citations) was communicated to the interviewees in addressing their concerns about keeping information confidential before conducting the formal interviews.
- A summary of each interview was produced to double-check the key points to ensure that what was understood and recorded was consistent with each participant's views and claims.

Twenty-seven in-depth interviews were conducted in the past five years from different business units and hierarchical SAP levels plus key stakeholders from the SAP partner ecosystem. The interviews were conducted in China, UK, and US. The reason for this is that these markets present different degrees of acceptance of cloud transformation. A semi-structured interview was designed and used with 19 of the 30 interviewees; the remainder were open-ended informal interviews. The one-on-one interviews were conducted with the following people on different occasions, as summarized in Table 3.

Table 3

Summary of Interviews

Number of Interviewees	Functional Position	Company Name	Number of people interviewed	Interview time (hours)
1	Director, SFSF solution of SAP Greater China	SAP	1	1.2
2	Director, Ariba COE of SAP Greater China	SAP	2	3
3	Marketing Director of SAP Greater China	SAP	1	1
4	Client Engagement Executive, Ariba solution of SAP Greater China	SAP	1	1
5	Chief Digital Officer of SAP China	SAP	1	1
6	Channel Manager of SAP China	SAP	1	1
7	Account Executive of SAP China	SAP	1	1
8	General Manager, S/4 HANA Cloud solution of SAP China	SAP	1	1
9	Vice President, Cloud strategy of SAP Greater China	SAP	2	3
10	Director, Cloud Platform of SAP Greater China	SAP	1	1
11	Senior Vice President, DBS of SAP SE	SAP	1	1
12	Vice President, General Business of SAP SE	SAP	1	1
13	General Manager of SAP Greater China CX solution	SAP	1	1
14	Principal, SAP SE cloud solution	SAP	2	2
15	Client Executive Engagement-S/4 HANA Cloud of SAP Greater Chi	SAP	1	1
16	Partner, Management Consulting of KPMPG China	KPMG	1	1
17	Partner, Technology of KPMPG China	KPMG	1	1
18	Patner, Powered Enterprise solutions of KPMG APAC	KPMG	1	1
19	Senior Director, SAP Cloud of Accenture Greater China	Accenture	1	1
20	Senior Dircector, Journey to Cloud of Accenture Greater China	Accenture	1	1
21	Management Dircector, Technology of Accenture Greater China	Accenture	1	1
22	Managing Dircector, SAP Practice of Accenture Greater China	Accenture	1	1
23	Dircector, SAP Practice of Accenture Greater China	Accenture	1	1
24	Senior Manager-Tech Enablement, Ecosystem of AWS China	Amazon	1	1.2
25	Senior Manager, Ecosystem of AWS China	Amazon	1	1.2
26	VP, Ecosystem of Alibaba Cloud	Alibaba	1	1
27	Director-GDN of Powered Enterprise solutions, KPMG	KPMG	1	1
Total			**30**	**32.6**

These interviews were performed from December 2016 to October 2019 by telephone and or face-to-face meetings. The average length of the 30 meetings for each interviewee was around one hour. After the pilot project, the protocol was modified step by step. The iterative process addressed the following key questions: executives and interviewees were asked to explain how successful the cloud service model is. What challenges were faced in the initial stages? What are the obvious obstacles or barriers? How can they be overcome? How was the cloud service model shaped and developed, and how does it operate nowadays, i.e., more specifically, how is the cloud business model positioned within SAP? Is it a core strategy or not, and why? And what are the

critical success factors of cloud transformation, etc.? In order to make the interview questions more organized and relevant to analyse the journey to the cloud and the transformation process of servitization, the abstraction of interview questions is based on the theoretical framework, and the 13 blocks are reclassified into three dimensions of questions:

(1) business model dimension including key resources, key dynamics capability, key activities, cost structure, revenue stream, and growth agenda – specifically, questions related to what the main and key activities are. What key activities does our value proposition require? What key resources and capabilities does our value proposition require? What are the most important costs inherent in our business model? What consists of the most revenue streams? And what are the key factors that drive the high growth rate?

(2) business value dimension depicted by the value proposition and value co-creation, with more specific questions: Which of our customer's problems are you helping to solve? What value do we deliver to the customer? And how can value be co-created with ecosystem partners in the cloud platform?

(3) service ecosystem dimension consisting of key partners, distribution channel, platform, customer relationship, and customer segments, with more detailed questions related to who the key partners are in cloud computing? What role do these key partners play? Through which channels do our customer segments want to be researched? How are we researching them now? What role do platforms play in cloud computing? How can a platform co-create value with participants? Which market segments do we serve? Who are our most important customers? And what type of relationship does each customer segment expect us to establish and maintain with them?

In addition to the interview approach, I used other information as complementary materials, such as internal documents belonging to SAP, Accenture, KPMG, AWS, and Alibaba collected by accessing the internal portal and shared by interviewees. Those systematic documents provide logical data and deeper insights, which can't be obtained from a one-hour interview. For example, the internal presentation materials describing the cloud opportunity, packaging, marketing and sales, and large marketing event's presentation by their regional president describing the company's strategy and cloud transformation were also included in the data collection. In total, 16 internal documents from SAP and partners were collected.

Yet, I also used other data sources – multiple sources of evidence such as observations and participant workshops. Observations are one of the most distinctive features in doing case studies, as they focus on human actions, physical environments, and real-world events (Yin, 2011). The author attended 23 events, training sessions, and workshops, as summarized in Table 4, from 2015 to 2019 as an observer and tried to connect with speakers and presenters to ask some key questions linked to the research questions. For each workshop or event, the field notes were dotted with key points. Generally, the notes were not complete sentences, but I sorted them into formal moral writing in that night in case those notes can't be deciphered, or the related context can't be recalled as time flows after the events.

Table 4

Summary of Observations

Observation #	Event name of observation	Number of times participated	Venue of event	Date of event	Duration of event
Observation #3, #9, #32	SAP China FKOM 2015 (Field Kick-Off Meeting)	1	Beijing	January	3 days
Observation #33, #7, #10, #11	SAP China FKOM 2016	1	Beijing	February	3 days
Observation #1, #4, #6	SAP China FKOM 2017	1	Beijing	March	3 days
Observation #15, #13	SAP China FKOM 2018	1	Macau	January	3 days
Observation #5, #14	SAP China FKOM 2019	1	Macau	February	3 days
Observation #4, #6, #28	SAP US SAPPHIRE 2017	1	Orlando	May	3 days
Observation #7, #29	SAP US SAPPHIRE 2018	1	Orlando	May	3 days
Observation #8, #15	SAP Global Partner Summit 2018	1	Orlando	May	1 day
Observation #4, #9, #24, #27, #28	SAP China PKOM 2017 (Partner Kick-Off Meeting)	1	Sanya	March	1 day
Observation #2, #8, #15, #17, #18	SAP China PKOM 2018	1	Sanya	March	1 day
Observation #2, #8, #11, #13, #15, #18, #24, #27	SAP S/4 HANA Cloud Partner Boot Camp-2018	1	Shanghai	April	2 days
Observation #1, #11, #12, #18 #19, #24, #27, #28, #31	SAP Partner Workshop-Cloud Service Sales Mindset-2017	1	Shanghai	June	1 day
Observation #2, #11, #13, #17, #18, #21, #22, #25, #31	SAP Cloud Transformation Workshop-2018	1	Shanghai	June	1 day
Observation #3, #9, #32	SAP Beijing Select 2015	1	Beijing	August	1 day
Observation #33, #7, #9	SAP Beijing Select 2016	1	Beijing	September	1 day
Observation #4, #16, #28	SAP Beijing Select 2017	1	Beijing	August	1 day
Observation #8, #15, #21, #22, #27	SAP Beijing Select 2018	1	Beijing	August	1 day
Observation #18, #25	SAP Beijing Select 2019	1	Beijing	September	1 day
Observation #7, #19, #26, #27	ASLC (Accenture SAP Leadership Council)-2016	1	Miami	June	3 days
Observation #18, #20, #12, #25, #30, #31	ASLC (Accenture SAP Leadership Council)-2017	1	Evian	June	3 days
Observation #21, #21, #22, #23, #26, #30	Ali Yunqi Conference 2018	1	Hangzhou	Oct	3 days
Observation #19, #22, #23, #25, #30	KPMG Powered Enterprise-Cloud Transformation Training	1	Hong Kong	May	5 days
Observation #21, #23,	SAP China Cloud Summit-2019	1	Shanghai	May	1 day
	Total	**23**			**48 days**

I also carried out a material analysis in the sense of data triangulation. The multiple sources of evidence are used to triangulate the data thus collected to maintain the integrity of the analysis and the chain of evidence (Miles & Huberman, 1994; Sliverman, 2006) and to enhance the validity of our findings (Yin, 2009).

4.5 Data Analysis

Data analysis was conducted of the data collected from the above three approaches: interviews, internal documents, and observation by attending workshops and executive meetings. I use the interview as the primary way to collect data with archival documents and observations as the supplement.

The interviews were tape-recorded and transcribed subsequently. Given the different personal, educational backgrounds, experience, and focused fields from interviewees, the interviews were tailor-made for each interviewee and focused on what they perceived about the transformation leading to success. In terms of the concrete coding process: when I conducted the semi-structured interviews, the interviews were based on an interview question guideline developed by the theoretical framework. It provides a straightforward way to link with the codes and categories based upon three dimensions with 13 blocks.

The data analysis started with observations and documents and by selecting all quotes from interviews related to leading to the CSFs (critical success factors) toward cloud transformation. To explore the CSFs, I focused on observations of workshops, training, and marketing events; and interview quotes, where interviewees discussed CSFs and their related working experience. In the process of searching for ideas from the observations and these quotes from interviews, I noticed that discussions from the workshops and meetings provide very detailed suggestions. This suggested the use of open coding and preset codes to categorize these observations and quotes into aggregate codes by grouping observations and statements with similar meanings and keywords.

When the interview was conducted in an open-ended way, Bardin's (1977) three data codification rules were followed: (1) meaning rule: thematic analysis was employed to group the elements in terms of common topics by respondents; (2) enumeration rules: to find out whether a new element was quoted by respondents; (3) categorization rules: category names were constructed based on the general meaning of content and elements. Therefore, both preset codes and open codes were used as a hybrid model in the process of creating codes, covering two aspects: vendor and partner.

4.6 An Exploratory Study

The objective of this exploratory study is to develop a theoretical framework for the service-enabled business model transformation used to guide the case study. The other goal is to shape managerial implications based on the analysis and findings of the empirical study about value co-creation in the cloud ecosystem and the success factors of cloud transformation. The building of the new constructs and their relationship and the development of propositions or managerial implications are considered basic tasks when developing the new theory.

It should be stressed that the intention in this thesis is not that of building a brand-new theory but rather to construct a theoretical framework by synthesizing the literature review, insights extracted from the case, and empirical evidence from management practice. The literature review, phenomenon, observation, document, extant theory, and the deviation between them jointly shape the starting point to define the preliminary conceptual framework. The gap in theory matching triggers the motivation to adopt a new theoretical framework to interpret cloud-enabled business model transformation.

This preliminary framework is compared with the analysis and findings of the case study to examine how the constructs and elements of the preliminary framework are

matched with the data in the case study. This comparison between theory, discussion, and implication contributes to refining the constructs and structure of the framework. Similar constructs were extracted from the dimensions of the preliminary conceptual framework: business model, business value, and service ecosystem. The familiarity of constructs or ideas across the dimensions also speeds up the next steps in comparing, analysing, and generating further theoretical and managerial implications. The process between theory, discussion, and the implication is running as an iterative approach to making sure that the theory that is delineated by the framework is valid.

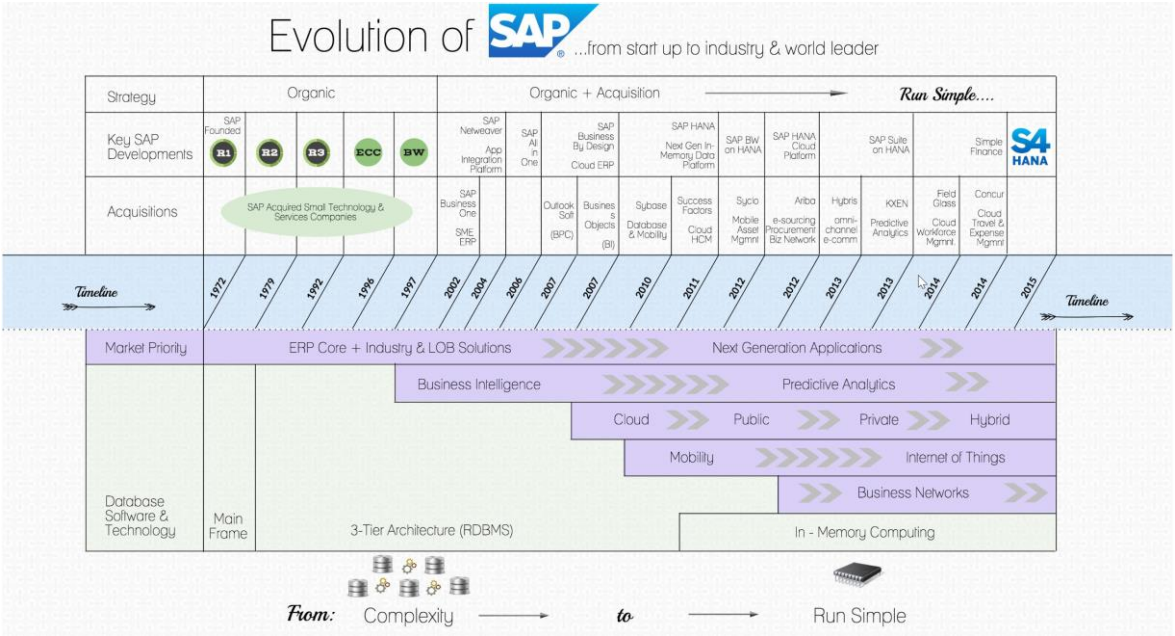
Chapter 5. SAP Case Study

SAP (Systems, Applications & Products in Data Processing), which was founded in 1973, is currently the world's leading business software company and the biggest enterprise application software company worldwide. SAP is a German multinational software corporation, and it's headquartered in Walldorf, Baden-Württemberg, with regional offices in 130 countries. The company has over 50,000 customers and 11,000 partners, which are comprised of service partners, channel partners, technology partners, and software partners in 190 countries. In the fiscal year of 2016, the company sales revenue reached US$23.7 billion, 80% of Fortune 500 enterprise is SAP installed-base customers approximately. In recent years, SAP has been in the throes of business transformation from software seller to service provider because the traditional software license business is experiencing flat growth or even decreasing. To accomplish this cloud transformation, SAP must become more agile, efficient, and collaborative. The cloud-first is SAP corporate strategy but needs a model for a smooth transition. Since 2012, SAP has adjusted its corporate business strategy and started with the transformation to cloud-based solutions.

As Figure 12 shown, it presents a landscape to understand the SAP evolution from start-up to global application software leader. SAP piloted the first SaaS solution – SAP Business ByDesign – in 2007, which is not the mainstream SaaS within SAP, but I mainly focus on the SAP SaaS ERP transformation–S/4 HANA Cloud– since 2012 and collected corresponding information for this research.

Figure 12

Timeline and Milestone for SAP Evolution



Source: SAP a brief history 2019

5.1 Business Model

5.1.1 Key Resource

Running a business model requires resources. Resources are valuable to invest in the R&D, operation, and GTM initiatives for enterprises. The shortage of resources is an eternal issue for those enterprises implementing transformation, and SAP is no exception.

Analysis: Different companies need different resources, depending on the types of business models and roles and functions performed by firms. According to Osterwalder and Pigneur (2010), key resources can be categorized as physical, financial, intellectual, or human resources. In the context of cloud computing, providing an integrated cloud service is an ecosystem effort that is always required to involve the above four types of resources owned or acquired from the software vendor and partners, but this chapter

focuses on SAP as a software vendor and the key resources for SAP are mostly human and leadership, and intellectual resources. I focus on our analysis of these two key resources.

Moving to the cloud is not only a change of technology architecture but requires SAP senior leadership to drive the change from the strategy design of the organizational structure at the macro level. The SAP cloud business organization has experienced this restructuring many times. In 2017, SAP reshuffled the acquired SaaS company into a new business unit – a cloud business unit. Robin Enslin, a board member of SAP SE who previously led SAP's sales as the head of the global customer operation – one of the two pillars of SAP business – was appointed as president of the SAP cloud BU to drive SAP's new cloud business group, which includes the acquired firm's cloud applications (e.g., SFSF, Concur, Ariba, Hybris, and Fieldglass, etc.,).

SAP is integrating and elevating its acquired SaaS firms to a first-tier unit as a sign that it is focusing dedicated resources with more business decision-making power on the growth of SaaS. Simultaneously, the co-successors of SAP's global customer operation led by Jennifer Morgan and Adaire Fox-Martin still carry the cloud business as a core KPI. Thus, the cloud business is co-administered by SAP's cloud business group and SAP's global customer operation. The executive leadership actions are designed to further enhance SAP's cloud position rather than treat it as a separate division. Such a change delivers a strong and clear sign, which speeds up the transformation to the cloud. Leadership is a fundamental driving force that involves creating a vision for the firm, ensuring the team aim at the actual business results. If leadership is not actively boosting an all-pervasive business transformation, there is little hope of being successful. This is especially true in the transformation of the company's business model.

The cloud transformation also needs to drive changes from the staffing & operating design of the organization at the micro-level. I noticed during the interviews, a new type of job post called a CEE (customer engagement executive) was introduced to the SAP field sales organization as a new type of resource assigned to look after customers as a focal point. This role not only requires an understanding of the client's business requirements and cloud solution technique, and the provision of support in the form of after-sales service, but also the selling of new add-on cloud solutions, coordinating and solving technical issues, and building up a closer relationship with customers, etc. This newly defined role is also seen by SAP as another kind of sales, but its role or function is different from that of the existing traditional account manager. In a conversation with the vice-president of SAP's cloud strategy, when asked how to evaluate the importance of a CEE and which job position is more important between the account manager and a CEE, Interviewee #9 explained:

> *It is easy to open a shop but hard to keep it always open. If we say that the account manager is to focus on developing net new name account business, and a CEE is most likely to act as an entrepreneur.*

The shifting from software selling to cloud service selling means that a SaaS vendor needs to take more responsibility as a platform company. Clients believe that SaaS vendors are responsible for the outcome of service providers instead of the software as a tool simply provided. Hence a CEE is in a central role empowered with greater responsibility.

In regard to the on-premises model, the SaaS environment delivers more freedom to the customer to change provider or exit if the solution and/or service are not satisfactory (Seethamraju, 2015). The following quotes from Interviewee #2 further illustrated the importance of customer relationships when he was asked what type of relationship SAP expects to establish and maintain with customers.

In the B2B market, SaaS business requires a closer relationship and customer intimacy connecting with customers, addressing their business requirements, and solving their problems to build up the "win-win" situation, despite the fact that SaaS is characterized as more click-through, massive engagement, trials, and customer experience.

Findings: Executive leadership is a scarce resource, and cloud transformation requires strong leadership with consistent and energetic enthusiasm. Organizational energy – collective motivation, enthusiasm, and intense commitment – is a crucial ingredient of a successful transformation (Aiken & Keller, 2007). I have all seen major transformation initiatives that take a high-profile approach at the beginning, but in the later stage, when things get challenging, enthusiasm wanes, ultimately causing the business transformation to fail. On the other hand, the cloud computing model is to provide a one-stop service based on subscriptions for customers; the fulfillment of SaaS software selling does not mean the end of selling. Rather, it is just the beginning of sales and revenue recognition by providing continuous service for the customer. The creation of the job post of customer care is built on the resource-based view of the firm to meet customers' requirements and create and provide value for customers. It is a new element also derived from enterprise organization design, which enables two account managers (sales and after-sales customer care) to serve the same customer. Such an organizational design and strategic arrangements, from the customer relationship perspective, indicate that SAP is keen to build up closer and long-term customer relationships based on customer success for a "win-win" relationship.

Cloud computing is a disruptive innovation. It's pretty challenging for software vendors to pursue and exploit both business models: a) on-premises software existing business model, and b) SaaS on-demand disruptive innovation model. The software vendor is required to set up a dedicated team to develop cloud business or keep the acquired SaaS companies operating business independently for a while, and the cloud delivery process

should set up the customer success management function to be able to prove that value promised in the sales processes is tied to value created post-implementation, given that the two business models are quite different in terms of their requirements for resources, skill set, and even culture. O'Reilly and Tushman (2008) suggest that firms should set up autonomous business units that are independent of the traditional business.

5.1.2 Key Dynamic Capability

Dynamic capability reflects the ability of an organization to develop, integrate, and reconfigure the internal and external resources timely for the innovation to address changing environments rapidly. Dell's direct model used to be recognized as a huge innovation in 1997 with the highly efficient and low-cost distribution characterized by online business, but after 20 years, Dell has abandoned the original single direct sales model that it has always been proud of and refocused on the channels and offline business with customer experience. Therefore, there is no model that can be completed once and for all, and the business model innovation is a sustainable development process attributed to dynamic capabilities. Let's return to the SAP case. SAP has been the number one vendor of business applications globally for many years. SAP realized, probably in 2007, that a big shift was required to cloud solutions in terms of market and customer demand and felt a sense of urgency to develop its SaaS business while new SaaS start-up companies were growing very fast. To maintain its number one market position, SAP is required to transform its business model with the dynamic capability to adapt to the changes in the market and the environment.

Analysis: In this section, three phases of dynamic capability depicted in the literature review are adopted as a framework to understand how SAP exploited and built these capabilities.

Sense and shape opportunities and threats. Dynamic capability in sensing and shaping opportunities is to identify emerging market opportunities promptly. In the 2000s, SaaS was emerging with Salesforce.com as a flagship SaaS vendor. Although SAP was not the first software vendor to develop SaaS software, as early as 2007, SAP released their own first SaaS software application called Business ByDesign – a cloud ERP system. When SAP developed and exploited SaaS business, the period was also the same period with Workday – another rising SaaS giant – which is mainly specialized in the human resource field. Being different from two SaaS-nature companies, Salesforce and Workday, SAP treated Business ByDesign as a line of business specializing in the SME market segment.

Seize opportunities. In comparison to sensing and identifying a market opportunity, it would be more challenging to seize opportunities. SAP was committed to Business ByDesign. Jeff Stiles (2009), Senior Vice President of SME Marketing of SAP AG, said that *"SAP is 100 per cent, unequivocally committed to bringing Business ByDesign to market for the long haul"*. However, it was always notable that the discussions about being an off-the-shelf Business ByDesign on SAP Executive Board meetings had happened more than seven times in the past decade due to its unsatisfactory performance in the SaaS market. Before 2012, SAP still took the SaaS business as an option, and even a pilot project, instead of its overall cloud transformation strategy. SAP's strategic swing and relapse had actually caused SAP to miss many opportunities to grow its SaaS business, whereas Salesforce and Workday seized the market opportunity to become SaaS giants. Hence, SAP sensed and identified the SaaS market opportunity earlier, but it did not seize and capitalize on this opportunity. The dynamic capability to seize an opportunity is related to the entrepreneurship of a company and its commitment because it stresses the importance of exploring and exploiting market opportunities.

Integrate, enhance, and reconfigure the resource to maintain competitiveness. Building the dynamic capability of solution portfolios is required to gear up to the target customer segmentation and to adapt to the external changing market environment. SAP decided to shift to SaaS. It had to build and reconfigure SaaS's new resources and capabilities, despite the on-premises software that was already fertile as a "cash cow" business. Internally, SAP faced formidable challenges during the transition to SaaS, and it underestimated these obstacles. After the long run of many years, SAP's Business ByDesign did not meet SAP's ambition in terms of SaaS business. SAP made several organizational changes to enhance its cloud business in adapting to market dynamics. In 2015, SAP released a brand-new ERP SaaS software – S4 HANA cloud – in addressing the large- and middle-enterprise market. Companies developing a service-based business model need to design a dynamic portfolio of offerings, in which the content differs in terms of the customer, and which can change in concert with customer requirements and as they gain more experience in being service suppliers (Kindström, 2010).

Externally, SAP has made a number of M&As (mergers and acquisitions), and the quantity and funds of M&As show the level and extent of its resource reconfiguration. SAP can penetrate more SaaS market share through M&As to absorb and integrate external resources and competence. For example, SAP has acquired a significant series of SaaS application vendors: SFSF – Human Resource Management, Ariba – Supplier Relationship Management, Concur – Expense Claim, Hybris – E-commerce, etc., and since 2011, SAP has been active in developing its SaaS business. At the SAP Cloud Forum 2019 in Shanghai, Mark Gibbs, SAP Greater China president, said: *"In the past ten years, SAP has spent nearly $70 billion to acquire Hybris, etc., refactoring more than 400 million pieces of traditional core ERP product code to conform to the cloud computing architecture, and simultaneously released S4 HANA Cloud."* These M&As have led to the significant growth of its SaaS business. As can be seen from SAP, the

dynamic capability is adopted to some extent to run and balance two business models, namely on-premises and cloud business models, via the reconfiguration and integration of resources.

Findings： SAP was good at identifying and sensing SaaS opportunities but relatively mediocre and slow at reconfiguring new resources to transform the existing business model. Although SAP has made a series of M&As of SaaS firms, it needs to periodically digest, build, integrate, and reconfigure resources and competencies to strengthen its competitiveness from strategy through to execution. Kotter (2007) pointed out that the desired transformation is not only about conveying the expectation from one state to another that a firm's corporate culture and internal systems have changed but also becoming dynamic in continually adapting to new conditions. Leading companies can become stuck or may even fail, not because they do things wrong or badly, but because they keep doing what used to be the right things that brought them initial success for too long. When business conditions change, they fall victim to the rigidity of their business model (Sull, 1999).

5.1.3 Key Activities

The key activities are about how companies must make the business model work by defining the most important actions. From the viewpoint of time, the essential activities are performed before, during, and after the product's usage phase (Cook et al., 2006; Tan & McAloone, 2006). The key activities of SaaS vendors generally refer to sales and marketing, R&D, and operation and deployment.

Analysis: Each business model requires a series of key activities. For SAP itself, the key activities are sales, marketing, and R&D of software, which create the most value for SAP. Sales and Marketing are called a "field" at the organization level, whereas

R&D is called a “lab” Given that this paper focuses on the business view on SAP transformation to the cloud, key activities in the field of go-to-market are more relevant to sales and marketing. This section synthesizes a set of three aspects linked to key activities from a business view, i.e., a) mindset change, b) sales method, and c) sales and operation process change, and aims to address the challenges.

Mindset change. Among the most prominent key activities of sales and marketing, when interviewees were consulted in the interview process, a “changing mindset” was frequently mentioned. In the SaaS context, the mindset change is a core measured by several aspects of the successful shift to the SaaS. First, a mindset change requires a service-oriented culture to deliver a business outcome to customers. One of the biggest challenges that SAP faced was shifting from a software product selling mindset to a service-oriented culture. The hard thing in transformation is how to push for change at the level of execution. We must acknowledge that successful sellers of on-premises software can find it difficult to recognize the need for change and even more difficult to make that change. Although it’s clear that the SaaS has more advantages from the angle of the value proposition for customers, selling SaaS for sales can earn more credit and sales incentives from the SAP perspective as well. However, SAP sellers are still not willing to sell SAP SaaS, subverting their traditional sales methods. According to Munck (2001), the natural inclination of people is to hold on to whatever feels familiar, even if confronted with better alternatives.

Second, a mindset change needs SAP sellers to focus on a quick win. Traditionally, SAP sellers emphasized signing a big software license deal since completing one or two big deals can meet or exceed the annual sales quota of the individual. Nevertheless, SaaS calls for sellers to make a quick win to set a foundation for future recurring revenue instead of making a big deal. Interviewee #8 commented:

The SaaS model is a disruptive business model innovation; the new

model requires changing mindsets from pursuing the value of the single big deal to the model of small and medium deals increasing volume…… further added that the core ideas of SaaS sales approach are to get the "quick win."

SAP is used to looking for and prioritizing big deals. In this mindset, the goal is to create the largest impact possible in a short period of time. This is the Capex on-premises mindset. An Opex cloud mindset uses the "approach of a spear" to start with the tip, small scope, fast impact with successive impacts step by step instead of looking for a larger impact at the very beginning.

Third, a mindset change calls for a focus on customer success. Traditional SAP on-premises software selling is focused on license deal closing; signing a software deal means that sellers have completed their main job. The software service delivery is left for SAP SI partners. Hence, SAP sellers don't take care of the system "go live" schedule, quality of project delivery, and whether or not successful for the project service implementation. But the cloud mindset not only calls for SAP sellers to care about software selling, but also customer adoption, service delivery, and customer success as a whole in its customer life cycle management because SaaS is a recurring and lifetime business, and the sales and revenue generation of SaaS is achieved by continued customer success.

Sales method change. The sales method principle changed when moving to the SaaS model from the on-premises model. In conjunction with the interviews, I spent considerable time analysing the documents more deeply to extract the difference and change of sales method. Customers begin to explore the journey differently with software selection. Interviewee #3 stated:

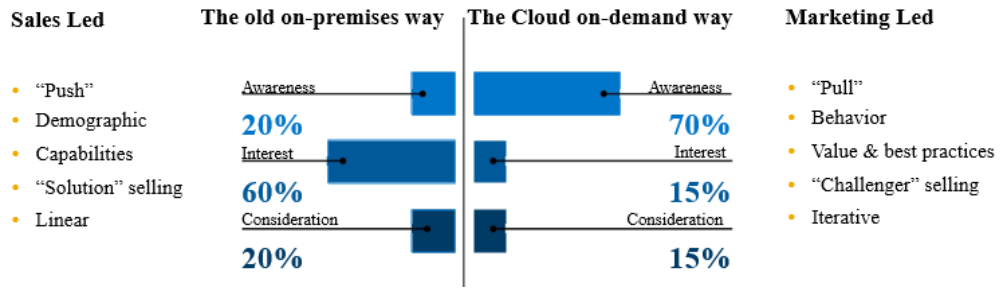
Most cloud customers make their purchasing decision before they ever engage with you, and customer acquisition of cloud business is shifting

from a sales-led focus to a marketing-led focus.

An authoritative survey from SAP SE also echoes the point of view of the SAP marketing director: 60% of cloud customers have already decided on a solution before they even contact you. What are the real reasons behind this? In fact, the sales-led approach is not an effective and dominant approach when cloud computing has been identified as one of the major IT megatrends by "anytime, anywhere, anyone, and any application" for the customer. In the cloud marketplace, the "pushing sales model" is losing influence and relevance as customers become more educated and look for a more fluid buying experience. Figure 13 illustrates more specific data to validate further the shifting from the sales-driven approach in the era of the on-premises application software market to the cloud marketplace driven by marketing.

Figure 13

The Cloud Buyer's Journey vs. the On-premises Buyer's Journey



Source: Transformation session 2: packaging, marketing and sales 2015

Sales & operation process change. SaaS requires the software vendor to move away from solution selling and value-based "challenger selling" built on how an offering can change the customer's business. Hence, the sales and operation process of the SaaS is different from on-premises ones. The sales process of SaaS has been simplified into four steps: 1) LoB whiteboarding; 2) sales demo; 3) executive presentation; 4) deal closing. The overall sales process is guided by the following principles:

- The marketing funnel will deliver pre-qualified leads seeking a specific value proposition
- Call high to qualify the lead and guide the acceptance of cloud solutions in the earlier stage
- The pre-sales process focuses on alignment to best practices, not requirements gathering
- Selling must focus on business outcomes
- Sell the art of the possible and lock on the first deal, and emphasize speed from leads to close

In contrast, the first substantial difference is that the sales process of on-premises software takes a long time and includes the following seven steps: 1) opportunity identification and qualification; 2) business requirements survey; 3) solutioning; 4) entering the shortlist; 5) executive presentation; 6) contract negotiation, and 7) deal closing. Another major distinction is that fitting customer requirements build on the whole sales cycle of on-premises software, consuming more resources, whereas the SaaS emphasizes that customers are required to fit the standard of SaaS solutions, speeding up the sales cycle. Figure 13 presents the contrast and difference.

Findings: The cloud is transforming how software vendors engage with customers and partners in service provision. This change requires a mindset change from a product-oriented culture to a service-oriented culture, prioritizing simplicity, agility, and speed and focusing on sales to align with finance from a long-term perspective for customer success. SaaS software vendors need to advocate the service-oriented culture in addressing new opportunities and dealing with threats arising. Simultaneously, the customer journey is evolving, and the role of marketing is expanding and becoming more important. Much of the screening and qualifying of opportunities, previously driven by sales, is now operated by digital marketing activity when switching to the

new value-based marketing pull paradigm. The marketing team can help align with customer motivations and understand how to move target customers through the decision-making process. Nass (2015) explained that "Effective digital marketing relies on developing customer 'personas' – not the more traditional demographic approaches you may be accustomed to. Personas are composite profiles, based on actual customers, developed for the purpose of effective market targeting". As a result, the sales method and process have fundamentally changed. They align with the outcome-driven business and customer experience, fitting the standard of SaaS solutions instead of fitting all customers' business requirements. Starting fast to make a quick win is more important right now than attending to everything the customer may need from us in the future.

