Transition to Cloud Sourcing
Innovation and Competitive Advantage

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FACULTY OF ENGINEERING | LUND UNIVERSITY
Background

After graduation I worked for PriceWaterHouseCoopers (PwC) as an IT-consultant with small, big, local and multinational companies performing Data Management Analysis, Fraud Analysis, IT General Controls, IT Governance, and Business Process Analysis. Having this insight into companies core and their IT systems I decided I wanted to pursue my dream from the time I enrolled the International Baccalaureate Diploma Program (graduated in 2007, Katedralskolan, Lund, Sweden), - namely to do research to improve organisational performance. This thirst for knowledge, curiosity and the need to develop science for a better tomorrow has always been a great interest of mine.

Starting off my academic career as a course director, developing courses and lecturing I have long experience of coordinating courses, supervising and examining thesis’s as well as lecturing at Lund University both on undergraduate (courses: IT for People, Organisations and Society and IT and Globalisation), and graduate level (Strategic Management and Information Systems).

Research
My research focus is on cloud sourcing, innovation and competitive advantage. As familiar to many cloud computing - storing data, applications and whole IT systems remotely rather than on companies’ own premises can reduce costs dramatically and speed up operations. There are many cloud vendors to choose from such as Microsoft Azure, Google Cloud, Amazon Web Services etc, still very few companies actually take the step out in the cloud. The biggest risk is giving up control of the data to someone else using different data centers in remote places, and in worst case face data loss, wiped data, corrupted or even stolen data. Companies that decide to move their IT systems to the cloud are not only cloud sourcing, but they enter a strategic partnership with the other partners involved in the cloud sourcing arrangement. This means that they put the very core functions of their organisation in the responsibility of external cloud providers and cloud brokers which poses certain risks. The problem is if cloud providers actually can understand the business of the cloud customer well enough, and prove that they can do what they say they can do. To cloud source successfully dynamic capabilities must be developed. Seeing cloud sourcing as a longitudinal process the business relationship development becomes an important factor for innovation and competitive advantage.

The fast scalability, flexibility, changes in infrastructure and software, volume etc, gives way to dynamic relationships with partners in cloud sourcing. Cloud sourcing requires constant communication, updates, fast decision making, and readiness for quick changes on the fly etc. In my research I have identified the barriers to cloud sourcing that might explain why the cloud goes bad on some companies but not on others. To understand how to overcome these barriers, create strong business relationships over time in cloud sourcing - that facilitates innovation and competitive advantage - is the essence of my thesis work.

With her research Mirella Muhić wants to contribute to successful cloud sourcing with focus on innovation and competitive advantage towards cloud continuance. She is especially interested in the business relationship development in cloud sourcing.

This doctoral thesis makes Mirella Muhić a PhD in Innovation Engineering.
Transition to Cloud Sourcing

Innovation and Competitive Advantage
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Innovation and Competitive Advantage

Mirella Muhić

DOCTORAL DISSERTATION
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To be defended at Lund University. Date 13.09.2019 and time 10:15.

Faculty opponent
Professor Nicolette Lakemond
Abstract

Looking into the topic of cloud sourcing, at first glance it might be seen as an off the shelf pay per use service that is easy and fast to adopt for most companies. Although in practice not all companies succeed with cloud sourcing. Previous research shows that cloud sourcing entails risks especially in the adoption phase in terms of security, trust, data loss, and transparency among others. The challenges faced by cloud customers and in specific larger companies are extensive; and can be all but cost effective. Companies that decide to cloud source need to understand that it is not only a service delivery model, but also perhaps a long term business relationship that can offer benefits beyond the cloud basics (scalability, cost reduction, flexibility). To address these complex challenges, more research is necessary on the barriers to cloud sourcing, capabilities to overcome these barriers and stay in the cloud successfully. The research purpose is to investigate cloud sourcing from the firm client perspective, more specifically the transitioning process from traditional IT outsourcing to cloud sourcing, i.e., the barriers to continuance of cloud sourcing, how cloud sourcing triggers innovation capabilities and its implications for competitive advantage. This is done in order to contribute to the business and management research knowledge of cloud sourcing.

The research is qualitative including interviews, observations and text analysis, based on three studies and reported in five appended papers. The first study is a state-of-art literature review on cloud sourcing phenomenon. Subsequent studies were based on empirical investigations. The second study identified sourcing motives behind sourcing decisions based on a pilot study. The third study expanded those findings through two case studies with cloud customer companies and other cloud partners involved in cloud sourcing relationships.

The cloud continuance process is argued to be a stage-based model enabling different types of innovations implicating various levels of competitive advantage, e.g., depending on how the cloud customer together with the other partners in cloud sourcing manages to develop the business relationship development process. Findings in this research suggest that dynamic capabilities in different forms can sense, seize and transform cloud sourcing into innovations and affect competitive advantage in the long run through new business models, market expansion, and new services. From a practical perspective the research can inform managers about common implementation problems when transitioning to cloud sourcing, and help them prepare for this process.

Key words: Cloud sourcing, Innovation, Competitive Advantage, Cloud continuance, Business relationships

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Signature Mirella Muhić Date 2019-08-07
Transition to Cloud Sourcing

Innovation and Competitive Advantage

Mirella Muhić

LUND UNIVERSITY
To the best people I know; Mum and Dad
Acknowledgement

My PhD journey has been full of twists and turns, as one may think it’s to be expected. What kept me persistent was willingness to face each challenge with a positive attitude and open mind, skills I have learned from my beloved parents. As a survivor of the longest siege in modern history, the besieged city of Sarajevo 1992-1995, I have realized that with patience, endurance and hard work anything is possible. Since enrolling into the International Baccalaureate Diploma Program (IB world school) at Katedralskolan in Lund my dream was to become a researcher. I have always had a curious mind. My parents would probably call me eternal knowledge seeker. When all odds were against me to complete my doctoral thesis, I kept on going like a true Muhic eager to take on new research endeavours.

With a deep and sincere sense of gratitude I would like to express many thanks to my main supervisor Professor Lars Bengtsson, who with excellent support, invaluable guidance, and invincible inspiration has made the creation of this thesis complete. Throughout my research Professor Lars Bengtsson has provided me with rewarding discussions and great advice. Thank You! My co supervisor Professor Jonny Holmström whose expertise and immense knowledge was invaluable has followed me through the whole PhD journey and helped me see the light in the tunnel. Big Thanks for your great motivation, continuous support, and for believing in me. Many thanks to my other co supervisor Dr. Danilo Brozovic for your insightful comments and encouragement, but also for the hard questions which incented me to widen my research from various perspectives. Thanks for always having time to discuss whenever I ran into a trouble spot or had a question about my research or writing.

I am greatly thankful to Associate Professor Jessica Wadin - for your assistance, invaluable comments, understanding and dedicated involvement in my research process. I would like to thank Professor Fredrik Nilsson for encouraging my research and for insightful discussions. My deepest appreciation goes to Associate Professor Gudbjörg Erlingsdottir for constructive comments, valuable help and warm encouragement. Many thanks to Professor Rikard Lindgren for sharing his exceptional scientific knowledge, providing support and time for illuminating discussions. Expressing my heartfelt gratitude to Professor Thomas Kalling for inspiration and continuous optimism to carry on during the hard times. I received generous support and encouragement from Associate Professor Henrik Pålsson. Professor Jelena Zdravkovic has been of great assistance and guidance, always ready to help me. Thank You!

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I wish to thank all participating organizations and informants for taking part in my research study, and for welcoming me and providing me with an office at your headquarters for months. It was one of the most interesting, rewarding and fun parts of this journey.

None mentioned, none forgotten - There are my wonderful colleagues and friends, who were of great support in deliberating over our problems and findings, as well as providing happy distraction to rest my mind outside of my research. I am immensely thankful and grateful to you All!

Whole-heartedly, I would like to thank my wonderful family for their endless support, wise counsel and sympathetic ear; my beloved Mother and Father for their eternal love, continuous encouragement and compassion, my dear brother Mirza, sister Melisa, brother in law Marcus Ismail and niece Hannah for love, continuous encouragement and unfailing support throughout my years of study and through the process of researching and writing this thesis. This dissertation stands as a testament to their unconditional love and encouragement. This accomplishment would not have been possible without them. You have always been there for me. I love you!
Abstract

Looking into the topic of cloud sourcing, at first glance it might be seen as an off the shelf pay per use service that is easy and fast to adopt for most companies. Although in practice not all companies succeed with cloud sourcing. Previous research shows that cloud sourcing entails risks especially in the adoption phase in terms of security, trust, data loss, and transparency among others. The challenges faced by cloud customers and in specific larger companies are extensive; and can be all but cost effective. Companies that decide to cloud source need to understand that it is not only a service delivery model, but also perhaps a long term business relationship that can offer benefits beyond the cloud basics (scalability, cost reduction, flexibility). To address these complex challenges, more research is necessary on the barriers to cloud sourcing, capabilities to overcome these barriers and stay in the cloud successfully. The research purpose is to investigate cloud sourcing from the firm client perspective, more specifically the transitioning process from traditional IT outsourcing to cloud sourcing, i.e., the barriers to continuance of cloud sourcing, how cloud sourcing triggers innovation capabilities and its implications for competitive advantage. This is done in order to contribute to the business and management research knowledge of cloud sourcing.

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The cloud continuance process is argued to be a stage-based model enabling different types of innovations implicating various levels of competitive advantage, e.g., depending on how the cloud customer together with the other partners in cloud sourcing manages to develop the business relationship development process. Findings in this research suggest that dynamic capabilities in different forms can sense, seize and transform cloud sourcing into innovations and affect competitive advantage in the long run through new business models, market expansion, and new services. From a practical perspective the research can inform managers about common implementation problems when transitioning to cloud sourcing, and help them prepare for this process.
Digitaliseringen är en revolutionerande samhällsutveckling, en ny epok som är här för att förändra och stanna för sättet företag arbetar på, organisera sig och utvecklas. Detta speglas givetvis även i övriga samhällsstrukturer där vi ser en allt mer internetuppkopplad verklighet oberoende av tid och rum. Ett av mina caseföretag WasteHeroes har system för att identifiera besökare, avfallsmängd och en uppkopplad smart våg ute på sina anläggningar som är helt molnbaserade. Molnet utgör grunden i den digitala utvecklingen och Internet of Things.


Vidare ser vi att digitaliseringen driver även industriell produktion mot att bli allt mer internetuppkopplad i vad som kallas ”Industry 4.0”. Där olika produktionsenheter kan kommunicera med varandra i realtid och därmed anpassa produktionen efter situation. Det blir en mer dynamisk produktionsmiljö där alla internetuppkopplade enheter kan kommunicera med varandra, kommunicera med människor, agera och rapportera. Mitt andra caseföretag Quos utnyttjar detta genom att erbjuda molnbaserade tjänster som övervakar och styr industriföretags produktionsutrustning. Att använda molnet, eller som det kallas i denna avhandling, att cloud sourca har blivit allt mer vanligt. Bortsett
från de grundläggande fördelarna (kostnadsfördelar, flexibilitet och skalbarhet) kan cloud sourcing vara en förutsättning för att utveckla innovationer, t ex nya tjänster, nya affärsmodeller och att nå nya marknader som kan ge företaget konkurrensfördelar. Detta har också drivit organisatoriska, strukturella och kulturella förändringar där nya chefsroller skapas så som Chief digital officer (CDO), IT får en mer strategisk och affärsutvecklande roll, IT-avdelningen kommer närmre företagsledningen, aktivt samarbetete med olika cloud sourcing partners samt att företagsledningen måste hålla sig a’djour om utvecklingen i molnet och dess möjligheter.


För en framgångsrik implementering av cloud sourcing behöver företag beakta dessa barriärer och utveckla en plan för att hantera dem. Avhandlingen visar att om de lyckas med detta ökar möjligheterna för olika typer av innovationer. Detta inkluderar till exempel nya tjänster och produkter gentemot kunder, inträde på nya marknader samt utveckling av affärsmodellen. En effekt av en framgångsrik innovationsutveckling i molnet kan ge konkurrenskraft på lång sikt.

Denna avhandling har studerat cloud sourcing utifrån ett process perspektiv, utveckling av affärsprocesser i molnet, utveckling av affärsprocess relationer, skapandet av innovationer och potentiell konkurrenskraft. Då cloud sourcing är ett växande forskningsområde med ständig teknikutveckling, krävs fler studier som skapar en djupare förståelse för denna problematik. I avhandlingen poängteras behovet av fler empiriska studier. Ett specifikt område är skiftet av IT-organisationens roll som stödfunktion till att få en strategisk roll.
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Appended papers

**Paper I**
Title: Relativism in the Cloud: Cloud Sourcing in virtue of IS Development Outsourcing - A literature review
Authors: Björn Johansson, Mirella Muhić

**Paper II**
Title: Sourcing motives behind sourcing decisions exposed through the Sourcing Decision Framework
Authors: Mirella Muhić, Björn Johansson
Status: Published in 2014 in International Journal of Information Systems and Project Management, 2(1), 5-17. Earlier version published as conference proceeding in Procedia Technology. See below on related papers.

**Paper III**
Title: Barriers to cloud continuance: Evidence from two case studies
Authors: Mirella Muhić, Lars Bengtsson, Jonny Holmström
Status: Submitted to and under review with International Journal of Information Management. Earlier version accepted to the Strategic Management Society Conference in 2018, Hyderabad, India
Paper IV
Title: Dynamic capabilities triggered by cloud sourcing – a stage model
Authors: Lars Bengtsson, Mirella Muhić
Status: Accepted to and presented at INEKA 2019, Verona, Italy were it received Best Paper Award. Under second review round with Review of Managerial Science (Springer). Earlier version of the manuscript has been accepted to and presented at the Academy of Management 2019.

Paper V
Title: Fostering sustainable business relationships in a cloud sourcing context
Authors: Mirella Muhić, Danilo Brozović
Status: Submitted to and under review with Journal of Industrial Marketing Management.

Related papers and publications

Title: Cloud sourcing–Next generation outsourcing?
Authors: Mirella Muhić, Björn Johansson
Status: Published in 2014 in Procedia Technology, 16, 553-561.
Abbreviations

**CC**: Cloud computing
**CS**: Cloud sourcing
**TCS**: Trust, commitment and satisfaction
**BRDP**: Business process development
**DC**: Dynamic capabilities
**IS**: Information system
**SLA**: Service level agreement
**ERP**: Enterprise resource planning
**PDA**: Personal digital assistant
**RBV**: Resource based view
**DCT**: Dynamic capability theory
**CRM**: Customer relationship management (system)
Terminology

Backsourcing - Backsourcing is the opposite of outsourcing, i.e. the IT-system was cloud sourced but then taken back to be governed and maintained by internal resources. (Kotlarsky and Bognar 2012).

Cloud Computing - A model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. (Mell and Grance 2011).

Cloud – A communications network (wide area network or local area network). The word "cloud" refers to a data center full of servers that is connected to the Internet. (http://www.pcmag.com/encyclopedia/term/39847/cloud).

Cloud sourcing - The situation where an organisation adopts and integrates cloud computing services from one or several external providers. (Schneider and Sunyaev 2016).

SaaS - Software as a service is a software licensing delivery model in the cloud. The software is licensed on a subscription basis on demand. (Armbrust et al. 2009).

IT outsourcing - Outsourcing is defined as the act of shifting some or all of the IT systems to be operated externally by contractual agreement. During the delivery process, the residual rights are owned by the supplier as it owns the required resources for the information systems (IS). Responsibility for delivery rests exclusively with the external supplier, i.e. no governance on the client side during the delivery process (De Looff 1998).

Pre Adoption – This is a temporal phenomenon including planning, contractual agreement, due diligence and everything else that must be done before implementing a new system (Karahanna, Straub, Chervany 1999).

Adoption – Is a temporal phenomenon focusing on the implementation of IT (Venkatesh 2006).

Post Adoption – The post-adoptive phase occurs after an IS artefact has been implemented, made accessible to the user and applied by the user in performing his/her work tasks. It is thus a temporal phenomenon (Shaikh and Karjaluoto 2015).
Cloud Continuance – Since the definition of cloud continuance origins from the IT-continuance literature, that is the reference that cloud continuance in this thesis relies on. It is defined as the outcome of the cloud sourcing and not necessarily a temporal phenomenon. When the user of a system continues its use. (Bhattacherjee 2001).

Partners - A cloud service customer or user is an organisation that uses a cloud service. A cloud service provider makes cloud services available to its customers/users. Basically, the providers are the partners that build cloud-centric products. A cloud service partner (also called an intermediator) supports or supplements a number of cloud computing activities of a provider, customer, or both (Califf et al. 2016). The cloud service provider usually has a third-party vendor that is responsible for data storage and cloud maintenance. All of these are partners in a cloud sourcing arrangement relationship.