5.1.4 Cost Structure

The cost structure refers to the classification and relevant portfolio of cost items, and it is associated with multiple elements of a business model like key resources, key activities, and key partners, etc. As for the specific case −SAP− under study, what is the cost structure of SAP? In terms of SAP's annual reports in the past five years, the cost structure between SaaS and on-premises software is analogous. SAP's cost structure includes the four main cost items: 1) cost associated with cloud subscriptions and on-premise licenses; 2) cost of research and development; 3) cost of sales and marketing and analysis; and 4) general and administration costs, among others. In the sections below, I offer more detailed and related support, followed by a summary of our *findings*.

Analysis: In fact, as Table 5 exhibits, as regards the four cost items, except for the cost associated with cloud subscriptions and support, which is different from that of on-premises software, the remaining three items of cost classification, namely R&D, sales, and marketing, and general and administration, among others, remain the same but have different implications. The following analysis of cost structure will be focused on the

different types and the different implications of the same type. Items 2 and 4 from the table do not differ between the two models, so in the following analysis, I focus on the two items where we have substantial differences: Items 1 and 3.

Item 1. The cost of cloud subscription and support contains a wider range of cost factors and varies greatly compared with the on-premises software. There are 32 data centres running SAP SaaS solutions globally, and SAP has the ownership of 16 out of the 32 data centres running SAP's core product – S/4 HANA.

First, when the data centre used to support SAP SaaS applications – S/4 HANA and LoB (Line of Business) – is owned by SAP to operate and run, the cost associated with IaaS (e.g., hardware, network, data storage, and backup, and electricity, etc.) will be counted into the total cost because customers don't keep the IaaS.

Table 5

SaaS Model Cost Structure vs. On-premises Model Software Cost Structure

Cost structure of SaaS	Cost structure of on-premises Software
Cost of cloud subscriptions and support	Cost of software licenses and support
Research and development	Research and development
Sales and marketing	Sales and marketing
General and administration and others	General and administration and others

Second, the economics of scale determines the cost associated with cloud subscription and support. SAP SaaS requires a certain scale to be operated at manageable costs, and the unit cost of SAP SaaS is closely associated with the reachable economics of scale-expected client amounts. The more clients adopt SAP SaaS solutions, the more the unit cost of SAP SaaS decreases. In other words, the client amount will determine the unit cost and cost leadership of the company. In an interview with the General Manager of SAP Greater China CX solution, it is impressive to note his view about the economics of scale, as Interviewee #13 described:

The user scale is a critical factor in influencing the unit cost of SAP SaaS; the more users use SaaS, the more space there is to reduce the unit cost, and vice versa. The user scale and reduction of unit cost can either mutually reinforce each other in a positive loop or become the reverse effect in a negative loop.

Third, the frequency of software updates directly affects the cost of support related to cloud subscriptions and on-premises licenses. Although both SAP SaaS and SAP on-premises software have the same nature of software – almost zero marginal cost characteristics when offering information product – the related cost of ongoing software maintenance of on-premises does not grow as fast as the SaaS, since the updating of SAP's on-premises software solutions is on an annual basis, whereas SAP SaaS is a quarterly based update. The quick update cycle of SAP SaaS means that SAP needs to invest in more technical staff and resources, which are associated with the higher cost of software maintenance and updates. In terms of SAP's annual reports over the past four years, Table 6 provides further evidence that the growth rate of the cost of SAP's cloud subscription and support was the fastest among the four main cost items of disclosure in its annual report. The year-on-year growth in the cost of SAP's cloud subscription and support was 53.2% in 2014, 112.5% in 2015, and 28.5% in 2016; in contrast, the year-on-year growth in the cost of SAP's on-premises software license and support was in single digits, i.e., 4.2% in 2014, or negative growth, i.e., -5.2% in 2015 and -4.8% in 2016.

Table 6

Comparison of YOY Cost Increase Between the SaaS Model Cost Structure and On-Premises Model Ones.

Unit: € millions

Cost Structure / Items	2013		2014		2015		2016	
	Number	YOY Growth %	Number	YOY Growth %	Number	YOY Growth %	Number	YOY Growth %
Cost of cloud subscriptions and support	-314	-	-481	**53.2%**	-1,022	**112.5%**	-1,313	**28.5%**
Cost of software licences and support	-2,315	-	-2,413	**4.2%**	-2,291	**-5.1%**	-2182	**-4.8%**
Cost of cloud and software	-2,629	-	-2,894	**10.1%**	-3,313	**14.5%**	-3,495	**5.5%**
Cost of service	-2,402	-	-2,379	**-1.0%**	-2,932	**23.2%**	-3,089	**5.4%**
Total cost of revenue	-5,031	-	-5,273	**4.8%**	-6,245	**18.4%**	-6,583	**5.4%**
Research and development	-2,282	-	-2,331	**2.1%**	-2,845	**22.1%**	-3,044	**7.0%**
Sales and marketing	-4,131	-	-4,304	**4.2%**	-5,782	**34.3%**	-6,265	**8.4%**
General and administration and others	-893	-	-1323	**48.2%**	-1,048	**-20.8%**	-1,036	**-1.1%**
Total operating cost	**-12,337**	-	**-13,231**	**7.2%**	**-15,920**	**20.3%**	**-16,928**	**6.3%**

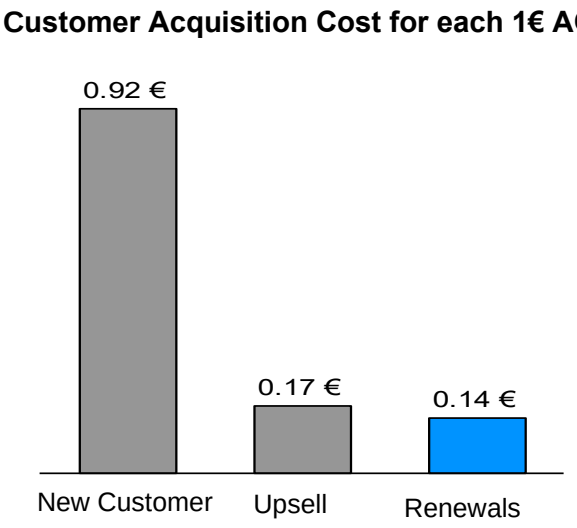
Item 3. Cost of sales and marketing: Regarding the cost of sales and marketing, although both SaaS and on-premises software keep the same classification of cost structure, the implication for managing the cost is totally different. Table 6 shows that the cost of SAP sales and marketing was ranked number one among the four main cost centres, accounting for a third of the total operating cost as per the SAP annual report of 2013–2016. SAP annual reports did not break down the cost of sales and marketing, but in conjunction with interviews, workshops, and observations, I find that SAP is trying to reduce the CAC (customer acquisition cost) through upselling, cross-selling, market automation, and managing churn. Compared to the on-premises solution model, CAC and CRC (customer retention cost) are clearly defined in the context of SaaS. CAC refers to the sum of all costs involved in acquiring a new customer or the average sum of all costs on an annualized basis, and CRC is the recurring cost of all expenses required to retain a customer. In SAP's cloud business, the cost of renewing, upselling, and cross-selling is far less than the cost of acquiring a new client. In an interview with an SAP global cloud expert, Interviewee 14 emphasized that:

> *The renewal cost – CRC is 1/7 of CAC-new booking in a cloud business around, and the upselling cost is 1/5 of CAC. Selling small deals first with a quick win is to create a foundation for renewal and upsell SaaS deals further with the favorable cost structure.*

Acquiring new customers is expensive. The third-party survey data also substantiate the above points. Figure 14 also shows that CAC is almost seven times the renewal cost and five times the upselling cost based on the 74 SaaS company survey. When CAC is growing briskly, it has become imperative for SAP to concentrate efforts on reducing CAC and building up efficient and healthy business growth. To do this, one of the best ways is to motivate sales and CEE teams to maximize customer value through upselling and cross-selling, which are at the heart of reducing CAC and driving successful SaaS sales. However, the current mindset of SAP sellers doesn't include renewal, upselling, and cross-selling as part of the continuous efforts to align sales and finance to save costs.

Figure 14

Comparison of the Customer Acquisition Cost



Source: 2013 Pacific Crest Private SaaS Company Survey results based on 74 companies

In recent decades, SAP has made a huge success in its on-premises enterprise software business, which has proved highly profitable. Sales and marketing are characterized as one of the most costly items. The design of the sales process and key sales activity of SAP's on-premises license software is driven by key characteristic-software license pricing, the competition of software functions and features, complex selling, and customization, etc. These processes and activities of sales imbued with the attributes of

an on-premises software business company might have been practical and successful before, but it would not apply to the SaaS, which has been taken as the mainstream trend of enterprise applications. It is impractical to adopt the cost structure of sales and marketing of on-premises software to pursue the SaaS business, but how is it possible to effectively strike SaaS deals and reduce the CAC further? Interviewee #3 expressed his thoughts:

> *Leveraging marketing automation would be one of the most effective ways to lower CAC from the layer of marketing because customers prefer to obtain necessary information beforehand via the flexible and easy way – the Internet – instead of the vendor's field sales.*

From the layer of cost structure, marketing automation is reinventing a new paradigm of the sales process. It could generate SaaS revenue with almost zero marginal cost of sales and marketing activities because customers can find and do a trial to use SaaS solutions for free with a given time frame, even if there is no field sales team to demonstrate the SaaS solutions. Thus, the cost structure of sales and marketing has changed from being sales-driven, which was previously engaged in sales activities, to being marketing-driven, which is mainly associated with marketing activities. Interviewee #9 elaborated on the cost reduction of acquiring sales leads through marketing automation:

> *A repeatable digital marketing process that creates and nurtures leads is critical for success in marketing cloud solutions. Marketing automation as a kind of digital marketing approach should be used to take the burden off sales and deliver marketing qualified leads, playing a significant role in driving down CAC.*

Marketing automation is a pull mode driven by marketing, delivering triggered personalized interactions based on the data-driven decision instead of the field sales-led pushing model, leading to a higher labour cost. Clearly, the sales and marketing approach is very different between the SaaS and on-premises license models. If the

sales pitch of SaaS deals is conducted by adding excessive field sales, it will undermine the foundation in building a successful SaaS business.

Besides the interview with marketing staff, in a further interview with a director of SAP SFSF solution, Interviewee #1 expressed her thoughts from a micro-level on how to reduce the cost of customer acquisition.

> *Churn is the lifeblood of the SaaS business since it is not only firmly tied to the revenue stream of SaaS business but also hugely affects CAC.*

From the perspective of operation, churn is a major concern, as it is the rate of cancellation of customer subscriptions. If churn equals the growth rate of new customer acquisition, then growth eventually stops. If churn is more than the new business booking rate, your net new business growth is negative, and then you are shrinking instead of growing. Therefore, this is why churn is so important. Churn is regarded as the "killer" of the SaaS business. Higher churn means higher CAC because churn costs too much to lose customers.

In addition, churn plays an important role associated with multiple key indicators. It is highly relevant to customer satisfaction. In most cases, before deciding to cancel subscriptions, customers have been unsatisfied with the SaaS vendor for a while. It's important to make customers sticky and increase customer satisfaction by interacting and engaging with them as frequently as possible. The more customers interact with your service, the less likely they are to leave. To retain customers and reduce CAC, another effective way to manage the churn of customers is to increase the average customer spending and extend customer lifetime value (CLV) further by upselling and/or cross-selling.

Findings: First, moving to the cloud means upfront investment before growing recurring revenue. When providing end-to-end cloud solutions – IaaS, PaaS, and SaaS for customers – this suggests that SAP is bound to bear the upfront fixed cost throughout the whole life cycle. In contrast, on-premises software licenses and support are not required to invest at such a high cost. Second, adopting the sales approach of on-premises software to sell the SaaS is not only inefficient, but it also extends the sales cycle and increases enormously the sales cost to further jeopardize the company's profit. Because the sales cost of SaaS grows exponentially with complexity, which varies from different approaches, e.g., freemium, no-touch, inside sales, field sales, third, managing churn can generate a stable and predictive revenue stream, as well as contributing to the reduction of CAC. Churn is a key that is highly relevant to customer satisfaction: the more customers are satisfied, the less churn incurs. Upselling and cross-selling can make customers sticky and lower the churn further by increasing the switching cost of customers.

5.1.5 Revenue Stream

If we assume that customers are at the heart of the business model, it is no exaggeration to say that revenue streams are its blood. Revenue streams would be generated through the business model through two approaches: transaction revenues and recurring revenues. Transaction revenue is generated from one-time deals, and recurring revenues have resulted from ongoing payment of a fixed rate based on subscription. SAP business model transformation to the cloud means that the structure of the revenue stream will change accordingly. SAP has stood among the giants of the global software industry for many years and generated billions of dollars to dozens of billion dollar's revenue. Traditionally, SAP revenue consisted of three streams: (1) software licenses; (2) software maintenance support; and (3) consulting service. When SAP launched its SaaS strategy in 2012, the cloud subscriptions and support were added as the fourth revenue

stream. Given that the consulting service refers to the service implementation, it does not fall under the software domain to conduct further analysis.

Analysis: The SaaS and on-premises software are very different; the on-demand model challenges the on-premises software model about revenue streams in the following three areas: 1) recurring revenue vs. one-time sale of the software license; 2) reallocation of revenue stream, and 3) customer churn or retention rate.

Item 1. Recurring revenue vs. one-time sale of software license: SaaS is characterized by a recurring revenue business that extends the customer lifetime. The SaaS business can generate subscription revenue streams after the initial contract period. Therefore, the SaaS sales model creates incremental revenue growth. For example, if SAP sells 100 million euro of annual contract value (ACV) in one quarter, and then SAP sells the same amount of ACT in the following quarter, it will be growing because the prior recurring revenue in the last quarter is accumulated to the current contracted value (from here on let's assume there is no churn or less churn). Whereas the on-premises software is a transactional and deal-based business, obtaining the one-off software license revenue at the initial software license contract. The transactional deal-based model is doomed to make the bulk of SAP revenue from selling SAP on-premises software licenses varied in the past, sometimes substantially from quarter to quarter and year to year.

In general, SAP revenue resulting from on-premises software licenses is difficult to forecast due to the long sales cycles for products, large deal sizes, complexity, extended timing of individual customer transactions, and the uncertainty of the circle of customer service implementation. For example, if SAP similarly sells 100 million euros of software licenses in one quarter, it must sell no less than 100 million in the next quarter. Otherwise, it will achieve negative revenue growth. It is common to leave a customer

unattended after closing a big deal because we know that not much revenue will be generated from there in the short term. Therefore, we have to seek different customers to meet sales quotas.

SAP annual reports provide further proof that the SaaS sales model creates and accelerates incremental revenue growth. According to SAP annual financial reports, as shown in Table 7, although the revenue of cloud subscriptions support accounted for a small portion of SAP's total revenue, in an analysis of three consecutive years, SAP cloud business made double digits or triple digits in year-on-year growth: 56.2% in 2014, 110.3% in 2015, and 30.9% in 2016. In contrast, the growth of year on year for the portion of the on-premises software licenses is almost flat except for the fiscal year of 2015, with a 9.9% increase, although there was a slightly negative growth in 2014 with a 2.6% decline. These results suggest that SAP cloud business has started a fast growth, while the on-premises software licenses could freeze up.

However, although the year-on-year growth trend of on-premises software has stalled, it is still profitable and is considered as a "cash cow," accounting for 25% of SAP's total revenue. Therefore, it is unrealistic for SAP, which lies in a leading position in terms of enterprise application software worldwide, to give up the on-premises software completely. The transitioning to SaaS could last a number of years. During the transition stage, SAP actually runs two models in parallel, offering similar software products as both on-premises software and on-demand SaaS. Clearly, this is a typical transitional strategy when moving towards the SaaS model. SAP is attempting to avoid the competition and risks in threatening the existing revenue stream of on-premises software through customer segmentation.

Table 7

SAP Global Cloud and Software Revenue for 2013–2017 Unit: € millions

Annual revenue / Items	2013		2014		2015		2016		2017	
	Number	YOY Growth %	Number	YOY Growth %	Number	YOY Growth %	Number	YOY Growth %	Number	YOY Growth %
Cloud subscriptions and support revenue	696	-	1,087	56.2%	2,286	110.3%	2,993	30.9%	3,769	25.9%
Software licences revenue	4,516	-	4,399	-2.6%	4,835	9.9%	4,860	0.5%	4,872	0.2%
Software maintenance support revenue	8,738	-	8,829	1.0%	10,093	14.3%	10,571	4.7%	10,908	3.2%
Consulting service revenue	2,865	-	3,245	13.3%	3,579	10.3%	3,638	1.6%	3,911	7.5%
Total Revenue	**16,815**	**-**	**17,560**	**4.4%**	**20,793**	**18.4%**	**22,062**	**6.1%**	**23,461**	**6.3%**

Item 2. Reconfiguration of revenue stream: The SaaS model and on-premises software license model are quite different because the revenue stream and mechanism of revenue realization have been fundamentally changed when moving to the cloud. The charging model of on-premises software is not there, replaced by subscriptions.

First, SAP can generate cloud subscription revenue while providing software functionality in the SaaS environment to customers; the realization of revenue is not dependent upon the perpetual software license and related software maintenance support. Hence, in the SaaS model, along with changes in the license model, the software maintenance is not charged as basic support, which is embedded in the SaaS subscription fee to customers. The SaaS subscription is based on "pay-per-use." By contrast, the business of software maintenance support is highly relevant to the software license sold; the decreased software sales could have an adverse effect on related software maintenance. SAP software maintenance support is charged annually at 22% of the total software license fee. When the software license is entering stagnation, it means that software maintenance support will lose the engine of business growth.

Second, the SaaS reallocates the revenue stream while enabling increased business agility, standardized function, and faster return on investments for customers. Traditionally, when SAP sells each euro of on-premise software license, 3–4 euro of service implementation can be generated for SAP partners to deliver the service for customers accordingly. In the SaaS landscape, the previous pattern of revenue stream is being turned upside down. When SAP sells each euro of SaaS subscriptions of the

first year, there is only 0.5–1 euro of SaaS service implementation generated for SAP partners to deliver the related SaaS service for customers. The characteristics of SaaS subscriptions determine that recurring revenue is the more stable and predictive revenue, whereas the related SaaS service is shrunken and unpredictable. There is no doubt that the SAP partners and ecosystem gained the largest piece of the revenue stream of an enterprise application from customers in the previous on-premises license model.

In contrast, SAP software and related maintenance account for a small proportion of the revenue stream. The transition to the cloud means the reallocation of the revenue stream led by partners is converted to the revenue reallocation led by SAP as a SaaS platform vendor. The next question is when SAP can create new revenue streams, how to motivate ecosystem partners to participate in the SaaS transformation, which is not only related to the transformation of SAP itself but also the transformation of the SAP ecosystem.

Third, the nature of the SaaS subscription model can make customers sticky. Customers can continue to use on-premises software without the renewal of software maintenance, but for the SaaS, the customer can't access and continue to use the SaaS application system anymore without the renewal of the SaaS subscription. However, SAP does not force customers to renew subscriptions and software maintenance after the initial period. From another angle, this suggests that the SaaS model can provide a more stable and predictive revenue stream for SAP. In terms of SAP annual reports, I find that software maintenance remains the largest piece of SAP revenue, accounting for 50% of total sales revenue. SAP shifting to SaaS means that the two revenue streams of on-premises model software license and software maintenance will be mainly converted into one revenue stream – subscription in the SaaS model. Thus, the retention rate of customers or churn is getting critical to the success of revenue growth.

Item 3. Customer churn or retention rate: Customer success has become a key factor in revenue generation due to the importance of churn. Churn is closely associated with the revenue stream of SaaS: keeping the recurring revenue stream growth requires churn to be minimized. If a customer is happy with the service, they will stick around for the long haul, resulting in a lower churn, and the profit that can be made from that customer will increase considerably. On the other hand, if a customer is unhappy, they will churn quickly, and the business will likely lose money on the investment they made to acquire that customer. This creates a fundamentally different dynamic to a traditional software business.

SAP instituted a new sales incentive programme to secure customers for the long haul to promote the signing of multiple-year contracts instead of a one-year contract. In terms of the current SAP sellers' compensation plan, if SAP sellers sign a SaaS contract for three years and beyond, 2.5 times of the sales credit and sales commission will be recognized as SAP sales. Otherwise, there is no SPIF (Special Programme Incentive Fund) being counted. Oracle has also adopted a similar sales incentive to boost SaaS solutions, but the difference is that Oracle offered a more aggressive SPIF – seven times the sales credit and sales commission when selling SaaS solutions with contracts of three years and beyond.

However, the reality is that the higher sales incentive plan of the SaaS was not always able to manage and control churn. As a result, the SAP SaaS retention rate is relatively low in some regions, e.g., Greater China and some newly emerging countries. What is puzzling is why a higher sales incentive sometimes leads to a low customer retention rate. In the interviews with SAP sellers, Interviewee #7 explained:

> *To gain a big bonus and meet the sales quota of SaaS, we deliberately make a combined deal to book SaaS revenue by cutting some portion of on-premises license revenue as a trade-off when the customer budget remains the same.*

In fact, customers did not plan to adopt the SaaS from the beginning at all. SAP sellers just embedded the deal of SaaS into the overall software solution portfolio for customers. When a hidden false sales order was booked as a SaaS deal, it covered up the potential problems and crises. It is impossible to expect customers to renew a SaaS that was never used before. When SaaS is not adopted by customers, SaaS business will come back to the business model of on-premises software; even worse, it can be just seen as a pure software license sold without any software maintenance. Hence, it's important for SAP management to identify false sales orders and improve these metrics to address management loopholes during the transformation journey.

Findings: Based on the above analysis, I find, first, that the SaaS revenue model will surpass the on-premises license revenue model in the long run. The revenue growth of the on-premises software model is increased greatly by acquiring a number of new customers with one-time sales. In contrast, the revenue growth of the SaaS model depends on the total number of customers, rather than just new customers, because when more customers are added, each customer can create a stream of revenue to grow. Second, the transformation to the cloud means the product-oriented model transfers to the outcome-oriented revenue model. The SaaS vendor is winning over the reallocation of the revenue stream in its ecosystem. Third, managing churn is a means of increasing revenue stream, but not a result, and customer adoption and customer success are final destinations for the successful revenue generation of SaaS business.

5.1.6 Growth Agenda

The SaaS model differs markedly from the on-premises software model with unique challenges concerning business growth, and traditional business metrics of on-premises software have been unable to capture the key factors that drive SaaS performance. Transforming to the SaaS needs a different set of metrics to measure business

performance and efficiency. Traditional KPIs, such as revenue growth, are extended by customer growth, customer lifetime value, and customer retention rate. SAP, which enjoyed fast revenue growth of software and software maintenance, has begun moving to the SaaS to respond to the increasing customer demand for cloud-based solutions. In this section, I will conduct a more detailed analysis, followed by a summary of our findings.

Analysis: Being different from the traditional measure of business growth in SAP annual reports focusing on the revenue growth of cloud and software only, in the SaaS context, there are key variables that drive future business growth significantly. Besides revenue growth, I introduce another dimension: a) customer growth and b) churn effect.

Item 1. Revenue growth: Table 8 shows that, in the past five years, SAP's total revenue maintained single-digit growth, except in 2015. This indicates that SAP has entered lower speed growth. However, when breaking down the total revenue into cloud subscriptions and support revenue and software license revenue, cloud subscriptions and support revenue have already achieved significant growth with big double-digit growth and even three-digit growth in 2015, whereas the growth of on-premises software licenses has almost remains flat. In 2017, SAP achieved €3,769M revenue in cloud subscriptions and support and €4,872M revenue in on-premises software licenses. If we suppose that SAP's SaaS business can continue to maintain around 30% growth since 2016, at the same time, the on-premises license business will keep the flat growth continuously. The inflection point for the SAP cloud will be crossed in 2018. Luka Mucic, CFO of SAP SE also echoes this point, and he expects SAP SaaS business will surpass the revenue of on-premises software licenses by 2018.

Table 8

SAP Global Cloud and Software Revenue Growth Rate for 2013–2017 Unit: € millions

Items \ Annual revenue	2013 YOY Growth %	2014 YOY Growth %	2015 YOY Growth %	2016 YOY Growth %	2017 YOY Growth %
Cloud subscriptions and support revenue	-	56.2%	110.3%	30.9%	25.9%
Software licences revenue	-	-2.6%	9.9%	0.5%	0.2%
Software maintenance support revenue	-	1.0%	14.3%	4.7%	3.2%
Consulting service revenue	-	13.3%	10.3%	1.6%	7.5%
Total Revenue	-	**4.4%**	**18.4%**	**6.1%**	**6.3%**

Although SAP has made rapid progress in moving to SaaS, compared with a SaaS-born company like Salesforce, which is considered a high-growth company focused on growth and not margins, investors treat SAP and other on-premises software vendors moving to SaaS very differently, and they have higher expectations for both revenue growth and margins. Investors won't tolerate a decline in operating margins during the transformation to the SaaS, and they expect SAP to deliver on continuous double-digit growth as well as margins for mature on-premises software without any substantive and frequent fluctuation. This has also raised challenges regarding how SAP is to communicate with and educate investors and Wall Street on their transition.

Revenue growth is a critical metric for a SaaS business. However, since SaaS revenue is generated and recognized over time, it is more important to analyse what factors drive revenue growth. Traditionally, SAP on-premises software revenue is based on TCV (total contract value), and TCV contains a one-time software license and ongoing software maintenance fee, which accounts for 22% of software license fees. By contrast, SAP SaaS revenue is recurring revenue, which typically bills customers annually, presenting the firm with ACV (annual contract value).

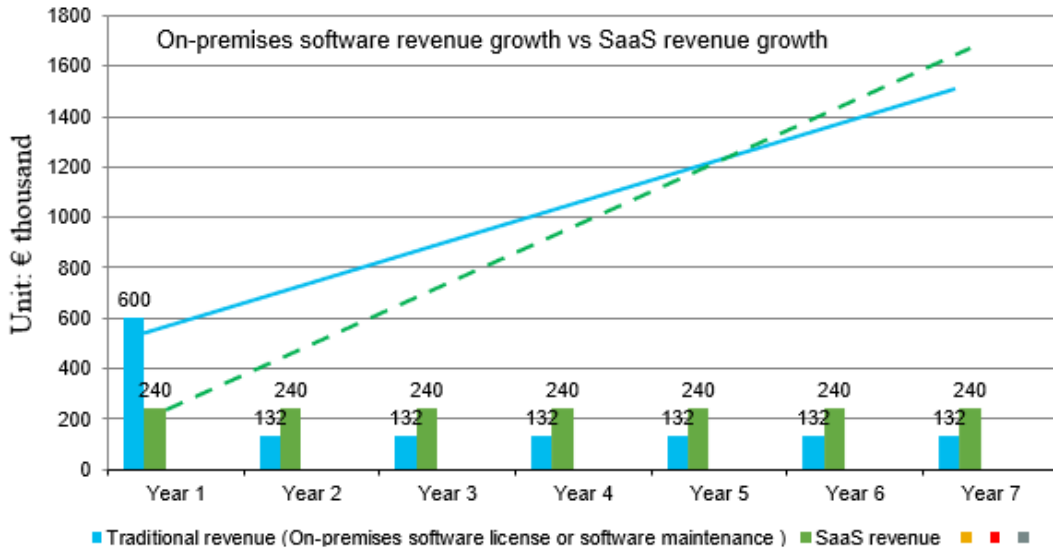
In Figure 15, I exhibit the revenue growth mechanism of on-premises software licenses and the related software maintenance compared with the SaaS model when enterprise application software is sold. To conduct further analysis and explanation, I simplify our examples with the following assumptions: a) one customer purchased €600K of on-

premises software at the end of the calendar year without the first-year software maintenance fee and VAT (value-added tax); b) the annual SaaS subscription fee is 40% of equivalent on-premises software applications; and c) customers used on-premises software without canceling the annual software maintenance fee, and customers used SaaS without churn.

Figure 15 shows that an ACV of €240K SaaS subscription revenue is smaller than a TCV of €600K on-premises software revenue, but a €240K backlog per year, which is not reflected in the TCV of one or multiple years, is an operational measure that represents future growth. SaaS revenues are essentially deferring license revenues. Hence, measuring SaaS revenue growth requires understanding new metrics (e.g., backlog, recurring revenue, and deferred revenue, etc.) when moving to the SaaS; SaaS vendors are less profitable in the earlier stage due to the heavy upfront cost investment in sales, marketing, and operations. As shown in Figure 15, the cumulative SaaS revenues surpass the traditional on-premises software license and the related software maintenance revenue in between five and six years. This also explains why SAP SaaS revenues grow much faster than the revenues of SAP on-premises software licenses.

Figure 15

On-premises Software Revenue Growth vs. SaaS Revenue Growth



Item 2. Customer growth: Transitioning to the SaaS is not only focused on revenue growth as a financial measurement but also on customer growth as a non-financial KPI operational measurement. Customer growth is one of the key factors linked to financial success. However, how can we measure customer growth for SAP? There are two indicators considered to achieve customer growth: a) customer number and b) customer lifetime value.

The growth of customers has practical significance for both the on-premises model and the SaaS on-demand model for SAP to boost business growth. However, the nature of transitioning to the SaaS requires a focus on increasing customer numbers rather than coming with strings attached to close a big deal. When selling SaaS solutions, SAP traditional sales instinctively sell SaaS by using the approach of selling on-premises software. It's an effective way to meet the sales quota for individual SAP sellers by selling a big deal in the short term, but as regards SAP corporate level, this approach of adopting on-premises software to sell SaaS is not in line with the SAP cloud strategy because it is common and practical to seek to sell a big one-off deal to customers for on-premises software, and focusing on closing a big deal is still a revenue growth-driven KPI instead of being customer growth-driven. Simultaneously, if a sales team always tries to bring big deals to the table, the CAC increases, and the breakeven point is postponed. The company may face financial issues with this, but the SaaS model is not based on one-time sales; its substance is to have each customer create an ongoing revenue stream through recurring revenue, especially in the earlier stage of transformation to the SaaS.

Maximizing customer lifetime value (CLV) makes it possible to achieve sustainable growth. In the on-premises software era, there was no driving force to care about maximizing customer lifetime value. SAP mainly focused on increasing the customer base to drive the sales and revenue growth, tracking the top deal value per customer,

and the number of customers each quarter. However, these indicators can't provide accurate evaluation when entering the SaaS era. By contrast, CLV is an estimated total gross margin value that a customer can generate over the lifetime from a holistic viewpoint, incorporating multiple elements, such as annual recurring revenue, cost to serve, and churn. In breaking down the CLV, the formula can be expressed as below:

(1) CLV = ACT * Gross Margin * Lifetime
(2) Gross Margin = (Revenue – Cost) / Revenue * 100%
(3) Lifetime = 1 / Churn Rate

To increase the CLV, it is equally important to focus on: a) increasing ACV by cross-selling and upselling; b) cross margin improvement by lowering CAC and increasing ACV; and c) lifetime expansion by investing in customer retention and providing enhanced customer service and responsiveness. Hence, to continuously grow the CLV, when the cost is kept stable, increasing ACV and keeping retention rates are critical to improving the CLV to drive business growth. At the SAP Beijing field kick-off meeting in 2018, Mark Gibbs, president of SAP Greater China, presented the new concept of customers for life, creating and maximizing CLV as being part of the cloud transformation strategy.

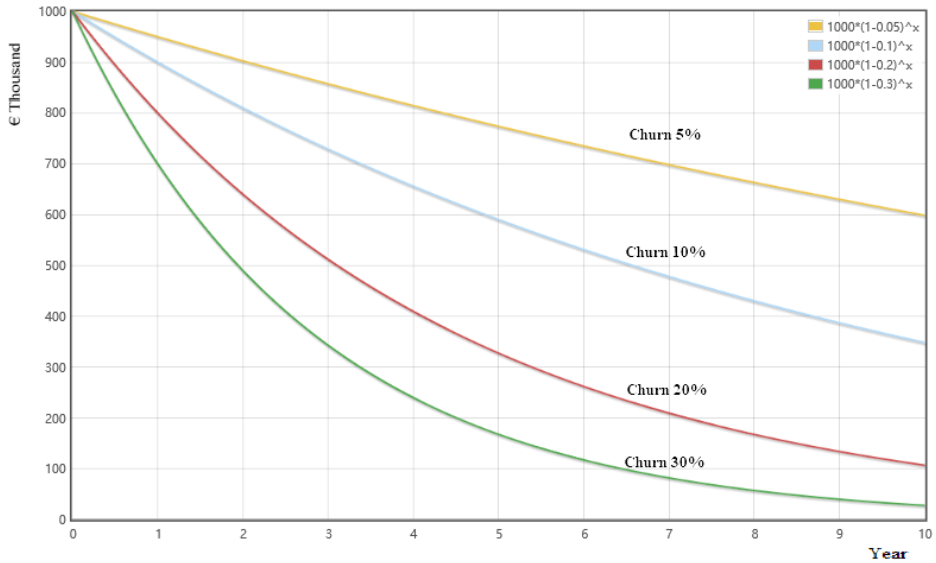
Item 3. Churn effect on growth: The churn rate is vital for SaaS business growth. SAP spent most of its resources driving growth by acquiring new customers, ignoring keeping their existing customers happy. SAP did not take effective measures to reduce the customer churn rate to a minimum. The typical situation was that SAP marketing and sales invested heavily in customer acquisitions, and customers purchased SAP ACV of SaaS solution for the first year, but in the second year, the customer churn rate became relatively high. Thus, the CAC enormously outweighed the money gained from customers. Due to the inertia of traditional thinking, SAP sales and sales management

did not care about the churn rate and what it really meant to SAP and just treated them as on-premises software maintenance. Whether customers would renew the subscription is none of their business. However, how does the churn effect impact the growth of SAP SaaS business profoundly? The following examples present concrete cases to address this.

First, we assumed €1000 thousand revenue obtained from existent customers at the beginning of year one with different churn rates – 5%, 10%, 20%, and 30%. We can see that the change in churn rate is very impactful and exponential for the revenue growth in Figure 16. The impact on the growth rate will be augmented over time. The more time it takes, the greater the negative effect on the growth rate. In year 10, the customer revenue with a churn rate of 5% is 20 times that with a churn rate of 30%, three times that with a churn rate of 20%, and nearly 1.7 times bigger than that with a churn rate of 10%.

Figure 16

Churn Rate Change Effects



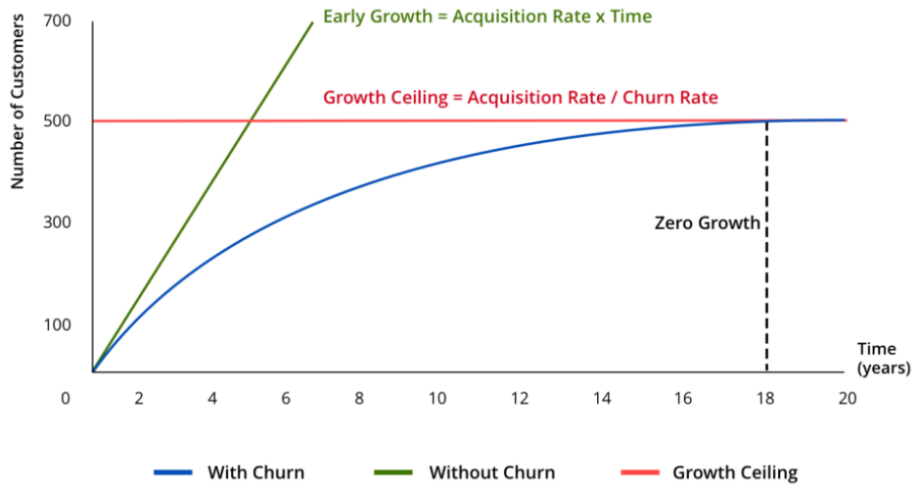
Second, when the churn rate takes hold, combined with new customer acquisition, it defines the maximum customer growth celling that the SaaS business can reach. If the number of new customers acquired equals the number of churned customers, the customer number will reach its maximum point, where the growth rate effectively stalls to zero, finding an equilibrium state. Figure 17 illustrates an example when the churn rate is kept at 20%, the number of new customers acquired is assumed to be 100 each year, and the maximum customer number is 500. This can be calculated with the formula below:

Maximum customers = customer acquisition rate / % churn rate

Hence, to maximize customer value, decreasing churn will help move the growth ceiling upward and expand the growth curve.

Figure 17

Maximum Customer Number and Equilibrium State



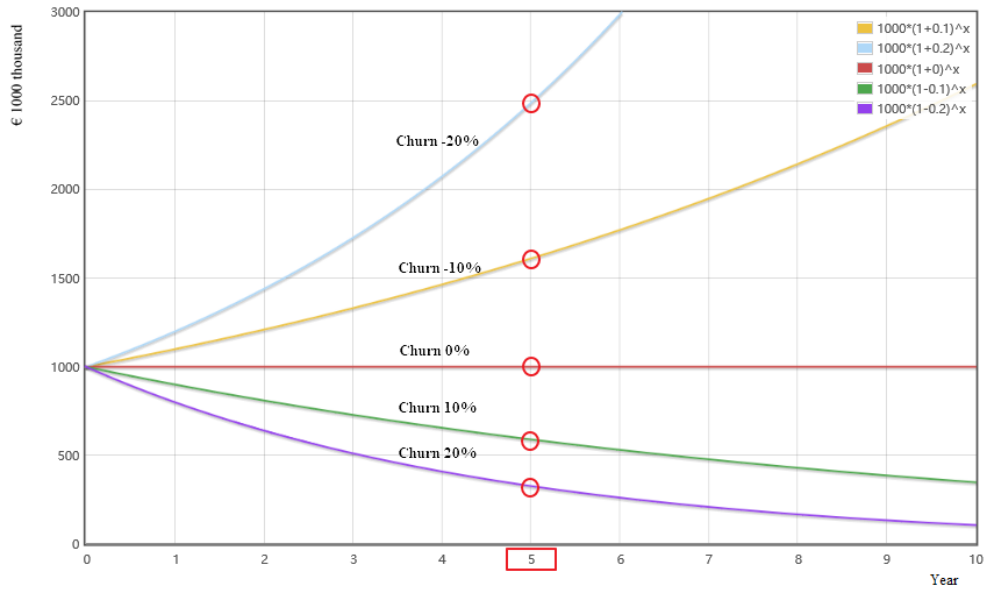
Third, negative churn is a mechanism for achieving growth and revenue expansion, and having a negative churn is a powerful effect leading to huge success. Negative churn

suggests that the revenue gained exceeds the revenue churned from installed base customers because this is due to the compounding effect of adding revenue incrementally from the existing customer base by upselling and cross-selling. To show how a negative churn can dramatically drive the growth rate, we illustrate this in Figure 18. We still use the above examples and assume €1000 thousand revenue obtained from existent customers at the beginning of year one, but when comparing churn rates of 10% and 20%, and negative churn rates of -10% and -20% over the years, we easily find that in year five, the customer revenue with a churn rate of -20% is 7.6 times that with a churn rate of 20%, while the customer revenue with a churn rate of -10% is 2.7 times that with a churn rate of 10%.

In other words, the customer revenue with churn rates of -20% and -10% increases by 248.8% and 161.1%, respectively, compared with no-churn (churn rate equals zero); the customer revenue with churn rates of 10% and 20% gets -41% and -67.2%, respectively, compared with no-churn. Hence, a negative churn is a desirable characteristic to drive the growth rate of the SaaS business. Although negative churn is a reverse churn, it is different from churn, which achieves a decreasing churn rate by continuing to renew customers. The negative churn needs to focus on three aspects: 1) higher utilization – a pricing model that increases the pricing based on component usage; 2) upselling – customers purchase additional users; and 3) cross-selling – customers purchase additional SaaS software.

Figure 18

Comparison of Churn and Negative Churn Effects



Findings: Measuring the growth rate of the SaaS business requires a different set of metrics. First, SaaS revenues are essentially deferring license revenues, and measuring SaaS revenue growth requires understanding new metrics like backlog, recurring revenue, and deferred revenue. Second, customer growth as a non-financial KPIs operational measurement is one of the key factors to link with financial success through the land and expand strategy, instead of closing big deals to achieve the growth rate. Third, the SaaS growth rate is a customer lifetime approach, in which CLV holds a holistic metric to view the business growth over the customer lifetime. Fourth, the churn rate greatly impacts the SaaS revenue and growth, and negative churn is a mechanism for achieving high growth and revenue expansion.

5.3 Business Value

5.2.1 Value Proposition

With regard to the value proposition, it can be perceived how to address customer problems and needs in a particular market segment and why customers would buy your product and service instead of others ultimately. The value proposition is centrally positioned in the business model, and the business model transformation suggests that the value proposition for customers has changed fundamentally. When SaaS became a market trend, offering a flexible option with lower initial spending, quick iteration, and innovation for customers. The value proposition of SaaS is better in satisfying customers' needs from the software functionality providing to the service outcome providing. The company needs to rethink how to transform into the new business model by improving its value propositions to better support and deliver these new offerings for customers. As the biggest application software, SAP is challenged to transform its business to the SaaS to maintain its leading position in the enterprise application software market worldwide.

Analysis: SAP has done an excellent job for the on-premises software business in recent years, and the on-premises software is still a cash cow business for SAP today. Although the growth of on-premises software is sluggish, at the same time, SAP SaaS is growing rapidly. Thus, we will investigate why SAP needs to move to the SaaS and how SaaS can create value by seeking new value propositions for customers to drive SAP growth, compared with on-premises software. Table 9 represents a summary of the unique value proposition in comparison to on-premises software.

Table 9

SaaS Value Proposition vs. On-premises Software Value Proposition

Items	Value Proposition of On-premise Software	Value Proposition of SaaS
Financing and cost flexiblity	One-off permanent licences purchasing	More predictable revenue based on subscriptions model
Value capture time	Long time to value	Quick time to value—faster return on investment (ROI)
Innovation agility	Customization	Increased business agility with more innovation
Cost saving	Higher total cost of ownership (TCO)	Lower total cost of ownership (TCO)

First, clients want to have an OPEX with the risk-sharing model using an enterprise application management system. The on-premises model requires the customer to invest in one-time heavy upfront investment in one-off permanent license purchasing, whereas the SaaS model can manage the cost from CAPEX—high initial investments—being transformed to OPEX—running operational costs—which impact customer cash flow and provide the net present value for customers accordingly. Simultaneously, SAP can obtain more predictable software sales and revenues based on the subscription model, minimizing the fluctuation of sales and revenue impacted by the uncertainty of new customers and additional on-premises software license purchasing.

Second, clients want to have instant value. They need a solution that not only helps them to realize value but also accelerates the time to value to thrive in this digital business environment. SAP on-premises core application software often requires one to two years for service implementation. By contrast, SAP SaaS simplifies the service implementation and reduces the cycle of the service delivery and amount of training needed by standardizing the software application, making quick iteration, and enhancing the customer experience with the solution's intuitive interface and responsive design. Interviewee #22 elaborated:

> *SAP SaaS software service implementations are typically performed in around 50% of the man-day time of on-premises enterprise management applications. Correspondingly, SAP can raise competitive advantages by improving the solution productivity and customer return on investment (ROI).*

Third, digital transformation is happening everywhere. New business requirements mandate a significantly digital core system based on cloud computing in which SAP allows customers to run their business efficiently and effectively. SAP SaaS can enable business agility and more innovation. Figure 19 shows that when SAP on-premises software is released annually, SAP SaaS provides the quarterly release cycle. In comparison to SaaS solutions, the upgrade cycle of on-premises customers will often take two to six years. This implies that on-premises customers will lose business functional value and continuous innovations released by quarterly SaaS updates due to version lock effects. Although there are so many advantages of SaaS solutions, there is also a huge challenge faced in business practice.

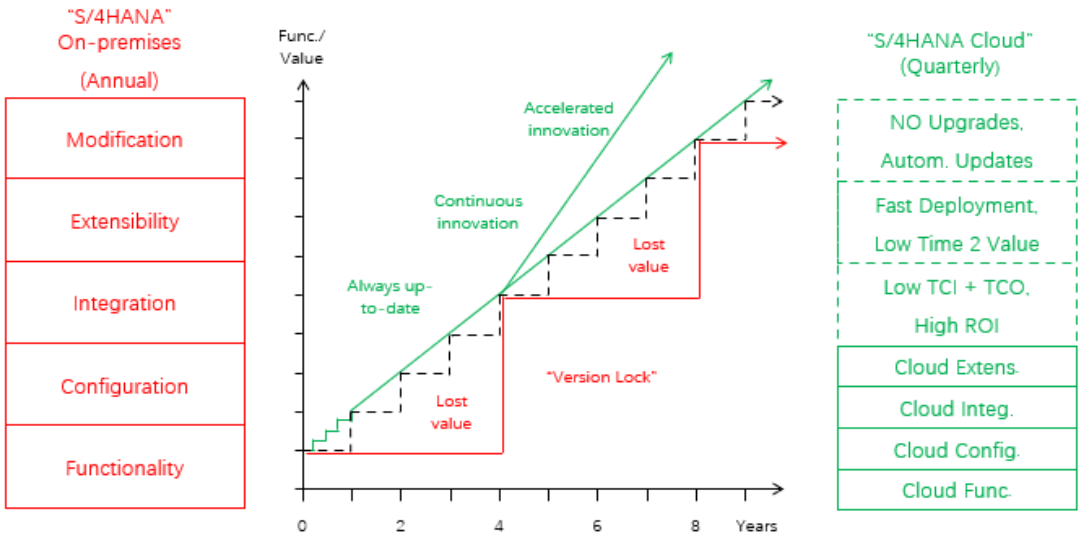
The SaaS product functionalities lie in the initial stage and are as immature as the on-premises software. The reality is that customers had invested heavily in the on-premises software with a number of in-house legacy systems, customization, and third partner solutions around SAP core ERP solutions. SAP on-premises software (e.g., ERP) can generally suit 70–80 % of customer business requirements, and the remaining 20–30 % of business requires customization. The customization extends the cycle of service delivery and increases the associated significant costs.

SAP SaaS is a standard solution, which can’t be allowed to be modified on the client side usually. When SAP SaaS solutions can’t cover the functionality of an existing enterprise application system or manifest how fast innovations and cloud ecosystem application integrated by APIs on top of SAP core cloud application can make up the gap and even generate the new business value beyond the functionalities of on-premises software, customers will take a wait-and-see approach to new technologies, making the SAP cloud transformation strategy more difficult.

In addition, the on-premises software can meet individual customer needs through the second development of software and customization on top of the core ERP system, whereas SaaS emphasizes customers following the best practice and industry template enabled by SaaS software, simultaneously standardizing solutions through quick iteration, quarterly updates, and building up the enterprise App store to meet customer requirements. From this angle, when the SAP standard package software solution can't fully meet customer requirements, the resource and scale of enterprise cloud applications in the SAP App store determine the extent to which SAP SaaS can meet customers' dynamic requirements on the digital edge; in other words, the number and scale of SAP enterprise cloud ecosystem applications impact SAP SaaS business growth significantly in terms of how attractive these SaaS software solutions around the ecosystem are for customers as a differentiation.

Figure 19

Value Comparison Between On-premises Software and SaaS



Fourth, customers want to have a lower TCO (total cost ownership). Customers understand that massive investments in hardware and platforms tie up capital that could be used for other business priorities. Therefore, businesses now seek solutions to help

them run their projects without the need for big budget approvals. SAP SaaS has the cost-efficient attributes to lower customer TCO compared with on-premises solutions. There is no upfront cost or initial investment for customers when shifting from a software license and maintenance to a subscription model. In this case, from the SAP point of view, helping customers to reduce the use cost of software through the SaaS model may also mean a decrease in SAP software sales and revenue. It might be correct for a simple deal with a short term, but SaaS is economies of scale business with lifetime business value. The customer cost saving is realized by economies of scale and scope on the SAP side for SaaS business, enabling acquisition of only the amount of software needed as opposed to the traditional license per device, allowing customers to use the business functionality by subscribing at a lower cost than paying for licensed software applications and leading to overall cost reduction by the cloud ecosystem. SaaS business is viewed as a winner takes all. Helping customers to lower customer TCO will significantly improve SAP's competitive edge in attempting to penetrate the market rapidly.

Findings: It's becoming evident that SaaS will enable new service-intensive value propositions, improving SAP's competitive advantages in the market by lowering its customer TCO using SaaS application, increasing customer ROI, using more innovation and business agility, and speeding up time to value for customers. However, given the complexity of enterprise software applications and its evolving process, the functional SaaS is not as rich and powerful as on-premises software in meeting customer needs, and a hybrid cloud model can provide more options for customers and buy some time for SAP shifting to the cloud as well. Furthermore, the transformation to the cloud can't be achieved only through SAP per se. It is not only SAP's work to lower TCO and co-create value but also the work of partner ecosystem. As a platform leader, to deliver end-to-end solutions for customers, collaborative efforts to lower cost also require rapid service deployment from SI partners, saving huge project and

implementation costs, infrastructure service from IaaS partners, and minimizing investment in time and resources handling infrastructure and platforms. We will analyse and discuss this in detail in the section on value co-creation.

5.2.2 Value Co-creation

Cloud computing is a service innovation based on value co-creation and cloud-based services and is comprised of several actors playing different roles and conducting key activities, which interact with other players in the network to provide outcome-oriented service for customers.

Analysis: In creating the new value chain in the cloud platform, SAP is reshaping its ecosystem based on cloud technology, and value is co-created with the interaction among platform leaders, IaaS providers, and SI providers and orchestrated by customers as well. However, achieving value co-creation requires finding a "structural fit" between customer activities, software vendors, and partners (Heinonen et al., 2010). Questions are raised about how the key actors take part in and where and how value co-creation actually takes place in the cloud ecosystem. The identification of value co-creation dimensions is vital for decision-makers, but it's hard to test the effects of value co-creation.

Storbacka et al. (2016) think value co-creation is difficult to observe empirically. However, how participants act can be observed, so the value co-creation can be designed and managed. I analyse how value is generated and co-created between the SAP cloud platform and ecosystem through the key participants' engagement, including SAP, SI partners, and IaaS partners, during value co-creation and find that participants take part in service exchange and lead to the interaction of resource integration, and

then I point out the participants' roles and key activities to demonstrate the challenges from the on-premises model to the on-cloud model.

SAP as a platform leader: SAP is taken as a platform leader in the cloud value network to act as two kinds of roles: SaaS provider and PaaS provider in parallel. The role of SaaS provider is that applications are deployed on the cloud platform to provide the application service via the multi-tenant mechanism, in which various customer requirements are fulfilled by using a single instance – a common source code of software application; the role of the technical platform is to offer an environment within which cloud applications can be deployed.

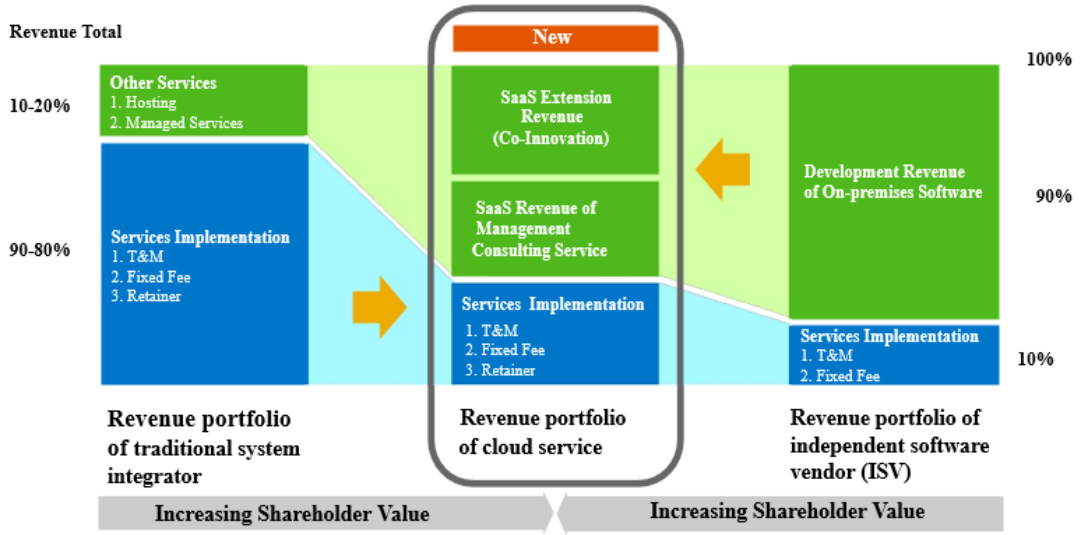
While SaaS is taken as a technology innovation to disrupt the on-premises software, it requires SAP as a traditional software vendor to re-estimate their existing business model and to seize market opportunities. A critical question needs to be addressed on how SAP can co-create incremental value with its ecosystem partners together when SAP is moving to SaaS, eroding parts of traditional service implementation. As mentioned before in Section 3.1.5 of Revenue Stream, the new revenue model for partners to drive cloud transformation is related to SAP itself and determines the direction and success of cloud transformation as a whole ecosystem.

In the SaaS model, SAP needs to change the mindset of its SI partners not to stay with the traditional on-premises service model, in which service implementation of on-premises software accounts for 80–90%, hosting and managed services 10–20 % in Figure 20 in terms of SI partners' revenue streams. The SaaS model provides wider options to grow new SAP revenue streams. Although the revenue portion of service implementation has shrunk, SAP's cloud transformation enables SI partners to co-create and co-innovate SaaS extension on top of the SAP cloud platform to complement SAP's industry solutions based on SaaS applications; thus, SI partners also have new stable

and predictive revenue based on the subscription of add-on applications attached to SAP's core SaaS solutions.

Figure 20

SAP SaaS Platform is Creating New Valuation Outcomes for Partners



Source: Transformation session 1: cloud opportunity 2015

Second, SAP moving to the cloud provides an excellent opportunity for SI partners and consulting firms like the Big Four, Accenture, IBM, and Capgemini to exploit incremental management consulting services in response to customers' digital transformation based on SAP cloud solutions. SaaS applications stress the principle of fit to standard, in which customers should follow the standardized packaged software solutions with scope items, instead of customizing software to meet non-typical business requirements. Thus, it requires consulting firms to conduct a management consulting service (e.g., business process re-engineering, business process optimization, etc.) in advance to streamline the customers' business process in coping with SAP's function and process embedded with the best practice. Interviewee #1 said:

> *Moving to the cloud does not mean the shrinking of SI partner revenue, but creating greater business opportunities and value in the field of management consulting service for SI partners to help customers transform their business.*

It is undeniable that SaaS erodes the traditional SI service via system configuration and composition based on-premises software. However, the new market scale of management consulting generated by SAP cloud transformation is far more than a piece of traditional SAP SI service. Interviewee #18 commented:

> *We closed significant management consulting deals based on KPMG-powered enterprise solutions to help customers' business transformations in the US, the UK, and Australia. The size of those cloud transformation deals is far more than pure service implementation, which is as much as 10–15 times the SAP software license deal itself.*

Third, SAP moving to the cloud creates a new marketplace for ecosystem partners to build the SaaS extension or add-on solutions. In order to boost complementary innovation extended solutions in its cloud ecosystem, SAP is shaping a new partnership programme of their cloud platform and ecosystem; partners who joined the programme can co-create value with SAP on top of the SAP cloud platform by developing the applications and add-on solutions. The SAP cloud platform is providing a new set of integration tools with cloud platform integration, API management, and open connectors.

SAP integrates SAP's HANA, ABAP, and other business solutions with various open-source open technologies and tools such as Kubernetes and Open API, and provides them to customers and partners through the PaaS service on the SAP cloud platform, allowing all kinds of partners to use SAP's PaaS services such as pre-built services provided by the SAP cloud platform to achieve agility, efficiency, and security on the cloud for various SAP, non-SAP systems, SaaS application, and on-premises localization applications enable out-of-the-box interoperability for seamless integration; new functions for existing types of enterprise-level business systems on the cloud and under the cloud, cloud extensions for new processes. Thus, SI partners ISVs and IaaS

providers can deploy, realize the creation, development, and operations of extension applications rapidly based on the SAP cloud platform, publish them to enterprise-level distribution channels such as the SAP application store, the Azure application store, the AWS application store, and the Alibaba cloud market for promotion. To meet the client's individual business needs, SAP can also keep the core SaaS customer applications clean to ensure a quarterly SaaS automatic upgrade. Interviewee #12 remarked:

> *Customers can not only use SAP technology but also use SAP technology to expand and integrate. When you have spent one or two years and even more time developing a new software product, the software product might have been out of date for half a year. Because modern innovation has been innovated in the manner of real-time. This is the biggest benefit that the SAP cloud platform can bring to customers and partners.*

In advocating SAP SaaS application and ecosystem based on the SAP cloud platform, SAP proactively engaged with ecosystem partners. For example, Accenture, one of SAP's global SI partners, built up a virtual joint venture with SAP named the Accenture SAP business group to develop the first batch of six industry assets and solutions in 2016 based on SAP SaaS; Adobe, one of SAP's global ISVs, teamed up with SAP to develop functional solutions in delivering insight-driven marketing to complement the SAP solutions portfolio and be more competitive to attract more customer adoptions; and Alibaba, one of SAP's global IaaS providers, is partnering with SAP to deploy its enterprise applications into the SAP cloud platform as a new marketplace to extend the market reach.

Partner as an SI provider. SI partners are seeking a new role in the SAP cloud ecosystem. While SAP's SI service business based on on-premises software is declining, SI partners will have to exploit a new revenue model to sustain its SAP business growth. Because traditional SI partners like Accenture, IBM, and Deloitte have had a large SAP

practice team based on the on-premises deployment model, focusing on large and middle enterprises, at the company level, they don't have a clear strategy toward SaaS service; at the individual consultant level, there are numerous SAP consultants that still didn't find their way to following SAP technology changes and reinventing themselves as IT consultants. In addition, given the inertia of traditional SAP SI business operations, it is difficult to move toward SaaS service as fast as expected originally.

In contrast, KPMG, Capgemini, Delaware consulting, Intelligence consulting, etc., are proactively pioneering their SaaS service business; they do not have an existing large-scale SAP consulting team with a heavy burden but focus on investing in building resources and capability of SaaS service transformation. I illustrate KPMG as a case from the perspective of an SAP SI provider to address how to co-create value with other key actors in the cloud platform and ecosystem. KPMG is building an SAP SaaS service named Powered Enterprise, providing the following four types of service as a whole to co-create value with SAP in embracing the SaaS service business.

-TOM (Target Operating Model), providing a proven solution set covering People, Process, Technology, Service Delivery, Performance, and Governance.

-PES (Powered Execution Suite), an integrated platform of next-generation tools with a guided approach to transformation.

-PMS (Powered Managed Service), helping clients evolve their business and stay relevant and current in maximizing the original investments.

-GND (Global Delivery Network), delivering high-quality solutions at a competitive price in a repeatable and consistent manner.

TOM is a kind of management consulting aiming to bridge the application gap by leveraging the organization and process changes to fit SaaS applications' standards when standard functions of SAP SaaS can't fully meet customer requirements. On the

one hand, the value co-creation for SAP is to eliminate obstacles in the adoption of SaaS applications, while KPMG is promoting a TOM-management consulting service to customers. On the other hand, the value co-creation for KPMG at the strategic level is to create a new revenue stream management consulting service based on KPMG's Powered Enterprise solutions.

The deal size of SI services for SI partners is important but it is more important to increase service delivery efficiency fundamentally. In the SaaS era, SAP SaaS application is based on public infrastructure to optimize the application and service resource. This requires that the tools of project delivery are also based on SaaS to support the collaboration and communication across SAP, SI partners, and customers, and the service project can be delivered by pre-designed and pre-configured solutions and service assets to improve the efficiency of service delivery during the cycle of project execution and delivery.

In addition, the transformation approach of the SaaS service differentiates service delivery into shortening the delivery cycle and saving costs accordingly compared with the traditional SI service. As shown in Figure 21, the traditional SI service spans six stages, namely 1) start-up, 2) design, 3) build, 4) develop 5) test, and 6) transition, but KPMG Powered Enterprise implementation, which represents the cloud transformation approach, which is an agile implementation approach delivering incremental capabilities, redefining the process of service implementation into four phases, namely 1) vision, 2) validation, 3) construct, and 4) deploy, has significantly changed the approach to service delivery in shortening the delivery cycle. Interviewee #17 explained the transformation to effective cloud solution delivery:

> *It is one of the most significant transformations that consultant firms build services around the implementation of best practices instead of customization, deliver time to value by productizing and fixing fees*

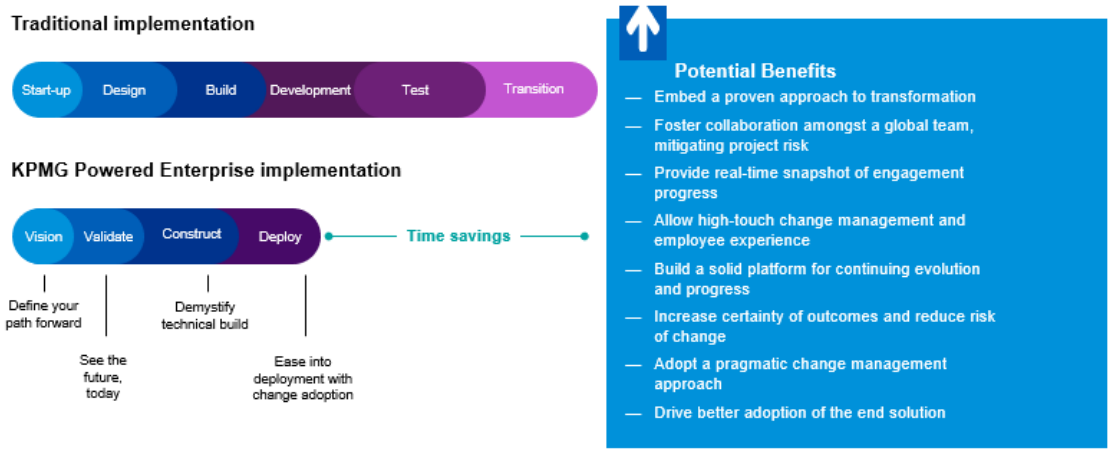
on implementation modules, focus on customer change management, and ensure that customers adopt new best practices and recognize that value has been created in the process.

Additionally, he further elaborated the guidance for SaaS service implementation.

- *Foster cloud mindset by adhering to the fit to-standard and agile deployment.*
- *Use preconfigured solutions with the predefined process.*
- *Ensure use of the cloud integration technologies. E.g., public APIs, CPIs*
- *Ensure use of modern extensibility technologies and develop customer extension in a side-by-side approach.*

Figure 21

KPMG Powered Enterprise Cloud Transformation Delivery Approach vs. Traditional SI Service Delivery Approach of On-premises Software



Source: KPMG Powered Enterprise Playbook.

What makes SaaS service delivery transformation challenging is that consultant firms also see a substantial decline in short-term services implementation revenue per deal when moving to SaaS. The shortening of the delivery cycle also means a corresponding reduction in service implementation fees per deal. However, traditional SI or consultant firms also need to change the business service model to adapt to market changes. Interviewee #18 echoed this:

The SI service decline of single deal size leads to the decline of service revenue per deal can only be offset by productizing offerings to enhance margins, lowering risk by the best practice of solutions and driving rapid time to value – moving customers quickly through the implementation process to get them live, using offsite or remote teams to deliver implementations with increased utilization due to more concurrent customers per consultant, and turning one-time service implementation for a given client into repeatable, recurring streams of revenue applied to multiple customers.

The pre-designed and -configured SaaS service optimizes maintainability, which in return reduces cost. In this sense, the value co-creation for KPMG is to obtain profitable growth via efficient improvement in leveraging the new tools of cloud application and pre-designed and pre-configured solutions and assets. The value co-creation for SAP and customers means shortening the time of project delivery and enhancing the quality of project delivery. Interviewee #16 stated:

We don't care about the ratio between SaaS ACV and SaaS service implementation, we get more involved in how to leverage our PES tools and power enterprise, an asset-based SaaS service, and to serve customers more efficiently.

The pricing of the SaaS service is a very great concern for SAP and clients. The traditional SI of SAP on-premises software is limited to the complexity of service configuration, system development, and communication, which requires an on-site delivery model with very costly travel expenses and accommodation. When the traditional SI deal is as much as three to four times the SAP software license revenue, SI partners can bear the related cost and expense per day of consultancy travel, accommodation, and per diem, accounting for a third of the man-day consultancy service rate on average.

However, in the cloud area, the customer's expectation is set on how to lower the total cost of ownership using cloud applications. For SAP SI partners, the challenge is how

to lower the total pricing and average man-day rate of SaaS service delivery. Therefore, it is critical for SI partners to cut the cost and expense of travel and accommodation through simplifying the service delivery via a standardized process and delivering the SI service project remotely. I interviewed a director from KPMG, who is responsible for the GDN of Powered Enterprise solutions. Interviewee #27 said:

> *The current on-premises service delivery model cannot scale quickly, the non-standard delivery has resulted in write-offs of service revenue, and the high cost of delivering SI service also reduces competitiveness. In responding to the cloud transformation, we built up a global delivery network to deliver our cloud service of powered enterprise remotely.*

Actually, KPMG built the global delivery network centre located in Bangalore and other regional, remote delivery centres by region and country to provide a multitiered, scaled, and global delivery backbone that improves efficiency and optimizes the cost of delivering the solutions to the customer. The remote delivery centre was established to provide a wide range of services, including pre-sales work (e.g., leads qualification, solution architecture, and demo) and service delivery work (e.g., preparation, validation, construction, and deployment). Its purpose is to enable a systematic approach to delivering pre-designed and -configured solutions by remote delivery in a repeatable and consistent manner with competitive pricing. Interviewee #27 commented:

> *The global delivery centre allows us to optimize the use of the firm's Resources, locally and globally, leveraging the SMEs (subject matter experts) across multiple opportunities and engagements.*

At this point, the value co-creation for KPMG is to lower the cost of service delivery by remote delivery and reduce the competition. The value co-creation for SAP increases the win rate and helps extend the market access with reasonable pricing, given the part of service delivery accounts for the considerable client's budget; at the same time, the

value co-creation for customers means lowering the overall spending of project delivery and enhancing the agility and quality of project delivery.