Cloud sourcing relationship – the interrelation between different partners in a cloud sourcing arrangement (Califf et al. 2016).

Cloud sourcing arrangement – partners involved in a cloud sourcing relationship (Lacity and Reynolds 2014), such as providers, users, third parties, middle hands, developers etc. The arrangement is determined by the agreements and licenses (Ryan 2011; (Cullen, Seddon, Willcocks 2005, Willcocks, Cullen, Seddon 2007).
“As long as care lasts and love warms, life smiles” Dad
“Dok pažnja traje i ljubav grije, život se smije” Tata
1. Introduction

I present the research background, purpose and questions along with an outline of the appended papers and the remainder of the thesis.

1.1 Prologue

The vision of providing computing facilities to the public like a utility (similar to electricity, telephony, water) was first mentioned by John McCarthy in the early 1960s (McCarthy 1960). Today, cloud computing (Mell and Grance 2011) has begun to make this vision a reality and in the coming years we will probably see computing as something that will be on-demand and easily accessible through a network much like electricity. Many companies have started to use cloud computing and are in the process of outsourcing their IT operations and information systems to the cloud, i.e., cloud sourcing (Schneider and Sunyaev 2016). From a strategic perspective, this poses the question of whether cloud sourcing could enable innovation capabilities and become a source of competitive advantage or whether, just like with electricity, it will be so easily accessible to all companies and have so many advantages that all companies will need to use it, meaning that it cannot be a source of competitive advantage. However, if there are barriers to adopting and continuing to use cloud sourcing, there might be temporary competitive advantages, just like there were for companies that electrified early compared to late adopters. There might also be more enduring competitive advantages if cloud sourcing triggers and enables the company to continuously innovate its processes and businesses, either alone or in collaboration with their cloud sourcing partners.

1.2 Empirical background

Cloud computing can be described as an on-demand network to a pool of scalable and manageable shared IT resources (Mell and Grance 2011) over the internet. In other words it is a technical phenomenon including the hardware and software among other technical features of an information system. Whereas cloud sourcing is the process of
deployment and maintenance of this system which is carried out by several partners coming together (Armbrust et al. 2009). Figure 1 illustrates the arrangement, coordination, and management of cloud infrastructure. It shows the three service models and their requirements and processes from a cloud provider perspective.

![Figure 1: Illustration of cloud computing infrastructure (Mell and Grance 2011)](image)

Software as a Service (SaaS), uses the web to deliver applications that are managed by a cloud provider. Most SaaS applications can be run directly from a web browser without any downloads or installations required. It is a pure web delivery model. Applications delivered are usually some type of information systems or modules of the same; to manage enterprise resource planning, human resources, collaboration, customer relationship management etc. The cloud provider typically manages the applications, runtime, data, middleware, virtualization, servers, storage and networking. It is the traditional apps layer in the cloud including software as a service apps, business services, and business processes on the server side.

Platform as a Service (PaaS), is used for customisation and development of applications providing cloud components to software. This type of application development, testing and deployment is simple, quick and cost effective. Here the cloud provider is responsible for the virtualization, servers, storage, networking, and the PaaS software itself. Whereas the developers manage the applications. Applications using PaaS inherit cloud characteristic such as scalability, high-availability, multi-tenancy, SaaS enablement etc. Basically it is the middleware that manifests in the cloud with app platforms, database, integration, and process orchestration (how parts are integrated or derived from an app server).

Infrastructure as a Service (IaaS), is a self-service model for accessing, monitoring, and managing remote data centre infrastructures, such as compute, storage, networking, and networking services (e.g. firewalls). Instead of having to purchase hardware users can
purchase IaaS based on consumption, similar to electricity or other utility billing. Compared to SaaS and PaaS, IaaS users are responsible for managing applications, data, runtime, and middleware. Cloud providers are responsible for managing virtualization, servers, hard drives, storage, and networking. The cloud customer (the term cloud customer and cloud client are used interchangeably through the thesis), is responsible for updating the IaaS if new versions are released. In summary it is the physical servers, networks, storage, and systems management being virtualised in the cloud.

According to Gartner (Stamford 2019) cloud services worldwide market is predicted to grow 17.5 percent in 2019 to total $214.3 billion, up from $182.4 billion in 2018. The fastest growing market segment will be infrastructure as a service (IaaS), which is forecast to grow 27.5 percent in 2019 to reach $38.9 billion, up from $30.5 billion in 2018 (see Table 1). The second-highest growth rate of 21.8 percent will be platform as a service (PaaS). Research vice president at Gartner Sid Nag says: “At Gartner, we know of no vendor or service provider today whose business model offerings and revenue growth are not influenced by the increasing adoption of cloud first strategies in organizations. What we see now is only the beginning, though. Through 2022, Gartner projects the market size and growth of the cloud services industry at nearly three time the growth of overall IT services” (Stamford 2019).

Roughly a third of organizations see cloud investments as a top three investing priority. Gartner expects that by the end of 2019, more than 30 percent of technology providers’ new software investments will shift from cloud first to cloud only. This means that license based software consumption will further decrease, while SaaS and subscription based cloud consumption models continue their rise. (Stamford 2019).

Table 1. Worldwide Public Cloud Service Revenue Forecast (Billions of U.S. Dollars) modified from Gartner (Stamford 2019).

<table>
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<tr>
<th>Cloud Service / Year</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
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<tr>
<td>Software as a Service (SaaS)</td>
<td>80,0</td>
<td>94,8</td>
<td>110,5</td>
<td>126,7</td>
<td>143,7</td>
</tr>
<tr>
<td>Platform as a Service (PaaS)</td>
<td>15,6</td>
<td>19,0</td>
<td>23,0</td>
<td>27,5</td>
<td>31,8</td>
</tr>
<tr>
<td>Infrastructure as a Service (IaaS)</td>
<td>30,5</td>
<td>38,9</td>
<td>49,1</td>
<td>61,9</td>
<td>76,6</td>
</tr>
</tbody>
</table>
Furthermore, comparing traditional IT outsourcing with cloud sourcing there are some fundamental differences as illustrated in figure 2. Traditional IT outsourcing requires connection of all devices to servers with separate installation of applications on each device. Meaning that updates are much more time costly and therefore not as frequent as in cloud sourcing. On the other hand in cloud sourcing all connections between devices and servers are made through the internet, enabling fast and responsive updates on all devices at once. As can be seen in figure 2, applications, middleware, infrastructure and hardware are at the cloud customer site. Whereas in cloud sourcing all of those are provided by the cloud provider as pay per use services.

Figure 1.2: Traditional IT outsourcing vs Cloud sourcing modified from (Wang 2010)

Companies that decide to cloud source (to outsource IT resources to the cloud), (Schneider and Sunyaev 2016) do so to either cut costs, have a more flexible and scalable information systems infrastructure or to free up time to focus on their core functions (Armbrust et al. 2009). However, there is another reason which is not attributable to the company itself but rather the rapid development of information systems technologies, where cloud vendors are leading the development and forcing companies to move their systems to the cloud. For instance, the on-premise versions of certain information systems are no longer supported or have been upgraded by their vendors. Thus, the vendor puts pressure on its customers to cloud source instead of having their systems on premise. Not having access to support for on-premise systems means that companies have no choice than to do what the cloud providers impose, which
is to move to the cloud. Usually, cloud providers allow customers a few years to prepare to move to the cloud. For instance, AX dynamics has set 2021 as the last date for offering on-premise information systems. After that, only cloud systems will be provided and supported by the vendors. This leaves the customers with no choice. Whether they want it or not, they have to move to the cloud sooner or later. The companies that decide to cloud source encounter certain problems that can make cloud sourcing a struggle or even a failure. In order to develop and sustain cloud sourcing, it is vital for companies to develop innovation capabilities (e.g. Willcocks and Lacity 2018). Table 1 shows the practical differences between cloud sourcing and traditional IT outsourcing from a practical perspective, and perhaps some of the main arguments for companies to cloud source instead of traditional IT outsourcing.

Table 1.2: Practical differences between cloud sourcing and traditional IT-outsourcing (on premise) taken and modified from Harding (2011)

<table>
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<tr>
<th>Characteristics</th>
<th>Cloud sourcing</th>
<th>Traditional IT outsourcing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time before service can be accessed</td>
<td>Minutes/Hours</td>
<td>Days/Weeks</td>
<td>Once the cloud computing environment is set up initially, access can be gained faster than in traditional IT outsourcing where lead time is needed for installation, set-up, and configuration.</td>
</tr>
<tr>
<td>Capital Expenditure (CAPEX)</td>
<td>Pay per use, Variable</td>
<td>Upfront cost, Fixed</td>
<td>The pay per use model for cloud sourcing reduces or eliminates the large upfront costs incurred in procuring hardware and software in traditional IT-outsourcing.</td>
</tr>
<tr>
<td>Economies of scale</td>
<td>Yes, for all organisations</td>
<td>Only for large organisations</td>
<td>Cloud sourcing not only provides cost advantages, in procurement of hardware and software, it also provides cost advantages from improved productivity. Traditionally, lessons learned from one environment must be duplicated in other environments but, in cloud sourcing once best practices are applied they benefit all consumers.</td>
</tr>
<tr>
<td>Multi-tenacy</td>
<td>Yes</td>
<td>Generally no, but can be found in application hosting</td>
<td>Multi-tenacy properly applied to cloud computing services allows providers to host multiple consumers effectively across shared resources. While it is more readily enabled in IaaS through the use of virtualisation, PaaS and SaaS providers may need to undertake significant re-architecting of their platforms or applications to apply multi-tenacy to these elements as well as to infrastructure. Where this has not been undertaken, consumers may find that their platforms and applications are not as elastic or cost-effective as anticipated.</td>
</tr>
<tr>
<td>Scalability</td>
<td>Elastic and automatic</td>
<td>Manual</td>
<td>Cloud computing resources can often be scaled up or down automatically, whereas human intervention is usually needed to add hardware and software in traditional IT outsourcing.</td>
</tr>
<tr>
<td>Virtualised</td>
<td>Usually</td>
<td>Sometimes</td>
<td>Cloud computing environments are usually virtualised, whereas traditional IT outsourcing environments include a mix of physical and virtualised infrastructure.</td>
</tr>
</tbody>
</table>
A significant amount of evidence suggests that although organisations may have done due diligence in making their decision to move towards cloud sourcing, generating value (Masli et al. 2011) for the partners involved can often be very challenging (Barnett et al. 2013, Sultan 2014, Lee and Kim 2015). These challenges have in my case studies WasteHeroes and Quos in practice shown to prohibit cloud sourcing in several ways – see chapter 3. For example these companies have cloud sourced but did not set clear requirements from the beginning in the service level agreement (SLA) between them and their cloud partners and have therefore faced problems of misunderstanding in what was expected from them. Example of these misunderstandings; cloud based systems can be updated overnight meaning that functionalities of the systems might change. Sometimes this change happens without any prior information, which created problems for the cloud customer Quos. Difficulties in using (Gupta, Seetharaman, Raj 2013, Yang and Lin 2015) the system affects the efficiency and production of the cloud customer company, as it requires extra time for system users to learn the new functions (Hentschel, Leyh, Petznick 2018, Oliveira et al. 2019, Shuaib et al. 2019). Another challenge is to merge all involved cloud partners and make sure that they have the competence to deliver what is expected, interact with each other when needed and be transparent in case something happens, in case of data loss, problems with the system etc. (Schlagwein and Thorogood 2014, Califf et al. 2016, Huntgeburth 2016, Dempsey 2018).

1.3 The problem – cloud sourcing and innovation for competitive advantage

Although cloud computing (Mell and Grance 2011) and cloud sourcing (Schneider and Sunyaev 2016) research literatures might talk about the same artefacts, they do it from different angles. The former is more concerned about “computing” hence holding a more technological perspective on the provision of computing through the exploitation of technical innovations such as virtualization, high–performance networks and data centre automation (Armbrust et al. 2009, Mell and Grance 2011). Whereas the latter is more concerned about “sourcing” hence it involves a socio-technical and strategic perspective which allows third parties to be directly integrated such as different providers and sub providers (Huntgeburth 2016, Dempsey 2018); which if interacted with in the right way can open up for innovations and competitive advantage (Ali, Warren, Mathiassen 2017, Dempsey 2018, Willcocks and Lacity 2018).

Most of the research literature on cloud sourcing focuses on the technical aspects and the implications for the decision to adopt and continue to use cloud sourcing (Schneider and Sunyaev 2016, Cheng 2018, Walther 2018, Hall 2019, Shuaib et al. 2019). The few studies that apply an economic or company strategic perspective on cloud sourcing draw primarily on transaction cost economics (e.g. Benlian 2009, Asatiani 2015). Only a handful of scholarly papers have utilized a strategic perspective on cloud sourcing from

Both innovation and competitive advantage have been central topics for management and information systems research over the years, where innovation has been discussed both as process and product (Nylén and Holmström 2015, Nambisan et al. 2017, Holmström 2018) and the role of IT for creating and sustaining competitive advantage has been elaborated on (Chan, Sabherwal, Thatcher 2006, Bharadwaj et al. 2013).

In relation to traditional IT outsourcing, where the company’s IT-services are outsourced wholly are partially on large and long-term contracts, cloud sourcing is on-demand self-service, scalable, virtualized and shared, and priced on a pay-per-use basis (Schneider and Sunyaev 2016, Willcocks and Lacity 2018). While the value of cloud sourcing for the client company certainly is at least as large as for traditional IT outsourcing, the increased accessibility of cloud sourcing makes it less of a rare and hard-to-imitate resource for the client company (cf. Barney 1991), thus a less likely source of competitive advantage. Moreover, cloud sourcing removes many of the technical issues and difficulties associated with the so called back-end of IT-outsourcing, e.g., technical infrastructure, making the technical organization and competence less important from a strategic perspective (Hahn et al. 2013, Hardy 2018, Vithayathil 2018).

Instead the front-end issues of IT outsourcing become much more strategic, i.e., the applications, business model and innovation issues (Legner 2017). Specifically, companies with traditional IT functions often lack capabilities to describe and analyze their function in relation to the company’s strategy and business model (Willcocks and Venters 2013, Willcocks, Venters et al. 2013). Moreover, most companies with a traditional IT-function and traditional IT outsourcing typically lack capabilities for product, service and business model innovation (Willcocks and Venters 2013, Willcocks, Venters, Whitley 2013). In addition, traditional IT-sourcing typically mean a 1:1 relationship between the client and vendor (Vithayathil 2018), while cloud sourcing involves several cloud provider companies (cloud broker, cloud provider, cloud sub provider, IT-consultants), requiring a capability from the cloud sourcing client company to interact with and manage an eco-system of cloud provider companies.

From a strategic theory perspective cloud computing is an example of a new technology enabling different kind of innovations and new business models (Teece 2018). New
technologies, like cloud computing, are unlikely to be an enduring source of competitive advantage, as they are generally easy to imitate or easy to acquire if proven valuable (Barney 1991, Teece 2018). Instead, companies’ dynamic capabilities to design and transform cloud computing and cloud sourcing into innovations and new business models are more likely candidates as sources of competitive advantage (Teece 2007, Teece, Peteraf, Leih 2016, Teece 2017, Teece 2018). According to the dynamic capabilities theory (Teece 2007) successful, i.e., profitable, business model innovation shares one or several of the following non-imitable characteristics: a) differentiated business model architecture with co-specialized elements, b) complicated process steps, organizational structures, and/or arrangements, c) combinations with (internal or external) complementary assets, d) relationships with external actors, e.g., customers, suppliers, partners, which are unique and/or disturbing to competitors, e) dynamic adaptation of business model elements and architecture, or dynamic adaptation of relationships with external partners and/or, f) strong intellectual property. All of these characteristics, except strong intellectual property, can be used in relation to cloud sourcing.

This thesis is phenomenon driven drawing on several sources of literature in order to understand cloud sourcing; information systems, innovation management, strategic management and relationship marketing literature. These literatures have helped me form a knowledge base on which to build further, and to narrow my scope of research to cloud sourcing, innovation, and its implications for competitive advantage. My research focus on a relatively new phenomenon – transition to cloud sourcing – which to date has received limited attention from management and business researchers.

As previously discussed most research focus has been on technical aspects of cloud computing rather than business and management related to cloud sourcing, e.g., strategic issues (Luo et al. 2018, Chang et al. 2019, Lang 2019). The more precise character of the extant business and management research on cloud sourcing remain to be established and will be a continuous research challenge as the field develops quite rapidly.