Partner as an IaaS provider. The traditional on-premises infrastructure could be a barrier to speed. It requires estimating hardware and network needs and putting in the upfront investment for the maximum peak use and beyond than the actual needs. It involves a limited capability based on existing on-premises hardware, storage, and network. Given its limitation, IaaS is emerging to address the problem of computing resource usage with improving agility, elasticity, and cost.

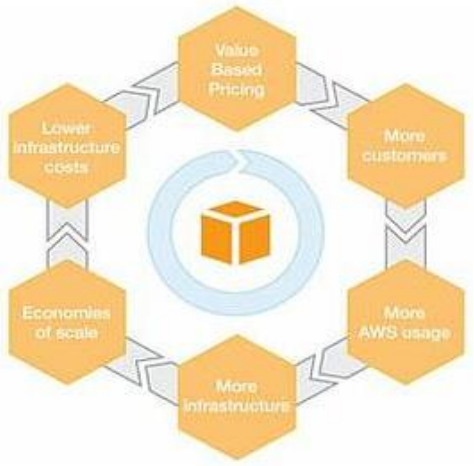
SAP's business growth and expansion could not have happened using their own data centres, and SAP must partner with major IaaS providers. The agility and speed that IaaS partners provide to put on more than thousands of virtual servers and terabytes of storage in minutes around the world meet this type of business requirement. SAP's IaaS partners like AWS, Azure, Google, and Alibaba begin by providing the customers with agility by leveraging IaaS for speed, co-creation, and innovation.

Lowering cost is an eternal theme for IaaS providers: AWS, Azure, and Ali have lowered their pricing many times, and AWS has reduced prices more than 67 times since it launched in 2006. First, a significant cost saving comes from eliminating large upfront investment for cooling, cabling, labour power, networking, server, and storage, etc. Second, the massive application scale will reduce the costs on an ongoing basis, as shown in Figure 22. The value-based pricing attracts more customers; more customers require more usage of IaaS; more usage of IaaS needs more infrastructure; more infrastructure leads to economies of scale; economies of scale cause the generation of new space to lower infrastructure costs; and lowering infrastructure costs further results in pricing reduction, providing more competitive value-based pricing for customers.

Third, the price lowering stems from IaaS providers focusing on customers paying only for what they use and how long they use it. This ability belongs to the elasticity of IaaS services in comparison to the SAP on-premises model. IaaS partners do not intend to oversell IaaS services more than needed. Instead, they prefer to help SAP and customers to optimize their usage of IaaS services by removing inefficient resources to increase customer satisfaction and stickiness continuously.

Figure 22

The Benefits of Massive Economies of Scale



Source: SAP on AWS 2017

The price lowering of IaaS will directly impact the cost of SAP using IaaS resources to provide SaaS subscriptions to customers on top of IaaS and cause SAP to further lower its SaaS pricing in attracting more potential customers.

Findings: In a cloud network, SAP, SI partners, and IaaS providers need to build a new cloud value chain when breaking the traditional value chain of on-premises SI service. The new value chain is based on the orchestration and interaction of key actors within the cloud ecosystem, focusing on agility, service provision efficiency, value creation, and innovations. The actors are not only limited to exchanging service and money, but

more importantly, they work collaboratively to co-create incremental value within the cloud ecosystem. SAP opens new opportunities for SIs and ISVs to develop the management consulting service, and creates a new marketplace based on the cloud platform for ISVs and customers, as well as generating a new revenue stream. SI partners transfer themselves with service innovation to provide the management consulting service of industry experts based on cloud technology and improve the efficiency of service delivery through pre-designed and -configured solutions as well. Hence, the growth of service sales, revenue, and profit of SI partners is driven by improving the efficiency of service delivery rather than struggling to gain the market share in the highly competitive market of the traditional system configuration service. IaaS partners optimize the configuration of computing resources and remove inefficient resources to enhance agility and elasticity and reduce cost, presenting a real customer-focused strategy to increase customer satisfaction and "stickiness."

5.3 Service Ecosystem

5.3.1 Key Partner

A company can't possess all the necessary resources for developing products and delivering services, and the aim of the partnership is to optimize and configure resources, reduce cost, share the risk of projects, and enhance the competitive edge. The ecosystem is a vital part of doing B2B business. This is also a key pillar in an organization like SAP, which could not be successful without its partner ecosystem. In terms of SAP internal data, SAP extends its partner ecosystem globally and owns more than 11,000 partners worldwide to provide SAP solutions for customers. Traditionally, the SAP partner ecosystem consists mostly of four kinds of partners distinguished in function-based categories: a) software license reseller; b) service implementation partner; c) technology or hardware partner; and d) third-party software partner. In the

SAP partner ecosystem, partners can play more than one functional role. With the shifting to cloud platforms and services, the role, responsibility, pattern, and structure of the SAP partner ecosystem have changed fundamentally.

Analysis: The transition to the cloud service requires SAP to upgrade and change its partner ecosystem. The four types of SAP partners in Figure 23 were created in the context of the on-premises software model. Software license resellers are designed for reselling SAP software licenses to customers as a middleman; a service implementation partner refers 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 network; and a third-party software partner is certified by SAP to provide the software somehow related to SAP and integrate it into SAP software solutions as a whole for customers. The traditional on-premises ecosystem operates in a direct relationship between customer and vendor. The customers have to work with different vendors to build infrastructure, technologies, tools, software, and service to form an end-to-end solution.

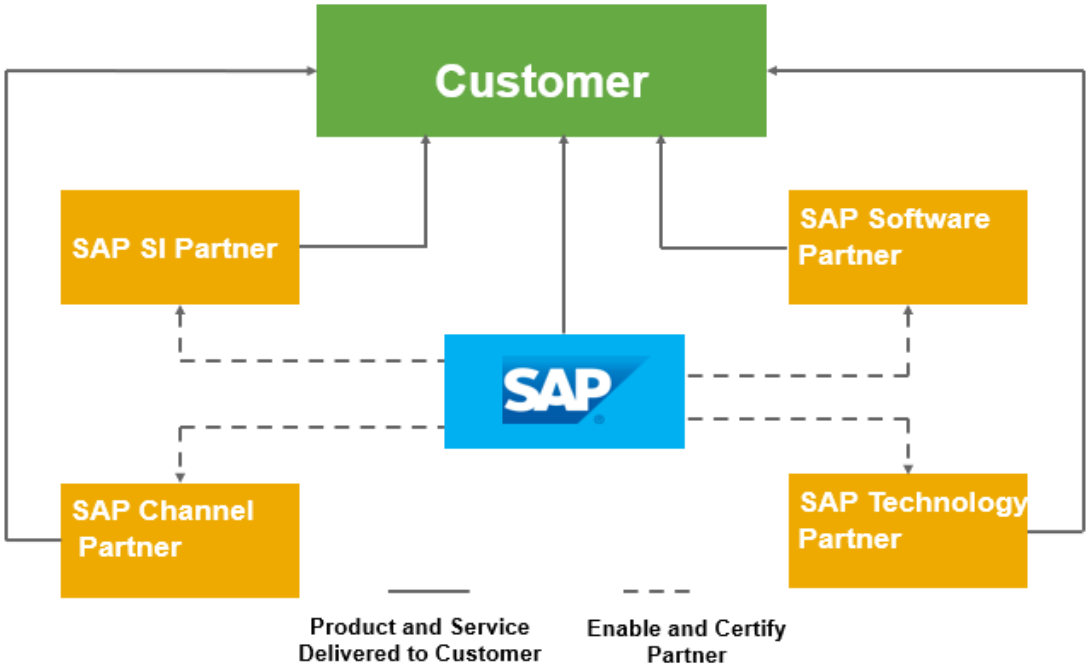
However, our interviews reveal that in the context of cloud computing, the actors of the SAP alliance and their roles are changing while the partner ecosystem is evolving rapidly. Cloud computing seems to disrupt the traditional ecosystem by providing the solution remotely as a service (Ojala & Helander, 2014). This new partnership is not clustered around the functions of the legacy IT, like software, hardware, and technology, but is based on customer-oriented service in a three-layer cloud computing stack.

The cloud ecosystem is comprised of new players in the ecosystem. Infrastructure as a service (IaaS) provides a technical infrastructure and environment to consume the computing resources – computer processing, network, and storage, etc.; SaaS enables the software application functionality provided as a service based on service-oriented

architecture (SOA); Platform as a service (PaaS) is in between the SaaS layer and IaaS to offer an environment for the SaaS application being deployed. With the shift to the cloud platform and service, the roles, responsibilities, and structure of SAP's partner ecosystem have changed fundamentally.

Figure 23

Traditional SAP On-premises Software Partner Ecosystem



The emerging IaaS has been changing the market trend and behaviours of customers in purchasing hardware while the traditional global hardware vendors (e.g. IBM, HP, and Dell) have been gradually replaced by new cloud players like Amazon, Google, Microsoft, and Alibaba. On the one hand, the new emerging IaaS providers seek to build up a new partnership with SAP to exploit the B2B market. On the other hand, SAP also needs to establish a new alliance partnership and community with IaaS players to provide integrated cloud solution offerings in addressing customer needs.

The change in roles and responsibilities in the partner ecosystem is exemplified by the transformation of the partnership between SAP and its SI partners, as discussed with

our interviewees. Traditionally, the SI partners were required to be responsible for the result of the overall project service delivery, occupying the leading position with customers, whereas SAP is seen as a management software tool that lies in a non-dominant position based on the transactional relationship with customers. SAP SI partners enjoyed the benefits of a large-scale service implementation generated by SAP on-premises software licenses sold to customers. However, in the SaaS context, the focal point for customers has shifted from SI partners to SAP, seen now as a SaaS and platform leader by providing simplified and standardized software as a service. Simultaneously, it erodes the service implementation revenue of on-premises software through pre-configurations to standardize its applications to reduce the service delivery cycle. Interviewee #9 explained:

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

On the one hand, SAP partner ecosystem transformation to the cloud needs to develop new SI partners based on SaaS solutions for agile delivery, in case the traditional SI partners have not yet prioritized SAP cloud service as its business strategy and focus or they can't keep up with SAP's pace in deploying the SaaS solutions. On the other hand, it is also required for SAP to answer two essential questions: a) how can it upgrade the existing SI partners with a new skill set for SaaS solutions, and b) how can it enable SI partners to create new revenue streams by substituting the traditional service implementation, which is showing a revenue decline 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 multilateral relationship, where partners and software vendors tie the service together with a network structure, converging on the cloud. Partners and software vendors form a multilateral tightly coupled relationship with a network structure. Figure 24 shows that the product and

service are not provided separately to customers by the multiple vendors but represent an integrated service leveraging a new micro-ecosystem as a basic unit together with a three-party relationship to interact with customers by offering the outcome based on the "as a service" model. Three key actors are orchestrated within this value network to create the triangular partnership within a micro cloud ecosystem. Interviewee #6 stated:

> *The actors (partners) in the cloud ecosystem play the role of providing cloud technology support and synthesize services like demand generation, sales origination, and go-to-market initiatives to bundle and cross-sell integrated service offerings.*

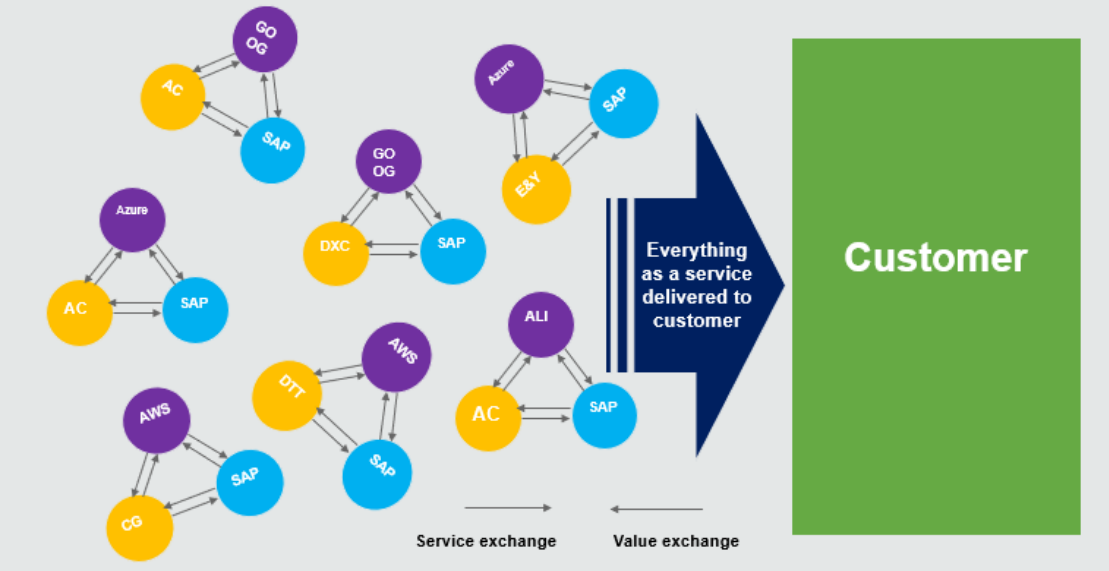
SAP plays the role of SaaS provider and platform leader to exchange service and values with its SI partners and IaaS partners, and SAP SI partners and IaaS partners also interact and work together by exchanging service and value to interlink with SAP. The partner-vendor relationship will become closer and enhance the collaborative process in the search for mutual interests to deliver the joint service for customers because customers need an integrated service of the outcome-oriented. Kohli and Grover (2008) mentioned the diverse nature of value co-creation. They believe that in the B2B alliance, the company has strategic relationships with other companies, ranging from loose outsourcing to seamless integration where products and information flow.

In addition, the key actors also form a co-opetition relationship in the cloud ecosystem. They can work together in a micro-ecosystem but compete in another micros-ecosystem. For example, the consulting firms or SI companies like Accenture, IBM, and big-four can team up with SAP and other IaaS partners (e.g., Microsoft-Azure, Amazon-AWS, Google Cloud, and Ali Cloud) to provide the end to end cloud solution of enterprise applications in a micro-ecosystem, but at the same time, they also partner with SAP's key competitors (e.g., SFDC, WorkDay, and Oracle) in another micro-ecosystem to provide the similar cloud offering and service. Furthermore, IaaS partners like AWS,

Azure, Google cloud, and Ali cloud are not dedicated to SAP, and they also work with those software giants: SFDC, WorkDay, Coupa, and ServiceNow, etc., which are considered as SAP key competitors in the worldwide. Therefore, in the pattern of the cloud ecosystem, business cooperation and competition are intertwined and symbiotic, and co-opetition will be the norm.

Figure 24

SAP Cloud Ecosystem as a Service Ecosystem



Findings: 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 new patterns of cloud collaboration based on a micro-ecosystem comprising a multilateral relationship between groups of at least three stakeholders, instead of a bilateral alliance between firms.

This argument is supported by Ojala and Helander (2014), who say that cloud

computing seems to disrupt the ecosystem by providing solutions remotely as a service. In addition, the emerging PaaS cloud delivers a new participant in the cloud ecosystem – development partners 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 application, the development partners, powered by the SAP cloud platform, which is an open platform as a service, represent a new cloud innovation to address such challenges.

5.3.2 Distribution Channels

Transformation to the SaaS is changing how customers buy and use 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 its customer base access, as SAP could not approach the targeted market segment directly, but when moving to the SaaS marketplace, SAP is facing a challenge in relation to enabling the transformation of distribution channel partners and VARs in the B2B marketplace. We analyse it from two perspectives: the roles and functions of distribution channel partners and the creation of a digital sales channel.

Analysis: The roles of channel partners have been weakening since moving to the cloud. As discussed with the interviewees, VARs have a personal channel and relationship with customers, it's important for both customers and vendors as a trusted advisor or an agent, thereby, previously, SAP's VARs 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 marketplace. The reasons are twofold. First, a considerable system integration effort has been replaced by SAP, providing a full stack

of cloud computing services. Distribution channel partners are thus selling software without the lucrative system integration work in the process of losing influence with the customers. Second, SAP has become the dominant platform leader and has furthermore developed a direct sales approach, tuning its sales and marketing methods to the SaaS marketplace. This means it is growing rapidly through a marketing-driven yet low-touch sales approach. Interviewee #12 stated:

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

Pure-play VARs are not succeeding in today's SaaS marketplace channels. This is echoed by Hedman and Xiao (2016), who say that there is nothing to resell, technically install, and there are no opportunities for providing any kind of logistics anymore. The low-value functions and roles like order fulfillment 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 is still in the process of evolving, and SAP does not have in-depth process expertise to cover each market segment; this provides a real opportunity for channel partners to establish themselves in the SaaS marketplace as providers of market-specific extensions and add-ons, which is based on PaaS developing software on top of the SAP cloud platform, then deploying these extensions as applications in SAP's App store. These extensions evolve into a repeatable, scalable, and packaged offering that forms new recurring revenue attached to the SAP core SaaS.

In this sense, channel partners will become more likely as independent software vendors (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, which can reach out to SME customers through geography coverage. Instead, they can obtain related information quickly and conduct most of the analysis and research by themselves. As a result, SAP is trying to drive its SaaS applications to be sold via digital channels and is developing social selling tools such as LinkedIn Navigator to build relationships with prospects and customers. For example, attending SAP's global partner summit in 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, Interviewee #12 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 address their issues. At the same time, it offers an excellent opportunity for SAP to gather leads via social media platforms using comments, likes, and other social network effects. Interviewee #14 stated:

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

Findings: With the increasing use of sales automation and the digital channel, SAP has launched its SAP Store to make software purchases direct and easier. 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 programme and drive the realignment of channel partners from reselling products to delivering result-oriented service business.

5.3.3 Platform

The platform has become increasingly important for IT enterprises as markets and technology evolve. The notion of the platform has evolved from an internal platform-product platform to an external platform-industry platform. SAP was traditionally seen as an enterprise application software company, but it is becoming a real platform company-cloud platform with the digital economy rising. In terms of SAP's company development path, historically, SAP also called itself a platform company in the 2000s, but the platform mainly means product platform rather than industry and cloud platforms, which have a foundation technology that is open for ecosystem partners.

Analysis: SAP faced more competition in the 2010s and in later years when SaaS was emerging. Although SAP had entered the cloud market and developed its first SaaS application – Business ByDesign – in 2007, SAP's transformation to the cloud as a

corporate strategy began in 2012. In this chapter, we will focus on analysing the platform strategy and the relationship among the key stakeholders in the cloud ecosystem.

Item 1. Cloud platform strategy: SAP didn't have a clear cloud platform strategy and used to host its data centre to run the cloud applications until 2017. SAP announced the new cloud platform strategy – multiple cloud infrastructure – which allowed customers to decide on their choice of infrastructure providers to develop and run apps during SAP SAPPHIRE 2017. Amazon-AWS, Microsoft-Azure, and Google cloud platforms are certified as SAP's first batch of three cloud strategy partners. What it did differently is that SAP no long controls the infrastructure layer under SaaS and PaaS. In contrast, SAP would open its platform, supporting business agility and optimization to new cloud ecosystem partners. When attending SAP US SAPPHIRE 2017, I asked an expert on the SAP cloud platform what the root reason for making such an important transition was, and whether this shift meant new competition between SAP and its ecosystem partners. Interviewee #10 explained：

> *The strategy of multiple cloud infrastructures will not bring in new competition between SAP and its partners. We are committed to reshaping a new cloud ecosystem and providing more choices for customers.*

Dan Lahl, a SAP corporate vice-president in charge of product marketing, further explained the rationale for the strategy of multiple cloud infrastructure during SAP US SAPPHIRE 2017:

> *The SAP company is looking to differentiate its platform-as-a-service (PaaS) with a multi-cloud approach and the ability to connect to SAP apps and business services. We want to be a software company and one that lets customers decide where they want to run the cloud infrastructure.*

Bernd Leukert, an executive board member of SAP SE, Products & Innovation, spoke at the keynote session of SAP US SAPPHIRE 2017 to endorse SAP's multiple cloud infrastructure strategies:

> *SAP's multiple cloud infrastructure is based on an open cloud environment as the new game changer to make SAP much richer, and it drives new business values. This is the age of openness of SAP, but more importantly for you, our customers.*

In fact, similarly to Microsoft and Oracle, originally, SAP planned to provide the end-to-end cloud solutions for customers by hosting their own infrastructure layer of cloud computing. However, SAP has no comparable and overall advantages to run all large data centres across the globe. Because AWS has established the leading IaaS position in the world, and Microsoft lies in the second position to chase AWS after successfully transferring its business software and application software (e.g., Office 360, Dynamic CRM application, etc.) to the cloud with the rich resource of data centres across the globe since Satya Nadella succeeded as CEO of Microsoft in 2014. And Oracle has equipped the end-to-end cloud capability ranging from hardware to system software, middleware, and application software after a series of dazzling M&As (mergers and acquisitions) in recent decades. Hence, SAP could not become another AWS or Azure, since SAP missed the timing of being the leading IaaS provider.

In comparison with Amazon-AWS and Microsoft-Azure, the SAP data centre, which basically provides the ERP and LoB solution service, does not have sufficient pervasiveness to cover all IT fields if a client is a non-SAP-installed base, but the client has already adopted the IaaS service of AWS or Azure, even though the client has decided to change their ERP system to the SAP application solution, and SAP is not attractive enough to drive customers to change all their IaaS services from AWS or Azure to the SAP data centre infrastructure. In addition, given the scale of the existing customers of AWS and Azure, SAP could not provide a competitive price for the IaaS

service. Thus, SAP attempted to manage the shift from resource control to resource collaboration.

The opening a cloud platform to its cloud ecosystem partner is a strategic move by SAP. First, SAP is able to focus on more efforts and invest in more funding for SaaS and PaaS solutions, offering more choices for customers to decide on IaaS providers, especially when customers prefer to use multiple cloud infrastructures running different SAP cloud solutions. Second, SAP can deploy its solutions, whether it is a SaaS or a solution hosted in the HANA Enterprise cloud – a private cloud or even on-premises solutions via the SAP cloud platform. In other words, SAP can connect both the SaaS model and the on-premises model in parallel to meet customer needs. Of course, this new cloud platform strategy is denounced by Oracle, which is SAP's arch-rival. Mark Hurd, CEO of Oracle, stated critically: "SAP's cloud strategy, which is most often referred to by the term S/4 HANA, is fundamentally a hosting strategy. It's really taking their core ERP on-premises application and hosting it in a data centre. It is really the physical movement of a computer here to there."

The true cloud services are on-demand, with shared use of software, server processing power, and computing infrastructure over the Internet on a "pay-as-you-go" subscription. Managed hosting of on-premises services typically does not offer the cloud's flexibility, scalability, and other benefits (Castro-Leon & Harmon, 2016). It's clear that SAP does not act like Oracle to undertake a desperate gamble. Instead, SAP is taking a balanced approach in running two models (on-premises model and cloud model) and is in the process of shifting to SaaS when giving customers the "full-spectrum" of cloud options. Third, it is beneficial for customers to lower the TCO (total cost ownership) when adopting SAP cloud solutions. Fourth, SAP can create a new cloud ecosystem to cope with the potential rise in competitors.

Item 2. Relationships among key stakeholders in the cloud ecosystem. The cloud platform not only impacts the platform strategy of the IT industry at the macro level but also changes the relationship between platform leader and key players at the micro level because customers receive an integrated service from the platform leader, who collaborate with the IaaS provider in charge of the underlying architectural service, and with the SI provider in charge of service implementation and integration. Here, I will further elaborate on how SAP as a platform leader exchanges value and service with SI providers and IaaS providers and how SI providers and IaaS providers collaborate in a peer-to-peer network.

SAP takes on a dual role in the cloud marketplace by acting as both a cloud platform PaaS provider and a SaaS provider. It thus integrates IaaS, PaaS, and SaaS 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 it is also creating a new marketplace – the SAP App 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 to 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. 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 is a standardized software solution based on SOA, deployed on a data centre 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. 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 constitute an actor-to-actor relationship within the value network of cloud computing. I converge the analysis on two aspects: (a) management consulting service and (b) infrastructure service.

Management consulting service. In order to strengthen their attraction to customers and gain a competitive advantage over their rivals, IaaS providers certified by SAP are more eager to put the industry-specific solutions into their cloud infrastructure platforms. They think 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, the more attractive it is for customers to consume IT services. Therefore, the management consulting service in the cloud model offers more value to IaaS providers than that for the deployment of on-premises hardware.

Infrastructure service. Infrastructure service has been simplified by the centralization, reconfiguration, and virtualization of hardware resources compared to the traditional hardware system configuration. As a result, the value of hardware or infrastructure configuration services provided by the consulting firm has been shrunk and replaced by the IaaS provider when moving to the cloud. Interviewee #19 commented:

> *The consulting firm must completely give up the deployment service of on-premises hardware system configuration and sizing, moving to the field of infrastructure consulting service and cloud integration.*

In addition, the cloud platform imposes a new relationship between SAP and IaaS providers. Here, I 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 is run at the data centre of IaaS providers, providing the cloud service via the mechanism of multiple-tenant technical architecture 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. Thus, SAP is necessary 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 hardware stability and reliability. 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 centre 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 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. SAP understood the huge transformation challenges it faced in taking advantage of the hybrid cloud model with a step-by-step approach moving to the cloud. SAP is committed to opening its cloud platform for ecosystem partners to promote the multiple cloud infrastructure strategy with partners. Opening a platform can spur adoption by harnessing network effects, reducing users' concerns about lock-in, and stimulating the production of differentiated goods that meet the needs of user segments (Eisenmann et al., 2009). This creates a new cloud platform and ecosystem patterns. All three actors are not limited to exchanging service for money but can act much the same way as an orchestrator to co-create value within this value network by refining the service offering and eventually providing the end-to-end service via the platform leader for customers. For detailed findings, the results of the analysis of the relationship between the platform leader, the SI partners, and the IaaS partners are summarized in Table 10.

Table 10

Value Measured Among SAP, SI Partners, and IaaS Partners

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**
Management 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 management consulting service of cloud
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 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		

5.3.4 Customer Relationship

When the SaaS changes the structure of the software and IT industry, it also fundamentally changes the software vendor-customer relationship. A customer relationship that makes traditional on-premises software successful won't work in the cloud platform. The cloud platform is a two-sided market. SAP is aiming to build up long-term relationships based on SaaS, looking for close relationships with its customers and providing the integrated cloud service values in the cloud ecosystem for the co-created solutions, while customer relationships transform the focus from the transaction relationship of closing a one-off deal to establishing partnerships. This creates a new momentum to develop long-term relationships with customers. Simultaneously, when the SI is transitioning its service business, extending to the field of ISV, the SI is not only a partner of the software vendor but also a customer to co-create value for joint end customers.

Analysis: SAP aims to build up long-term relationships, seeking close relationships with customers, and helping customers to provide a complete integrated cloud service through its cloud ecosystem. First, the SaaS enables the transition of responsibility deploying and maintaining an enterprise application software service from customers or its service partners to the software vendor, playing the role of platform leader to engage with customers directly. With the on-premises model, the relationship between SAP and customers is mainly transactional; if customers encounter SAP software application problems, they first seek SAP service partners to solve the related technology and application problem rather than SAP as a software company. SAP software is often seen as a management tool to help customers to manage enterprise processes. Unlike traditional software licenses, in the SaaS context, the situation has been reversed. Interviewee #20 stated:

While clients meet some technical issues in using cloud solutions,

by default, SAP will be considered as the first contact point responsible for ironing out the problems, instead of cloud service partners and other players.

This moves the burden to the SaaS vendor with accumulated responsibility to ensure the success of the application and strengthens its position with customers in the industry as well.

Second, in relation to the on-premise models, the SaaS environment delivers more freedom to the customer to change providers or exit if the solution and/or service are not satisfactory (Seethamraju, 2015). The following quote from Interviewee #2 illustrated the importance of customer relationships when he was asked what type of relationship SAP expects to establish and maintain with customers.

SAP needs to build ties with customers closely, and it is a must-have. If SAP can't understand how well customers use cloud solutions, once clients are unsatisfied with a cloud solution, they will withdraw the cloud application service easily. Likewise, tenants will not extend the contract anymore if they are not satisfied.

If customers are not satisfied with SaaS solutions, SaaS vendors will receive more pressure to ensure their SaaS solutions successful because customers have not invested in the significant upfront capital to lock in a certain SaaS vendor. They have more freedom to change the SaaS vendors. This suggests that the SaaS software vendor should be committed to building up a close relationship based on a financially vested interest in ongoing customer success. Hence, it requires a true partnership between SaaS software vendors and customers, which is much closer than before.

The customer relationship is perceived as not being confined to the bilateral relationship between SaaS software vendors and customers but extended to a service ecosystem to view the customer relationship. The roles of SAP SI partners have changed when transitioning their business into the field of ISVs in the cloud marketplace. The

traditional ISVs delivered on-premises software solutions surrounding the core vendor's software as an add-on and extension. In the cloud platform, SAP SI partners integrate ISV business to deliver a comprehensive application service to customers over the Internet via the SAP enterprise application store, providing a more flexible and convenient service experience in terms of customer access, besides the delivery of service implementation of the software system. The extended applications developed by SAP SI partners and built on SAP cloud platforms are governed in the SAP cloud marketplace. When the extension solutions surrounding SAP SaaS are sold to end customers in the SAP marketplace of enterprise apps stores, SAP can gain 30% of those extension application revenues. In this regard, these SIs have not only been SAP partners delivering the service implementation of application software but a "customer" generating a new revenue stream for SAP by providing complementary applications based on the SAP cloud platform. Therefore, the relationship between SAP and SIs has been extended from a partner relationship to a customer relationship, and SAP's SI could have dual identities – both a partner and a customer of SAP. Interviewee #19 commented:

> *In the cloud ecosystem, SAP SIs are enhancing the reciprocal dependencies with SAP in transitioning to the business fields of ISVs in the cloud platform, increasing the customers' stickiness to the end customers as well.*

At the same time, an IaaS vendor is not a SAP supplier but a strategic partner who provides the IaaS service as part of cloud solutions embedded in SAP cloud offerings for customers. An IaaS vendor does not directly provide the IaaS service to end-users, and SaaS could be a customer of IaaS. The cloud service consumption goes through SAP based on application service provision and as a result, is delivered to end customers. Hence SAP, acting as a SaaS vendor in the value chain, is becoming a major channel customer for IaaS providers. Interviewee #26 stated:

Alibaba and SAP not only maintain an alliance partnership but also shape a mutual customer relationship. SAP is also one of the biggest customers in Ali cloud.

The SaaS has changed the approach to how the software is developed and delivered to the customer. The shift from on-premises software to cloud service and the service provision from one-to-one to one-to-many have changed the relationships between customers and SIs. The most important thing is that SAP SIs find a new way to generate predictable revenue with potential economies of scale and shorter sales cycles when the traditional On-premises SI revenue is impacted heavily by the business shrinking.

In SAP cloud platform ecosystems, customers sometimes are not characterized as a pure customer identity; customers often act as developers by creating cloud extension of functional business applications to not only address their business requirements but also to develop new add-on applications or extensions on the SAP cloud platform for joint go-to-market with SAP. Both customers and SAP can monetize the assets and extensions developed by customers and generate a new revenue stream when the extension applications in the SAP marketplace are sold with scale effects. In this sense, customers are also taking the role of partners to work with SAP in a two-sided market.

Findings: The SaaS enables changes in vendor-customer relationships, and it shifts the responsibility from customers or its service providers to the SaaS vendor; simultaneously, the SaaS vendor as a platform leader needs to build up long-term and closer relationships with customers for ongoing success. Furthermore, the SaaS vendor-customer relationship is not a simple dual-structure relationship, the incremental value for customers based on the full stack of cloud computing can't be produced individually by either actor, and customer value is co-created by each of the actors in collaboration to provide a service that is valuable for all participants to address customer needs in the cloud ecosystem, and it relies on the network value relationship between the SaaS

vendor and its partners – SI provider and IaaS provider – to provide end-to-end service solutions.

5.3.5 Customer Segments

Segmenting customer is to satisfy different requirements of customer groups, pointing out which client groups are intended to serve first as the targeted customers. It's imperative for a company to make a conscious choice about which customer segments are to be served. Traditionally, SAP is seen as the number one application software vendor globally to serve large enterprise clients. When making an initial sales call, the classic advertisements to attract potential customers highlighted by SAP are that 80% of the Fortune Global 500 companies are running SAP ERP (Enterprise Resource Planning) application software. This indirectly implied that SAP mainly focused on the larger enterprise market segments.