A second research challenge concerns cloud sourcing implications for competitive advantage in relation to other IT outsourcing options. Cloud sourcing being a new type of IT outsourcing has due to its different characteristics from traditional IT outsourcing also different challenges that companies that decide to make this transition need to relate to. Even if the decision behind cloud sourcing has been carefully selected based on the firm’s strategic goals; organisations have to consider the strategic value of their resources and capabilities in order to make the right decision in handing over the ownership of their IT to a third party. Even though these insights are known, the area has been scarcely researched (Oliveira et al. 2019). The existing literature focuses on strategic aspects such as cloud computing in relation to innovation (Lin and Chen 2012, Clohessy, Acton, Coughlan 2013, Asatiani 2015, Trevor 2016, Helfat and Raubitschek 2018, Kathuria et al. 2018, Willcocks and Lacity 2018). However, there is still a lack of research on the strategic importance of resources and capabilities for competitive
advantage of cloud sourcing (Bayramusta and Nasir 2016, Senyo, Addae, Boateng 2018).

A third research challenge relates to the process of cloud continuance. This entails the ability of the client firm to not only adopt cloud sourcing but also to continue to use and develop the cloud sourcing over time (Makhlouf and Allal-Chérif 2019, Martins et al. 2019); in order to first reap the basic benefits of cloud sourcing (such as scalability, cost reduction, flexibility etc) and then develop these benefits further into innovations and potentially gain competitive advantage. There are many examples of firms that have cloud sourced and then back sourced not being able to continue cloud sourcing, and thereby never making full use of cloud sourcing (Latamore 2011, Walther 2018). Challenges faced by companies when transitioning from traditional IT outsourcing to cloud sourcing are not well elaborated on in extant research (Hentschel et al. 2018, Shuaib et al. 2019). Although existing research gives us important insights on cloud adoption barriers (e.g. Oliveira, Thomas, Espanadal 2014, Gao and Sunyaev 2019), cloud continuance is still a problematic task and for many companies rather risky (Opara-Martins, Sahandi, Tian 2016). There is a lack of research on an organizational level of barriers to cloud source (Shuaib et al. 2019), and in particular barriers for sustained cloud sourcing (Martins et al. 2019) understanding the cloud continuance process over time.

A fourth research challenge deals with identifying the stages that cloud sourcing firms go through in their business model development, and the challenges they face. Current research highlights personal attitudes, behavior characteristics and leadership support (Ratten 2016) as important factors for cloud continuance, but it lacks in knowledge on the process of how the adoption and continued use of cloud sourcing can trigger development of innovations and competitive advantage of a firm. Firms with traditional IT outsourcing often lack the capability to innovate services, products and business models related to IT sourcing (Willcocks and Venters 2013, Willcocks et al. 2013). Another factor of value to consider is the fact that traditional IT outsourcing typically implies a 1:1 realtionship between the client and vendor. Whereas cloud sourcing entails several cloud partner firms coming together, which requires a capability from the cloud customer to interact and manage all partners. This capability may be of dynamic characteristics, and the lack of thereof can hinder the utilisation of the full potential with cloud computing and the opportunities to develop the cloud customer firm’s business model and competitive advantage (cf. Teece 2007, Teece 2017). Nevertheless, if the cloud customer firm is able to sense and seize the opportunities related to cloud computing, it might be able to realign its structures and cultures to gain competitive advantage (cf. Teece 2007, Teece 2017), a research area that is only in its infant stage with need of extensive insight (Luo et al. 2018). More recently Willcocks and Lacity (2018) propose different types of innovations related to cloud sourcing, but they do not perform any systematic study on this and therefore suggest such to be done.

The fifth research challenge considers the need to understand the business relationships in cloud sourcing because of their role in the development of innovations and

1.4 The purpose

The purpose is to:

Investigate cloud sourcing from the firm client perspective, more specifically the transitioning process from traditional IT outsourcing to cloud sourcing, i.e., the barriers to continuance of cloud sourcing, how cloud sourcing triggers innovation capabilities and its implications for competitive advantage. This is done in order to contribute to the business and management research knowledge of cloud sourcing.

1.5 The research questions

Willcocks and Lacity (2018) suggest propositions of innovations supported by cloud computing and cloud sourcing. They discuss the huge amount of effort it takes to make cloud sourcing work, in specific to scale for large organisations - and that deeper critical scrutiny and more empirical work is needed (Willcocks and Lacity 2018). A recent literature review on cloud computing (Senyo et al. 2018) highlights the lack of theoretical underpinnings and empirical studies. Bayramusta and Nasir (2016) calls for more studies on cloud sourcing from a business perspective. Moreover, Kathuria et al. (2018) point out three research gaps on how firms can reap the benefits of cloud computing. The first gap highlights a need to study the interaction between cloud capabilities and its transformative value. This involves a better understanding of how cloud computing influences capabilities of internal functions and external partners. The second gap puts forward a lack of understanding of the relation between cloud computing and firm performance. The third gap points out a need for better insight into
the integration of cloud systems and legacy systems present in existent IT infrastructure, and its importance in business value generation.

As discussed above, there are a number of research problems related to firms’ transitioning to cloud sourcing from a management perspective. Firstly, we have a limited understanding of cloud computing and cloud sourcing from a business and management perspective due to limited research in this area. Thus, we need to review current cloud sourcing research in order to understand its strengths and weaknesses. Secondly, one of the management research areas with limited research is strategic management and the relationships between cloud sourcing and competitive advantage. Thus, we need to investigate the sources of competitive advantage compared to other IT sourcing options. Thirdly, the trend of vendors closing down on-premises versions of platforms and software applications forces client firms to cloud source sooner or later. While research on cloud adoption is plentiful, research on cloud continuance is limited and gives only a limited understanding of the challenges involved in continuing to stay in the cloud, and in the long term in surviving as a firm. Thus, we need to investigate the specific barriers to cloud sourcing and how they can be overcome. Fourthly, while the current research on cloud sourcing does identify innovation opportunities related to cloud sourcing, it is rather vague on how these innovation opportunities are identified, captured and integrated into the firm. Dynamic capability theory has been used in other innovation management research to better understand innovation processes. Here, dynamic capability theory will be used to understand innovation processes and its implications for competitive advantage in the transitioning process to cloud sourcing. Fifthly, as described above, transitioning to cloud sourcing is not a process that involves only the client or user firm but, to a greater or lesser extent, also all the cloud provider and the broker firms involved in the cloud sourcing arrangement. Thus, to a large extent innovation processes related to cloud sourcing are due to collaborative efforts and the management of cloud sourcing relationships. This is a rare perspective in current research; thus an exploratory study has been conducted of how cloud sourcing relationships are activated and managed (or not) for innovation.

This leads to the following research questions:

**RQ1:** What are the characteristics of the current body of literature on cloud sourcing?
**RQ2:** Which sourcing options of IS-development can be a source of competitive advantage?
**RQ3:** What are the barriers for cloud continuance in cloud sourcing firms?
**RQ4:** How are dynamic capabilities for innovation triggered in cloud sourcing firms?
**RQ5:** How does collaborative innovation develop in cloud sourcing relationships?
These research questions debouche into the overarching research question: **How can cloud sourcing lead to innovation and what does it imply for competitive advantage?**

1.6 Thesis outline

This thesis consists of a summary of papers (called kappa in Swedish). The aim of the kappa is to present an overall view of the papers, the theoretical framework applied and the methodology used. The contributions are elaborated on in relation to the purpose and research questions of the thesis. The kappa consists of six chapters. Chapter 1 is an introduction to the thesis, providing a background and motivation for this research and presenting the research questions, and how they are related to the five papers. Chapter 2 provides a theoretical background. Chapter 3 presents the method. I have constructed this thesis in three studies; – a, b and c –, which are described in detail in Chapter 3. The three studies have resulted in five papers which are described in Chapter 4. Figure 1.1 illustrates how the different research questions are related to each paper and study, respectively. It also shows the different theoretical lenses applied in the research process. Chapter 5 provides a discussion of results reconnecting to the research questions. Finally Chapter 6 presents the contributions, implications and future research.
Figure 1.3: Illustration of connections between my papers, research questions, studies and theoretical perspectives

- **RQ1**: What are the characteristics of the current body of literature on cloud sourcing?
  - **Paper I**: Relativism in the Cloud: Cloud Sourcing in virtue of IS Development Outsourcing - A literature review

- **RQ2**: Which sourcing options of IS-development can be a source of competitive advantage?
  - **Paper II**: Sourcing motives behind sourcing decisions exposed through the Sourcing Decision Framework

- **RQ3**: What are the barriers for cloud continuance in cloud sourcing firms?
  - **Paper III**: Barriers to cloud continuance: Evidence from two case studies

- **RQ4**: How are dynamic capabilities for innovation triggered in cloud sourcing firms?
  - **Paper IV**: Dynamic capabilities triggered by cloud sourcing - a stage model

- **RQ5**: How does collaborative innovation develop in cloud sourcing relationships?
  - **Paper V**: Fostering sustainable business relationships in a cloud sourcing context

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**Study A**

**Study B**

**Study C**
“Science and thought have no limits” Dad
“Nauka i misao nema kraja” Tata
2. Theoretical background

In this chapter, I present the literature that is of direct relevance to my research. A brief introduction to cloud computing is followed by a review of cloud sourcing continuance, followed by a review of research relating cloud sourcing to innovation, competitive advantage and structural and cultural alignments.

2.1 What is cloud computing?

Cloud computing is not a new phenomenon. The core technologies incorporated in cloud computing have been readily available for quite some time (Armbrust et al. 2009, Géczy, Izumi, Hasida 2012). The concept of providing computing facilities to the public like a utility was first mentioned by John McCarthy in the 1960s (McCarthy 1960) when referring to telephony and water, bearing in mind the early stages in computing at the time. The term “cloud” was used in various contexts in the 1990s, and appeared in network diagrams and figures to indicate large networks. Subsequently, the term ‘cloud’ began to seriously gain popularity after its use by Google’s CEO Eric Schmidt in 2006 to describe the business model of providing services across the internet (Erl, Puttini, Mahmood 2013).

The definition of cloud computing used in this thesis is from the US National Institute of Standards and Technology (Mell and Grance, 2011, 2-3) defining it as “a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction”. The convergence of the following technologies (Shawish and Salama 2014) has contributed to the realisation of cloud computing:

- Distributed Computing: utilized computing capacity from multiple distributed computers to address large computational problems.
- Distributed File System (DFS): allows access to files from multiple hosts via a computer network.
- Virtualization: uses hypervisor or Virtual Machine Monitor (VMM) to establish a virtual layer between the Virtual Machines (VMs) and the underlying hardware.
- Web Services: is a software system designed to support interoperable machine-to-machine interaction over a network.
- Cryptography: cryptographic techniques which implies coding and decoding messages facilitates cloud computing security requirements.

Cloud computing provides an on-demand network to a pool of scalable and manageable shared IT resources (Mell and Grance 2011). Cloud computing can be further characterised by its service and deployment models (Mell and Grance 2011). There are different types of cloud service models, summarized in Table 2.1, including Software as a Service (SaaS), wherein software is hosted remotely and users access IT using a mobile device or web browser (e.g. Salesforce CRM or MS Office Mobile); Platform as a Service (PaaS), wherein a platform for deploying a solution is hosted in the cloud (e.g. Salesforce or Microsoft Azure); and Infrastructure as a Service (IaaS), which entails the provision of servers or storage facilities (e.g. Amazon Elastic Compute Cloud or Dropbox) (Hahn et al. 2012). In addition, there are four deployment models of the cloud: public cloud, private cloud, hybrid cloud and community cloud (see Table 2.2). The public cloud requires the least amount of investment, but may lack data security. The private cloud has less issues with data security since it is private, and the user owns it, and large corporations that already have the virtualisation infrastructure can easily make it work. The hybrid cloud provides the security of the private cloud at the low cost of the public cloud. This is usually an obvious choice for large companies that have variable demand for IT services and can use the hybrid cloud to adapt their demand to certain periods. The community cloud is tailored to a particular industry such as health care to meet their needs more closely than generic clouds (Muller 2012).

In line with the National Institute of Standards and Technology (NIST) there are three different cloud service models (Mell and Grance 2011). Since 2014 ISO/IEC added four more categories namely (ISO 2014): Communications as a Service (CaaS), Computer as a Service (CompaaS), Data Storage as a Service (DSaaS) and Network as a Service (NaaS).

Table 2.1 presents the different cloud service models available with definitions and examples of each. Table 2.2 presents the different cloud deployment models in use.
<table>
<thead>
<tr>
<th>Service models</th>
<th>Target</th>
<th>Characteristics</th>
<th>Product Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software as a Service (SaaS)</strong></td>
<td>B2B (End users)</td>
<td>Customers are provided with applications that are accessible any time from anywhere (application functionality rented from a service provider instead of installing and running software)</td>
<td>Web applications and services (Web 2.0)</td>
<td>Salesforce.com, Oracle, Fortnox, (Gmail, Facebook)</td>
</tr>
<tr>
<td><strong>Platform as a Service (PaaS)</strong></td>
<td>Independent software vendors &amp; developers in user organisations</td>
<td>Customers are provided with a platform in the Cloud, for developing and executing applications</td>
<td>Programming APIs and frameworks; Deployment system</td>
<td>Microsoft Azure, Google, AppEngine, Amazon, SimpleDB/S3</td>
</tr>
<tr>
<td><strong>Infrastructure as a Service (IaaS)</strong></td>
<td>Independent software vendors &amp; developers in user organisations</td>
<td>Customers are provided with virtualised hardware (storage space and computing power) on top of which they can build infrastructure</td>
<td>Virtual machines management infrastructure, Storage management</td>
<td>Rackspace, GoGrid, Flexiscale</td>
</tr>
<tr>
<td><strong>Communications as a Service</strong></td>
<td>End users</td>
<td>Customers are provided with real time interaction and collaboration</td>
<td>Communication applications</td>
<td>Voice over IP (VoIP)/ Videoconference</td>
</tr>
<tr>
<td><strong>Computer as a Service (CompaaS)</strong></td>
<td>Independent software vendors &amp; developers in user organisations</td>
<td>Customers are provided with provision and use of processing resources needed to deploy and run software</td>
<td>Processing applications, Database management</td>
<td>Amazon EC2</td>
</tr>
<tr>
<td><strong>Data Storage as a Service (DSaaS)</strong></td>
<td>Independent software vendors &amp; developers in user organisations</td>
<td>Customers are provided provision and use of data storage and related capabilities</td>
<td>Storage management</td>
<td>Fidelitone/ Urban Mapping/ Signite</td>
</tr>
<tr>
<td><strong>Network as a Service (NaaS)</strong></td>
<td>End users and Independent software vendors &amp; developers in user organisations</td>
<td>Customers are provided transport connectivity and related network capabilities</td>
<td>Network management</td>
<td>Juniper Networks</td>
</tr>
</tbody>
</table>
Table 2.2 Cloud computing deployment models modified (Venters and Whitley 2012, Alsaeed and Saleh 2015)

<table>
<thead>
<tr>
<th>Deployment models</th>
<th>Characteristics</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Used as a means to dedicate hardware components exclusively to customers with the option of locating the cloud internally within the organisation. Access to the cloud is usually through a VPN connection. However, this type of deployment does come at a significant cost.</td>
<td>Services may exist off site</td>
</tr>
<tr>
<td>Public</td>
<td>Is entirely owned by the cloud provider and their services are less customizable as IT is targeted at a specific group of customers to whom the service is sold. More than one virtual machine may be running on one server in the cloud.</td>
<td>Amazon, Google</td>
</tr>
<tr>
<td>Hybrid</td>
<td>Combines the characteristics of both the public and private cloud. Allows companies to cut costs by operating a system in the cloud while maintaining the security levels of private cloud storage.</td>
<td>Data stored in private cloud and agency database manipulated by a program running in the public cloud</td>
</tr>
<tr>
<td>Community</td>
<td>Shared by several organisations and supports a specific community with shared issues. Managed by a third-party organisation.</td>
<td>Government or G-Cloud</td>
</tr>
</tbody>
</table>

The flexibility of cloud computing and in particular the SaaS model enables business processes to be offered in the cloud either as a unified packaged solution such as a cloud-based enterprise resource planning (ERP) system, or as a selective process solution that is not tied to a single application – a module of a system which can be used in different application environments (Schneider and Sunyaev 2016). For example, if a company has a complex process for processing its customer relations, this process can be independently linked to other processes in the cloud through SaaS, as well as to existing applications in the company’s data centre, thereby ensuring that a consistent process (Armbrust, et al. 2009) exists across the organisation.

2.2 The theoretical development of cloud sourcing

Cloud computing and cloud sourcing are two different phenomena. Cloud computing entails a technological orientation (Yang and Tate 2009, Garrison et al. 2012), whereas cloud sourcing is more sociotechnical (Géczy et al. 2012, Schneider and Sunyaev 2016) in nature. Cloud computing is the technology (hardware, software, virtualisation, data, maintenance, functionalities etc.) behind the decision-making or process of cloud sourcing (contractual agreement, use of system, management support, trust relationships, innovations etc). It is important to highlight that research literature does not explicitly and clearly differentiate between cloud computing and cloud sourcing. Often, they are used interchangeably, which creates confusion over the two terms. There are cloud computing papers published in business journals and conference proceedings (Yang and Tate 2009, Sultan 2010, Sarkar and Young 2011, Venters and Whitley 2012, Yang and Tate 2012, Rieger, Gewald, Schumacher 2013, Schrödl and Bensch 2013,
Willcocks et al. 2013), as well as cloud sourcing papers in computing journals (Jae-Nam et al. 2003, Armbrust et al. 2009, Brynjolfsson, Hofmann, Jordan 2010, Garrison et al. 2012, Andriole 2015, El-Gazzar, Hustad, Olsen 2016). Some authors publish about cloud computing in both business and technical outlets such as Garrison et al. (2012), Garrison et al. (2015). This is not as common on the phenomenon of cloud sourcing which is less explored in technical journals and conferences, as well as generally (Amrit and Van Hillegersberg 2010, Gröh 2012, Repschlaeger et al. 2013, Willcocks et al. 2013, Schneider and Sunyaev 2016). It seems as if cloud computing is perceived as a “safe card” terminology which is used as an umbrella term in lack of more specific definition.

In order to leverage the benefits of cloud computing, companies turn to cloud sourcing, which can be defined as a process by which the deployment and maintenance of IT is outsourced to and provided by one or several cloud service providers (Armbrust et al. 2009) and thus can be seen as a specific variant of the outsourcing of IT resources (Schneider and Sunyaev 2016). In relation to traditional IT outsourcing, cloud sourcing is more flexible and scalable in terms of for instance the decision process and scope (the company can cloud source individual applications (i.e., e-mail) and does not have to commit to entire IT solutions), mixed governance modes (some servers and other equipment are private, others public) and contracts are usage-based and short-term (Schneider and Sunyaev 2016). The differences between cloud sourcing and traditional IT outsourcing on a number of dimensions can be seen in Table 2.3. From the table, it is evident that these two sourcing options differ on all dimensions except mode, which represents the number of vendors and clients involved in the process.
### Table 2.3. Comparison between cloud sourcing and traditional IT outsourcing (Schneider & Sunyaev, 2016:4).

<table>
<thead>
<tr>
<th></th>
<th>Cloud computing</th>
<th>IT outsourcing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decision process</strong></td>
<td>SaaS: business department as key client</td>
<td>Large outsourcing contracts with high strategic relevance, top management as key clients</td>
</tr>
<tr>
<td></td>
<td>IaaS/PaaS: IT department as key client</td>
<td>Request for information/request for proposal</td>
</tr>
<tr>
<td></td>
<td>Predominantly self-service</td>
<td>Vendor selection prior to decision on degree of outsourcing</td>
</tr>
<tr>
<td></td>
<td>Vendor selection bound to product selection, product-based decision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Online trial evaluations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Task responsibilities shifted from provider to customer, for example, for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>request for proposal evaluation vs self-service evaluation</td>
<td></td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>Standardized software (SaaS) or cloud infrastructures (IaaS/PaaS) created by</td>
<td>Custom-tailored IT services</td>
</tr>
<tr>
<td></td>
<td>the provider for an anonymous market</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Role of the IT department as service integrator</td>
<td>Can include hardware, software, people, and processes (e.g., software development, datacenter operations, desktop maintenance, help desk operations)</td>
</tr>
<tr>
<td></td>
<td>Limited customization</td>
<td></td>
</tr>
<tr>
<td><strong>Governance mode</strong></td>
<td>Enables new scenarios of outsourcing and governance arrangements due to the</td>
<td>Individual configurations of ownership, mode, and degree</td>
</tr>
<tr>
<td></td>
<td>variety of service models (IaaS, PaaS, SaaS) and deployment models (private,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>public, community, hybrid) and combinations thereof</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enables the management of building blocks of IT, provided by external</td>
<td></td>
</tr>
<tr>
<td></td>
<td>providers in the same way as they would be managed in-house</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ownership, mode, and degree partially predefined by the selected service and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deployment model</td>
<td></td>
</tr>
<tr>
<td><strong>Ownership</strong></td>
<td>Outsourced assets totally owned by the provider and its providers</td>
<td>Varies with type and degree of outsourcing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Totally owned by the customer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partially owned by the customer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Totally owned by the provider</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>Single vendor/client or multiple vendors/clients</td>
<td>Single vendor/client or multiple vendors/clients</td>
</tr>
<tr>
<td><strong>Degree</strong></td>
<td>Selective outsourcing</td>
<td>Total outsourcing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selective outsourcing</td>
</tr>
<tr>
<td>Contractual mode</td>
<td>Usage based</td>
<td>Period based or project based</td>
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<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------</td>
<td>------------------------------------------------</td>
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<tr>
<td></td>
<td>High degree of automation and scaling</td>
<td>Individually negotiated</td>
</tr>
<tr>
<td></td>
<td>Minimal up-front costs</td>
<td>Pricing based on business metrics</td>
</tr>
<tr>
<td></td>
<td>Little possibility for negotiation, standardized terms of use</td>
<td>Strategic partnerships for continuous and joint innovation</td>
</tr>
<tr>
<td>Environment</td>
<td>Decentralized market</td>
<td>Outsourcing market is well established with numerous experienced providers</td>
</tr>
<tr>
<td></td>
<td>Volatile and immature market</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uncertain legal issues</td>
<td></td>
</tr>
<tr>
<td>Broad network access</td>
<td>Critical network dependence</td>
<td>Depends on the type of outsourcing (e.g., less critical for software development than for data centre operations)</td>
</tr>
<tr>
<td></td>
<td>Potential bottlenecks, slowdowns, and outages that neither the client nor the vendor can control</td>
<td></td>
</tr>
<tr>
<td>Resource pooling</td>
<td>Multi-tenant virtualized applications</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Common code stack</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provider-determined upgrade schedule</td>
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</tr>
</tbody>
</table>

2.2.1 The company’s decision to adopt and continuance of cloud sourcing

There are a wide range of factors that have a significant impact on the adoption of cloud sourcing in the research ranging from relative advantage, top management support, firm size, competitive pressure, and trading partner pressure characteristics (Garrison et al. 2012, El-Gazzar et al. 2016) to risk, security and trust in relationships (Low, Chen, Wu 2011). Oliveira et al. (2014) argue that the importance of the identified factors for cloud adoption are heavily industry-dependent. They therefore conducted a quantitative study of 369 manufacturing and service firms in an effort to integrate an understanding of the industry adoption of cloud sourcing driven by the diffusion of innovation theory (Lyytinen and Damsgaard 2001) and the technology organisation and environment framework (Tornatzky, Fleischer, Chakrabarti 1990). Their study assesses the concerns cost savings, relative advantage, complexity, compatibility, technology readiness, top management support, firm size, competitive pressure and regulatory support which resemble the main factors identified in literature.

Post adoption, being the phase subsequent to adoption, is defined as follows: “Post adoptive behaviour occurs after an IT artefact has been implemented, made accessible to the user and applied by the user in accomplishing his/her work activities. This behaviour may be quite different from the behaviour in initial adoption stages” (Recker 2010, 78 in Shaikh and Karjaluoto (2015). Some researchers define the post adoption phase as IT continuance (Bhattacherjee 2001). In relation to cloud sourcing, I have chosen to see cloud sourcing as a process, and therefore equate it with IT continuance.
Previous research on post adoption is based on literature of IT continuance, which resembles the process of cloud continuance; but is not studied as extensively as cloud adoption.

An overview of cloud sourcing continuance literature is given in table 2.4. Two papers are published on B2B, whereas the rest is on Business to Customer (B2C). The two papers (Mirusmonov and Kim 2013, Ratten 2016) that study cloud sourcing continuance in B2B focus on individual users, employees and managers, and related organisational factors.

Table 2.4: Literature summary of papers published on continuance of cloud computing

<table>
<thead>
<tr>
<th>Paper on Cloud Continuance</th>
<th>Summary of paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trenz, M., Huntgeburth, J. C., &amp; Veit, D. (2013, June). The Role Of Uncertainty In Cloud Computing Continuance: Antecedents, Mitigators, And Consequences. In ECIS (p. 147).</td>
<td>Quantitative study, survey based, 143 individual users (students) of general cloud storage services using Principal Agent Theory to hypothesise trust, peer adoption, switching costs, information privacy issues, information security concerns, availability concerns, perceived uncertainty, perceived usefulness, perceived ease of use, satisfaction, continuance intention - focused on demographics (age and gender), other cloud storage services, internet use, technology experience, time with service and business or private use for cloud computing continuance.</td>
</tr>
<tr>
<td>Ratten, V. (2016). Continuance use intention of cloud computing: Innovativeness and creativity perspectives. Journal of Business Research, 69(5), 1737-1740.</td>
<td>Quantitative study, survey based, 142 survey questionnaires with managers from technology firms in Australia. Social Cognitive Theory - personal attitude, perceived behavioral control, risk, innovativeness, creativity. Concludes that environment and technology acceptance is important in determining continual usage of cloud computing. No support for innovativeness and creativity as cloud computing is integral to organisation’s IT rather than being a new technological innovation. Personal attitude is most important, meaning that the use of cloud computing relates to behavioral characteristics. Important for organisational leaders to gain bottom-up support in using cloud computing.</td>
</tr>
<tr>
<td>Yang, H. L., &amp; Lin, S. L. (2015). User continuance intention to use cloud storage service. Computers in Human Behavior, 52, 219-232.</td>
<td>Quantitative study, descriptive statistics analysis of 294 questionnaires conducted in Taiwan. Key factors influencing individual users’ of cloud storage services studied through Task-Technology Fit Theory. Concludes that cloud storage services as an unstructured task, cloud storage self-efficacy and the opinions of reference groups have significant positive influences on perceived usefulness which impacts users’ continuance intention to use cloud storage devices. Privacy protection risks and lack of privacy policy have negative influence on continuance intention.</td>
</tr>
<tr>
<td>Wang, N., Liang, H., Jia, Y., Ge, S., Xue, Y., &amp; Wang, Z. (2016). Cloud computing research in the IS discipline: A citation/co-citation analysis. Decision Support Systems, 86, 35-47.</td>
<td>Knowledge structure of cloud computing research. Citation and co-citation analysis of cloud computing research between 2004-2014. 214 papers from 20 top journals in IS and Management, and 2 prominent international conferences. They identify 41 important papers, and main path analysis reveals three development stages of cloud computing research: incubation stage, exploration stage and burgeoning stage. Co-citation analysis, the principal component factor analysis of the cocitation, mainly identifies six</td>
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</table>

To sum up, the literature review of the theoretical development of cloud sourcing (Wang et al. 2016) shows that cloud sourcing research has evolved through three stages, namely incubation, exploration, and burgeoning. Papers in the incubation stage do not explicitly define the term cloud computing or cloud sourcing and use similar constructs. Papers in the exploration stage mainly focus on the definition, technical features, opportunities, and challenges of the development of cloud computing. Lastly, papers in the burgeoning stage start to address specific research topics. They show that there is very little published on the continuance of cloud computing and recommend more research on the
Building on this literature review, this thesis can be positioned as part of the burgeoning stage and beyond.

2.3 Cloud sourcing - dynamic capabilities and competitive advantage

The dynamic capability theory (DCT) of the firm (Teece 2007, 2018) is a development of RBV (Barney 1991, Wernerfelt 1984). Both theories postulate that valuable, rare and hard-to-imitate or substitute resources and/or capabilities may be sources of a company’s competitive advantage. However, DCT assumes that the value of strategic capabilities will erode over time due to the competition catching-up (Teece 2007, 2018). The only capabilities that will be valuable, rare, or hard-to-imitate or substitute over time are the capabilities to develop, re-configure and divest the company’s capabilities more effectively than its competitors, i.e., dynamic capabilities (Teece 2007). Dynamic capabilities include the sensing, seizing and transforming capabilities needed to design, implement and innovate the business model (Teece 2018). Dynamic capabilities depend on managerial skills in identifying opportunities, committing resources to the development and refinement of the business model, and making cultural and structural alignments (see Figure 2.1.).
The relation between dynamic capabilities and strategy has been discussed extensively but here I adhere to Teece (2018), as shown in figure 2.1., that strategy is the same as competitive strategy, i.e., how the company competes. A common trigger for sensing a business opportunity are the introduction of a new technology like cloud computing. The opportunity of a new way of IT outsourcing, cloud sourcing, may start a transformation process gaining momentum by the company’s dynamic capabilities.

Sustained competitive advantage can only be achieved if the value-creating strategy is not copied by a considerable number of competitors, which emphasise the importance of a company’s resources being kept indoors as a source of competitive advantage (Barney 1991). Kathuria et al. (2018) argue that resources alone cannot create value and become a source of competitive advantage, as they are only enablers for cloud services. Instead, it is the agile infrastructure and characteristics of cloud computing that provide opportunities to develop new cost-reducing and revenue-generating services and other cloud based solutions that can become a source of competitive advantage (Kathuria et al. 2018). Thus, the agile infrastructure and the flexible and scalable properties of cloud computing underpins the development of innovative or dynamic capabilities (Teece 2007, 2018) that could be a source of competitive advantage.

In general, the dynamic capabilities theory (Teece 2007) asserts that successful business model innovation shares one or several of the following non-imitable characteristics: a) differentiated business model architecture with co-specialized elements, b) complicated process steps, organizational structures, and/or arrangements, c) combinations with (internal or external) complementary assets, d) relationships with external actors, e.g., customers, suppliers, partners, which are unique and/or disturbing to competitors, e) dynamic adaptation of business model elements and architecture, or dynamic adaptation of relationships with external partners and/or, f) strong intellectual property. All of these characteristics, except strong intellectual property, are possible to use in relation to cloud sourcing.

2.4 Cloud sourcing triggering innovation

Innovation has been a central topic for management and information systems research over the years, where innovation has been discussed both as process and product (Nylén and Holmström 2015, Nambisan et al. 2017, Holmström 2018). The innovation concept will here be defined in accordance with the OECD-definition An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relation (OECD 2005, 146). A new type of innovation not covered by the OECD definition is business model innovation, which has specific relevance when a new field of technology, such as cloud computing, triggers innovation (cf. Teece 2018). There are many definitions of a business model
but an often cited definition comes from Teece (2010, 172): …the design or architecture of the value creation, delivery, and capture mechanisms a firm employs. The essence of a business model is in defining the manner by which the enterprise delivers value to the customers, entices customers to pay for value, and converts those payments to profit. Teece (2018) specifies the key components or elements of a business model into three main categories:

Value proposition: Product & Service, Customer needs, Geography

Revenue Model: Pricing Logic, Channels, Customer Interaction

Cost Model: Core Assets & Capabilities, Core Activities; Partner Network.

In line with this business model definition and with the OECD definition, requiring implemented and new or significantly improved components, business model innovation could be defined as: designed, novel, and non-trivial changes to the key elements of a firm’s business model and/or the architecture linking these elements (Foss and Saebi 2017, 216). As examples related to cloud sourcing could be the firm licensing a new service based on software (SaaS) from a partner firm and then offering this as a service to its customers along with its other services. This would be a product innovation. A business model innovation would be a more holistic change to the firm’s way of doing business. An example would a traditional taxi company changing to Uber-like services. This would require changes in the booking system, pricing logic, new payment system, new mobile apps, geographic localization system, new customer interaction and so on. And the Uber business model would not be possible without cloud computing and cloud sourcing.

Cloud sourcing represent new forms of flexibility and scalability to innovate products, processes, markets and the company’s business model (cf. Teece, 2018). One of the few empirical studies on cloud sourcing and innovation (Willcocks and Lacity 2018) identify three types of innovations supported by cloud computing and cloud sourcing:

- **IT operational innovations:** IT operational, employee roles, technological changes (that do not affect firm specific business processes).

- **Business process innovations:** Changes in specific business processes and how business operates.

- **Business product/service innovations:** Enable market expansion, develop services and products for existing customers.

In terms of how firms will innovate related to cloud sourcing Willcocks and colleagues propose three types of processes (see table 2.5) incremental, architectural and radical innovation (Willcocks et al. 2013, Willcocks and Lacity 2018). Incremental innovations improve processes, reduces cost and replace application programs with subscription licenses, i.e., software as a service (SaaS). Architectural innovations integrates IT and business processes by developing the IT-department’s role to become more business
and strategy focused, and facilitate collaboration with third parties. Radical innovations may come from collaboration with third-parties and from internal collaborative work.

Table 2.5: Cloud sourcing as the platform for innovations (Willcocks and Lacity 2018).