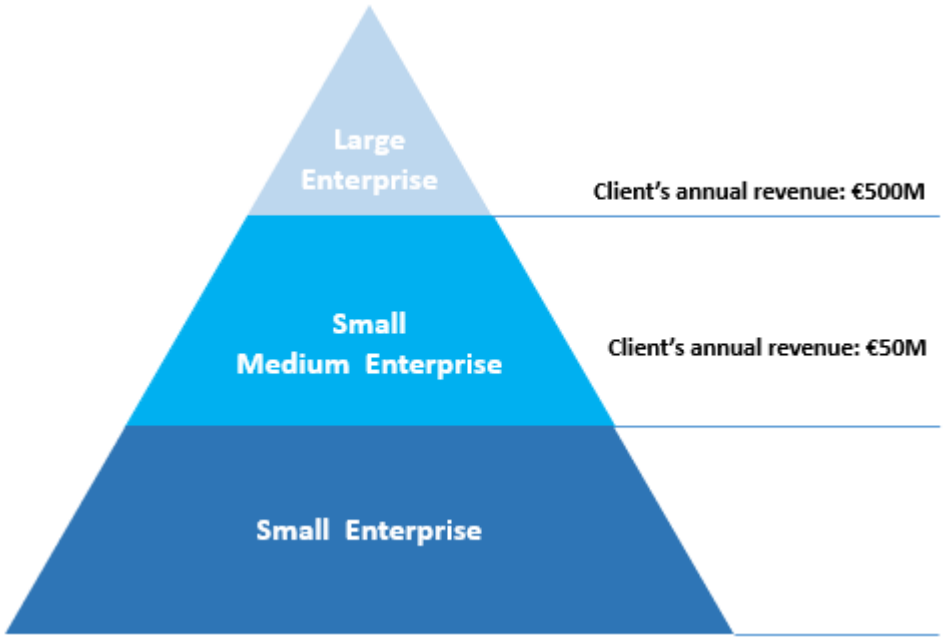
Analysis: SAP is not confined to serving large enterprise clients but also serves SMEs. Previously, SAP was always regarded as an ERP application software provider; however, moving forward to the digital era, SAP has extended its application solution portfolio to LoB (line of business). Hence, if we investigate how SAP positions the target market or customer segments while moving the cloud platform and service, the following three dimensions are taken into account: (1) customer size, (2) SAP solutions portfolio, and (3) partner customer segments.

For the dimension of customer size, although there is no assumption of limitation about the client's size in adopting the SaaS solution, the design philosophy of SaaS solution R&D is based on standardization and fast iteration. SAP's strategy of customer segmentation is to help customers move on-premises applications to the cloud "selectively" rather than all at once. The large enterprise clients who required

complicated applications to support their business operations need the on-premises solutions with customizations for reasons of application system complexity, security issues, and customer concerns about the ability to scale operations for large enterprises, etc. While the business scale of SMEs is not as complex as large enterprise customers, the SaaS solution is more favoured by SMEs compared with large enterprise clients. In terms of the SAP go-to-market scheme, SAP clearly defined the market segment. Figure 25 indicates that more than €500M in revenue refers to a large enterprise segment, less than €50M revenue refers to a small enterprise segment, and between €50M and €500M revenue refers to the SME market segment. SAP seeks to reach SMEs (small and medium enterprises) by Business ByDesign, which is one of SAP SaaS ERP solutions to enter the market, which does not have sufficient money to purchase on-premises application software, hardware, and related SI services, and cannot afford massive investments in advance.

Figure 25

SAP Customer Market Segmentation



Large enterprises' clients have gradually begun to adopt the SaaS solution, though it is restricted by the complexity of the applications, the issue of data security, and government regulation, etc. From the dimension of the solution portfolio, the LoB refers to peripheral application software like HCM (Human Capital Management), CRM (Customer Relationship Management), and SRM (supplier relationship management), which are not the core applications for large enterprise clients. Compared with the ERP system, LoB solutions are not as intricate as ERP solutions; rather, they focus on specific functional fields. Being analogous with the well-known SaaS vendors, e.g., Salesforec.com and Workday, etc., SAP attempts to enter the market across large enterprise and SME segments, in which business functions of customer applications are simple, those applications will not touch the very sensitive data for customers, and customers emphasize the fast deployment, instant value, and ROIs.

As the two dimensions presented in Figure 26 show, SAP's journey to the cloud is starting to come into focus for customer segmentation. Firstly, SAP did not directly enter the large enterprise market segment in the ERP market, which is advantageous. Instead, SAP prefers to choose the ByDesign solution to penetrate the SME market. Such a strategic arrangement in the customer segments is not because the SAP ByDesign solution fits into the SME market, or because the R&D and design of the SAP SaaS ERP solution merely cater for the SME market, but the SaaS ERP market in the large enterprise segment is not ready, so SAP is attempting to promote the S/4 HANA cloud edition for mid-size customers in selective regions and countries, due to factors of core system technology, the maturity of the customer, and concerns over data security, data confidentiality, and data sensitivity, etc. In contrast, SMEs are not kidnapped by software vendors, and the costs of switching to new software applications are proportionally lower than for large enterprises.

Secondly, in the LoB market, a customer segmentation model by solutions enables effective allocation of marketing resources and the maximization of cross- and upselling opportunities. Therefore, SAP should not have made a strict distinction between the large enterprise segment and SME segment when entering the market but should focus on application scenarios of extended solutions in which customers require specific functions to create standardized software applications based on SaaS. Interviewee #14 further explained:

> *The pure market segmentation is not an effective way to segment the market in SaaS business for the line of business solutions, and the segmentation from SAP, partners, and customers themselves might be quite different. The effective digital marketing in responding to customer segmentation relies on developing customer "personas," which are composite profiles including firmographics and demographics, role and goals, and process and context based on actual customers developed for the purpose of effective market targeting – not the more traditional demographic approaches we are accustomed to.*

With a focus on the line of business, vertical, and other functions, the specific value propositions become more important. In addition, the single software function SaaS application reduces the R&D challenges and complexity of software deployment, service implementation, and maintenance. SAP adopted the outside-in approach enabling it to make significant progress in the SaaS application market.

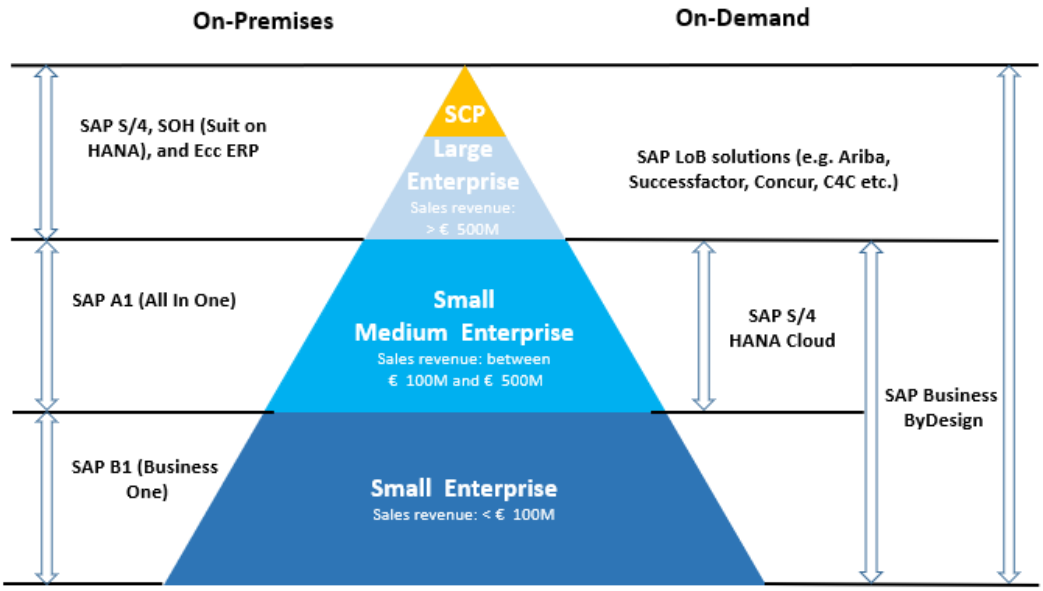
In contrast, Oracle, which is SAP's main competitor and regarded as the largest business software company and the second-largest application software company worldwide, has taken an entirely different approach to the SaaS go-to-market scheme for market segmentation. Oracle has almost abandoned the on-premises software application market while taking the gamble of pressing on with SaaS solutions across all market segments. However, such an aggressive approach can't be entirely accepted or

recognized when there are considerable differences in the market across different geographical regions and the maturity of the customers varies greatly.

Customers want to have the option to decide which IT model (on-premises model or on-cloud model) can match and support the business well according to their own situation, instead of jumping into the cloud all at once. Compared with SMEs, those customers in large enterprises would move to the cloud in a gradual and prudent approach based on the precondition of controllable risk, rather than pursuing the new technology only. Therefore, SAP has rapidly expanded its market share by taking advantage of the empty space left by Oracle's absence in the on-premises software market.

Figure 26

SAP Customer Segmentation of On-premises and On-cloud Solutions



The ecosystem perspective not only enables SAP to have a clear strategy about their own customer segments but also needs their partner-customer segments to be aligned with SAP customer segments in conjunction with industry focus, solution position, and geographic coverage. One of the biggest challenges is that there is no partner teaming

up with SAP when SAP is ready to Go-to-Market with SaaS solutions. Interviewee #15 remarked:

> *Our account managers often complain that there is no SI partner available to deliver the service implementation of the SAP S/4 HANA Cloud edition, even if SAP has already signed the SaaS subscription contract.*

The development of the cloud partner ecosystem can't wait to start until SAP SaaS deployment is ready since the building up of a new partner ecosystem will take a relatively long time. The previous lesson learned is that SAP did not pay too much attention to the incubation and development of its cloud partner ecosystem in the earlier stage in a whole and synergetic approach. Instead, SAP was focused on the infrastructure and building of its own resources and capabilities. As a result, partners were not aligned with SAP on the joint go-to-market strategy to invest in the related market segments for SAP SaaS solutions with dedicated resources. The non-coordination of strategy on customer segments between the software vendor and its partners leads to the development lag of the whole ecosystem and loss of competitiveness.

Findings: In general, when shifting to cloud business, SAP operates two business models in parallel in terms of its market segmentation. Running a dual business model is challenging to implement because the companies need to play different games and follow two opposite logics: PDL and SDL. For the ERP application software market, SAP positions its cloud ERP solution, ByDesign, in the SME market, while the on-premises solutions are still kept in a centralized position in the large enterprise market. With regard to the LoB software solutions, SAP adopted an outside-in approach to penetrate the market. Simultaneously, customer "persona" replacing traditional customer segmentation is critical to help SAP and its partners to align with customer motivations and understand how to move target customers through the decision-making

process. In comparison with Oracle's aggressive approach in moving to the cloud, SAP adopted a gradual approach in moving to the cloud. Moreover, moving to the cloud is seen as SAP's own strategy as a software vendor and an ecosystem strategy. SAP's market segmentation for the cloud solution will definitely affect its partners in shaping the related cloud strategy and market segmentation; simultaneously, the partner go-to-market strategy must be aligned with SAP as a whole.

5.4 Refined Service Transformation Business Model

The finding from this in-depth case study led us to refine and enrich our initial conceptual model. This research mainly makes contributions to the literature on business model transformation. Figure 28 pictorially represents the revised service transformation business model, which is comprised of three themes with 13 elements. These three big boxes represent three themes: a) business model, business value, and service ecosystem, and arrows among the three big boxes in the figure represent the relationship among these themes.

Starting with the themes of business model. Key resources are discussed in two dimensions: human & leadership and intellectual resources. The findings suggest that a dedicated team is kept independently is critical when running two different business models. Key dynamics capability is defined by three aspects: a) sense and shape opportunities and threats, b) seize opportunities, and c) integrate, enhance, and reconfigure the resource to maintain competitiveness. The findings suggest that the above changes made in one aspect are not sufficient; key dynamics capability requires the companies to continually digest, build, integrate, and reconfigure resources and competencies to adapt to the dynamic condition continually. Key activities emphasize mindset change, sales method change, and sales & operation process change. The findings imply that outcome-driven business requires the mindset change from product

culture to service culture, aligning with the digital marketing model, led by marketing to capture customer "Personas." The cost structure is mainly derived from CAC and Churn. The findings suggest that SaaS companies need to bear the upfront investment before generating revenue. CAC grows exponentially with the degree of sales complexity; simultaneously, managing Churn can contribute to the reduction of CAC. The revenue stream is defined by the dimensions of CLV and Churn. The findings suggest that the SaaS revenue model will surpass the revenue model of the on-premises software license in the long run, reallocating the revenue streams in its ecosystem. The growth agenda is delineated from four areas: ACV, Customer number growth, CLV, and Churn. The findings suggest that the growth agenda is driven by a new set of financial metrics, e.g., backlog, recurring revenue, and a series of operational measurements, e.g., customer growth, CLV, and Churn.

Building the themes of business value. The value proposition is defined from four dimensions: financing and cost flexibility, value capture time, innovation agility, and cost-saving. The findings suggest that SaaS can enable new service-intensive value, improving the enterprise's competitive advantage, and that cloud transformation requires ecosystem efforts. Value co-creation is analyzed by the role-based players-platform leader, SI provider, and IaaS provider for ecosystem collective value. Innovations no longer originate in a single organization; instead, they are co-innovations from different players (Arndt and Dibbern, 2006). The finding suggests that in a cloud network, platform leaders, SI partners, and IaaS providers build a new cloud value chain to co-create the incremental value while beyond exchanges of service and money while breaking the traditional value chain of on-premise software.

Integrating the themes of service ecosystem. The key partner is classified from the dimensions of partner role and function and cloud ecosystem structure to analyze the partner ecosystem change. The findings suggest that a new pattern of cloud

orchestration is based on a micro-ecosystem comprising a multi-lateral relationship, while changes of roles and responsibilities happen between SIs and platform leaders. Distribution channels are defined by VAR & distributor and digital channel. The findings suggest that traditional channel business is disappearing via reselling applications, replaced by digital channels, and channel partners need to transform themselves into the system integrator to deliver the result-oriented service business. The platform is discussed in the cloud platform strategy and the relationship among the key stakeholders. The findings suggest that the opening platform is a strategic move to provide more options for customers and that creation of marketplace, management consulting service, trust-building, and certification of infrastructure have displayed the greater value in need on the cloud platform business model. Customer relationship is depicted by customer intimacy, multiple identities, and co-creation. The findings suggest that SaaS vendor needs to build up long-term and closer relationships with the customer for the ongoing success that customers can act the different roles in different business scenarios on the cloud platform with multiple identifies. Customer segments are defined by the dimension of the solution portfolio and customer profile. The findings suggest that functional SaaS solutions are positioned at different market segments in terms of complexity and maturity of SaaS applications and that customer "Persona" is replacing the traditional customer segmentation.

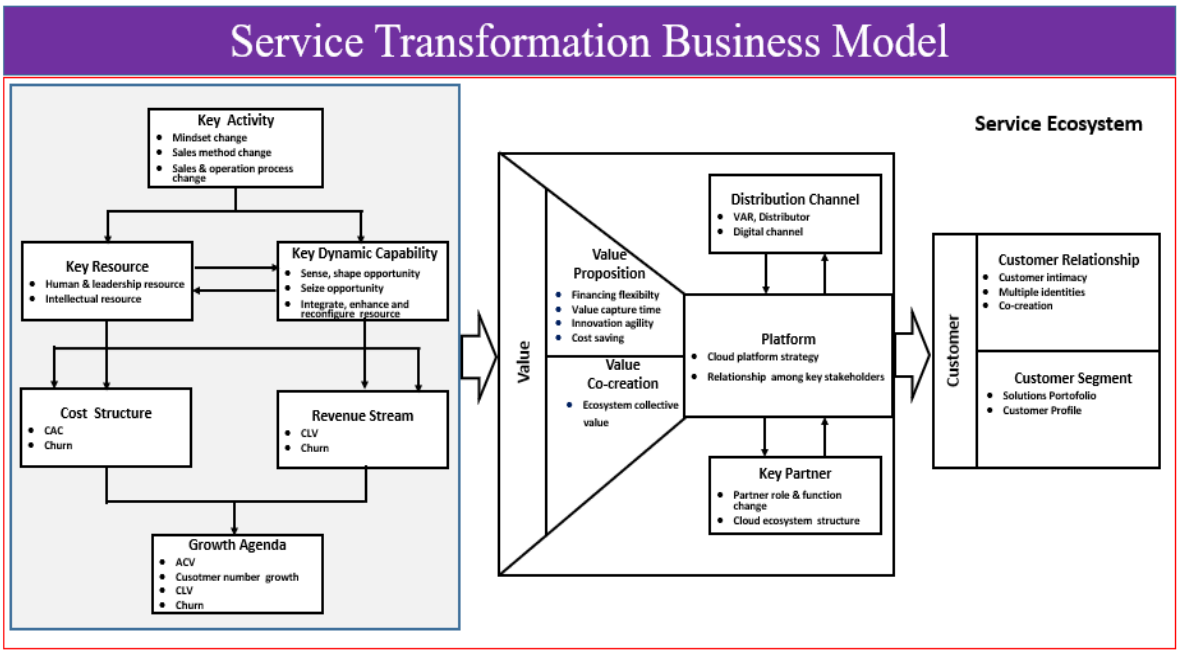
The framework was applied in studying SAP and its partners. After the literature review, empirical research, and business model comparisons across five years. I refined the service transformation business model. The insights are wrapped up from the framework application of the service transformation business model as follows:

- Understanding the traditional on-premise business model and investigating how the on-demand SaaS business model could work?

- Creating a new business model aligned to the software company's business transformation and its partner ecosystem transformation
- Defining characteristics of elements of the service transformation business model
- Comparing the difference between on-premise software and on-demand SaaS model
- Identifying challenges faced and CSFs toward cloud transformation
- Generating findings as a result of guiding business transformation practice.

Figure 28

Refined Theoretical Framework on Service Transformation Business Model



5.5 Critical Success Factors in Transformation

5.5.1 Leadership

Observation. In order to adapt to the development of cloud business, senior leaders changed their strategy layout to get new development opportunities. In assessing the effect of leadership in transformation, Observation #2 elucidates that *"top management support is a crucial resource toward a successful business model transformation."* Under the leadership of senior leaders, SAP cloud business organizations experienced

restructuring many times. In 2017, SAP reorganized the acquired SaaS company into a new business unit (cloud business unit). Robin Enslin, a board member of SAP SE who previously led SAP's sales as the head of global customer operations, was appointed as president of SAP's cloud business unit to drive SAP's new cloud business group, which included the acquired firm's cloud applications (e.g., SFSF, Concur, Ariba, Hybris, and Fieldglass, etc.). At the same time, the co-successors of SAP's global customer operation led by Jennifer Morgan and Adaire Fox-Martin still carry the cloud business as a core KPI. Thus, the cloud business is co-administered by SAP's cloud business group and SAP's global customer operation. Interviewee #11 stated:

> *We started with a series of M&A programmes to achieve inorganic growth. In the past five years, we successively acquired SFSF, Ariba, Concur, and Hybris, etc., and all of them are cloud-born solutions. SAP board-level decisions really caught up with the market demand, and cloud-first is the core of our corporate strategy. Otherwise, we could not fulfill the demands of our customers.*

Interviewee #14 emphasized the hardship of SaaS transformation and the importance of leadership in driving this revolutionary change.

> *The on-premises business model which we have known is more than 40years, it is a traditional way that customers buy the software licenses to obtain the software, now coming into the cloud business model, which is completely different with a huge challenge. We need to change the way, which requires the company leadership immediately to equip with knowledgeable cloud solutions to drive the cloud business model.*

Cloud transformation all begins with the CEO, who must not only understand that the future lies in the cloud but be willing to lead the cloud business or select a change agent to drive the new venture. In addition to strategic adjustment within the company, leaders have also formulated transformation strategies in the face of external competition and cooperation. For example, observation # 17 indicates that *"The transformation to the cloud requires taking the grand approach in terms of the external environment,*

customer readability, and vendor capability." As for why the transformation to the cloud is a step-by-step process, Interviewee #5 stated:

> *For some partners, the original business has been growing at a high speed, resulting in their attitude towards cloud transformation being relatively cautious. SaaS is a new business with small business volume, which can't be accepted by customers widely and generate profitability in a short period of time.*

Interviewee #4 further suggested that SAP needs to set a clear vision and path to guide partners toward SaaS service transformation together with SAP. Observation #27 confirms that "*SaaS vendors need to enable their SI partners to accelerate the expansion into the industry market and turn them into strategic advisors for specialized markets with the transformed value proposition."*

Furthermore, SAP is developing a new partner program for its cloud platform and ecosystem, in which partners can create value with SAP on the cloud platform by developing applications and additional solutions. The SAP cloud platform provides integration tools, API management, and interface, enabling partners to build extended applications based on the SAP cloud platform. Interviewee #2 said that SI partners are required to refine their roles and make the related industry SaaS service capability in the new market landscape.

> *Partners' roles vary greatly due to the change in the deployment, provision, and delivery via cloud computing. SI partners need to have in-depth expertise based on SaaS to ensure the quality of service delivery.*

In addition, Observation #31 further elaborates, "*when operating in a domain of differentiated horizontal or vertical resources and capability and expertise, and SI providers will encounter less competition."*

Analysis. The observations described above can be coded under different aggregate codes. First, I find that Observation # 2, which can be classified as top management support. Top managers make decisions about the company's strategy. SAP promoted the acquired SaaS companies to the first-level department, which further improved the status of SAP's cloud business. This arrangement could clearly deliver a new message about the company's organization design based on a cloud-first strategy across all business units and let all employees realize the determination of the company's transformation to the cloud. The employees working in the same direction would accelerate the transformation to the cloud. In addition, top management prioritizes key human resources investment into the cloud business department and puts the metrics of cloud business into the core KPIs. All of these reflect the support of senior leaders for cloud business. The difference between a successful and an unsuccessful company is the result of differences in top management (Kaltenecker et al., 2015). Through the strategic layout adjustment of resources and human resources, top management boosts the collaboration of the different departments engaged in the cloud transformation within the company to attain the ability to solve various challenges in the transformation process and ensure that the whole company is guided by the common vision and those metrics that can help realize cloud transformation.

Second, Observation #17*"* talks about the transformation path. The development of SaaS costs time. It needs to compete with other similar new products and needs to obtain the market share from the existing on-premises software. For every player in this ecosystem, they need some time to give up the on-premises business to transform to SaaS. Third, Observation #27 talks about channel transformation. Moreover, Observation #31 talks about the market segment. When SAP carries out cloud transformation, it needs to help partners and external resources transform into the focused market segment accordingly. Only by helping the partners transform

successfully into the target market segment can a new ecosystem environment be established for cloud solutions, so this is part of the company's strategic layout.

If we only promote the cloud transformation of the company itself, and the partners do not keep up with the transformation pace, even if the market demand for cloud solutions has been established, there will be no partners providing relevant consulting services for customers. The result is that cloud business development will be blocked due to the lack of operational support from other partners. Thus, SAP cannot achieve long-term development, and the cloud transformation of the company cannot be successful. In conjunction with the above analysis, the aggregate code of top management support, transformation path, channel transformation, and the market segment can be categorized into a theme category leading to leadership as a CSF.

Success Factor – Leadership. Prior literature conceptualized top management support as part of leadership in CFSs: for example, top management support is usually considered a CSF of clients' cloud ERP implementation and cloud transformation, and even the most important factor from mean rankings of CSFs according to the degree of importance in ERP implementation, when promoting the adoption of ERP (Akkermans & van Helden, 2002). However, this requirement is to apply to clients' digital transformation to implement a cloud ERP and SaaS transformation of the software vendor itself. Transforming to the SaaS business requires profound shifts that start from leadership. A successful transformation calls for competent leadership, vision, and strategy, especially introducing and implementing a service strategy (Ackoff, 1999; Grönroos, 2007). When coming into the company's new changes of servitization, the leader must involve the team early, plan properly, and constantly communicate what is going on, and then the team will likely treat it as an opportunity and head the organization for successful changes towards servitization(Ahamed, Inohara et al. 2013). In addition, cloud transformation is not constrained to top

management support via the top-down approach; the bottom-up approach is equally important to enable every employee of the company to take the lead in participating in the transformation process.

Kilmann (1995) developed CSFs of eight elements, divided into five system tracks and three process tracks, including leadership as a CSF. Komssi et al. (2009) emphasized that top management must have great confidence and belief to embody leadership in an indirect way in its strategic shift towards becoming a service-oriented business. Our findings indicate, especially for SaaS transformation, that it is essential that leadership can create and communicate a common vision to establish coherence across different business units engaged in enterprise transformation, while companies are facing challenges with such a huge change leading to uncertainty and being weak-willed. The importance of effective leadership has long been recognized in distinguishing successful from less successful organizations and in managing change and overcoming resistance (Kotter, 2007; Kotter & Schlesinger, 2008; Yukl, 1994).

5.5.2 Dedicated Resources

Observation. In the interviews, I noticed that many interviewees proposed that SAP field sales organizations introduce a new type of job, called a CEE (customer engagement executive). This department is customer-centric, helping to solve the business needs and technical problems of customers, providing after-sales services, and establishing a closer relationship with customers, but its role is different from that of traditional customer managers. What does a CEE need to do? Interviewee #4 said：

> *A CEE coordinates SAP internal resources in supporting customers' projects to go live and be successful, enabling a sustainable customer cloud service business. First, a CEE needs to have an in-depth understanding of the SaaS product. Second, they also require an in-depth understanding of the project management in this process to*

provide support and balance the interests of SAP and its partners.

And I observe that there are many pieces of evidence showing the importance of a CEE in SAP workshops. Observation #1 indicates that *"A CEE plays a pivotal role in maintaining a close and long-term relationship with customers and in renewing the cloud business."* This is also confirmed by Interviewee #9 that CEE acts as a role of entrepreneur, Observation #3 and Interviewee #14, who referred to *"Setting up the dedicated team, which is independent and different from the traditional existing business unit organization."*

In this regard, Interviewee #5 and Observation #4 further highlighted the importance of a dedicated team for SaaS transformation: *"Establishing a new full set of capabilities with the value proposition and operating model, a dedicated team is essential in developing SaaS business."* And Observation #33 and Interviewee #9 echoed this point from the perspective of ecosystem partners in SAP workshops: *"Establishing a new dedicated team is essential in developing and delivering SaaS service project for SI partners."*

Analysis. Observation #1 is to emphasize the importance of a new department and position. CEE is not a solution sales role like an account manager to focus on business deals. Instead, this role is to focus on customer adoption and customer success by coordinating SAP's internal resources and external partners' resources to solve the problems and further improve customer satisfaction more. The position of a CEE is usually held by senior SAP experts who require a deep understanding of the clients' business requirements and the cloud solution technique, the experience of project management, and the skills to communicate with senior management.

Observation #3 commonly illustrates that SaaS transformation needs a new dedicated team or organization. Why is setting up a dedicated team to boost SaaS business critical

for SaaS transformation? Isn't it possible to use the existing on-premises team to sell and deliver SaaS solutions? The answer is negative. Interview #11 delineated the necessity and importance of a dedicated team from the perspective of an ecosystem partner:

> *The partners who have an on-premises business today don't change your business. There is a valid business opportunity, and you know how to be successful. It will be increasingly competitive and commoditized; let's keep on improving it to maintain your cash flow and profits. In contrast, the partners who have decided to take advantage of the cloud opportunity build a dedicated team for a new business where the growth is. This is a different business style – the whole way of working is different from an on-premises business.*

Firms cannot pursue both exploring disruptive opportunities and exploiting existing assets within one business unit and should set up autonomous business units that are independent of the traditional business, and should be free to experiment and embrace an organizational culture that motivates employees to take risks, develop creative ideas, and behave like "in-house entrepreneurs" (Christensen, 2006; Govindarajan & Kopalle, 2006). The operating model between on-premises and SaaS is quite different, requiring the different skill sets of consultants, sales and marketing resources, and service delivery methodology. Nass (2015) indicated that the cloud business couldn't be a "side business" as it requires focus and should essentially be treated as a start-up venture. Interviewee #14 further explained:

> *In a SAP SFSF HR service implementation project, one of SAP's partners was trying to train all existing on-premises consultants of SAP HCM (Human Capital Management) into SAP SFSF-SaaS HR consultants and get them to deliver the SFSF service project; however, when they found what the reality of the project was, the majority of on-premises consultants failed in SAP SFSF projects because they could not cope with the difference in the way delivering SFSF service projects, so, finally, most of them moved straight back to the on-premises world only, and the SAP partner had to start to build a new team for SAP*

SFSF solutions. Interestingly, he said to me four years later that they had been successful and built a very good brand of SaaS service.

In terms of the above analysis based on observations and interviews, the CEE means a new functional job position is required to maintain a good relationship with customers and help customers succeed in the SaaS project. The dedicated team focuses on a new full set of capabilities and resources to sell and deliver SaaS projects from SAP and its ecosystem partners. Because the cloud go-to-market, operational, and financial pillars require a departure from business as usual, entrenched teams will push back and kill the emerging "Cloud NDA" if the business is not sequestered and properly funded. Many roles will require recruits to overcome entrenched behavior (Bennett, 2017). All four observations and interviews can be coded into a new organization and dedicated team, which can be categorized into a category of the theme-dedicated organization leading to dedicated resources as a CSF.

Success Factor – Dedicated Resources. A dedicated team or organization created to proactively drive the company's change in fitting the technology trend and environment is critical for boosting and realizing enterprise transformation. The previous academic literature rarely mentioned the dedicated resources as a CSF in enterprise transformation, and most literature highlighted the organizational transformation, but Komssi et al. (2009), in particular, pointed out that a dedicated team is essential in service development from a software product to a service business. Our study also echoes the point that the separate organization or resources created are vital with a strong commitment and related transformation metrics to focus on the cloud transformation. Carving out a dedicated team of staffers with digital skills can create a new fast-track service for that experience and bring it to market quickly (Avedillo et al., 2015). The aim of the separate business units established, which consist of marketing, sales, service, R&D, and support, is to emphasize the distinct needs of different market segments. A dedicated digital transformation team is formed to guide strategy and

operations based on business and customer-centric goals (Solis et al., 2014). In practice, Mckinsey consulting studies confirmed the importance of establishing a dedicated team to support digital business transformation and build up digital governance to align fragmented digital activities (Catlin et al., 2015).

5.5.3 Sustainability

Observation. The cloud is considered a kind of economies of scale. Observation #9 was summed up when attending the SAP SAPPHIRE event that *the economies of scale are a leading indicator of SaaS business, and it determines the cost of the unit associated with cloud subscriptions and support*. Observation #9 is also echoed and explained by the prior interview #13 that cloud business can scale more efficiently and rapidly and reduce application and acquisition. In parallel, it can be observed with Observation #10 that customer acquisition of cloud business in which the *labour of sales and marketing should be highly leveraged through marketing automation, and the focus on marketing automation leads to the reduction of CAC for SaaS vendors*, is different from on-premises software which is mainly conducted by sales visits in person. This is also echoed by Interview #3 and #9 that the marketing automation is a highly effective tool and marketing approach to lower CAC, and confirmed by Interviewee #23, who stated:

> *The sales cycle of cloud business is shorter than on-premise ones. The original sales cycle was three to six months, and now it is around 30 days. In fact, clients have already conducted a related survey and even a system trial via the Internet before the first meeting with SAP sales. SAP advocates the notion of a "quick win" in handling cloud business accordingly.*

Observation #11 embodies that churn could significantly impact the CAC of a SaaS company. In SAP workshops, it is highlighted that *churn is a critical factor in*

influencing CAC. Increasing customer satisfaction and average customer spending will lower churn, which in turn leads to a reduction of CAC. At the same time, this observation is also supported by interview #1's statement that Churn hugely affects CAC. In an interview meeting, Observation #16 and Interviewee #24 explained that churn not only significantly impacts the CAC but also the growth rate:

> *The growth rate is highly relevant to the churn rate, which impacts the SaaS growth exponentially. The increasing of a positive churn rate can erode the growth rate drastically and destroy the overall SaaS business further; by contrast, negative churn is a mechanism achieving a higher growth rate.*

Observation #13 and Interviewee #3 further illustrated that *churn is playing a crucial factor in influencing revenue stream also, but more importantly, focusing on customer adoption and customer success as the start point and end result can lower churn, which in turn leads to an increase of revenue stream.*

SAP internal documents and Observation #14 indicated the growth model of SaaS business to prioritize customer number growth in its initial stage that *the choice made between customer number growth and revenue growth is crucial in the early stage of business transformation, and successfully managing and balancing fast customer number growth and long-term economics with short-term revenue shrinking per deal size is a key for success for SaaS vendors.*

Undoubtedly the SaaS business grows faster than on-premises software ones. However, what about the new market? Observation #12 provides an insightful message when attending the SAP partner summit: *"The SaaS revenue model will exceed the on-premises license revenue model in the long run, and lead to the reallocation of revenue stream, which is conducive to SaaS vendors in its ecosystem."*

This is also confirmed by Observation #19 and Interviewee #8. SAP's global SaaS revenue surpassed on-premises software ones in 2019. *"With the cloud transformation, the new market scale of management consulting service generated is far greater than the portion of traditional SAP on-premises SI service to attract and drive SI partners' service business transformation."*

Analysis. An observation describing that Observation #9 indicates taking a balance between long-term economics and short-term profitability. Observation #14 depicts the growth agenda and mechanism in balancing the interests between short-term and long-term. Typically, the sales cycle of-premises software is lengthy, incorporating a high-touch, direct sales process, and the SaaS sale cycle is considerably shorter due to the low upfront cost and quicker service implementation. Furthermore, as SaaS is a winner-takes-all market typically, the growth becomes the first priority to reach a certain degree of economies of scale and network in sacrificing a proportion of the profit as a trade-off. I coded it under the aggregate code of the "network effect." Observation #10 indicates SaaS marketing can't rely on the high-touch sales activities that cost a lot for customer acquisition. SaaS vendors employ a "land and expand" marketing strategy focused on digital marketing (e.g., social media, searching, and websites) with integrated campaigns to lower the cost of customer acquisition. The key to success in SaaS is to grow volume when leveraging scale to optimize the cost. I coded it under the aggregate code of CAC.