<table>
<thead>
<tr>
<th>Innovation focus</th>
<th>Proposition</th>
<th>Cloud services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental innovation</td>
<td>Cost control through consolidation and virtualization. Direct replacement of Apps with SaaS</td>
<td>Virtualization, Hybrid Clouds, IaaS, SaaS</td>
</tr>
<tr>
<td>Architectural innovation</td>
<td>Improvement in business processes; increasing mobility; increasing</td>
<td>Mobilization, consumerization, PaaS, IaaS, SaaS</td>
</tr>
<tr>
<td>Radical innovation</td>
<td>Skunk-work IaaS, collaboration (intra- and inter-organizational)</td>
<td>Elasticity, Consumerization, Market based, PaaS, SaaS</td>
</tr>
</tbody>
</table>

In order to understand how collaborative innovation can develop in cloud sourcing, I have illustrated the relations at hand below in figure 2.2. As seen from the illustration all partners involved interact with each other. The cloud computing service models add to this interaction through the involvement of different partners each responsible for a specific service. These relations can be highly complex.
Figure 2.2 Cloud sourcing relationship
2.5 Structural and cultural alignments related to cloud sourcing and dynamic capabilities

The strength of a company’s dynamic capabilities depends partly on managerial efforts to make structural and cultural alignments in relation to the technological opportunities and market changes (Teece 2018). The discussion of innovation opportunities related to cloud sourcing by Willcocks and Lacity (2018) is further developed in Vithayathil (2018), who questions the future of the internal IT department with the adoption of cloud computing and cloud sourcing. He juxtaposes traditional IT outsourcing with cloud sourcing and clearly states the differences. Cloud sourcing is different from traditional IT outsourcing that is characterized by (1) a 1:1 relationship between the client firm and vendor; (2) longer duration of contracts; (3) nature of contracts where pricing and terms include the use of incentives, or specific performance directives, or the use of Time-and-Material (T&M) pricing, with such contracts typically being negotiated and customized for the specific client-vendor outsourcing relationship; and (4) the outsourced work is specific and customized for the client. Furthermore, Vithayathil (2018) asserts that cloud computing is different from on-premises, in-house and captive services saying that “Traditional computing services and IT departments evolved as captive departments grown within the organization that incurred the capital expenditures and operating costs for the IT department. In contrast, cloud computing obviates the requirement for capital and the services are on-demand and metered” (Vithayathil 2018, 2). In contrast to traditional IT outsourcing, in cloud sourcing the customer pays only for services that are used, for the volume and duration of use. The pricing schedule of the cloud vendors is public and all requirements and terms are stated in the Service Level Agreement (SLA) between the different stakeholders involved in a cloud sourcing relationship. The SLA covers (Vithayathil 2018) quality, reliability and guarantees of availability of resources, their up-time, performance or the responsiveness of the IT resources and other performance indicators.

Cloud vendors usually serve an international market with divergent interests between the cloud vendor and its customers. Most often, the services provided are standardised to satisfy general demand and maximize the cloud vendor’s profits or revenue instead of a specific customer’s preferences. This means that when updates are made in the system, all customers using the same system will face same updates at the same time. IT systems in the cloud are updated much more frequently (Vithayathil 2018) than those traditionally outsourced IT. This puts pressure on the cloud customer to be open and ready for change in the functionality as well as the interface design of the cloud sourced system, meaning constant learning for the customer, as well as faster development of the system. The cloud vendor applies multi-tenancy and sharing of IT resources to achieve efficiencies (Dempsey 2018). Multi-tenancy means that servers and storage are shared among several cloud customers, whereas in traditional IT outsourcing, the demand for IT services is modelled as a monopoly (Lacity et al. 2009) driven only by a specific customer’s demand and their internal use.
The fact that cloud sourcing solutions can be thought of as building blocks of IT (Schneider and Sunyaev 2016), where the IT infrastructure as a service is delivered by one or several cloud vendors, and where application programs of systems such as e-mails, web pages and ERP systems are delivered by different cloud vendors and development platforms by yet other cloud vendors, makes it necessary for the client company to manage many more cloud vendors or third parties than in the traditional IT outsourcing model.

The few studies on cloud sourcing relationships discuss the necessity of building the relationship over time (Dempsey 2018) and that continuance forces success (Walther 2018). Specific research on cloud continuance and discontinuance is sparse and mainly quantitative, looking at the relationship quality (Chou, Liu, Hsieh 2015), trust and commitment (Goode 2018), compatibility and output quality (Cheng 2018), as well as socio-organisational and technology-related factors (Walther 2018). Business model innovation related to cloud sourcing requires strong and creative relationships according to (Willcocks et al. 2013, Legner et al. 2017).

Previous studies on the importance of relationships in IT outsourcing arrangements have focused on the individual thus having the ambition to continue with the organisational unit of analysis (Cullen, Seddon, Willcocks 2005). Cullen et al. (2017) means that it is personal relationships that drive success. Their results suggest that a successful outsourcing arrangement can be derived through the adaptation of well-considered behavioural approaches rather than contracting techniques. This means that the outcome of the cloud sourcing arrangement does not only rely on the SLA, but that relational factors are important in order to identify barriers and why some companies do not remain in the cloud. This covers the softer side of outsourcing management such as trust, commitment, and knowledge sharing. Studies that are more recent have identified managing the relationship between the parties as playing a crucial role in outsourcing outcomes (Lacity et al. 2009, Huber et al. 2013, Lacity and Willcocks 2017). Still, there is not much empirical research focused on the relationship between cloud providers and cloud customers, despite the fact that this would be of high interest in the cloud sourcing area (Wilms, Stieglitz, Muller 2018).

2.6 Further research on cloud sourcing

The majority of studies conducted on cloud computing are technologically related while there is also a dearth of studies on business related issues (Kathuria et al. 2018). Kathuria et al. (2018) point out three research gaps on how firms can reap the benefits of cloud computing and create value. Firstly, there is a need to study the interaction between cloud capabilities and its transformative value, as well as how cloud computing impacts the capabilities of internal functions and external partners. Secondly, there is a lack of understanding of the connection between cloud computing and firm performance, resulting in a lack of guidance for practice. Knowledge about how value is leveraged
from cloud computing through resources and capabilities is rather scarce. Thirdly, the integration of cloud systems and existing legacy systems, and its importance in business value generation from cloud computing, requires more research. Furthermore, there has been an absolute dearth of qualitative research in all domains of cloud computing adoption, including cloud sourcing continuance (Shaikh and Karjaluoto 2015, Bayramusta and Nasir 2016, Senyo et al. 2018). A qualitative research approach may uncover more detailed findings of companies’ experiences of how cloud sourcing can be transformed into business and strategic value (El-Gazzar et al. 2016). This thesis’s focus is on gap 1 and 2; to study the interaction between cloud capabilities and its transformative value, as well as how cloud computing impacts capabilities of internal functions and external partners (the first gap above) and the implications for competitive advantage, as a proxy for performance (the second gap above).
“Man is as a human for as long as he can master his passions” Dad
“Čovjek je onoliko čovjek koliko može da savlada svoje strasti” Tata
3. Research design and methodology

The purpose of this study is to contribute to the business and management research knowledge of cloud sourcing. This is done by applying different theoretical perspectives to empirical studies of cloud sourcing in order to understand how cloud sourcing can generate strategic value for the cloud customer company. Each of these theoretical perspectives adds to the knowledge about how innovations develop and may be sustained over time through cloud sourcing. With this research purpose in mind and in view of the nature of this study, I have chosen to apply qualitative methods with an abductive approach, drawing on different theoretical models that best explain a state of events.

My research journey was rather empirically driven. With a passion for business relationships prior to my PhD studies, at the time I worked for PriceWaterHouseCoopers (PwC) in Malmö, Sweden, as an IT consultant with small, big, local and multinational companies performing data management analysis, fraud analysis, IT general controls, IT governance, and business process analysis. Having this insight into the core of companies and their IT systems, I decided I wanted to pursue my dream from the time I enrolled in the International Baccalaureate Diploma Program (graduated in 2007, Katedralskolan, Lund, Sweden), namely to do research to improve organisational performance. This thirst for knowledge, curiosity and the need to develop science for a better tomorrow has always been a great interest of mine. Starting off my academic career as a course director, developing courses and lecturing, I have long experience of coordinating courses, supervising and examining theses as well as lecturing at Lund University both at first cycle level (courses: IT for people, organisations, society and IT and globalisation), and second cycle level (strategic management and information systems). This background sparked my interest in information systems, innovation management, relationship marketing and strategic management literature in order to better understand the cloud sourcing adoption problems that I had encountered during my work. I realised that this was not just a technical issue, but one with more of a relational character involving organisational, structural and cultural change. Table 3.1 gives an overview of my contributions in each of the five papers.
Table 3.1: Overview of my contributions in each appended paper.

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<tr>
<td>I am primarily responsible for the literature review, collection of papers,</td>
<td>I am primarily responsible for the data collection and analysis as</td>
<td>I am primarily responsible for the data collection and analysis. I</td>
<td>I am primarily responsible for the data collection and analysis. I</td>
<td>I am primarily responsible for the data collection and analysis. I</td>
<td>I am primarily responsible for the data collection and analysis. I</td>
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<tr>
<td>analysis and drawing conclusions. My co-author contributed comments.</td>
<td>as well as the writing of the publication. My co-author contributed</td>
<td>shared responsibility with my co-authors for the writing of the</td>
<td>shared responsibility for the writing the publication with my co-author.</td>
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<td>advice and some writing of the paper.</td>
<td>publication.</td>
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3.1 Epistemological and ontological viewpoints

As a multi-perspective research discipline (with technological, engineering, organisational, managerial, psychological, and societal aspects), innovation can use a variety of research methods (Wood-Harper 1985). The combination of critical realism with the interpretive perspective has been presented as an ‘alternative paradigm’ in literature on social work research (Morris 2006) and qualitative research in general (Guba and Lincoln 2005). The critical realism approach has been used previously with success in information systems research (Henfridsson and Bygstad 2013).

Since the starting point of this thesis is the philosophy and metatheory of critical realism, its key epistemological and ontological principles are explained as well as how they relate to methodology and the importance of explanation over prediction. It justifies the use of this philosophy in comparison to positivist and interpretivist research philosophies and shows its relevance to the study of innovation. Interpretivist research has been widely applied within the field of strategic management, starting off with among others Klein and Myers’ (1999) study of managerial development and understanding human thought and action in organisational contexts. It is important to highlight that critical realism provides an underlying philosophical framework and not a methodological prescription. The question of whether a particular method is appropriate therefore depends on its role within the study design, in which critical realist principles about cause and effect in social systems are embedded, for instance, the integrative approach to social research that allows for a combination of quantitative and qualitative methods within a critical realist framework by Danermark et al. (2002). Moreover, Fairclough (2013) has drawn on critical realism in his version of critical discourse analysis in order to explore language as a constitutive element of social practices that mediate between structure and process. Fairclough (2013) state that this approach does not entail a rejection of hermeneutics, but rather an acknowledgement of the same, saying that hermeneutics by itself cannot provide an adequate explanation for social phenomena (Fairclough 2013).
Taking the critical realist lens, I argue that there is a level of reality below the everyday levels of events and our experiences of them. It is at this level that the mechanisms that drive events in the world exist. In other words, there is a level of reality that is not easily accessible because it is hidden from common view. As Miles and Huberman (1994) expressed it:

“We look for a process or mechanism, a structure at the core of events that can be captured to provide a casual description of the forces at work...The fact that most of these constructs are invisible to the naked eye does not make them invalid. After all, we all are surrounded by lawful physical mechanisms of which we are, at most, remotely aware”.

The case companies formed as a result of the interaction of human agency with a number of other material agencies, notably technology. Here, I looked at selected case companies and embraced what I experienced from those cases on a nominalist level in trying to answer my research question: “How can cloud sourcing lead to innovation and what does it imply for competitive advantage?”. This experience could have been subjective and limited, and thus not given me the right picture of reality. Therefore, I needed to look at things that happened and things that were said that I perceived through experiences, namely events. By applying the dynamic capabilities perspective together with the critical realist view, I could carve out the process that describes innovation capabilities. This lead me to the second level of reality, a metaphysical realism where I could confirm that the external world (in this case the cloud customers) has a physical reality with practices, behaviours, statements and narratives around cloud sourcing. Dynamic capabilities helped me here to identify and understand these underlying structures. The critical realist perspective facilitated a more multi-layered explanation (Volkoff and Strong 2013) of the innovation capabilities development process. Matthyssens, Vandenbempt, Bockhaven (2013) show how to translate this epistemological orientation into methodological choices.

However, events do not occur out of nothing; they must have a cause. These causes of events are mechanisms which could be the assumptions that constitute the risk of cloud sourcing. I can only infer mechanisms logically from events. Since it is the generative mechanisms that cause real events then they must be real, which is the third level of reality that I discovered through my research work.

As a result of the nature of the research question that I am asking, and the ontologies and possible theories I anticipated using, my approach is interpretive in nature and relies on inductive and abductive reasoning. Furthermore, I relied on a number of data sources, namely semi-structured and in-depth interviews, to collect nuanced data and data reliant on context, e.g. organisational experience.
Figure 3.1: This thesis chronological evolution of studies with corresponding theoretical lenses
3.2 Taking an abductive approach

Given the nature of my research objective, an abductive approach appears to be the most appropriate. In contrast to inductive and deductive reasoning, abductive research can explain, develop or change the theoretical framework before, during or after the research process through iteration. The iterative process of abduction moves back and forth between inductive and deductive research in order to explain or understand an empirical phenomenon further. Dubois and Gadde (2002) call this reasoning “systematic combining” based on a pragmatic approach to understanding complex social phenomena.

![Figure 3.2: Abductive reasoning (Dubois and Gadde 2002)](image)

Consequently, my research approach was iterative and abductive, meaning that I continually reviewed my analytical framework by moving from the empirical material to theory and then back again (see Figure 3.2) (Dubois and Gadde 2002). This helped me match theoretical insights with the reality of the cases and constantly refine my findings. I remained receptive to many possibilities. The longitudinal case studies evolved over time, allowing for the development of a better understanding of the phenomenon.

Abductive reasoning has helped me specifically in the identification of themes, codes, and categories when analysing my data, by providing insights and new understanding, and by linking insights together to generate an order that fits the facts (Dubois and Gadde 2002, Dubois and Araujo 2004).

In general, Paper I provides the first literature study (Study A) presenting the research status on cloud sourcing and confirms the lack of research on the topic. Paper II, based on a pilot study (Study B), gives insights into IT outsourcing and using the resource based view as a theoretical lens to analyse how cloud sourcing can be a competitive
advantage from the static perspective of the resource based theory of the firm. Paper III, based on two longitudinal case studies (based on Study C), is a comparative case study which, through cloud continuance literature, analyses the barriers to cloud sourcing and what it takes to transition to and stay in the cloud. Paper IV is also based on Study C and applies a dynamic capability theoretical framework to understand how cloud sourcing can trigger new dynamic capabilities and transform the company and its business model. Paper V (based on Study C) applies a strategic relationship theoretical perspective to understand how sustainable collaborative innovation relationships are developed in cloud sourcing.

The research process started by conducting a literature review (Study A) and then a pilot study (Study B) in order to identify research problems and research gaps. From there, I commenced the exploratory case studies, collecting data through interviews while still going back to the literature to refine my research questions and to find useful theoretical frameworks. This led me into the second stage, where I conducted another literature review simultaneously with the case studies (interviews, observations and text analysis). As I progressed, my theoretical framework evolved, which directed me to continue with the case studies and to collect more data. This iterative approach, going back and forth between data collection and the literature, helped me to challenge previous literature reviews and to match theory with empirical evidence, which provided further direction.

More concretely, the connection between my five papers and how I applied an abductive approach is elaborated on below.

**Study A:** The research process started by conducting a literature review to get acquainted with the existing relevant literature to learn about the theories, concepts, methods, and to find the main authors and controversies within different streams of research within the topic (Bryman 2016). Based on this, Paper I was designed to be a systematic literature review to identify (Sandberg and Alvesson 2011) gaps in the research and guide further studies (Webster and Watson 2002) in order to answer RQ1. The literature review confirmed that there is a lack of research on the topic of cloud sourcing.

**Study B:** Continuing on from the literature review, I decided to develop an interview study to answer RQ2, since that would give me insights into the motivations behind IT sourcing in general. Since the financial sector has traditionally been rather conservative in terms of handing over responsibility for their IT to third parties, I found this to be an interesting pilot study. Interviews were conducted with four large Swedish banks that also operate abroad. The pilot study presented in Paper II concluded that sourcing can be a competitive advantage depending on the resources and capabilities involved, studied through the VRIO framework and RBV (Barney 1991).

**Study C:** The fact that cloud sourcing as the next generation of IT outsourcing (Muhic and Johansson 2014) is still a risk for many companies, and simultaneously a natural progression into the age of digitalisation, raised new questions. I started to exploratively study why cloud sourcing works for some companies but not for others. That is how I
developed the first empirical comparative case study presented in Paper III, which is based on interviews, observations and text analysis to answer RQ3. This paper identified barriers to cloud sourcing continuance and presents a framework which indicates the connections between the barriers leading to the positive or negative development of cloud continuance.

The findings in Paper III demonstrated a need for a better understanding of certain transformations in the firm, mainly business development activities related to cloud sourcing. Now that I had found the barriers, I wondered how I could explain the business development stages by means of certain capabilities, which would help to answer RQ4. The literature, conducting the two case studies, and my previous papers informed each other iteratively, which led to the development of junctures that managers need to overcome in order to progress to the next stage in the business development process of cloud sourcing. This resulted in a stage-based model of dynamic capabilities triggered by cloud sourcing.

Paper IV has informed Paper V in answering RQ4 through the vision of collaborative innovation discussed within the described stage-based model. This insight evoked a need to study the relationships of cloud sourcing partners and how these collaborative relationships develop as a process over time. Again, this work progressed in line with abductive reasoning, going back and forth between the literature (looking at previous literature studies, and conducting new ones) and the two case studies (interviews, observations and text analysis). This longitudinal process study added to the previous study in answering RQ5: by identifying the different catalysts, sets of catalysts, and triggers that develop a business relationship and potentially can make it a sustainable one, ultimately reaching the advanced phase of competitive advantage with new business models and innovations.

3.3 Literature review – Study A

The literature review was conducted to establish the authority and legitimacy of the research and are the foundation for making a relevant contribution. The goal of the literature review was to point out research issues, and give critical and conceptual discussions of the research problem. The literature review helped me to evaluate the seminal influences on and strong antecedents of my chosen field of study. The literature review demonstrates a clear critical knowledge of the field and identifies the research addressing the gaps in existing knowledge. (Line Dubé 2003, Levy and Ellis 2006, Okoli and Schabram 2010). Obviously, it needs to be sensitive to pertinent literature across a range of different, but allied, disciplines. Since this thesis both uses and enriches existing theory, the literature review is not purposely formal but contains the main dimensions of studies and specifies the different relationships between these dimensions. The concepts and theoretical frameworks found from the literature reviews were used in the data analysis stage as a lens for the analysis.
The literature review was of an inductive nature (Line Dubé 2003) applying the following steps: 1) Selection of appropriate publication outlets; 2) Identification of relevant articles; 3) Creating inductive categories and subcategories based on the content of the articles; 4) Assessing the articles and classifying them into categories; 5) Analysis of the categorized articles to extract trends; and 6) Discussion and recommendations for future research. In order to identify the relevant articles, I used key words such as “cloud sourcing”, “cloud sourcing barriers”, “cloud sourcing risks”, “cloud sourcing success”, etc., in either the title, or abstract, or keywords, but also by reading the abstract for relevance. Where no articles were found, I changed “cloud sourcing” to “cloud computing”. Search engines used included Google Scholar and EBSCO Business Source complete. The analysed period was not set, but in the search results, cloud sourcing is first mentioned in 2013. The selection and review was done manually. The snowball method implied that additionally I had to look at the reference list of the found papers and use that to trace my way back to the original source (Sandberg and Alvesson 2010).

3.4 Pilot study – Study B

In order to gain insights in the outsourcing of IT, I started off with a pilot study in the financial sector. This helped me understand how cloud sourcing can be a competitive advantage which evoked the need to continue in that direction. In total four banks, three from Sweden and one from Germany were investigated. In the process of finding the interviewees I listed all larger banks in Denmark, Germany and Sweden, and made calls to them. On the phone I was patched through many instances, asking for the professional heading the organisation’s IS-sourcing strategies respectively decisions. As preparation for the interviews I conducted pre-interviews with two of the banks that I investigated. Permission was given for recording and transcribing only for one of the pre-interviews. In that way these interviewees helped me find potential cases. Likewise I got the first impression from the organisations and their overall IT strategy. The actual data collection was from four interviewees, all in leadership roles in IS outsourcing decisions: Manager of Strategic Partnerships (IT solutions), Head of Development Infrastructure, Head of Outsourcing and Vendor Management, Head of outsourcing and IT Development. Some of the interviews were conducted during a physical meeting at the company’s offices, in particular the meetings with the company from the financial sector in Germany. The interviews in Germany were conducted in German through translation of the questions during the interview. The interviews with the companies from the Swedish banking sector were all conducted via telephone conference using Skype. The reason for this was that the Swedish financial sector companies all have their headquarters in Stockholm and it was therefore more convenient to arrange and when necessary more flexible to reschedule these meetings via Skype. Bank A is one of the largest financial concerns in Europe. It has the largest Internet banking service in the world with around 6 million users, and 260 million transactions each year. The
A company has about 12 million banking customers and about 30,000 employees. Bank B, domiciled in Germany, provides a core banking solution that covers all processes in the field of traditional banking business. With its 1,600 employees, it defines its key skills as being in the development and operation of high quality core banking solutions (around 900 employees) as well as the provision of outsourcing services. Bank C is a leading financial institution in Scandinavia with an international presence offering a full range of banking services. It has over 20,000 employees, 6 million private customers and 3,000 corporate customers in the form of large companies as well as financial institutions, and 500,000 small to medium sized enterprises (SMEs). Bank D has approximately 12 million private customers and 900,000 corporate customers and has roughly 30,000 employees.

3.5 Case studies – Study C

The empirical aspect of this research work used case studies. The case study method is especially useful when the researcher wishes to cover contextual conditions (Yin 2015). Surveys can try to deal with the phenomenon of interest and context, but their ability to investigate context is extremely limited. In case study research, there are typically many more variables of interest than just a few data points. In particular, case studies conducted in this research are interpretive in nature, meaning that they investigate a contemporary phenomenon within its real life context when the boundaries between the phenomenon and the context are not clearly evident (Yin 2015).

The advantage of the case study is that the phenomenon can be studied in its natural setting and meaningful, relevant theory can be generated from the understandings gained through observing actual practice. It also allows the questions of why, what and how to be answered with a relatively full understanding of the nature and complexity of the complete phenomenon (Yin, 2015). Case studies are very well suited to the exploratory investigations of this thesis, where several of the variables are still unknown and the phenomenon are not well understood (Benbasat, Goldstein et al. 1987).

Conventional case studies are useful for gaining new and creative insights, developing new theory, achieving a high level of validity with the ultimate users, and increasing the understanding of actual events as well as richer data (Eisenhardt 1989, Yin 2015). Many theoretical contributions are “vacuous”, without much explanatory power (Schmenner et al. 2009) – “too much theory, not enough understanding”. Often, this results in the research having only a small impact (Skitton 2011). Good theory can be relevant and have a high impact, and result in richer managerial findings and implications: “Nothing is quite so practical as a good theory” (Van de Ven 1992, Jahner, Boehmann, Krcmar 2006). As my research topic is centred on one phenomenon and a single research field, it makes sense to conduct case study research; to study the phenomena in its actual settings (Yin 1994, Yin 2015).
Since this is a process study based on a longitudinal case study of cloud sourcing (Yin 1989), I focused on the situated actors and practices that shaped the relationship of the cloud sourcing, which was intended to bring strategic change, to the cloud sourcing company. In particular, I sought to offer an account of how cloud sourcing activities developed and why sometimes, despite successful adoption, cloud sourcing was not sustained. Thus, I looked at companies that were already involved in cloud sourcing. These companies were of interest for this study because they have experience of cloud sourcing and of relationships with the different partners involved in cloud sourcing.

Each case study of cloud sourcing consists of a focal customer company and several cloud providing supplier companies that come together to design, develop and deliver the cloud sourcing solution. The focal cloud customers are from two different industries: Quos is the global leader in industry maintenance; and WasteHeroes is a municipally owned waste management company. All the other cloud providing partners were from the IT industry (the providers, sub-providers, intermediaries, etc). The cloud providing partner firms are not limited to operating in a specific country. The study was partly retrospective in the sense that I looked at a cloud sourcing that was already initiated, but also ongoing activities in real-time. Experiences were not always easy to collect, but as the cloud sourcing was still ongoing, observational data in the form of meeting participation, documentary evidence (emails, meeting notes, SLAs) and interviews were available to me.

Table 3.2: Comparison of Quos and WasteHeroes

<table>
<thead>
<tr>
<th></th>
<th>Quos</th>
<th>WasteHeroes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of company</td>
<td>International privately owned corporation operating in 28 countries across the globe</td>
<td>Public Service Company operating only in Sweden and in one municipality</td>
</tr>
<tr>
<td>Amount of employees</td>
<td>Approx. 3000 employees</td>
<td>Approx. 300 employees</td>
</tr>
<tr>
<td>Start of Cloud sourcing journey</td>
<td>Year 2015</td>
<td>Year 2015</td>
</tr>
<tr>
<td>Status by end of year 2018</td>
<td>Successfully cloud sourced all its IT systems within 10 months, and is still running in the cloud</td>
<td>Has cloud sourced 70 % of its IT systems</td>
</tr>
</tbody>
</table>

Quos is the global leader in industrial maintenance with more than 25 years of experience in industrial maintenance management and execution, supporting its customers throughout the entire maintenance value chain. Their mission is to embed superior safety practices and build a true maintenance culture. Quos optimizes maintenance costs and improves plant performance by reducing technical failures and continuously improving productivity, thus maintaining the value of assets. The company is spread across 5 continents, at 71 sites in 28 countries with 3000 employees in total. Virtual teams working 24/7 are common. All systems are in the cloud. Previously, Quos belonged to ABB Full Service, but since 2015 it has been owned by Nordic Capital. It started off its cloud journey in the carve-out in 2015 when no back-end support functions existed. There were no support systems in place and only a few
operational systems. Basically, there was no backbone infrastructure. The time for Quos to stand on its own two feet was short – it needed to be up and running by June 2016. The management decided on an IT Strategic Framework including:

- A standardized and centralized infrastructure at a global level (limited IT at region/site level)
- Lean IT organisation with a minimum of IT applications
- Largest possible degree of outsourcing
- Ensuring critical business application knowledge remained inhouse as well as IT management capabilities
- Scalable IT platforms to support further business growth without major changes
- Variable IT cost base (e.g. pay per use with 3rd parties)
- Set-up and integration with customer environments based on standardized blueprints and playbooks
- Future focus that IT is important for our customers
- They aimed to build a platform and backbone to decrease the time-to-market of additional maintenance services.

By 30 June 2016, 28 countries were up and running in the same cloud structure. The whole ERP system was set up and rolled out in 10 months – with one global template and localisations if needed for legal or compliance reasons. All systems were running (migrated or newly implemented) in Azure. These included a few common standardized support systems such as CRM Sales, Safety & Management, etc., Office 365 email, storage/backup of work-related personal documents on OneDrive, Share Point for sharing documents, Skype For Business, SharePoint and Yammer for Collaboration, Outsourced ITOp with 1st Line Service Desk; and Server Monitoring, Backup and Restore, 2nd and 3rd Line support with an ITO provider or application provider. Talking to their cloud sourcing suppliers, Quos is rather unique in this sense, since none of their other cloud sourcing customers have gone down this route so rapidly and on such a large scale.

In the second case study, WasteHeroes was the focal cloud customer company. It is a Swedish waste management company, 80% owned by public sector organisations, i.e., municipalities. The company has some 300 employees, and uses seven IT systems cloud sourced as SaaS (Software as a Service) since 2015. They have a long relationship with the cloud sourcing suppliers lasting between 3 to 5 years. The current relationship is characterized by frequent communications, common goals, and the partners reporting to each other. Individuals in the relationship are crucial, since they possess specific skills and knowledge. However, there have been problems in the relationships with the cloud vendors, which have not allowed WasteHeroes to move all its IT systems to the cloud. WasteHeroes’ aim is to cloud source all IT systems within five years from now. For WasteHeroes, cloud sourcing its IT systems implies that its employees will be able to focus on its core business, which is waste management. No longer will they need an internal IT department for the purpose of maintaining the IT systems. The strategic
intent of WasteHeroes’ cloud sourcing is a more efficient organisation where the employees can make decisions in real-time on the fly, while managing waste at different stations. Communications between employees has become more frequent as they all have access to the IT systems using their PDAs and can monitor actions and exchange information instantly, no matter their location. To summarise, cloud sourcing has helped to reduce costs, increase flexibility, speed up operations, and improve communications, creating a more efficient organisation and the foundations for future upgrading to the internet of things.

3.6 Data collection and analysis

Data was collected primarily through interviews, onsite observations and reviewing documents as SLAs, internal reports, meeting notes and minutes, presentations, and change orders. In line with Klein and Myers (1999), I strove to include all partners involved in this cloud sourcing relevant for understanding the process. Eliciting data from multiple sources and in various forms allowed me to triangulate my data for authenticity (Yin 1989). Data was collected over a period of one and a half years with follow ups up to two and a half years in total, in several phases. This allowed me to study the changes resulting from the cloud sourcing process over time by comparing past and present practices, i.e. activities and associated sense-makings, values, norms, actions, problems that arose, how problems develop, etc.

In the first phase, I was invited by Quos and WasteHeroes managers to study issues in their cloud sourcing. This worked in my favour, ensuring willingness to cooperate, the availability of multiple sources and the potential for purposeful sampling (Yin 1989, Peppard 2001). Semi-structured interviews were conducted with the different partners (eight in total at WasteHeroes and eleven at Quos) involved in the cloud sourcing, the managers of Quos and WasteHeroes, and users of the cloud system (employees at Quos and WasteHeroes). In addition I conducted onsite observations of meetings between the different cloud providing partners as well as meetings with only Quos and WasteHeroes staff. These observations offered a grounded understanding of the cloud sourcing whilst contextualizing my understanding of the issues that Quos and WasteHeroes faced in their cloud sourcing processes.

In the second phase, data collection focused on understanding the outcomes of cloud sourcing. To this end, I interviewed people with rich insights into the cloud sourcing; notably, all respondents were involved in the cloud sourcing either as partners or users of the cloud sourced systems. Observations from the first phase helped inform my sampling. First I interviewed the Head of IT of WasteHeroes (twice), a WasteHeroes Manager (once), and all their cloud providers once. The process was similar at Quos, starting off with the top management and closing off with them as well. As they were key parts of the cloud sourcing, this offered rich and direct access to the cloud sourcing process and its outcomes and allowed me to elicit data about barriers, innovations and
changes in the companies. Informal talks were held on a regular basis with the Quos and WasteHeroes Heads of IT. This offered key insights into strategic intentions and practices at Quod and WasteHeroes, respectively, and helped validate the early results, increasing the credibility and authenticity of my findings (Miles and Huberman 1994). In addition, onsite observations helped to verify my understanding of the data. Where necessary, post-interview follow-ups were also conducted.

Interviews were typically conducted in offices or adjacent conference rooms. Most interviews were recorded and transcribed verbatim. Interviews on site with the users were conducted on the fly, where high levels of noise prevented audio recording; instead notes were taken. Notes were also taken during recorded interviews and onsite observations. I was invited to have my own office at their headquarters to do observations at Quos for two months, and at WasteHeroes for one month. During this time, discussions with various employees, formal and informal, were conducted to enrich my contextual understanding.

The reason for the decision to do interviews was based on the fact that it is the most frequently applied method in interpretive studies for collecting rich data on individual understandings and experiences (Braun and Clarke 2006). Semi-structured interviews, which make up the base of this research, were an important source of data, (Da Cunha and Orlikowski 2008, Gubrium 2012). This required me to be able to ask good questions and interpret the answers, to be a good listener and to not be trapped by preconceptions, to be adaptable and flexible, to see newly encountered situations as opportunities and not threats, to have a firm grasp of the issues being studied, and to be unbiased by preconceived notions and thus receptive and sensitive to contradictory evidence (Yin 1994, Kvale and Brinkmann 2009). The choice of respondents was based on the identification and validation of key respondents as well as the need for a number of perspectives (questions for which no one person has all the required knowledge; events that may have different interpretations) (Alvesson 2010). I therefore looked for multiple viewpoints. The interviews were recorded, and field notes were taken and company feedback was collected. The data was then checked. The interview questions focused on strategic intentions, provider selection, contractual governance, the transition of work and organisation, ongoing delivery, relational governance, cloud outcomes and overall lessons learned. Kvale and Brinkmann (2009) claim that good interview questions should address knowledge production and provide a good interview interaction. Bearing this in mind, I developed an interview guide that led us through the interview, knowing that the interview researcher is his or her own research tool (Kvale & Brinkmann, 2009).

The reason for the decision to include document collection and analysis (examination of documents found in organisational files, business press, newspapers archives, etc.) and interpretation was to get supplementary research data, to elicit meaning, increase understanding, and develop empirical knowledge (Corbin and Strauss 2008) but also to contextualise the data collected from the interviews and observations. I believed that these documents could provide questions that needed to be asked and open up situations
that needed to be observed as part of the research. They also helped in tracking change and development for the verification of the evidence. The documents that were collected for systematic evaluation included advertisements, agendas, attendance registers, and minutes of meetings, manuals, background papers, books and brochures, diaries and journals, event programmes (i.e., printed outlines), letters, and memoranda, etc.