Observation #11, #13, and #16 are all related to churn. Churn is the flip side of customer retention, which is considered as important as customer acquisition, and a higher retention rate (or a lower churn) indicates the effectiveness of sales and marketing, which leads to a series of healthy financial indicators. In contrast, even a slightly high churn rate can deteriorate all financial KPIs, impacting growth, revenue, and CAC exponentially. I coded it under the aggregate code of Churn.

Observation #12 and #19 indicate that the market scale of cloud business will not be shrunk, and the volume of cloud business is growing rapidly, although the single deal size of the customer is getting smaller. But there is a debate among the partner ecosystem about whether cloud transformation will generate more service business or reduce the service. The partners have complained that SaaS is eroding the revenue of partner service implementation. The fact is that new technology replaces the traditional service, simultaneously creating more service opportunities; from both perspectives of software companies and partners, the market scale is still growing fast. I coded these observations under the aggregate code of the market scale. Network effects, CAC, churn, and market scale are further categorized into a category of theme growth, profitability, and sustainability because they are all related to financial metrics and sustainability. CAC and churn are closely linked with profitability and growth, and network effects and market scale are tied up with sustainability. Making the cloud transformation successful means increasing revenue and lowering CAC and churn through reaching the economies of scale and then achieving network effects to obtain sustainable growth.

We look at the similarity between growth, profitability, and sustainability, leading to sustainability as a CSF. There are several interlinkages among the metrics of growth, profitability, and sustainability; analysing these metrics is essential for accessing the CSF of SaaS transformation. Whether a software company can successfully achieve SaaS transformation is closely related to the sustainability of business ultimately. Profitability as a metric cannot fully measure the success of the company's business, especially in the initial stage, as the SaaS company does not seek profitability, whereas the growth of the number of customers and the renewal of contracts are the key factors in measuring business sustainability. The growth is one of the important factors for SaaS transformation, but the quality of growth, the efficiency of growth, and whether the

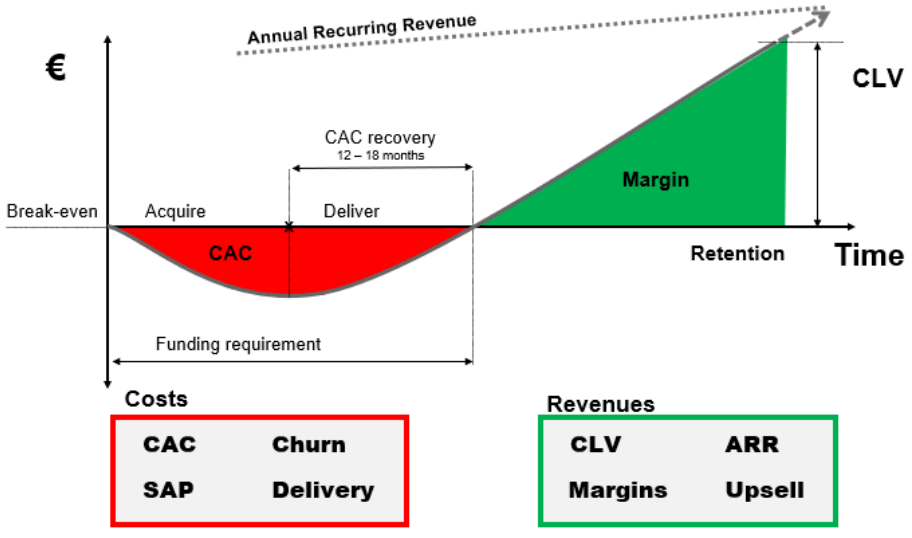
growth is sustainable are becoming more important as a CSF. Hence, I code the theme of growth, profitability, and sustainability into sustainability.

Success Factor – Sustainability. Sustainability is about whether a firm has been able to maintain or extend its lead in its industry. Our studies find that long-term sustainability is critical for the success of a SaaS business, whereas neither profitability nor growth is simply listed out a CSF. Our results indicate that software companies should be prepared to drive business growth efficiency and quality via the lower profitability requirement as a trade-off in the initial commercialization phase of SaaS transformation since they need to take a long time to make a SaaS business profitable.

The "Rule of 40" recognizes the short-term impact on profit due to a focus on growth; based on this rule, a company in the growth phase with an 80% growth rate that produces negative margins is acceptable (Prasadh et al., 2016). Figure 27 reveals that SaaS business generates negative margins in the initial stage in requiring significant upfront investment and funding to cover CAC and delivery costs and then makes money via optimizing CLV to obtain sustainability eventually.

Figure 27

How Does SaaS Make Money Source: Bennett, Cloud Sales Mindset, 2018



Sustainability in our study is confirmed as a CSF of SaaS transformation; evaluating the sustainability of the new cloud computing paradigm is a touchstone to draw on business model transformation with technologies being successful or not successful (Keuper et al., 2011). Sosna et al. (2010) argued that the sustainability of any specific business model is unclear, as market changes can quickly make existing business models obsolete. In contrast, Osterwalder (2004) indicated that the value and the sustainability of the business are determined by its revenue model; our studies complement the work of Osterwalder (2004) in terms of customer retention, customer adoption, and network effect of the financial model to measure sustainability. This is supported by the working paper of Prasadh et al. (2016), which indicates that sustainability can be further measured by sales effectiveness, customer retention, and user adoption.

5.5.4 Service Culture

Observation. The service culture was mentioned by SAP leadership many times. The shift of product to service requires the injection of service culture to promote the transformation smoothly. Observation #6 confirms the change in the company culture that *SAP is anchoring culture adoption toward being service-oriented, measuring success through customer adoption and customer lifetime value*. This point is confirmed by Interviewee #25:

> *The pain points of transformation lie in the changes of mindset and behaviour that the traditional SAP software license sales still sell SaaS via the product selling methodology, which they are familiar with; they think there isn't too much difference in selling on-premises software and SaaS. SAP sales prefer to focus on the deal closing instead of customers' adoption and success.*

In the SAP workshop discussion, Observation #7 manifests that *"a significant change is the marketing methodology of software, which is led by the sales model to led by marketing model, and such changes will have a positive impact on the success of the cloud business growth."* This pointview is also echoed by the piror interviewee #3's statement that customers actually have had their thoughts for purchasing decisions. SaaS is a standard solution, and its selling process does not rely on high-touch sales activities via face-to-face meetings. Rather, the sales process is mainly conducted by marketing automation to complete the solutions validation process.

This change is also echoed by Observation #8 in a SAP workshop that the *"sales process of SaaS focuses on alignment with best practices and user experience, fitting the standard of SaaS solutions instead of fitting customized requirements."* Interviewee #21 further explained the reasons:

> *In fact, a successful cloud agreement should focus on helping the customer to achieve the business outcome and let customers understand the advantage, simultaneously accepting the limitation of SaaS at the beginning of the sales stage, rather than selling a software product, but the reality is that SAP sales didn't make it clear to the customers about the limitation of SaaS. For example, SaaS can't be customized on a scale.*
> *In order to sign a contract quickly, sales promised the customer that all business requirements could be met without going through the BG (branding guarding) programme strictly. When it comes to the stage of service implementation, the customer finds that those functions and processes can't be realized. As a result, the whole process will be very rebellious, and then the customer will unsubscribe from SaaS.*

Analysis. The observations and interviews shown above can be coded under a different aggregate code. Observation #6emphasized that SaaS is service-oriented and outcome-driven via ongoing success, which can be classified as a service-oriented culture. Cultural transformation occurs as people buy into a new strategy and business models are developed and implemented (Lorsch & McTague, 2016). Observation #7 and

8showed the consistency of changing mindset and behaviour from the sales method and sales process separately toward SaaS transformation and fostering cloud mindset by persisting in the agile deployment of best practice and the principle of fit-to standard. It can be classified into mindset change as an aggregate code after searching for similarities and patterns. Both service-oriented and mindset changes are categorized into a category of theme -service-oriented culture- leading to service culture as a CSF.

After turning to cloud services, the products provided by SAP are no longer software license selling but the result of using SaaS service output. Since the way that software products are provided has changed, the thinking mode of the company's employees also needs to change accordingly. Instead of selling a software product purely, they need to rethink in building a new type of long-term partnership with their customers based on ongoing customer success. In addition, in the business model of cloud service, the service-oriented culture is not only advocated within SAP but also requires coordination in incentive mechanisms across the partner ecosystem. For example, the distribution of sales commissions is no longer dependent on the signing of the customer contract but links with customer adoption, projects going live, and the renewal of SaaS subscriptions. Hence new metrics are required to drive changes in mindset and changes in behaviour to advocate the service-oriented culture.

Success Factor – Service Culture. The results from this case study suggest that cloud transformation is enabled by a service culture that embraces change from PDL to SDL. It is quite a challenge to build up a service culture when moving to a service business. Komssi et al. (2009) emphasized that service culture seems to be critical when shifting from products to services. Our study further explained that all staff of software companies need to understand and envisage the fact that the software provided is not a product, but services make both a mindset change and a behaviour change. Grönroos (2007) stated that a service culture means that an organization's employees can be

characterized as service-focused. Traditional software companies are typical product companies, and they have a distinct product culture that is ingrained into their processes. This challenge is echoed by another scholar (Bailey, 2010) in that companies considering making the transition to cloud computing have a lack of appetite for change within the enterprise. Our study also finds that getting software companies to change from product to service is tough and requires a deep understanding of the service culture in place, which is enabled by the organization's ability to change, willingness to change, the team's experience, and the leadership's commitment to change. Indeed, organizational culture generates cultural inertia, which is difficult to overcome directly (Sultan, 2014). A cultural change is a long-term process, which demands extensive and long-range activity programmes, and must be led by the top management (Grönroos, 2007).

5.5.5 Ecosystem Value

Observation. Focusing on the healthy development of the ecosystem is an aspect that every company needs to pay attention to when it carries out its new business transformation. Observation # 29 at the SAP SAPPHIRE 2018 event manifests that *"cloud platform, which brings software providers, SIs, and IaaS players as a new business pattern, has been becoming an innovation and growth engine. This new pattern creates a cloud ecosystem and changes the competitive landscape of the software market as well"*. Observation # 18 depicts that "*The transformation to the SaaS is not only a software vendor's job, and its success depends on the ecosystem transformation to collaborate with partners to co-create value for customers*." These observations are echoed by Peter Maier, president of SAP AG Industries and Customer Advisory, and he said in 2021that *we cannot, and don't want to do everything alone. We engage with our partners who can also build capabilities in SAP's industry cloud.*

This new change is also confirmed by Observation # 25 and Interviewee #24, who said that *"the transformation to cloud service needs to be viewed and managed as a change of the whole cloud ecosystem.* Observation # 32 illustrates that "*To be more effective, the partner ecosystem strategy must be aligned with the overall strategy of the SaaS vendor."* Observation #24 provides a proposal that "*Developing new cloud partners can be seen as a strategic initiative when the traditional SI partners are not reluctant to waive the market to earn money from the traditional configuration of software service implementation."* Observation #26 confirms tha*t "The scale of the new developer ecosystem plays an important role in SAP SaaS based on the apps store of the cloud platform."*

Observation #20 from attending the SAP Cloud event was that *"Creating a new form of service is to co-create business value by facilitating the standardization of pre-designed and -configured solutions to improve the efficiency of service delivery with cost reduction for SI partners, and to shorten the sales cycle for SaaS vendors and the purchasing cycle for customers."* This observation is fully aligned with interviewees #17, #18 by an agile implementation approach to deliver incremental capabilities and improve service delivery efficiency. From the perspective of the software vendor, Observation #21 indicates that *"SaaS vendors and their partners can achieve significant predictive sales through the participation of value co-creation in the cloud ecosystem."* From the standpoint of SI partners, Observation # 22 validates that *"SI partners can co-create new revenue streams with the platform leaders by SaaS add-ons and extended applications to be used on the cloud platform; simultaneously, more SaaS add-ons and extended applications evolve the cloud platform and ecosystem to attract more customers."* From the perspective of IaaS partners, Observation # 23 *"IaaS partners can co-create new business value via the positive enhancing loop of network effects with improving agility, elasticity, and cost reduction to further lower the cost of SaaS vendors' subscription for IaaS service and total cost ownership for end customers."*

Observation #28 and Interviewee #25 further explained the SAP's multiple cloud strategy and operational tactics that "*multiple cloud infrastructure refers to collaborating with IaaS partners such as Amazon and Azure. This option provides the flexibility of ramping up and down the hosting requirement with a real cost implication".* From the level of operation tactics in supporting the strategic transformation, Observation #5 exhibits that *"SAP also needs to patch the process to focus on the executions, matching up related resources to customer demands."*

Analysis. Observation #20, #21 #22, and #23 . these four observations indicate that the diverse resources from SaaS vendors, SI partners, and IaaS partners are combined and engaged in a new way that co-creates value with service innovation, which is beneficial to each other in a network via the cloud-enabled service model. SAP and its partners can gain significant benefits through value co-creation in the cloud ecosystem – benefits that may not be limited to the service and money exchange between the key actors but translate into the incremental revenue stream through the service innovation. I coded them under the aggregate code of service innovation.

Observation #24 and #26, these two observations stress the significance and necessity of new partner development and developing partners and community. This is not about the supplementary existing partner resource to pool a similar kind of on-premises software partners, but providing a complementary new kind of partner resource to achieve synergies by creating new, innovative products and services, which is why "heterogeneous partners can widen a window of opportunities in the form of new product and market expansions, which are not easily facilitated in the case of the horizontal integration with homogeneous participants" (Han et al., 2012). I coded them under the aggregate code of partner development.

Observation #18, #25, and #32, these three observations indicate that the transformation to the cloud requires an integrated approach, operating sales, marketing, product and service, and delivery function throughout ecosystem actions rather than a functional or decoupled approach. There is a need to understand the business transformation as a whole. The transformation from GDL to SDL for an organization is one of the hardest transitions possible, requiring a strategic remake of the entire enterprise and its external ecosystem (Castro-Leon & Harmon, 2016). I coded them under the aggregate code of the ecosystem strategy.

Observation # 28 and #29, these two observations indicate that the existing ecosystem is changing due to the characteristics of cloud solutions, and the ecosystem's advantages in cloud platform are enhanced competitive advantage position, shared risks to reduce cost, value co-creation, and economic efficiency with greater scale, creating a new marketplace to allow providers and customers to come together in interactions. They also suggest that the combined offerings of the cloud ecosystem can exceed the capacities and capabilities of what can be provided by any single company (Hahn et al., 2016). Given the essence of the ecosystem in the new marketplace to co-create value in the context of the cloud platform, I coded them under the aggregate code of the cloud ecosystem.

Observation # 5 indicates that to effectively establish new cloud sales, marketing, delivery, and customer success management functions, these operations must be distinct from the rest of the organization, and the cloud business should be considered a "start-up" venture. For example, as with marketing, the sales process must evolve to become a repeatable, efficient, and scalable leveraging tool and methodology to quickly and efficiently qualify, demonstrate, develop proposals, and contract; as with service implementation, service delivery must land the promised cloud value with customers, adopting the best practice, delivering time to value through service innovation, and

conducting repeatable methodologies and templates. All of these are highly relevant to operation optimization. Hence, I coded them under the aggregate code of operation optimization.

We discussed the patterns across the five aggregate codes, namely 1) Service innovation, 2) Ecosystem strategy, 3) Partner development, 4) Cloud ecosystem, and 5) Operation optimization, which are categorized into a category of theme leading to ecosystem value as a CSF in terms of iterations between data and theoretical concepts. Ecosystem value lies in the centrality of CSFs toward cloud transformation. It is not only focused on what can be achieved by any single actor or participant from customers in the cloud ecosystem but emphasizes the total value and incremental value that can't be generated by any individual company in the double-sided or multi-sided market.

Success Factor – Ecosystem Value. Our study prioritizes investigating CSFs from the perspective of the ecosystem in the cloud transformation. However, there has been little literature discussing the ecosystem value co-created by the platform as a key factor in cloud transformation. Our study indicates that ecosystem value is a CSF of cloud transformation, guiding software vendors, partners, and customers on how to position themselves to co-create value. The transformation to the cloud is not just the responsibility of the software vendor but also requires all participants to take synchronized steps with a common vision to see the ecosystem value as a whole, rather than just changing individual functional areas. Transition to the cloud for traditional IT vendors represents more than just adopting new technology and developing a new product. Rather, it needs to be managed as a change of the whole business model and business network (Hedman & Xiao, 2016). Ecosystem value needs to focus on service innovation, ecosystem strategy, partner development, and operation optimization and balance the long-term and short-term interests, in part and fully among the key stakeholders.

5.5.6 New Metrics and Performance Management

Observation. SAP business has been transformed from software to cloud service, the business model has changed, and the evaluation indicators of employees need to change accordingly. It can be observed from Observation #15 that *"The SaaS growth strategy is all about the customer for life, focusing on customer success and long-term customer value."*. The interviewee #7 provided a counterexample to witness if we only focus on the sales performance of the SaaS business like the on-premise software business, but do not pay particular attention to customer success and the consequences caused by this is far-reaching. *Besides,* Observation #30 provides another perspective that S*aaS fundamentally changes the structure of the vendor-customer relationship, and with the shifting of responsibility, the SaaS vendor needs to focus on ongoing customer success by providing ecosystem value with a long-term and close relationship for the customer".*

SaaS business is a much more data-driven business and subject to CLV. Interviewee #20 mentioned that *"CLV is a predictor of net profit from the entire future relationship with a customer; therefore, KPIs and performance management for cloud business should be tightly linked with CLV."*

Interviewee #22 explained from the perspective of the partner ecosystem that *"The KPIs and incentive plan for cloud solutions must be redesigned. The service deal size of the traditional on-premises software application is five to seven times that of SaaS service ones. When the quota of service sales and revenue is kept the same as before, the service sales will have no motivation and even resist selling cloud solution services".*

Analysis. Observation #15 indicates that the SaaS growth is achieved by helping customer success to maximize CLV. SaaS business growth and profitability are different

from on-premises software ones, given that the achievement of sales and revenue is through the subscription instead of licensing, and the clients focus on the business outcome rather than their own and operate software; as a result, operating the software as a service, measuring the sales, and delivering the service through partners require laying out metrics across the whole organization and ecosystem. CLV is a holistic metric, including insights into key driver customer retention rates, the cost to serve, and annual recurring revenue.

Observation #30 suggests that the SaaS business is fundamentally subject to customer success. Bill McDermott (2018), SAP AG CEO, in Forbes emphasized *that customer success is a new top priority, as it relates to the cloud and how I think you could really think about the incentives to the salesforce we have created an environment where it really matters that those go-lives and that customer success is the most important priority and that's also new reflected heavily in compensation for sales representatives as well as the whole management value chain.* The acquisition and achievement of sales of on-premises software are not dependent on customer success. When the software license is sold, it means the completion of the sales cycle, which is not associated with customer adoption of software and customer success with the project. Instead, customer adoption is a prerequisite of customer success to achieve CLV sustainably for the SaaS business. Customer adoption requires partners to deliver the service implementation of SaaS.

Therefore, the design of metrics and incentive plans is not only related to SAP itself as a software vendor, but also needs key consideration in extending to the ecosystem as a whole.

It can be seen that both observations are related to CLV, which is considered as a new metric that is different from on-premises software, and I code them into the CLV as an aggregate code. From the analysis of data, I can see that SAP's cloud business growth

focuses on the success and long-term customer value of customers, not only the short-term sales growth of cloud solutions. This is consistent with the characteristics of the cloud business. The cloud business is a service-oriented business, which needs to benefit from long-term customer service. Therefore, the sustainability brought by the successful renewal of customers is crucial. Correspondingly, the KPIs and metrics both outline the value to be delivered (pre-sales stage) but form the basis of measuring the results of the implemented solution (post-sales stage). Based on the above analysis, I combine customer success and CLV into a theme category, leading to new metrics and performance management broadly as a CSF.

Success Factor – New Metrics and Performance Management. The literature exploring new metrics and performance management as a CSF of cloud transformation is scarce, and the question as to what metrics created will influence individual behaviour can't be answered. New behaviours and capabilities need new metrics and performance management. Our study indicates that new metrics and performance management are the CSFs of cloud transformation. Recently, organizations have embarked on the new metrics of working collaboratively toward cloud transformation success. Our research further indicated that the new metrics designed are not simply focused on the sales success of software vendors for short-term growth but customer success leading to sustainability. These new metrics and performance focus on customer success and ecosystem prosperity to reflect the CLV and build up the long-term customer relationship with ecosystem value. The CLV is measured by customer adoption, customer satisfaction, annual recurring revenue, and customer retention rate.

Our study analysed and summarized that sales incentives of metrics are designed to align with the SaaS sales life cycle to maximize sales performance. These metrics, including ACV, new customer booking, contract length, upsell, cross-sell, and renewal, need to balance growth and sales capacity to retain sales team talent and to incentivize

ecosystem partners to co-create value from a sales perspective; simultaneously, ARR, deferred revenue, backlog, and net dollar-based churn need to be considered, and that is perhaps not being tracked by the traditional on-premises license model from the finance perspective. With their unique business model, SaaS companies can't be evaluated by traditional performance metrics; accurate assessments of operational and financial health require an understanding of drivers relevant to the SaaS business (Prasadh et al., 2016).

In summary, the 33 observations were classified into 18-themes, and the 18-theme aggregate codes were regrouped and refined into six themes. Eventually, I revisited the literature to look for constructs related to the theoretical lens presented in each of the six categorized themes, which allowed us to refine and label the dedicated organization as dedicated resources, service-oriented culture as service culture, growth, profitability, and sustainability as sustainability, position and leadership as leadership, shared vision with ecosystem value as ecosystem value, and customer success and CLV as new metrics and performance management (See the Appendix). In conjunction with the six CSFs, I also revisited the previous observations, interviews, field notes, and documents to ensure I had not overlooked any important data.

5.5.7 Propositions linked to CSFs

Leadership

Proposition 1. Successful business model transformation needs top leadership in driving the change. Without leadership supports, those resources for business model transformation can't be mobilized and used in a timely and effective manner and successfully manage risks.

Leadership seems to have been mentioned in every project of transformation and change. It is no exaggeration to say that leadership is critical, even the most important factor to the success of the business model transformation. Enterprise's business model transformation means removing obstacles and breaking the rigidity of establishing business models. To overcome the rigidity of existing business models, Doz and Kosonen (2010) propose that companies are more agile, which can be achieved by developing leadership as one of three meta-capabilities. From another perspective, leadership maybe not so prominent in the beginning stage of the business transformation process but becoming crucial when you encounter the challenges and difficulties of business transformation.

The leadership embodies the companies coping with new challenges to transform their business model to reach corporate strategy and objectives. The shift to the cloud service creates new challenges and a new marketplace for software vendors and their partner ecosystem. It is becoming increasingly important whether or not to formulate a clear strategy, and more important to execute it effectively by leveraging resources, building capability, cultivating service culture, and developing new metrics. These new challenges require strong leadership to drive the change. In this regard, leadership is not a single factor, but it is associated with other CSFs, sitting in the central position.

Dedicated resources

Proposition 2. In cloud business transformation, it is necessary to build up a dedicated team to focus on cloud solutions. The 'mixed team' approach is ineffective because they keep the traditional thought inertia and use the old way of on-premises software to sell and deliver cloud solutions.

The dedicated resources guarantee business development and service delivery, forming the success of the business transformation. A dedicated team ensures the resources configuration to capture business opportunities, establish a relationship with target customers and alliance partners, develop service offerings, and ultimately deploy and deliver customer solutions. It will be more necessary to pursue the new opportunity through a separate, dedicated business unit that has the autonomy to develop a unique business model to fulfill those objectives (Christensen, Bartman, et al. 2016).

In the SAP case study, we have validated the importance of dedicated resources to make the cloud transformation successful through the SaaS model and cloud mindset. Because the mixed team approach can create a structural loophole by running two different business models, reserving space for those sales to take some sideways to reach the target when "on-premises" sales also carry sales performance indicator of SaaS, this mechanism and sales behavior thoroughly ruin the established efforts and work of SaaS transformation. Sales of traditional "on-premises" usually take advantage of combined deal strategy to sell" on-premises" license software and SaaS subscription together, but after that, SaaS solutions are not adopted by customers at all.

Resource allocation and mobilization are not self-realized. Dedicated resources also demand leadership commitment, which is from the top management of SaaS vendors and ecosystem partners. Dedicated recourses are associated with new metrics & performance management. A dedicated team requires new metrics and performance management to motivate and manage the team performance aiming and reaching the target. Simultaneously, dedicated resources are given a new mission requiring new metrics and performance management to build the dedicated solutions that co-create value with customers and ecosystem partners on the targeted market segments to support new business development in the cloud transformation.

Service culture

Proposition 3. In order to make the change from PDL to SDL successfully, it's crucial to anchor service culture adoption, which is enabled by the organization's willingness to change, the firm's resources & capability to change, and team's knowledge and experience, and leadership's experience and commitment to change.

Software companies develop a service-oriented culture as they shift to SaaS. This culture change from PDL to SDL is guided and driven by business model changes when they shape new value proposition, decide what type of product or service is provided? What kind of resources and compatibilities are required? And what targeted market segments should focus on? This may be the most challenging task because service culture development is not easily achieved (Raddats and Easingwood 2010). Culture change produces thought inertia which is time-consuming to overcome. The PDL continually works to create a performance-driven culture within their organization. In contrast, the SDL can create a service-oriented culture based on the business outcome to increase customer satisfaction across the organization's boundary by working with customers and partners.

Culture change is not driven by a bottom-up approach but a top-down approach, which demands leadership's vision, determination, commitment, and experience. A dedicated team requires to inject service culture identity to conduct an SDL business. Simultaneously, the service culture can help an organization or team define what they should do and what they should not do. The culture change is linked with new metrics and performance management. The service culture not solely needs to be promoted at the company level but also needs to be guided in the new metrics and organizational performance management.

New metrics & performance management

Proposition 4. New metrics set is to motivate and drive organizations and ecosystems to change mindset and behaviors to achieve targets through customer life-time value more successful than complying with traditional performance management without new metrics.

The objective of new metrics is to trigger and motivate an organization to change behaviors. Simultaneously, new behaviors require new metrics and performance management for measurement. The SaaS business performance metrics used to measure financial performance will be different from those metrics built upon "on-premises" software. A new finance team specializing in SaaS transformation is required to develop new SaaS metrics, package these metrics, and educate organizations and ecosystem partners on how to use them. This point echoes that the new metrics are associated with the dedicated resources. New metrics & performance management and dedicated resources form a pair of success factors that have important roles in implementing and measuring cloud transformation progress.

In SAP case, the financial emphasis will not be on the pattern with high up-front revenue recognition and sales cost. SAP must consider acquiring new bookings with recurring revenues, controlling sales & marketing costs, and ensuring a high customer retention rate by minimizing churn, growth in deferred revenue, and cash flow. A series of new metrics include ACV, new customer booking, contract length, upsell, cross-sell, renewal, ARR, deferred revenue, backlog, and net dollar-based churn. SAP needs to track whether the cloud transformation has achieved these new metrics' expected results.

Ecosystem value

Proposition 5. Cloud business model transformation needs to be managed as a whole ecosystem. Ecosystem value co-created by key actors of the cloud platform is greater than the sum of all individual participants' value. Its realization depends on the joint success of vendors, partners, and customers with whole ecosystem prosperity.

It's essential to think about ecosystem value. Ecosystem value enables a holistic view of the ecosystem in terms of business model, business value, and service ecosystem. GDL companies focus on customer business value by optimizing organizations of internal resources and processes. In contrast, SDL seeks to obtain total ecosystem value by boosting external interaction, engagement, and collaboration between vendors, customers, and partners(Castro-Leon and Harmon 2016). In the SAP case, I have witnessed that the value generation of on-premises software is mainly focused on value exchange with a GDL model between vendors and customers; In contrast, the SaaS is an on-demand business with a SDL model which is built on ecosystem and platform concentrated on additive value and integrated value which can't be generated by any individual company. Ecosystem value is constructed in a cloud platform and ecosystem with a network effect. Greater scale generates more value, which attracts more customers and ecosystem partners, which more value — a virtuous feedback loop is shaped and mutually reinforced in the generation of ecosystem value(Van Alstyne, Parker, et al. 2016).

Sustainability

Proposition 6. Success in sustainability will be critical for long-term success in business model transformation. Sustainability is supported by the firm's service innovation, enabled by its dynamic capability, and measured by customer retention, sales effectiveness, and customer adoption to view customer life-time value.

The cloud transformation can be defined as a phased task and goal, but if we ask how to make cloud business sustainable with the ongoing success, the success of customer and ecosystem is the formula. The success in sustainability depends on how to speed up the product and service innovation, how to construct enterprise's dynamic capability in response to market and customer demands to identify opportunities, seize opportunities and integrate the resources, and how to contemplate SaaS as a customer for life business to formulate new metrics to gauge customer adoption and customer retention and sales & marketing effectiveness. In the SAP case, starting with a notion of the customer for life, I make it clear that those elements of market scale, network effect, and CAC and churn are elicited as the theme of growth, profitability, and sustainability. Sustainability is confirmed as a CSF finally after the comparison and analysis about the similarity and concept intersection of growth, profitability, and sustainability

Regarding the relationships among CSFs, if we say that leadership is an engine to drive the cloud transformation as a CSF, dedicated resources are a concrete organization that requires the leadership commitment to facilitate the business transformation as a CSF. Meanwhile, service culture and new metrics & performance management are the necessary elements as CSFs to sustain the organizations to create and co-create value, which leads to ecosystem value. Ecosystem value is orchestrated by vendors, partners, and customers to co-create value in shaping a healthy ecosystem, laying the foundation for developing sustainable growth. Sustainability is the ultimate goal to make an ongoing business success.

Chapter 6. Discussion

The objective of this exploratory study is to develop a theoretical framework for the service-enabled business model transformation used to guide the case study. The other goal is to shape managerial implications based on the analysis and findings of the empirical study about value co-creation in the cloud ecosystem and its success factors of SaaS transformation. The building of the new constructs, their relationship, and the development of proposition or managerial implication are considered as basic tasks when developing the new theory.

6.1 Theoretical implication

In this paper, it should be stressed that I have no intention of building a brand-new theory, but I aim to build a theoretical framework by synthesizing the literature review, insights extracted from the case, and empirical evidence from management practice. The literature review, phenomenon, observation, document, extant theory, and deviation jointly shape the starting point to define the preliminary conceptual framework. The gap of theory matching is triggering the motivation to adopt a new theoretical framework to interpret cloud-enabled business model transformation.

This preliminary framework is compared with the analysis and findings of the case study to examine how the constructs and elements of the preliminary framework are matched with the data in the case study. This comparison between theory, discussion, and implication contributes to refining the constructs and structure of the framework. Similar constructs were extracted from the dimensions of the preliminary conceptual framework: business model, business value, and service ecosystem. The familiarity of constructs or ideas across the dimensions also speeds up the next steps in further comparing, analysing, and generating theoretical and managerial implications. The

process between theory, discussion, and the implication is running as an iterative approach to making sure that the theory that is delineated by the framework is valid.

The refined theoretical framework of the service transformation business model offers abundant research opportunities on cloud computing and business transformation discipline. We have seen the research questions of the service transformation business model, which help enhance our understanding in the related fields. This study addresses the theoretical gap in business model, servitization, and cloud computing literature by systematically refining the service transformation business model. Specifically, the refined theoretical framework of the service transformation business model can contribute theoretical implications and benefit future research on cloud computing in the following aspects.

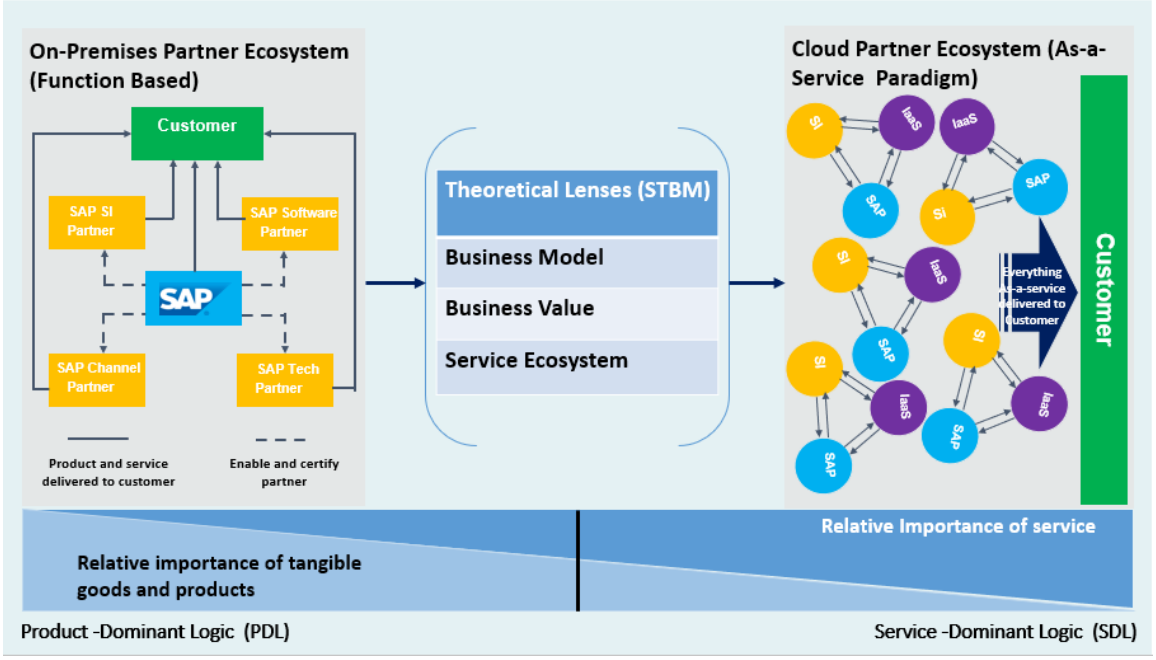
First, the service ecosystem is the integrated part of the service transformation business model, and the cloud ecosystem is a kind of service ecosystem engaging with each actor to develop the value proposition and to co-create value through the cloud platform. In this context, I found that the cloud ecosystem is different from the on-premises software ecosystem. The difference does not stay at the level of new participants or actors and numbers. Previous research identified new participants in the cloud ecosystem. Floerecke and Lehner (2016) created the PaCE Model to analyse the cloud ecosystem, which comprises 27 different roles of market actors grouped into five categories. As shown in Figure 29, our research mainly focuses on the ecosystem structure changes, which form a new micro-ecosystem as a basic unit with a tightly coupled relationship interacting with partners and customers and providing one-stop solutions based on service innovation compared with on-premises software ecosystem.

I believe that this will be an important finding under a service ecosystem of the refined service transformation business model since the prior literature review and past research treat the cloud ecosystem by introducing new participants rather than a structural

change. This finding is echoed by Hilkert et al. (2010), who state that "as-a-service-based software ecosystems" will have a higher level of market coordination than "on-premises" ecosystems, simultaneously standing at opposite ends against the proposition that all actors jointly create services in a loosely coupled manner through service refinement that fulfills the end customers' needs, while taking ecosystem as a whole (Leimeister et al., 2010). The pattern of the cloud ecosystem is not directly comprised of the individual participants or actors. Instead, the micro-ecosystem consists of a basic unit of the cloud ecosystem as an intermediate in the cloud ecosystem to provide integrated solutions as a service paradigm for customers. In other words, individual participants or actors could not survive independently in competing with other ecosystem alliances. This first attempt is to look into the structure of the service ecosystem in some depth, providing a deeper understanding of the cloud ecosystem. Future research can explore the co-opetition relationship between key players in the cloud ecosystem.

Figure 29

Ecosystem Evolution from On-premises Software to the Cloud



Sarker et al. (2012) depicted the alliance relationship between vendors and partners, which presents the pattern that vendors directly work with partners in exploring value co-creation. There are very few occasions when vendors are involved in direct interaction with clients. The path of value delivery is mainly shown in a linear way from ERP vendors to partners and then from partners to clients. Hence, the research of value co-creation is limited to the bilateral alliance of vendors and partners. Vargo and Lusch (2008) raised the Actor to Actor (A2A) network in service innovation with a service-dominant logic, viewing a more generic sense that all actors are resource integrators to co-create value in a network of other actors. However, A2A does not comprise the complete picture of the ecosystem. Previous literature conceptualizes the service ecosystem as a self-constrained, self-adjusting system of loosely coupled actors connected by shared institutional logics through service exchange (Vargo & Lusch, 2011).

This study develops a new theoretical lens of the cloud ecosystem based on SDL, which connects the relationship of vendor to partner, partner to partner (P2P), and partner to vendor into a circle as a basic unit being comprised of the micro-ecosystem as our findings indicate that this micro-ecosystem is a relatively self-adjusting, self-reinforcing system of mostly tightly coupled relationship among actors linked by mechanisms that facilitate the mutual interests and value co-creation through service integration and service innovation. Our findings imply that software vendors' partners (actors) in the micro-ecosystem are playing dual roles, namely customer service beneficiary and partner service offerer in the B2B context; this scenario is also applied to customers. The customer itself can have dual roles also while engaging in the service provision.

In this micro-ecosystem, I find that the relationship measured by value among the key players has changed. From the viewpoint of the SAP and SI partner relationship, I find

that the value of service implementation and training enablement decreases in cloud computing compared to on-premises SI. However, the results of the creation marketplace are in the opposite direction. From the perspective of the SAP and IaaS partner relationship, I find that the value of trust-building and certification of infrastructure in cloud computing is greater than on-premises ones, whereas the value needed for installation and configuration of hardware in cloud computing is relatively lower than on-premises ones. From the viewpoint of the P2P (SI and IaaS partner) relationship, I find that the value of management consulting services in cloud computing is very prominent and higher than on-premises ones. By contrast, the value of infrastructure service is substituted by IaaS providers in cloud computing, so there is no need to set up and dedicate infrastructure separately to launch the application and service compared to on-premise ones.

In addition, I found that the boundary between customer, partner, and vendor is becoming vague, but all of them can be an initiator in jointly creating value through service innovation and resource integration. This finding confirms that all social and economic actors integrate various types of resources to create value in S-D logic (Vargo & Lusch, 2008).

Second, the perspective of the service transformation business model stresses a holistic approach to explaining how companies transform themselves by value-cocreation. It also engages the entire range of value drivers and value chain, advances key actors collaborative to generate the joint value or incremental value in the service ecosystem. Thus, I emphasized the ecosystem value rather than customer value only. Van Alstyne et al. (2016) claimed that value creation changes from a focus on customer value to a focus on ecosystem value in the pipeline to platform business. Platform-based ecosystem value can be recognized to grow and scale more rapidly and efficiently with a diversified pattern. In the B2B platform-based business context, as mentioned above,

the roles of vendors or partners and customers often swap to play different actors in a two-sided market. Platform leaders (SaaS and PaaS) acquire the recurring revenue streams directly from customers and gain new revenue streams via a revenue-sharing arrangement, while partners develop and sell add-on applications based on their cloud platform as a new digital marketplace.

In a digital world, companies operate in cloud ecosystems that are intertwined such that digital strategies cannot be conceived independently of the vendor, alliance partners, customers, and competitors (Bharadwaj et al., 2013). For SI partners, they can also gain a new revenue stream by selling their add-on solutions in the cloud marketplace, besides the revenue stream of consulting and service implementations. Although the revenue-sharing arrangement with the platform leader will sacrifice some benefit on the surface, the new marketplace in the cloud platform provides huge market opportunities and low transition costs. For IaaS partners, those add-on applications developed by SI partners can generate additional network traffic based on PaaS besides the normal network traffic consumed by SaaS applications. This shapes a virtuous feedback loop between platform leader, SI partners, and IaaS partners in a micro-ecosystem internally and the external ecosystem with customers where value connects value and ecosystem generates the additive value with a network effect through service innovation. I find that the ecosystem value is more than customer value and causally linked by platform leader, partners, and customers as a reinforcing value loop.

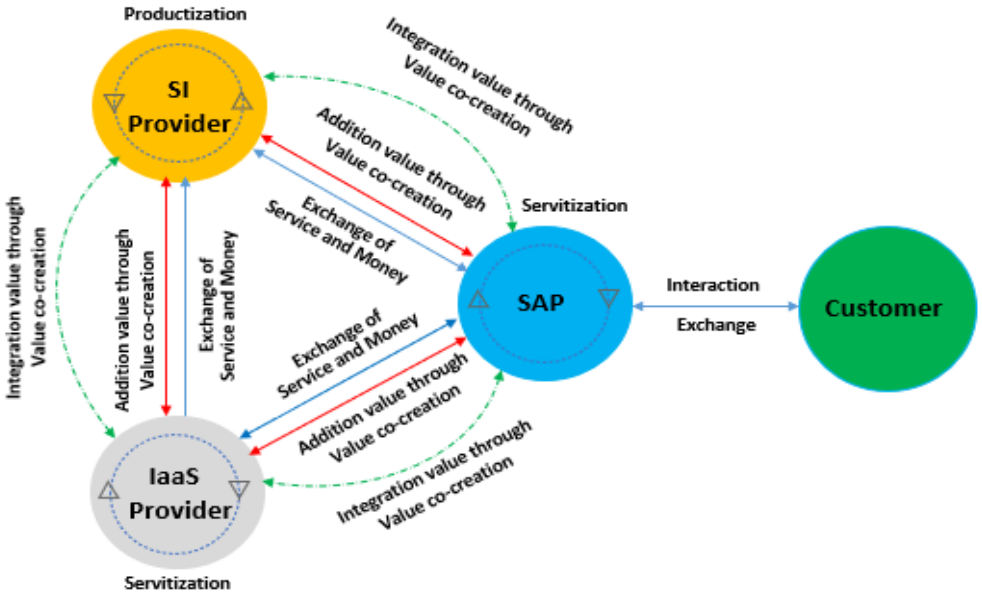
Sarker et al. (2012) outline the three methods of value co-creation: exchange – co-creating value through bartering; addition – co-creating value through layering; and synergistic integration – co-creating value through amalgamation. However, this study finds that the exchange is not comprised of the essential form of value co-creation. The exchange of service and money between participants in an alliance can’t generate additional value through providing resources and services from the micro-ecosystem as

a whole, in spite of the fact that this exchange can be a mutual benefit between two parties. The simplest case is that SaaS software vendors offer the training service in exchange for money from SI partners, and this exchange does not eventually bring incremental value for customers.

The value co-creation via addition and integration in Figure 30 disrupts the prior GDL and reconfigure and reallocate resources and capability based on SDL. Therefore, the task profiles in SDL will differ from those in GDL. Traditional service in GDL will comparatively decrease, whereas the "as-a-service" paradigm will sharply increase in the SDL ecosystem. Each key actor in the value co-creation network of the SDL ecosystem fulfills their role by adding a new set of value – additive value and synthetic integration value. The additive value through service innovation, the synthetic integration value through the platform, which creates the new marketplace, leads to the shifting from GDL to SDL. GDL companies focus on maximizing business value by providing a single product or service, whereas SDL companies seek to maximize the total value of the service ecosystem based on the service platform (Gawer, 2009).

Figure 30

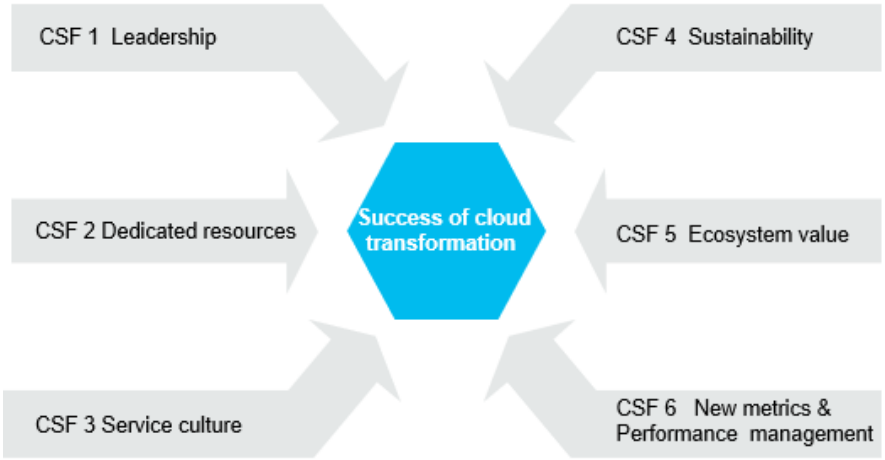
Value Co-creation of Cloud Platform



Third, what constitutes critical success factors toward the service transformation business model? CSFs attempt to explain why cloud transformation is successful or unsuccessful while estimating on the extent to which success can be met. I analysed the drivers of success in SaaS transformation, bringing those perspectives and prioritizing functions and factors that would be most impactful for SAP in leading a successful shift to the SaaS. The results refine six CSFs based on the service transformation business model toward cloud transformation, which is summarized as follows with Figure 31: 1) Leadership; 2) Service culture; 3) Dedicated resource; 4) Sustainability; 5) Ecosystem value; and 6) New metrics and performance management.

Figure 31

Critical Success Factors Toward the Success of Cloud Transformation



6.2 Managerial Implications

Management can draw many new insights from this study. Discovering new service transformation business models and evaluating what CSFs making them workable is important for cloud transformation; software vendors should not focus too much on their transformation to the cloud, but rather on the whole ecosystem platform strategy in the value co-creation, new partner development, economies of scale, ecosystem value, and customer success. Our findings indicate that the cloud transformation is not limited

to apply to a case like SAP, but it can be generalized to the software industry, e.g., other software giants, Microsoft, Oracle, and Adobe, etc. The shift to the cloud brings a series of very instructive managerial recommendations and suggestions for guiding the transition from on-premises software to cloud-based enterprise services.

Conducting Transformation in a Holistic Manner. The cloud 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 see their business disrupted, as the SaaS simplifies the purchasing and use of enterprise application software, including the removal of the majority of installation and configuration activities of hardware and software systems required for on-premises implementation.

These changes require a holistic approach to cloud transformation, where the interaction with and collaboration between the software vendor and its partners play an essential role. On the one hand, 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 centres and 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 et al., 2008).

Creation of New Revenue Stream Mechanism. When the composition and configurations of software are substituted by the SaaS, the related revenue of service implementation for partners is reduced accordingly. However, the SaaS 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.

Anchoring Service Culture. For companies seeking cloud transformation, culture change is the most challenging part of making them adaptive. This cultural change from PDL to SDL requires a mindset change throughout all parts of the organization internally and ecosystem partners externally, especially in sales and service delivery. Although SAP has been investing in cloud transformation for eight years, many SAP staff still think of SAP as a software product company. SAP sales follow the selling logic of on-premises software to sell SaaS solutions, and partners attempt to deliver a SaaS solution with the traditional implementation methodology.

Overcoming the above challenges. First, SAP needs to build a common vision of a mindset change moving to the cloud, guiding behaviours to fit into a service-oriented culture. Second, measuring success must be aligned with customer satisfaction and ecosystem value. The new measurements should proactively focus on customer adoption, customer retention, customer success, and sustainability. Third, SAP is required to make the related investment in enabling ecosystem partners for the mind change in selling and delivering SaaS-based service solutions. SAP has a long history of developing and selling software products, and the inertia of thinking will hold on to what they feel comfortable and familiar with (Munck, 2002). Hence, changing mindsets and behaviours don't happen all at once. Cultural transformation takes time and commitment from all levels of the organization. Despite that, leadership has advocated developing and shifting from a product transactional mindset to a service relationship cultural orientation (Oliva & Kallenberg, 2003).

Building a Common Vision of Value Co-creation. SAP SaaS software follows the principle of a standardized process and the approach of industry best practice, as well as very strict and limited customization. Hence, SAP, SI partners, and customers need to work together to analyse whether the current version of SAP SaaS software fits into the core requirement of current client business; if not, firstly, the management consulting needs be considered as to how to optimize the customer business process and operation to coincide with SAP best practice embedded in its SaaS software solutions. Second, if the clients don't want to conduct a business process re-engineering (BPR) or business optimization before the service implementation of the SaaS software application, the customization as an add-on solution based on SAP PaaS and APIs opened by SAP to connect with might be a more appropriate way to address clients' business requirements, especially for large enterprises.

It's a journey for SAP to make such a big transformation with considerable time to convert all SAP functions of applications based on on-premises software to the SaaS

version, even though SAP is committed to prioritizing the new innovative functions, applications, and enhancements in its SaaS software version. However, when SAP SaaS can't meet customer requirements in the business transformation journey, customers are not intended to conduct a business process re-engineering (BPR) beforehand to comply with SAP's existing best practices and process. If SAP PaaS is not available for SAP's SI partners and customers to address the special business requirements. How does SAP respond to this situation? This is not a special case from their opponents but a typical scenario representing customers' concerns about SAP SaaS. As illustrated by SAP sales, there are a considerable number of customers getting back to the on-premises version concerning the maturity and functionality of SAP SaaS compared to on-premises ones, although they have already signed a SaaS contract with SAP.

The suggestion is to provide more options for cloud deployment and business models to address customer concerns. For example, it is providing a more flexible deployment model to allow on-premises software running on public cloud infrastructure and to develop a single-tenant architecture, which is provisioned to a single customer in a dedicated instance with the subscription model, offering a fully functional scope of SAP enterprise application, in which a multiple-tenant version can't be offered yet. Albeit this arrangement makes a compromise to some degree to sacrifice the benefits and advantages of SAP SaaS multiple tenants, it is in the perspective of having customers who are easily swayed for a cloud mindset to consume software solutions that best suit their business requirements in comparison with a complete return to the on-premises version, as well as winning precious time for SAP cloud strategy execution and business transformation. Of course, this also requires correspondingly developing a new partnership, which is different from the on-premises ecosystem and multiple-tenant SaaS ecosystem.

Developing Service Offerings. When software vendors are moving to SaaS, ecosystem

partners also need to consider how to make the service innovation to create the repeatable service asset by productizing the service; thus, it becomes more efficient and competitive to deliver the project combining the service and asset together. Its implication of productization of services as an asset is also seen as a kind of higher-level intensive knowledge-based service. Productization of services can stem from design reuse or components, computer-aided tools, training, and standardized process frameworks (Cusumano, 2008). SAP cloud transformation is not done overnight, requiring their ecosystem partners to develop new service offering through industry or functional solutions based on the SAP cloud platform to address the challenges of customers faced with a different business scenario, improve the efficiency and quality of service delivery, shorten the cycle of service delivery further, and increase customer satisfaction by leveraging ecosystem partners' resources when the SAP SaaS product itself is not mature in some niche markets and solutions. Floerecke (2018) emphasized that offering a multitude of SaaS services is important to succeed because a broad service portfolio achieves increased attractiveness for a provider as customers feel more prepared for the future. The ecosystem partners need to be more conscious of customers' industry, process, and functions than the product normally, and the development of service offering spans sales, service delivery, post-service delivery stages, and even co-production and innovation of the service with the customers together (Kindström, 2010).

Working Out an Incentive Plan. The traditional incentive plan of on-premises software for sales, which ever worked well, is not suitable to transfer to SaaS directly. Selling SaaS is still one of the hardest jobs out there. The process of selling SaaS has always been, and always will be, difficult, while SAP sales will naturally focus on the traditional on-premises software that they are most familiar with. In parallel, ecosystem partners will naturally focus on the traditional SI of on-premises software, which they are most familiar with, as well as ones that can gain a big deal.

Moreover, SAP sales can gain commissions regularly when making deals with clients at regular intervals, whereas, in the SaaS context, sales are not needed anymore to sell SaaS subscriptions when a client is on track to pay a subscription fee annually. This means that by selling SaaS, the salesman takes away his future upselling options as customers get an all-inclusive deal (Floerecke, 2018). To overcome this, promoting SaaS sales requires an incentive plan to set a dedicated SaaS sales target, which can't be replaced and converted by the sales target of on-premises software, and generate the greatest quota relief and the highest commissions. Dedicated sales targets with SPIFs (special promotion incentive funds) are often used to incentivize the sales team to gain momentum with SaaS solutions.

Focusing on Customer Success and Ecosystem Success. Customer success and ecosystem success have significant implications for SaaS transformation. Supporting customer success and achieving a prosperous ecosystem is not an enterprise's slogan but a mission and action embedded in the process management of cloud transformation to create sustainable value that will make customers and partners satisfied. Software vendors should not be encouraged to succumb to the allure of short-term interest and sign false combined deals of on-premises software and SaaS to achieve the SaaS business's sales target. With these sales, it is crystal clear that the customers have agreed to buy SaaS applications in exchange for greater discounts offered by software vendors selling on-premises software products in a combined deal, but they will not use these SaaS products at all.

However, such a "sales success" might be mistaken for a SaaS subscription deal with the business potential to renew and grow by the corporate management internally and may be mistaken for a potential SaaS SI opportunity by ecosystem partners externally. This misallocation of resources not only further squeezes the profit margin of on-premises software by applying for greater discounts but also jeopardizes the index of

customer retention, given that customer adoption is a prerequisite for customer success in retaining the SaaS subscription. In other words, there is no customer retention without customer adoption. This point is echoed by Interviewee #11 to explain why SAP couldn't be treated as a high valuation of stock share with a PE ratio like pure SaaS vendors (e.g., Salesforce, Workday, and Coupa) in the capital market.

Chapter 7. Conclusion and Future Research

7.1 Outcomes of the Research

The Service Business Transformation Model describes the new elements and attributes of SaaS transformation requiring software vendors and their ecosystem partners to transform their business model, changing the way they sell, finance, and operate their businesses to match the requirements set by SaaS. In doing so, I address the research questions posed. The outcomes of the research are summarized for these three questions as follows:

RQ1: How does the ecosystem involved in enterprise application system delivery evolve when transforming from on-premises software to cloud service?

As mentioned in this research, the cloud ecosystem, which is comprised of a three-tier structure, operates differently from the way in which the on-premises software ecosystem, including channel partners, technology/hardware partners, and SI partners, did before. In the on-premises ecosystem, the bilateral alliance relationship constitutes the main body of the partner ecosystem. In the cloud ecosystem, in terms of our findings, the structure of the cloud ecosystem does not consist of individual participants or actors directly; rather, it is firstly comprised of a micro-ecosystem with a tightly coupled triangle partnership – a basic cloud ecosystem unit as an intermediate in the cloud ecosystem to provide the integrated solution as a service paradigm for customers. The micro-ecosystem is comprised of SaaS vendor and PaaS provider or platform leader, IaaS provider, and SI provider or consulting firm, and the cloud ecosystem consists of multiple interconnected micro-ecosystems. This structural change means that the traditional software ecosystem is evolving from PDL ecosystem to SDL ecosystem.

Simultaneously, the SDL ecosystem has changed the landscape of competition from company to company into ecosystem to ecosystem, scaling more efficiently and rapidly.

RQ2: How are values jointly created and shared, and their relationship changed amongst the key players in a cloud ecosystem (e.g., service provider, software providers, and infrastructure providers) and later delivered to customers?

In a cloud ecosystem, SaaS vendors, SI partners, and IaaS providers create a new cloud value chain to break the traditional value chain of on-premises SI services. The actors are not only limited to exchanging service and money, but more importantly, they work collaboratively to co-create incremental value and integrated value within the cloud ecosystem.

The value co-creation through exchanges is seen as a nominal form (Sarker et al., 2012). SaaS vendors and their SI partners create value by providing the outsourcing development resources and output of capability in exchange for man-day compensation; IaaS providers and SaaS vendors develop value by providing infrastructure resources and service in exchange for money; SI partners and IaaS providers establish value by providing operational service resources and capability in exchange for money. In the exchange situation, there is no incremental value generated.

The model of co-creating incremental value aims to build on contributions to develop new revenue streams along the value chain. The new value chain is based on the orchestration and interaction of key actors within the cloud ecosystem, focusing on agility, the efficiency of service provision, value creation, and innovations. SaaS vendors and platform leaders open up new opportunities for SIs and ISVs to develop a management consulting service, build service-based assets, and create a new

marketplace for ISVs and customers and generate new revenue streams. SI partners can transfer themselves into a composite consulting firm to create new revenue streams by providing management consulting and industry insight and improving the efficiency and quality of service delivery through best practices, productizing offerings, pre-configured solutions, and remote delivery. IaaS partners can enhance agility and elasticity and reduce cost by optimizing the configuration of computing resources and removing inefficient resources to create incremental value by attracting more clients to generate new revenue streams.

The model of co-creating integrated value, which can't be generated by individual participants, aims to reinforce the value in a positive loop by fusing resources based on cloud platforms with economies of scale. The more customers adopt SaaS applications, the more SaaS-related services can be generated to create revenue streams, the more add-on applications can be produced to drive the demand, the more IaaS can be consumed to optimize operation costs in creating value, and in turn, SaaS vendors and platform leaders will generate broader network effects in attracting customers. Hence, the positive effects can be enhanced further in a circle with the iterative process.

The roles of SaaS vendors, partners, and customers are changed significantly in the cloud ecosystem, and our findings show that they often swap to play different actors in a two-sided market. A partner can become a customer, and a customer can become a partner too. In the cloud ecosystem context, the role switching depends on the changes in the concrete business scenario. The relationship between SaaS vendor, IaaS provider, and SI partner transformed the focus from the transaction relationship of closing a one-off deal to establishing a long-term partnership for value co-creation. Our study also reveals that trust-building, creation of marketplace, management consulting service, and certification of infrastructure in the cloud ecosystem gain further importance with

the greater value needed than on-premises ones, whereas the value needed for service implementation by system composition and configuration, installation, and configuration of hardware, infrastructure service, and training and enablement still plays a dominant role in the on-premises ecosystem.

RQ3: What are the challenges faced, and what CSFs are behind making the transformation successfully and smoothly to cloud services?

Some challenges to implementing cloud business model transformation became clear during the period of the case study. Unlike the challenges of functional changes in one or two specific aspects identified, these challenges seem not only confined to one company but also to its ecosystem. First, cloud transformation has fundamentally changed all elements considered in service transformation business models with a SDL ecosystem constructed by three dimensions: a) business model, b) business value, and c) service ecosystem. Second, the mindset change may be time-consuming and demanding as well, which requires the culture change of a company from PDL to SDL. Third, it is required to set the right expectation about SaaS profitability, which may take a long time. Fourth, cloud transformation is not only a SAP job but also an ecosystem's efforts to execute it.

Eventually, there was internal resistance from the software vendor itself and external resistance from partners and customers because they are not completely aware of the potential value of SaaS, or even if they know it, they don't recognize it. I identify several challenges as above. The description of such challenges can help companies understand the root reasons, mitigate potential risk, elaborate CSFs, and develop six propositions linked to CSFs. The findings clearly reveal that CSFs that influence the on-premises software transformation to SaaS are mainly related to the following aspects distilled and structured.

Leadership. Leaders must understand the SaaS business model and stand firm in the belief that SaaS would generate predictable and stable revenue by providing more easily updated, more secure, and more quickly improved solutions on an ongoing basis, especially when encountering resistance from middle-level and front-line employees due to this disruptive change, withstanding the temptation of short-term benefits from on-premises solutions and the test of financial pressure.

Dedicated Resources. Our study finds that the separate organization or resources created are vital in building a new fast-track service and bringing offerings to market quickly from a software product to a SaaS business, addressing the customer needs in the focused market segments.

Service Culture. For software companies, having to change from product to cloud service is quite challenging and tough, and changing a distinct product culture ingrained into the enterprise process requires a deep understanding of the service culture in place, employees' willingness to change, the leadership's commitment to change, and the management team's capability and experience.

Sustainability. *Organizations seeking to grow have to depend on sustainability for continued business success.* Our results find that software companies should be prepared to drive business growth efficiency and quality via ensuring sustainability. Sustainability means ongoing customer success. If the subscription revenue model is not workable, SaaS will become the traditional on-premises software business without sustainability.

Ecosystem Value. A key aspect is the ecosystem value that has the ability to co-create the value with partners in a two-sided market, building up a cloud ecosystem strategy

service offering innovation, and balancing the interests of the part and the whole, long-term and short-term, with customers and partners together.

New Metrics and Performance Management. Our research reveals that software vendors and their ecosystem partners focusing on SaaS transformation must review and transform their existing enterprise performance management frameworks and operating models. New metrics and performance are focused on customer success leading to sustainability and ecosystem prosperity to reflect the CLV.

7.2 Contribution of the Research

The contributions of this research are various. First, this thesis enhances existing knowledge by creating a service transformation business model. Second, the literature review in Chapter 2 provides a comprehensive view of the current literature related to the business model, servitization, and cloud computing, pointing out how different the cloud ecosystem is compared with on-premises ones, what's CSFs behind moving to cloud business model, and which managerial implications are instructive for management.

Chapter 3 defines and proposes a theoretical framework derived from existing literature and added to existing knowledge in the areas of business models, business value, and service ecosystem. This theoretical framework provides a unique vehicle for analysing the cloud transformation in existing and proven theories. It provides an understanding of the business model from an internal perspective, the service ecosystem from an external view, and business value as a bridge connecting them to vet cloud transformation as a whole. It also provides a mechanism for research to evaluate the changes and impacts of business model transformation, which can potentially be

extended to study the organizational transformation of the IT industry in varying contexts beyond software companies.

Beyond the conceptual framework proposed, the research design in Chapter 4 synthesizes the work of qualitative research and builds on the foundation of a case study. This thesis provides a practical step-by-step approach to the execution of case study research from the initialization of the research to case study adoption, case selection, data collection, data analysis, and exploratory study from the results of the case study. The theoretical framework underpinning this research design has been tested by applying it to a concrete case study. However, further validation would be required before constituting new contributions to theories.

The detailed case study of this research in Chapter 5 provides valuable insights into how SAP and its ecosystem transform into the cloud and what's CSF behind based on such a transformation. The results of this study are corroborated by the following three dimensions: 1) business model, 2) business value, and 3) service ecosystem. The business model dimension provides an internal view's assessment of cloud transformation from the components of key resources, key dynamics capability, key activities, cost structure, revenue stream, and growth rate. The business value dimension provides a deeper understanding of the value proposition and value co-creation involved in cloud transformation. Finally, the service ecosystem dimension also provides analysis from the aspects of key partners, distribution channels, platforms, customer relationships, and customer segments.

Besides enhancing critical literature, the critical success factors fill a gap in the critical research of the service transformation business model, and it provides six CSFs as the analysis framework, namely 1) leadership, 2) dedicated resources, 3) service culture, 4) ecosystem value, 5) sustainability and 6) new metrics and performance management,

about which the existing literature is scarce and lacks related theories to gain insights into what CSFs impact cloud transformation.

The discussion in Chapter 6 looks at how different the cloud ecosystem is compared with on-premise ones from the viewpoint of theoretical implications: 1) the traditional product platform ecosystem has evolved from PDL ecosystem to SDL ecosystem, and 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; the cloud ecosystem has changed the role and function, and the value relationships amongst stakeholders; 2) ecosystem value focus instead of customer value only. Value creation is shifting to value co-creation from a focus on customer value to the ecosystem value focus in the B2B business; 3) summarizing six CSFs that guide what should be considered toward cloud transformation under the framework of the service transformation business model. Beyond the view of the theoretical framework, this research provides eight managerial implications for cloud transformation with the tangible experience of SAP that has been transforming into the cloud and how to overcome constraints faced. These results could help other companies to gain a deeper understanding of what aspects should be considered moving to the cloud, related lessons learned, and business value achieved.

7.3 Limitations and Suggestions for Future Research

Every research has its limitations, and this study is no exception. Although I try to minimize them, some limitations must be acknowledged. Given the nature of the exploratory study, this research has some limitations in terms of generalization because case studies are suitable for generalizing theoretical propositions rather than populations. Furthermore, this research was a single-case study rather than a multi-case one, which takes a more diversified sample in terms of the software company size,

focused fields, and other business profiles, etc. The single-case study cannot fulfill a cross-unit analysis to generalize theories, although I also adopt an ecosystem view in minimizing the impacts to evaluate the cloud transformation. In addition, the usual quality criteria for case studies have been sufficiently considered, but a generalization of the results only has limited legitimacy (Yin, 2009).

One of the limitations is that many of the interviewees who are still working at SAP did not allow the conversations to be recorded, given the sensitivity of the information and authorization of information disclosure. Some interview data were collected one or two days after the interview; the investigator just relied on recalling the key message, and the level of detail of the written interview notes and recalled information was not more comprehensive than the recorded interviews, though the detailed notes were sent to interviewees to review for mitigating any bias. Another limitation in this research was that it was not possible to directly interview SAP's global CEO, COO, other board members, and key stakeholders across its global organizations, although their speeches about the cloud transformation can be observed to refine their point of view in some key events that I attended before, and some interview questions can't be answered by those observations. Furthermore, this study has a limitation in terms of geographical focus. It is impossible to cover all regions and countries where the findings apply equally well.