In line with the abductive process, data collection and subsequent analysis an iterative cycle followed: going forth and back and forth between data and theory to gradually improve my understanding of the phenomena being observed. The data analysis included reading and subsequently coding the transcribed interviews and field notes, looking for statements and activities that offered insights into the process of cloud sourcing and the outcomes in terms of strategic value. The process of qualitative coding is important for climbing the abstraction ladder and generating greater meaning from the transcribed interviews. Through the coding process, emergent patterns were delineated. These patterns were then analysed and abstracted to form thematic categories, interdependencies, ends and ideals (i.e. different goals and activities for sustaining the cloud sourcing process), complicating factors (i.e. issues that emerge as a result of changes in the organisation, relationship to cloud providers etc), consequences and compromises (i.e. how and what they were practically able to cope with, given the situation), and realized and possible benefits and failures (i.e. how the process is slowed down or continued).

Table 3.3 Gives a brief overview of the different levels of interviews that I conducted at Quos and WasteHeroes with their respective cloud sourcing partners. A full table with all information is provided in the Appendix.

<table>
<thead>
<tr>
<th>Company</th>
<th>Interviews</th>
<th>Profile</th>
<th>Location</th>
<th>Interview time mean (hours and minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quos</td>
<td>35</td>
<td>The whole range from top down (CIO, CDO and CFO to technical staff, HR, strategic management, finances)</td>
<td>Face to face at Stockholm Headquarter + Skype interviews</td>
<td>1h</td>
</tr>
<tr>
<td>+ Cloud partners (cloud providers, cloud sub providers, middlehand)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WasteHeroes</td>
<td>34</td>
<td>The whole range from top down (CIO, CDO and CFO to technical staff, HR, strategic management finances)</td>
<td>Face to face at Malmö Headquarter + Skype interviews</td>
<td>1h</td>
</tr>
</tbody>
</table>
3.7 Reflection on methodological choices and limitations

Reliability and validity (Yin 1989, Yin 2013) cannot be applied to assess my overall research, but I still consider them valuable criteria for my systematic literature review (Paper I and Paper III). For the empirical study, the research rigor enhancement of reliability and validity can be addressed with a predefined research case protocol. A case protocol would indicate from where information is sought, and contains procedures and general rules of use, an interview guide (funnel model – open-ended questions first), etc. However, as the interviews were often retrospective, entirely or in part, I needed to be careful to control for the reliability of the interviewees’ recollections and other subjective biases. The other downside of doing two case studies (Marshall, Cardon et al. 2013) is that it might be difficult to determine cause and effect and participants may not recall important events which also may be subject to bias. Furthermore, notes from the interview meetings may not reflect what happened, there is less depth per case than in a single case study, and it is more resource-consuming. On the plus side, multiple cases (Lee and Baskerville 2003) augment external validity and help counter observer bias.

Qualitative data gathering and analysis produce findings that relate to intricate details where values and human experience are relevant. Here, the ability to interpret data is important, and in this the role of the researcher becomes essential (Leedy and Ormrod 2001). Qualitative research is seen as the fit between the findings recorded and occurrences in the natural setting. Yin’s (2015) criteria follow an objective worldview which do not always work for more interpretative research. Therefore I found that a fairer way to assess the quality of my research would be to utilise criteria of a more interpretive nature and from this the issue of the importance of “trustworthiness” (Denzin and Lincoln 2011) emerges. Lincoln and Guba (1986) describe this as the truth that can be evaluated through credibility, transferability, dependability and confirmability (see Table 3.4).

Table 3.4: This thesis research quality evaluation

<table>
<thead>
<tr>
<th>Quality criteria</th>
<th>Overall approach</th>
<th>Data collection</th>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credibility</td>
<td>Research outcome trustworthiness based on interviewees’ view</td>
<td>Data triangulation; interviews, observations and text</td>
<td>Pattern matching of responses</td>
</tr>
<tr>
<td>Transferability</td>
<td>Research methods and context described in detail</td>
<td>Description of the sampling of respondents</td>
<td>Theoretical concepts used as coding scheme</td>
</tr>
<tr>
<td>Dependability</td>
<td>Data collection and analysis defined</td>
<td>Case study/interview protocol</td>
<td>Interview study and coding scheme</td>
</tr>
<tr>
<td>Confirmability</td>
<td>Reflection on my epistemological and ontological view Chain of evidence</td>
<td>Open-ended questions Data recorded digitally and manually Variety of interviewees’ for chain referral</td>
<td>Interviews transcribed and coded, notes taken</td>
</tr>
</tbody>
</table>
Credibility refers to credible and truthful findings and interpretations, relating to internal validity (Lincoln and Guba 1986, Creswell 2013). In general, internal validity or credibility is very good in case studies as you can often collect detailed and fine-grained data about the studied phenomenon. In fulfilling this criteria, I tried to diminish personal bias in the interpretation of my findings through triangulation of the collected data: interviews, observations and text analysis. I tried to keep discussions iterative when appropriate and identified patterns across interviews. Moreover, I followed up with new interviews later on to confirm my interpretations. I also discussed with my co-authors to further confirm credibility. The second quality criteria, transferability, can be related to the generalizability of the findings to other contexts, termed external validity (Lincoln and Guba 1986, Creswell 2013).

Transferability is achieved with detailed descriptions to cover all the gathered information about the researched context (Lincoln and Guba 1986). In general, the findings from my research, including the literature reviews, show that innovation related to cloud sourcing is not only applicable to the maintenance and waste management industries, but any industry engaged in cloud sourcing. In terms of sampling, as previously discussed, I purposefully selected the companies and respondents (Miles and Huberman 1994, Creswell 2013). The first time I heard of Quos was at a Cloud Confessions conference event in Stockholm, October 2016. I went there with the purpose of getting to know cloud sourcing from a more practical viewpoint. There, I listened to a presentation by Quos’ CIO about their 10 month cloud journey which caught my interest to explore more. That is how I got into that company’s headquarters and through Quos got in touch with their cloud partners.

My other case company, WasteHeroes, took some time to find; several internet searches, telephone calls, talks with Michael Haglund, CTO for IBM Sweden and with Daniel Akenine (in 2008 he was ranked by IDG as one of “Sweden’s top 10 developers/architects” and the same year appointed as National Technology Officer at Microsoft). In the end, I found WasteHeroes as one of the top cloud provider’s customers on a website, and my interest in finding out more about this company grew. I had no insider contacts or gatekeepers whatsoever in finding my case companies: all interviewees and encountered staff on site were new to me. It was challenging to gain the trust of those people, who ultimately welcomed me, an outsider, and gave me an office at their headquarters for months, access to informal and formal talks, interviews of my choice, and allowed me to attend their meetings. This was very exciting and rewarding. Both of my case companies look forward to welcoming me again and to presenting my findings after the defence of this thesis. They have shown great interest in my research topic.

Moving on to dependability, which can be related to reliability (to be able to reproduce the results of the study) (Lincoln and Guba 1986), I developed an interview protocol (Maurer and J. H. Tindall 1983) which I followed to ensure that I had answers to my questions. I tried to maintain enough eye contact and nod when appropriate to make the interviewee feel more comfortable. Postural congruence with interviewees is thus something that I thought about when interviewing (Maurer and J. H. Tindall 1983). In
line with the recommendations of Maurer and J. H. Tindall (1983), knowing the context/environment before the interview helped in preparing the interview questions. Focusing on the interviewee, I tried to get concrete/situated information, which requires as little interpretation as possible. I followed up to add precision by asking questions such as ‘I’m not quite sure I understood that, did you mean…?’ , ‘Does this mean…?’ . I also gave the interviewees plenty of time: sometimes, it takes time to activate one’s memory, as some respondents are in the present not in the past. I used gentle prompts, repeating the last words of the interviewee to bring the interviewee back to the interview. Here, guiding is important to reassure the interviewee. I asked for additional information/questions, etc. The interviews were not finished until I left the interview setting. I followed the recommendation of Charmaz (2014) “No interview should end abruptly after an interviewer has asked the most searching questions or when the participant is distressed”. Many interviewees added information once the recording had stopped. Moreover, many interviewees added information once the interview was officially concluded. I had to indicate the end of the interview and thank them for their time and answers. Afterwards, I tried to memorize and find immediately a place to note these ‘off-the-record moments’ (unless I managed to record them). While it is difficult to control for consistency in answers (Kvale and Brinkmann 2009), it was also important for my development during this research and the way my interpretations evolved and matured during the process. “A research interview is […] a professional conversation; it is an interview, where knowledge is constructed in the interaction between the interviewer and the interviewee.” (Kvale and Brinkmann 2009).

The last quality criteria, confirmability, looks at the objectivity in qualitative research (Lincoln and Guba 1986). Since as a researcher I have been rather active and interacted with my respondents (Creswell 2013), it remains difficult to achieve this objectivity. “Intensive interviewing is a way of generating data for qualitative research. It typically means gently guided, one-sided conversation that explores research participants’ perspective on their personal experience with the research topic.” (Charmaz 2014). However, I believe I have still managed to achieve this to some degree through reflexivity. Early on, I acknowledged and described my initial beliefs and biases in the research process (Creswell and Miller 2000), such as my theoretical assumptions and preconceptions (Alvesson and Skoldberg 2009). During the interviews, I verified my interpretations by going back to the respondents in case of doubt to confirm. I also let the respondents speak freely (within the flexible frameworks of the interview guide, see Appendix) the knowledge gained gave access to further development (Kvale and Brinkmann 2009).

Finally as a researcher it has been a thrilling experience, to let my results lead me forward to a conclusion I had no idea about this thesis would end in. The excitement of applying established theories, and let each help me reveal new knowledge about cloud sourcing has been very satisfying. Not had I from the beginning planned to continue with dynamic capabilities after RBV, and then relationship theories, but my empirical research results have guided the choice and carved the way forward, piece by piece like a puzzle.
4. Summary of appended papers

I present a summary of the five appended papers that make up the main studies in this thesis in this chapter. The title for each paper is presented, followed by a brief background, overview of the research design, findings and main contributions. Please go back to the beginning of this thesis for information about where in the submission process each paper stands.

Paper I

Title: Relativism in the cloud: Cloud sourcing in virtue of IS development outsourcing - A literature review

Cloud computing and cloud sourcing is currently on the agenda in many organizations. Many Chief Information Officers (CIOs) that urge for alternatives to traditional outsourcing are interested in how they can take advantage from cloud computing, by sourcing Information Technology (IT) from the cloud. This paper provides an overview of the research direction of cloud sourcing in the IS field. A literature review based on selected papers from top Information Systems (IS) journals and conferences were conducted. Findings from the review indicate that the attention of cloud sourcing in IS literature has mainly been directed towards security and risk as well as adoption issues, and that cloud sourcing is claimed to be the next generation of outsourcing. Unfortunately, this is where this strong claim ends without any further evidence, which indicate that there is a need for more research on cloud sourcing, especially in the direction of investigating relationships and implications when organizations start using cloud sourcing.

The main contribution of this paper is to provide an overview of cloud sourcing as a phenomenon and how it has been discussed in the IS literature. It gives a direction for further studies.
Title: Sourcing motives behind sourcing decisions exposed through the sourcing decision framework

There is no doubt that information systems (IS) are the backbone of today’s organizations. Having an initial inspection on sourcing motives in the financial sector it can be stated that resources used in development of information systems (IS) are seen as an important factor for sustained competitive advantage. However, it can be claimed that it depends to a high extent on the application of different sourcing modes. This leads us to a closer inspection on sourcing motives through selected case studies and the following research question: How can motives for sourcing options of IS-development be explained? The empirical investigation on sourcing decisions and the motives behind, in addition to a literature review on sourcing decisions and sourcing options ends in four propositions. These propositions are then used in tandem with the findings from the empirical data for initial development of the Sourcing Decision Framework (SDF). Ultimately, what is at stake here is our framework (SDF) that from the initial development and the first test has shown to be purposive and could be further developed to a useful framework for analysing sourcing decisions and as a guiding tool for decision-makers when deciding on sourcing options for IS-development.

The main contribution of this paper is to increase our understanding of the motives for companies to enrol sourcing, and how these decisions are made. This was done by empirically evaluating previous literature on different sourcing options applying the Resource Based View (RBV) and VRIO framework. In addition to supporting the RBV we developed a Sourcing Decision Framework (SDF) to provide a better understanding of motives for sourcing options and the decision making process.
Title: Barriers to cloud continuance: Evidence from two case studies

The drivers and barriers for companies moving their IT-systems from traditional outsourcing to cloud sourcing have been studied extensively in cloud adoption studies. However, there are also indications that cloud sourcing and its benefits are not so easy to implement for companies calling for cloud continuance research. This is one of the first studies of cloud continuance processes at the organizational level contributing to the management and business research literature of cloud computing. In particular we have contributed with: 1) a literature review identifying two types of barriers which includes twelve individual factors which influence cloud continuance, 2) two case studies verifying the existence of ten of these factors as well as identifying an additional type of barrier: management process barrier, i.e., lack of objectives and strategies for cloud sourcing and lack of cloud vendor communication. Our study provides a model of barriers to cloud continuance that could be further explored.

The main contribution of this paper is an extension of the literature on barriers to cloud sourcing from a cloud continuance process perspective. Through empirical case studies and evaluation of existing literature, barriers to cloud sourcing are not only identified, but a conceptual model that describes the barriers and how they influence cloud continuance is developed. The additional type of barrier identified ”management process barrier” builds on and extends previous literature on the topic.
Title: Dynamic capabilities triggered by cloud sourcing – a stage based model

Current research offers with very limited insights on the process of how the adoption and continued use of cloud sourcing might trigger and push the development of innovations and competitive advantage of a firm. Applying an abductive approach, with two longitudinal case studies of cloud sourcing firms, and a theoretical framework based on stage-based models of business development and the dynamic capability view of the firm, we develop a model of stage-based business development path related to the adoption and continued use of cloud sourcing. The model identifies three business development stages characterized by specific types of capabilities. In between the three stages we identify three dynamic junctures that the firm and its managers have to overcome in order to progress from one stage to another. In the dynamic junctures three types of dynamic capabilities were key; sensing, seizing and transformation capabilities, to pass to the next stage. The model contributes to a better understanding of the evolution of dynamic capabilities as well as the evolution of the cloud sourcing firm and the cloud-based business model.

The main contribution of this paper is the understanding of how dynamic capabilities evolve - through the developed model of stage-based business development path related to the adoption and continued use of cloud sourcing. It provides a new perspective to dynamic capabilities being applied in a longitudinal stage-based process model, identifying business development stages that a cloud customer goes through when cloud sourcing characterized by specific type of capabilities.
Paper V

Title: Fostering sustainable relationships in a cloud sourcing context

Previous research on business relationships lacks more extensive insights into the business relationship development process. Thus, the purpose of this article is to provide a comprehensive framework of the business relationship development process and illuminate what makes business relationships more sustainable. The research is conducted in the cloud sourcing context and we base the results on 69 interviews and 50 observations related to two cloud customer companies. The findings reveal an intricate interaction of factors analyzed as catalyzers, catalyzer sets, and triggers within the distinct phases of the process, affecting trust, commitment, and satisfaction, and advancing the relationship toward sustainability.

The main contribution of this paper is a better understanding of how cloud sourcing partners can develop sustainable relationships over time. Moreover, it shows that through collaborative innovation cloud sourcing relationships can develop innovations such as new services, products, and business models. The paper contributes to extant literature on business relationships through a detailed study of the business relationship development process (BRDP) identifying factors that influence the initiation, development, continuation, and sustainability of business relationships. In addition, the role of trust, commitment, and satisfaction (TCS) is adapted for each phase along the process. The paper makes also a contribution to the literature on business relationships by the application of the novel context of cloud sourcing.
5. Discussion of results

This chapter reconnects with the outlined research questions in the very beginning of this thesis. In answering the research questions, I clarify the findings and justify the contributions of this research work. Furthermore, I discuss my contributions in relation to previous research.

5.1. Reconnecting with the research questions

The aim of this research is to contribute to the business and management research knowledge of cloud sourcing. In this chapter, I present the key findings in line with the five appended papers of this thesis and highlight the results. In the next chapter, chapter 6, the contributions to the cloud sourcing research are presented and discussed. The structure of this chapter is based on the research questions stated in the introductory chapter:

*RQ1*: What are the characteristics of the current body of literature on cloud sourcing?

*RQ2*: Which sourcing options of IS-development can be a source of competitive advantage?

*RQ3*: What are the barriers for cloud continuance in cloud sourcing firms?

*RQ4*: How are dynamic capabilities for innovation triggered in cloud sourcing firms?