The present study has built a theoretical framework for the service transformation business model. The applicability of the theory of the service transformation business model needs to be qualified from a different perspective. One of the avenues for future research is to further investigate the relationship between 13 elements in the context of service transformation business models. The theoretical implications presented can be consciously formulated as propositions, which should be understood as starting points for further research. Furthermore, another avenue for future research is to also rank

these six CSFs by the degree of importance of cloud transformation, to study in more detail about their relationship to CSFs, and to design quantitative research to examine those CSFs toward the success of cloud transformation and proposition linked to CSFs by moving from the building of theory to testing of theory. The eight managerial implications presented are therefore shaped as propositions that should be taken into account as a starting point on the given topic for future research.

References

Ackoff, R. L. (1999).Transformational leadership. *Strategy & Leadership, 27*(1):20–25,

Afuah, A. (2004). Business models: A strategic management approach, McGraw-Hill/Irwin.

Ahamed, Z., et al. (2013). "A strategic journey of firm transformation towards a new framework for implementing servitization strategy." IJI 6: 692-707.

Aiken, C. B., & Keller S. P. (2007). The CEO's role in leading transformation. *Management Quarterly*, *48*(2), 30.

Akkermans, H., & van Helden, K. (2002). Vicious and virtuous cycles in ERP implementation: A case study of interrelations between critical success factors. *European Journal of Information Systems, 11*(1), 35–46.

American Institute of Certified Public Accountants (AICPA), Special Committee on Financial Reporting. 1994. Improving Business Reporting-A Customer Focus: Meeting the Information Needs of Investors and Creditors. New York, NY: AICPA.

Amit, R., & Zott, C. (2001).Value creation in e-business, *Strategic Management Journal*, *22*, 493e520

Anding, M. (2010). SaaS: A Love-Hate Relationship for Enterprise Software Vendors. In Software as-a-Service (Benlian, A., Hess, T. and Buxmann, P. Ed.) Gabler, Wiesbaden, 43-56.

Armbrust, M., Fox, A., Griffith, R., et al. (2009) *Above the clouds: A Berkeley view of cloud computing*. EECS Department, University of California, Berkeley, 2009.

Arndt, J.M., and J. Dibbern, (2006), 'Co-Innovation in a Service Oriented Strategic Network k.' In Proceedings of the IEEE International Conference on Services Computing, Chicago, USA, pages 285-288, September.

Asha Barbaschow(2017, May 16) SAP now offering multicloud option with AWS, Azure, Google.http://www.zdnet.com/article/sap-now-offering-multicloud-option-with-aws-azure-google/

Avedillo, J. G., et al. (2015). *Two ways to modernize IT systems for the digital era*. McKinsey & Company.Bailey, D. (2010). Are you up to the cloud challenge? *Computing*, June 24, p. 9.

AWS (2017) SAP on AWS 101 for Customer V7.1

Ballantyne, D., & Varey, R. J. (2006). Creating value-in-use through marketing interaction: The exchange logic of relating, communicating, and knowing. *Marketing Theory*, *6*(3), 335–348.

Bardin, L. (1977). *L'Analyse de Contenu*. Paris: Presses Universitaires de France.

Barquet, A. P. B., et al. (2013). Employing the business model concept to support the adoption of product–service systems (PSS). *Industrial Marketing Management*, *42*(5), 693–704.

Benbasat, I., Goldstein, D. K., et al. (1987). The case research strategy in studies of information systems. *MIS Quarterly*, *11*(3), 369–386.

Bennett, C. (2017)Blueprint for business transformation-cloud partner business workshop Beijing and Shanghai.

Bennett, C. Cloud sales mindset. May 2018.

Bharadwaj, A., et al. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, *37*(2), 471–482.

Blaikie, N. W. H. (2000). *Designing social research: The logic of anticipation*. Polity.

Böhm, M., et al. (2010). *Towards a generic value network for cloud computing*. International Workshop on Grid Economics and Business Models, Springer.

Boillat, T., & Legner, C. (2013). From on-premise software to cloud services: The impact of cloud computing on enterprise software vendors' business models. *Journal of Theoretical and Applied Electronic Commerce Research*, *8*(3), 39–58.

Boss, G., et al. (2007). IBM high performance on demand solutions, Technical report. IBM.

Boudreau, K. (2007). Does opening a platform stimulate innovation? The effect on systemic and modular innovations. MIT Sloan Research Paper No. 4611-05, Massachusetts Institute of Technology, Cambridge, MA.

Boudreau, K. (2008). "Opening the platform vs. opening the complementary good? The effect on product innovation in handheld computing." The Effect on Product Innovation in Handheld Computing (August 24, 2008).

Briscoe, G., & Marinos, A. (2009). Digital ecosystems in the clouds: Towards community cloud computing. *2009 3rd IEEE International Conference on Digital Ecosystems and Technologies, IEEE*.

Bucherer, E., Eisert, U., & Gassmann, O. (2012). Towards systematic business model innovation: Lessons from product innovation management. Creativity & Innovation Management, 21, 183–198.

Budgen, D., Brereton, P., & Turner, M. (2004). Codifying a service architectural style. In *Proceedings of the 28th Annual International Computer Software and Application Conference*, pp. 16–22.

Cadambi, P., & Easwaran, S.. (2016). Transforming your SaaS business: A strategic guide for optimizing business performance.kpmg.com/SaaS KPMG

Casadesus-Masanell, R., & Ricart, J. E. (2010). From strategy to business models and onto tactics. *Long Range Planning*, *43*(2), 195–215.

Castro-Leon, E., Harmon, R. (2016). *Cloud computing: Implications for service transformation. Cloud as a service* (pp. 83–105). Springer.

Catlin, T., Scanlan, J., & Willmott, P. (2015). *Raising your digital quotient*. McKinsey. Retrieved April 10, 2016, from http://www.mckinsey.com/insights/strategy/raising_your_digital_quotient

Ceccagnoli, M., Forman, C., Huang, P., & Wu, D. J. (2012). Cocreation of value in a platform ecosystem: The case of enterprise software. *MIS Quarterly*, *36*(1), 263–290.

Chen, C.-S., et al. (2015). A cloud computing platform for ERP applications. Applied Soft Computing, 27, 127–136.

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), 529–555.

Chesbrough, H. (2007). Business model innovation: It’s not just about technology anymore. *Strategy & Leadership*, *35*(6), 12–17.

Chesbrough, H. (2010). "Business model innovation: opportunities and barriers." Long range planning 43(2): 354-363.

Christensen, C. M. (2006). The ongoing process of building a theory of disruption. *Journal of Product Innovation Management*, *23*,39–55.

Christensen, C. M., et al. (2016). "The hard truth about business model innovation." MIT Sloan management review 58(1): 31.

Christopher Fenz, solution advisor of SAP S/4 HANA. SAP a brief history: Internal document. January 2019.

Cloud, F. G. (2012). *Technical report, Part 1, Introduction to the cloud ecosystem: Definitions, taxonomies, use cases and high-level requirements*. Geneva: International Telecommunication Union.

Cook, M. B., Bhamra, T. A., & Lemon, M. (2006). The transfer and application of product service systems: From academia to uk manufacturing firms. *Journal of Cleaner Production*, *14*(17), 1455–1465. http://dx.doi.org/10.1016/j.jclepro.2006.01.018

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.

Cusumano, M. A. (2008). "The changing software business: Moving from products to services." Computer 41(1): 20-27.

Cusumano, M. (2010). Cloud computing and SaaS as new computing platforms. *Communications of the ACM*, 53(4): 27–29.

Davidsson, P., Steffens, P., & Fitzsimmons, J. (2009). Growing profitable or growing from profits: Putting the horse in front of the cart? *Journal of Business Venturing*, *24*, 388–406.

Demil, B., & Lecocq, X. (2010). Business model evolution: In search of dynamic consistency. *Long Range Planning*, *43*(2), 227–246.

Demirkan, H., et al. (2010). Coordination strategies in a SaaS supply chain. *Journal of Management Information Systems*, *26*(4), 119–143.

Desmet, S., et al. (2013). *Servitization: Or why services management is relevant for manufacturing environments*. Pearson Education Limited.

Doz, Y. L. and M. Kosonen (2010). "Embedding strategic agility: A leadership agenda for accelerating business model renewal." Long range planning 43(2-3): 370-382.

Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, *14*(4), 532–550.

Eisenmann, T. R., et al. (2009). Opening platforms: How, when and why? *Platforms, Markets and Innovation*, *6*, 131–162.

Elbers, F., et al. (2010). Designing innovative business models: A methodology for structured business model innovation, Technische Universiteit Eindhoven.

Euchner, J., & Ganguly, A. (2014). Business model innovation in practice. *Research-Technology Management*, *57*(6), 33–39.

Fan, M., et al. (2009). Short-term and long-term competition between providers of shrink-wrap software and software as a service. *European Journal of Operational Research*, *196*(2), 661–671.

Fink, A. (1998). *Conducting research literature reviews*. Sage Publications.

Floerecke, S., & Lehner, F. (2016). Cloud computing ecosystem model: refinement and evaluation.

Floerecke, S. (2018). Success factors of SaaS providers' business models–an exploratory multiple-case study. International Conference on Exploring Service Science, Springer.

Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go? *Journal of Management*, *43(*1), 200–227.

Forbes (2018) Why Cloud Customer Success IS New Top Priority For Salesforce, Microsoft, Workday, SAP, and Oracle. https://www.forbes.com/sites/bobevans1/2018/05/25/why-cloud-customer-success-is-new-top-priority-for-salesforce-microsoft-workday-sap-and-oracle/

Gambardella, A., & McGahan, A. M. (2010). Business-model innovation: General purpose technologies and their implications for industry structure. *Long Range Planning*, *43*, 262–271.

Garrison, G., et al. (2012). Success factors for deploying cloud computing. *Communications of the ACM*, *55*(9), 62–68.

Gawer, A. (2009). Platform dynamics and strategies: From products to services. *Platforms, Markets and Innovation*, *45*, 57.

Gibbs, M. (2019). President of SAP Greater China. SAP Cloud Forum 2019 in Shanghai.

Goldstein, K. (2002). "Getting in the door: Sampling and completing elite interviews." PS: Political Science and Politics 35(4): 669-672.

Govindarajan, V., & Kopalle, P. K. (2006). Disruptiveness of innovations: Measurement and an assessment of reliability and validity. *Strategic Management Journal*, *27*, 189–199.

Grönroos, C. (2008). Service logic revisited: Who creates value? And who co-creates? *European Business Review, 20*(4), 298–314

Grönroos, C. (2007). *Service management and marketing: Customer management in service competition* (3rd edn.). Wiley.

Grant, R. M. (1991). The resource-based theory of competitive advantage: Implications for strategy formulation. *California Management Review*, *33*(3), 114–135.

Guo Yonggang (2016). Assignment of social research methods.

Hahn, C., et al. (2016). "LEVERAGE ONCE, EARN REPEATEDLY–CAPABILITIES FOR CREATING AND APPROPRIATING VALUE IN CLOUD PLATFORM ECOSYSTEMS."

Han, K., Oh, W., Im, K. S., Oh, H., Pinsonneault, A., & Chang, R. M. (2012). Value cocreation and wealth spillover in open innovation alliances. *MIS Quarterly*, *36*(1), 291–316.

Hedman, J., & Xiao, X. (2016). Transition to the cloud: A vendor perspective. In *Paper Presented at the 2016 49th Hawaii International Conference on System Sciences* (HICSS).

Heinonen, K., Strandvik, T., Mickelsson, K.-J., Edvardsson, B., Sundström, E., & Andersson, P. (2010). A customer-dominant logic of service. *Journal of Service Management*, *21*(4), 531–548.

Helfat, C. E., & Peteraf, M. A. (2009). Understanding dynamic capabilities: Progress along a developmental path. *Strategic Organization*, *7*(1), 91–102.

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS Quarterly*, *28*(1), 75–105.

Hilkert, D., et al. (2010). *The 'as-a-service'-paradigm and its implications for the software industry: Insights from a comparative case study in crm software ecosystems*. International Conference of Software Business, Springer.

Hoch, F., Kerr, M., & Griffith, A. (2001). Software as a service: Strategic backgrounder. Software and Information Industry Association (SIIA).

Hogan, M., Liu, F., Sokol, A., & Tong, J. (2011). NIST cloud computing standards roadmap. *NIST Special Publication*, *35*.

Hoy, F., McDougall, P. P., & Dsouza, D. E. (1992). Strategies and environments of high-growth firms. In D. L.Sexton, & J. D. Kasarda (Eds.), *The state of the art of entrepreneurship* (pp. 341–357). PWS-Kent Publishing.

Huang, P., Ceccagnoli, M., Forman, C., & Wu, D. J. (2012). Appropriability mechanisms and the platform partnership decision: Evidence from enterprise software. *Management Science*, *59* (September 2014), 102–121.

Huntgeburth, J., et al. (2015). Exploring value co-creation in cloud ecosystems: A revelatory case study. *European Conference on Information System Proceedings*.

IDC 2009 "IT Cloud Services Survey." Technical Report,

IDC 2013 Report: 'New enterprise IT spend', 'Line of business IT purchases' and 'New enterprise IT growth'.

IDC 2015 Worldwide SaaS and Cloud Software 2015–2019 Forecast and 2014 Vendor Shares 2015 August, SKU, IDC5672297

Johnson, M. W., et al. (2008). Reinventing your business model. *Harvard Business Review*, *86*(12), 57–68.

Ju, J., Wang, Y., Fu, J., Wu, J., & Lin, Z. (2010). Research on key technology in SaaS. *Proceedings of the InternationalConference on Intelligent Computing and Cognitive Informatics,IEEE Computer Society*, 383–387.

Kaltenecker, N., et al. (2015). Managing potentially disruptive innovations in software companies: Transforming from on-premises to the on-demand. *The Journal of Strategic Information Systems*, *24*(4), 234-250.

Kaplan, R. S., & Norton, D. P. (2005). The balanced scorecard: Measures that drive performance. *Harvard Business Review*, *83*(7), 172.

Keuper, F., et al. (2011). *Application management*. Springer.

Kilmann, R. (1995). "A holistic program and critical success factors of corporate transformation." European Management Journal 13(2): 175-186.

Kindström, D. (2010). Towards a service-based business model: Key aspects for future competitive advantage. *European Management Journal*, *28*(6), 479-490.

Koehler, P., et al. (2010). Cloud services from a consumer perspective. AMCIS.

Kohli, R. and V. Grover (2008). "Business value of IT: An essay on expanding research directions to keep up with the times." Journal of the association for information systems 9(1): 1. 23–39.

Komssi, M., et al. (2009). Transforming a software product company into a service business: Case study at f-secure. *2009 33rd Annual IEEE International Computer Software and Applications Conference, IEEE*.

Kotter, J. (2007). "Leading change: Why transformation efforts fail." Harvard business review 86: 97-103.

Kotter, J. P., Schlesinger, L. A. (2008). Choosing strategies for change. *Harvard Business Review*, *86*(7/8):130–139.

Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Sage.

Larry Dignan (2017, May 16) SAP's Cloud Platform adds multi-cloud support, business semantics.http://www.zdnet.com/article/saps-cloud-platform-adds-multi-cloud-support-business-semantics/

Leimeister, S., Böhm, M., Riedl, C., & Krcmar, H. (2010). The business perspective of cloud computing: Actors, roles and value networks. 18th European Conference on Information Systems. Pretoria, South Africa.

Lenart, A. (2011). ERP in the cloud – Benefits and challenges. In S. Wrycza (Ed.), Research in systems analysis and design: Models and methods (pp. 39–50). Heidelberg: Springer Verlag Berlin.

Leonard-Barton, D. (1992). Core capabilities and core rigidities: A pradox in managing new product development. *Strategic Management Journal, Summer Special Issue*, *13*, 111–-125.

Lin, G., Fu, D., Zhu, J., & Dasmalchi, G. (2009). Cloud computing: IT as a Service. *IT Professional*, *11*, 10–13 (2009).

Lorsch, J., & McTague, E. (April 2016). Culture is not the culprit: When organizations are in crisis, it's usually because the business is broken. *Harvard Business Review*, *94*(4), 96–105.

Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management and Data Systems*, *111*(7), 1006–1023.

Luka Mucis (2017) SAP: -Leading the digital transformation. SAP-Investor-Presentation, 2017-09-19.

Luoma, E., et al. (2012). *Current software-as-a-service business models: Evidence from Finland*. International Conference of Software Business, Springer.

Mahadevan, B. (2000). Business models for Internet-based e-commerce: An anatomy. *California Management Review*, *42*(4), 55–69.

Markides, C. (2006). Disruptive innovation: In need of better theory. *Journal of Product Innovation Management*, *23*, 19–25.

Matthyssens P, and Vandenbempt K. (2010). Service addition as business market strategy identification of transition trajectories. Journal of Service Management, 21(5), pp. 693-714.

Maxwell, J. A. (2005). *Qualitative research design*. SAGE Publications.

Mcafee, A. (2011) What every CEO needs to know about the cloud. Harvard Business Review, 89, 124–132.

McGrath, M. E. (1995). *Product strategy for high-technology companies*. Irwin Professional Publishing.

Meyer, M. H., & Lehnerd, A. P. (1997). *The power of product platforms: Building value and cost leadership*. New York: Free Press.

Miles, Matthew B. & A. Michael Huberman. 1994. Qualitative Data Analysis: An Expanded Sourcebook. 2nd Edition. Thousand Oaks, CA: Sage Publications.

Mont, O. (2004). *Product–service system: Panacea or myth?* (doctoral thesis). Retrieved from the National Library of Sweden database. 91-88902-33-1.

Munck, B. (2001). Changing a culture of face time. *Harvard Business Review*, *79*(10), 125-130.

Munck, R. (2002). Globalization and Labour: The New'Great Transformation', Zed Books.
Nair, S., Paulose, H., Palacios, M., & Tafur, J. (2013). Service orientation: Effectuating business model innovation. *Service Industries Journal*, *33*, 958–975.

Nass, P. (2015). Transformation Session: 2: Packaging, Marketing and Sales.

Normann, R., & Ramirez, R. (1993). From value chain to value constellation: Designing interactive strategy. *Harvard Business Review*, (71:1), 65–65.

Novani, S. (2016). Value co-creation on cloud computing: A case study of Bandung City, Indonesia. *Systems science for complex policy making* (pp. 43–63). Springer.

Ojala, A., & Helander, N. (2014). Value creation and evolution of a value network: A longitudinal case study on a Platform-as-a-Service provider. In Paper Presented at the System Sciences (HICSS), *2014 47th Hawaii International Conference on Opening platforms: how, when and why*?

Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International Journal of Service Industry Management*, *14*(2), 160–172. http://dx.doi.org/10.1108/09564230310474138

O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, *28*, 185–206.

Osterwalder, A. (2004). The business model ontology a proposition in a design science approach, Université de Lausanne, Faculté des hautes études commerciales.

Osterwalder, A., et al. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the Association for Information Systems*, *16*(1), 1.

Osterwalder, A., & Pigneur, Y. (2002). An eBusiness model ontology for modeling eBusiness. *BLED 2002 Proceedings: 2*.

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game-changers, and challengers*. John Wiley & Sons.

Parmar, R., et al. (2014). "The new patterns of innovation." Harvard business review 92(1): 2. Pascal Nass, SAP SE Global Vice President, Cloud Channels, GPO. Transformation session1:cloud opportunity.

Paya, A., & Marinescu, D. C. (2014). Energy-aware load balancing policies for the cloud ecosystem. *2014 IEEE International Parallel & Distributed Processing Symposium Workshops*.

Peppard, J., & Rylander, A. (2006). From value chain to value network: Insights for mobile operators. *European Management Journal*, *24*, 128–141.

Peter Maier (2021). SAP Global Partner Summit Online, Industry Cloud Partner Go-to-Market https://ve.on24.com/vshow/GlobalPartnerSummit/lobby/18381

Porter, M. E. (1992). "Capital disadvantage: America's failing capital investment system." Harvard business review 70(5): 65

Porter, Michael E. (1985). *Competitive advantage*. Free Press. ISBN 0-684-84146-0

Raddats, C. and C. Easingwood (2010). "Services growth options for B2B product-centric businesses." Industrial Marketing Management 39(8): 1334-1345

Ren, G., & Gregory, M. (2007). Servitization in manufacturing companies: A conceptualization, critical review, and research agenda.

Santos, J., Spector, B., & Van der Heyden, L. (2009). Toward a theory of business model innovation within incumbent firms (Working Paper No. 16). Fontainebleau, France: INSEAD.

SAP (2012-2017) SAP Financial Reports and Presentations.
https://www.sap.com/investors/en/reports.html?tab=1&sort=latest_desc
Sarker, S., et al. (2012). Exploring value cocreation in relationships between an ERP vendor and its partners: A revelatory case study. Mis Quarterly, 317–338.

Schneider, S. and P. Spieth (2013). "Business model innovation: Towards an integrated future research agenda." International Journal of Innovation Management 17(01): 1340001.

Seethamraju, R. (2015). Adoption of software as a service (SaaS) enterprise resource planning (ERP) systems in small and medium-sized enterprises (SMEs). *Information Systems Frontiers*, *17*(3), 475-492.

Shafer, S. M., et al. (2005). The power of business models. *Business Horizons*, *48*(3), 199–207.

Silverman, David (2006). Interpreting Qualitative Data : Methods for Analyzing Talk, Text and Interaction. 3rd ed. London: SAGE. Print.

Simons, H. (2009). *Case study research in practice*. SAGE Publications.

Smith, N. C. (1989). The case study: A vital yet misunderstood method for management. In R. Mansifield (Ed.), *Frontiers of management*, Routledge and Kegan Paul.

Solis, B., et al. (2014). *The 2014 state of digital transformation*. Altimeter Group.

Sosna, M., et al. (2010). Business model innovation through trial-and-error learning: The Naturhouse case. *Long Range Planning*, *43*(2), 383-407.

Storbacka, K., et al. (2016). "Actor engagement as a microfoundation for value co-creation." Journal of business research 69(8): 3008-3017.

Stuart Lauchlan (2016 December 1) The same, but more of it - Oracle CEO pitches continuity with growth to NetSuite customers https://government.diginomica.com/2016/12/02/oracle-ceo pitches-continuity-growth-netsuite-customers/

Stuckenberg, S., et al. (2011). The impact of software-as-a-service on business models of leading software vendors: experiences from three exploratory case studies. Proceedings of the 15th Pacific Asia Conference on Information Systems (PACIS 2011), Queensland University of Technology.

Suarez, F. F., et al. (2013). Services and the business models of product firms: An empirical analysis of the software industry. *Management Science*, *59*(2), 420–435.

Sull, D. (1999). Why Good companies go bad. *Harvard Business Review*, July–August.

Sultan, N. (2014). Servitization of the IT industry: The cloud phenomenon. *Strategic Change*, *23*(5–6), 375–388.

Tan, A. R., & McAloone, T. C. (2006). Characteristics of strategies in product– service-system development. *Proceedings of the 8th International Design Conference* (pp. 1–8) (Dubrovnik, Croatia).

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*, 1319–1350.

Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, *43*(2), 172–194.

Tukker, A. (2004). Eight types of product–service systems: Eight ways to sustainability? Experiences from SusProNet. *Business Strategy and the Environment*, *13*(4), 246–260.

Tukker, A., & Tischner, U. (2006). *New business for old Europe: Product-service development, competitiveness and sustainability*, Greenleaf Publications.

Van Alstyne, M. W., et al. (2016). Pipelines, platforms, and the new rules of strategy. *Harvard Business Review*, *94*(4), 54–62.

Vandermerwe, S., & Rada, J. (1988). Servitization of business: Adding value by adding services. *European Management Journal*, *6*(4), 314–324.

Vaquero, L. M., et al. (2008). A break in the clouds: Towards a cloud definition. ACM SIGCOMM Computer Communication Review, *39*(1), 50–55.

Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1–10.

Vargo, S. L., et al. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, *26*(3), 145–152.

Vargo, S. L. and R. F. Lusch (2011). "It's all B2B… and beyond: Toward a systems perspective of the market." Industrial Marketing Management 40(2): 181-187.

Walsham, G., & Waema, T. (1994). Information systems strategy and implementation: A case study of a building society. *ACM Transactions on Information Systems* (TOIS), *12*(2), 150–173.

Waters, B. (2005). Software as a service: A look at the customer benefits. *Journal of Digital Asset Management*, *1*,32–39.

Williams A. (2006). Product service systems in the automotive industry: the case of microfactory retailing. Journal of Cleaner Production, Vol 14, Issue 2, pp. 172-184.

Williamson, P. J., & De Meyer, A. (2012). Ecosystem advantage. *California Management Review*, *55*(1): 24–46.

Wollan, R., et al. (2013). *Selling through someone else: How to use agile sales networks and partners to sell more*. John Wiley & Sons.

Yazdani, B. (2012, March). *Building a cloud development culture* (pp. 36–39). Chief Learning Officer.

Yin, R. K. (1981). "The case study crisis: Some answers." Administrative Science Quarterly 26(1): 58-65.

Yin, R. K. (2009). Case study research: Design and methods 4th edition. United States: Library of Congress Cataloguing-in-Publication Data.

Yin, R. K. (2011). *Applications of case study research*. Sage.

Yukl, G. (1994). *Leadership in organisations* (3rd ed.). Prentice-Hall.

Yunus, M., Moingeon, B., & Lehmann-Ortega, L. (2010). Building social business models: Lessons from the Grameen experience. *Long Range Planning*, *43*, 308–325.

Zissis, D., & Lekkas, D. (2012). Addressing cloud computing security issues. *Future Generation Computer Systems*, *28*(3), 583–592Zott, C., et al. (2011).

Zott, C., & Amit, R. (2010). Business model design: An activity system perspective. Long Rnge Planning, 43(2), 216–226.

Zott, C., et al. (2011). The business model: recent developments and future research. *Journal of Management*, *37*(4), 1019–1042.

Appendix: Summary of Observations and CSFs in the Transformation

Observation #	Observations & Interviews	Aggregate Code	Theme	Critical Success Factor
Observation #1	CEE plays a pivotal role to maintain a close and long-term relationship with customers and to renew the cloud business.	New organization & dedicated team	Dedicated organization	Dedicated resources
Observation #3	Setting up the dedicated team, which is independent and different from the traditional existing business unit organization.	New organization & dedicated team	Dedicated organization	Dedicated resources
Observation #4	Establishing a new full set of capabilities with value proposition and operating model; a dedicated team is essential in developing SaaS business.	New organization & dedicated team	Dedicated organization	Dedicated resources
Observation #33	Establishing a new dedicated team is essential in developing and delivering SaaS service projects for SI partners.	New organization & dedicated team	Dedicated organization	Dedicated resources
Observation #6	Anchoring culture adoption toward a result-oriented service, measuring success through customer adoption and customer lifetime value.	Service-oriented culture	Service-oriented culture	Service culture
Observation #7	Changing the mindset from a sales-led model to a marketing-led model has a positive impact on the success of cloud business growth.	Mindset change	Service-oriented culture	Service culture
Observation #8	Sales process of SaaS focuses on alignment to best practices and user experience, fitting the standard of SaaS solutions instead of fitting customized requirements.	Mindset change	Service-oriented culture	Service culture
Observation #9	The economies of scale are a leading indicator of SaaS business, and it determines the cost of unit associated with cloud subscription and support.	Network effect	Growth, profitability & sustainability	Sustainability
Observation #10	The labour of sales and marketing should be highly leveraged through marketing automation; the focus on marketing automation leads to the reduction of CAC for SaaS vendors.	CAC	Growth, profitability & sustainability	Sustainability
Observation #11	Churn is a critical factor in influencing CAC. Increasing customer satisfaction and average customer spending will lower churn, which in turn leads to reduction of CAC.	Churn	Growth, profitability & sustainability	Sustainability

Observation #13	Churn also plays a crucial role in influencing the revenue stream, but more importantly, focusing on customer adoption and customer success as the start point and end result can lower churn, which in turn leads to the increased revenue stream.	Churn	Growth, profitability & sustainability	Sustainability
Observation #16	The growth rate is highly relevant to the churn rate, which impacts the SaaS growth exponentially; an increased positive churn rate can erode the growth rate drastically and destroy the overall SaaS business further. By contrast, negative churn is a mechanism achieving a higher growth rate.	Churn	Growth, profitability & sustainability	Sustainability
Observation #12	The SaaS revenue model will exceed the on-premises license revenue model in the long run and lead to the reallocation of revenue stream, which is conducive to a SaaS vendor in its ecosystem.	Market scale	Growth, profitability & sustainability	Sustainability
Observation #14	The choice made between customer number growth and revenue growth is crucial in the early stage of business transformation; successfully managing and balancing fast customer number growth and long-term economics with short-term revenue shrinking per deal size is a key for success for SaaS vendors.	Network effect	Growth, profitability & sustainability	Sustainability
Observation #19	With the cloud transformation, the new market scale of management consulting service generated is far greater than the portion of traditional SAP on-premises SI service to attract and drive SI partners' service business transformation.	Market scale	Growth, profitability & sustainability	Sustainability
Observation #2	Top management support is a crucial resource toward a successful business model transformation.	Top management support	Position & leadership	Leadership
Observation #17	The transformation to the cloud requires taking a gradual approach in terms of the external environment, customer readiness, and vendor capability.	Transformation path	Position & leadership	Leadership

Observation #27	SaaS vendors need to enable their channel partners to accelerate the expansion into the industry market and turn them into strategic advisors for specialized markets with the transformed value proposition.	Channel transformation	Position & leadership	Leadership
Observation #31	When operating in a domain of differentiated horizontal or vertical resources and capability and expertise, SI providers will encounter less competition.	Market segment	Position & leadership	Leadership
Observation #5	SAP needs to patch the process to focus on the executions, matching up related resources to customer demands.	Operation optimization	Shared vision with ecosystem value	Ecosystem value
Observation #18	The transformation to the SaaS is not only a software vendor job itself, and its success depends on the ecosystem transformation to collaborate with partners to co-create value for customers.	Ecosystem strategy	Shared vision with ecosystem value	Ecosystem value
Observation #20	Creating a new form of service is to co-create business value by facilitating the standardization of pre-designed and -configured solutions to improve the efficiency of service delivery with cost reduction for SI partners and shorten the sales cycle for SaaS vendors and purchasing cycle for customers.	Service innovation	Shared vision with ecosystem value	Ecosystem value
Observation #21	SaaS vendors and their partners can achieve significant predictive sales through the participation of value co-creation in the cloud ecosystem.	Service innovation	Shared vision with ecosystem value	Ecosystem value
Observation #22	SI partners can co-create new revenue streams with the platform leaders through SaaS add-ons and extended applications to be used on the cloud platform; simultaneously, more SaaS add-ons and extended applications evolve the cloud platform and ecosystem to attract more customers.	Service innovation	Shared vision with ecosystem value	Ecosystem value
Observation #23	IaaS partners can co-create new business value via enhancing the positive loop of network effects with improving agility, elasticity, and cost reduction to further lower the cost of SaaS vendors' subscription for IaaS service and total cost ownership for the end customers.	Service innovation	Shared vision with ecosystem value	Ecosystem value

Observation #24	Developing new cloud partners can be seen as a strategic initiative when the traditional SI partners are not reluctant to waive the market to earn money from the traditional configuration of software service implementation.	Partner development	Shared vision with ecosystem value	Ecosystem value
Observation #25	The transformation to cloud service needs to be viewed and managed as a change of the whole cloud ecosystem.	Ecosystem strategy	Shared vision with ecosystem value	Ecosystem value
Observation #26	The scale of the new developer ecosystem plays an important role for SAP SaaS based on the apps store of the cloud platform.	Partner development	Shared vision with ecosystem value	Ecosystem value
Observation #32	To be more effective, a partner ecosystem strategy must be aligned with the overall SaaS vendor strategy.	Ecosystem strategy	Shared vision with ecosystem value	Ecosystem value
Observation #28	Multiple cloud infrastructure – collaborating with IaaS partners such as Amazon and Azure. This option provides the flexibility of ramping up and down the hosting requirement with real cost implications.	Cloud ecosystem	Shared vision with ecosystem value	Ecosystem value
Observation #29	A cloud platform that brings software providers, SIs, and IaaS players as a new business pattern has been becoming an innovation and growth engine. This new pattern creates a cloud ecosystem and changes the competitive landscape of the software market as well.	Cloud ecosystem	Shared vision with ecosystem value	Ecosystem value
Observation #15	The SaaS growth strategy is all about customers for life, focusing on customer success and long-term customer value.	CLV	Customer success & CLV	New metrics & performance management
Observation #30	SaaS fundamentally changes the structure of the vendor-customer relationship; with the shifting of responsibility, SaaS vendors need to focus on ongoing customer success by providing the ecosystem value with long-term and close customer relationships.	CLV	Customer success & CLV	New metrics & performance management

Publications

[1]. Yonggang Guo “Transformation from on-premise software to cloud computing based services: a case study of SAP practices from the ecosystem perspective.” Doctoral Consortium August 16, 2018 –Americas Conference on Information Systems (AMCIS) 2018.

[2]. Yonggang Guo, Nikolay Mehandjiev, Guohua Wan, “The Partner Ecosystem Evolution from On-premises Software to Cloud Services: a case study of SAP,” PACIS 2019.