*RQ5*: How does collaborative innovation develop in cloud sourcing relationships?

In Paper I, I presented the state of the literature on cloud sourcing, what we know so far. Paper II served as a pilot study in the financial sector, and pointed out an important insight that cloud sourcing as one form of sourcing might be a source of competitive advantage. Paper III developed this insight further by identifying the barriers of cloud sourcing, and as such contributed to a greater understanding of what makes firms struggle with cloud sourcing while other firms may have a smoother transition to cloud sourcing. Paper IV went further in exploring the dynamic capabilities triggered by cloud sourcing by developing a stage model of cloud related dynamic capabilities and
innovation capabilities. The final paper, Paper V, studies the relationships of cloud sourcing partners and how the business relationships develop over time. The development potential of reaching a sustainable business relationship, which may be a source of competitive advantage with new business models and innovations, is exposed. Figure 5.1. illustrates the links between research questions, papers and studies.
Figure 5.1: Research design and paper contributions

- Contribution to literature by exposing state of art of cloud sourcing research
- Contribution with important insight through RBV and VRIO; that cloud sourcing can be of competitive advantage
- Contribution to greater understanding of what the barriers to cloud continuance are - looking at the transition to cloud sourcing
- Contribution to dynamic capabilities by the identification of junctures and development of a stage model for innovation
- Contribution to relationship theory by identification of business relationship development process

**Literature review**
- RQ1: What are the characteristics of the current body of literature on cloud sourcing?

**Resource based view**
- RQ2: Which sourcing options of IS-development can be a source of competitive advantage?

**Cloud continuance**
- RQ3: What are the barriers for cloud continuance in cloud sourcing firms?

**Dynamic capabilities**
- RQ4: How are dynamic capabilities for innovation triggered in cloud sourcing firms?

**Relationship studies**
- RQ5: How does collaborative innovation develop in cloud sourcing relationships?

**Paper I**
- Relativism in the Cloud: Cloud Sourcing in virtue of IS Development Outsourcing - A literature review

**Paper II**
- Sourcing motives behind sourcing decisions exposed through the Sourcing Decision Framework

**Paper III**
- Barriers to cloud continuance: Evidence from two case studies

**Paper IV**
- Dynamic capabilities triggered by cloud sourcing – a stage model

**Paper V**
- Fostering sustainable business relationships in a cloud sourcing context

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Study A

Study B

Study C
5.1.1 What are the characteristics of the current body of literature on cloud sourcing?

The findings of this paper show that there is a lack of research on cloud sourcing as a phenomenon. The paper identifies current literature of cloud sourcing and categorises the reviewed papers in six different categories; capabilities, research, IS development, strategies, benefit/risks, and other. In addition, it relates cloud sourcing to traditional IT outsourcing with the purpose of discussing cloud sourcing as a new mean of sourcing. This literature review informs my following studies and thereby opens up for more research on cloud sourcing. Looking at the different categories in which cloud sourcing papers have been identified, they could be generalised into the field of strategic management. Albeit, when searching for papers on cloud sourcing in pure management outlets it is rather scarce to get any hits. This could be due to several reasons. Firstly, cloud sourcing per se is a transdisciplinary area that started off from the more technical field of cloud computing, and expanded further into becoming a socio technical field which is well suited for outlets of transdisciplinary character. Since very beginning of the term cloud computing being mentioned in 2007, academic research on the topic has focused primarily on two aspects: technical issues associated with cloud computing, and implications for end users and enterprises using cloud computing. To date, there has been little discussion on how it may affect innovation and competitive advantage. The literature review was performed in 2014 and since then several other research reviews have been published (e.g. Bayramusta and Nasir 2016, Senyo et al. 2018) in the area with similar findings, albeit with finding more contributions in the management research domain. The contribution in relation to later reviews will be discussed further in chapter 6.

5.1.2 Which sourcing options of IS-development can be a source of competitive advantage?

Informed by Paper I, Paper II continues with a pilot study in the financial sector with the aim of revealing sourcing options and their implications (Grover et al. 2018) for competitive advantage. This paper discusses previous sourcing options through the theoretical lens of RBV and the VRIO framework. With that said, it looks at the internal resources and their implications for competitive advantage. Connecting the findings of this paper to cloud sourcing, it is obvious that RBV is not enough in explaining competitive advantage related to cloud sourcing. The reasoning behind this is based on the fact that cloud sourcing has different characteristics from traditional IT-outsourcing as discussed in chapter 2, such as greater flexibility and scalability, which provides a different and more dynamic platform of possibilities and interaction with the technology. RBV is static, and not well equipped to explain the process of when value is created, and how firms can innovate and develop new sources of competitive advantage. The inability of RBV (Kraaijenbrink, Spender, Groen 2009) to explain more dynamic capabilities and their implications for sustained competitive advantage has lead
me to apply the DCT. While RBV has been used as a theoretical underpinning in a few cloud sourcing research studies (Senyo et al. 2018), the rapid development of the technology and its diffusion in industry makes DCT a much better theory choice when studying cloud sourcing from a firm strategic perspective.

Nevertheless, the findings of paper II provide insight to the possibility of cloud sourcing being a source of competitive advantage, and therefore calls for a better understanding of the cloud sourcing phenomenon and how it can be a source of competitive advantage – which is unfolded in the following papers. Applying RBV has helped me to understand how competitive advantage is formed in cloud sourcing in general. Moreover, in firms and industries with very high levels of security concerns RBV might still be an appropriate theoretical frame.

5.1.3 What are the barriers for cloud continuance in cloud sourcing firms?

This question is answered by Paper III were barriers to cloud sourcing continuance are identified and discussed in relation to cloud sourcing firms. The barriers are identified from a literature review (Chen, Chen, Chen 2009, Benlian, Koufaris, Hess 2011, Venkatesh et al. 2011, Trenz and Veit 2013, Mirusmonov and Kim 2013, Trenz 2014, Schlagwein and Thorogood 2014, Trenz and Veit 2015, Yang and Lin 2015, Ratten 2016, Al-Sharafi, Arshah, Abu-Shanab 2017) of cloud continuance factors and two case studies from different industrial contexts and cloud maturity. This gives a more fine-grained understanding of possible barriers that cloud sourcing firms can encounter. It contributes with a framework that identifies and relate these barriers for each case. As discussed in chapter 2, many companies struggle to cloud source. In some instances contextual barriers may be problematic such as hindering laws and regulations, lack of cloud vendor support and lack of competitive pressure. However, different types of organizational barriers seem to cause more problems, especially lack of top management support, lack of relevant IT competence and lack of innovation capabilities. The study also identified a new type of barrier, management process barriers, which consist of lack of objectives and strategies related to cloud sourcing and lack of communication with vendors. This finding is thus an addition to the cloud continuance research. As many of the previous of cloud continuance studies build on cross sectional studies (Schneider and Sunyaev 2016), the longitudinal case studies performed here might be a reason for this finding.

5.1.4 How are dynamic capabilities for innovation triggered in cloud sourcing firms?

The next paper, Paper IV builds on previous papers and develops a stage model of dynamic junctures that need to be overcome by managers; in order to sense, seize and transform in response to innovation opportunities. Applying DCT has helped to understand how innovation capabilities are created and used to innovate. These
innovations are based on dynamic capabilities that are formed in the different stages of the cloud sourcing process. The identified innovations are of three innovation types; process innovations, product/service innovations and market expansion and business model innovation. The stage based model combines three theoretical frames: the DCT (e.g. Teece 2007, Teece 2017), the stage-model (e.g. Romanelli and Tushman 1994) and capability lifecycle stages (Helfat and Peteraf 2003). Based on two case studies we identify a pattern of internal process innovations first, then product/service innovations and market expansion, and finally business model innovation.

The findings include a process view on cloud adoption and continuance stressing the capabilities to exploit cloud sourcing for business and competitive advantages over time. The capabilities to change, the dynamic capabilities, are here key to reap the business and competitive advantages from cloud sourcing. As much of the literature on cloud computing and cloud sourcing concerns cloud adoption and cloud continuance in a static perspective, i.e., based on cross-sectional data at one point in time (Schneider and Sunyaev 2016), this is new finding. Willcocks et al. (2013) reported in their empirical investigation of cloud sourcing and innovation that technological challenges were among the most important challenges. According to our model and empirical findings, the lack of dynamic capabilities combining IT- and business competences through re-aligning structures and internal culture, as well as establishing a good continuous innovation dialogue with cloud providing partners, are more important challenges.

Another finding concerns the IT-function and its capabilities. They are key in the sensing, seizing and transforming of the business development related to cloud sourcing. The IT-function must be able to lead and govern the collaboration with cloud providers, first organizing the routines for handling technology issues and internal process innovations. Then to organize and lead the cloud providers into a more business-oriented path with product/service innovations, geographic expansion and lastly business model innovation. This requires business competence in, or access to, the IT-function as well as more communication and coordination with business functions in the firm.

Finally the findings contribute to a better understanding of the evolution of dynamic capabilities. The stage-based model stress that not all the advantages of cloud sourcing can be exploited and explored at the same time, there is a temporal pattern to this process. Certainly, firms with more developed and strong dynamic capabilities relevant for cloud sourcing might be capable of executing a faster and more thorough process, but there would still be a temporal pattern according to our model. This temporal pattern is a testable proposition in large scale surveys concerning cloud sourcing in non-software intensive firms and the pattern of innovation.

(Willcocks and Lacity 2018) three types of innovation processes: 1) Incremental innovations (reduced costs, direct replacement of Apps with SaaS), 2) Architectural innovations (improvement in business processes; increasing mobility), and 3) radical
innovations (collaborating with third parties, internal skunk-works). The similarity lies in incremental innovations being the most easily accomplished and the greatest difference in Willcocks and Lacity (2018) describing three types of innovation processes while paper IV describes one type of innovation process, albeit it may progress (or even digress) with variable speed. The theoretical underpinning is not clear in Willcocks and Lacity’s (2018) study while paper IV very clearly use a combination of DCT and stage-based models. This might be the main difference in explaining the different views on how cloud sourcing leads to innovation.

5.1.5 How does collaborative innovation develop in cloud sourcing relationships?

The last paper, Paper V goes even deeper into the business relationship and desiccates the antecedents of innovation (Caputo and Evangelista 2018, Sousa and Rocha 2019). It provides a model of the business relationship development process that clearly defines each phase of the process, its catalysers, catalyser sets and triggers and how that affects the progress of a business relationship in cloud sourcing. The paper contributes to relationship theory with a better understanding about how these relationships develop over time in the context of cloud sourcing.

As seen from paper V, cloud sourcing relations can be rather complex with many factors to consider in order to achieve collaborative innovation such as culture, norms and values. This paper goes into depth in understanding the crucial factors for making cloud sourcing relationships form and sustain over time.

The findings add complexity to the business relationship literature by categorising factors into catalyzer sets, catalyzers and triggers based on their characteristics, abilities and evolution; to describe phases in a BRDP studying business relationship as a process. The data analysis revealed that factors are catalyzers as they are identified to be sources of BRDP stabilisers; meaning that they are crucial for the formation and existence of a BRDP.

These catalyser sets develop trust, commitment and satisfaction (TCS) along the phases over time, which trigger transition or lead to stagnation across the phases of business relationships in a BRDP. The interplay of catalyzer sets, catalyzers and triggers affect BRDP continuance.

The paper makes several contributions. First, it contributes to the literature in relationship marketing by exhibiting the business relationship process in chronological phases, where catalyser sets make transitions between phases possible and development of TCS which triggers the transitions in any direction over time. The paper is built on previous literature that discusses the importance of factors for business relationship development (Morgan and Hunt 1994, Olkkonen 2000, Walter et al. 2003, Andersen and Kumar 2006, Holmlund 2008, Athanasopoulou 2009, Falkenreck 2017). It is also extended by identifying different categories of factors in the process of BRDP, catalyzer
sets, catalyzers and triggers. Catalyzer sets and catalyzers are crucial for the development of TCS triggers which can transition BRDP along the BRDP model through evolving transition, stagnation, procurable transition and deteriorating transition. TCS triggers can enable or inhibit this process depending on how inhibiting or triggering they are, or in some cases stagnate (no change). Absence of catalyzers prohibits the development of BRDP.

Interestingly, the framework presented in the paper highlights what other authors (e.g. Holmlund, 2008) called the technical dimension or technical factors. These factors emerged during the data analysis across all the catalyzer sets, yet they were most prominent in the initial conditions. A possible explanation for relative importance of these factors in the data is the empirical setting of cloud sourcing, particularly when it comes to competences and contract fulfilment. These factors were previously mentioned and assumed to be existing, but they were not always emphasized.

Moreover, the study is performed in a novel context of cloud sourcing relationships and in this manner provides a fresh understanding of how business relationships can evolve and sustain. Hence, cloud sourcing continuance literature is further developed applying TCS and revealing its complexity as shown by previous studies (Chou et al. 2015, Chou, Chen, Liu 2017, Cheng 2018, Dempsey 2018, Goode 2018, Walther 2018). In theory cloud computing is highly scalable, flexible and on demand enabling development of new services.

5.2 How can cloud sourcing lead to innovation?

Reconnecting to the first part of the overarching research question, how can cloud sourcing lead to innovation, the papers that constitute this thesis expand extant management research on cloud sourcing that highlight it as a source for innovation. The types of innovations that can be developed through cloud sourcing are explored in three of the five papers that constitute this thesis. As discussed above the innovation process related to cloud sourcing is described as a stage-based process with dynamic junctures and stages. In the stages the company has developed and stable routines and ordinary capabilities to perform certain innovation types, i.e., process innovations, product/service innovations and market expansion and business model innovation. In the dynamic junctures the dynamic capabilities appear, either by import of skills, capabilities and knowledge or “awakening” of a dormant skill or capability.

The case studies indicated that once the decision to start the process of cloud sourcing and the technical implementation problems were solved, the dynamic capabilities related to internal process innovations started to work. For example, it was the hiring of an external consultant, a cloud specialist, that proposed cost saving activities of night time shut down utilizing the scalability of cloud sourcing. It was the appointment of an ERP-specialist that solved user problems with the ERP-system or communicated with
the cloud partner if the specialist could not handle the complaint or suggestion. Another example was the appointment and training of super users to train and support other users. These were examples of adaptations and alignments that would enable the process innovate related to cloud sourcing. That could include also developing the competence to replace traditional apps and systems with SaaS-based apps and systems, such as skills in contracting, technical transfer of software and data, communication with vendor and so on.

The next dynamic juncture occurred when products/services and market expansion innovations related to cloud sourcing come up on the agenda. Then new types of dynamic capabilities started to appear. New managers were hired to take responsibility of such innovations. Competence related technologies such as Internet of Things, i.e., sensors, were brought into the firm. The IT-function got access to top management to feed ideas on plans for these types of innovations and get feedback on overall company priorities. New types of meetings were set up with cloud vendors discussing, planning and following up development projects. At some point the company had developed stable routines and capabilities for product/service innovations and market expansion. The final dynamic juncture, identified in one of the case studies, concerned the appearance of dynamic capabilities related to business model innovation. This included the permanent inclusion of the IT-function in the top management team, the vision of fully cloud-based company, the constant search for new third party apps and systems as well as increased interaction and positive collaborative experiences with cloud vendors resulting in trust, commitment and satisfaction. While no company in the case studies had reached the business model innovation stage, one of the case companies were in the process of developing dynamic capabilities to reach that stage.

The stage-based innovation process is stylized in the sense that covers three types of innovation types related to cloud sourcing, companies might be moving both forth and back in the process depending on successful passing of dynamic junctures or not, and circumstances might change that affects the effectiveness of both dynamic and ordinary capabilities. The process is illustrated in figure 5.2. (below after section 5.3.)

5.3. Cloud sourcing as a source of competitive advantage

Starting with a discussion on how different sourcing options relate to competitive advantage in a static RBV perspective in paper II, overcoming (or not) barriers to cloud continuance in paper III and then continue to explore and explain how dynamic capabilities triggered by cloud sourcing may give rise to and sustain competitive advantage in paper IV, and lastly taking a relationship marketing point of view in paper V. The findings of this thesis has implied that cloud computing, in the technical sense, cannot be a source of competitive advantage as the technology and the services related to it are readily available on the market for any company to acquire. Cloud sourcing, as a variant of IT outsourcing, has less potential than traditional IT outsourcing to be a
source of competitive advantage due to its common availability and benefits of scalability and flexibility. More companies can afford cloud sourcing than traditional IT outsourcing due to less or very limited investments in IT infrastructure and IT equipment as well as less investment in application programs. Today, even start-ups and small companies can afford, and probably will in most cases prefer, cloud sourcing. Willcocks and Lacity (2018) has even labelled cloud sourcing as the “great equalizer” between small and large companies.

Thus, the RBV-analysis of IT sourcing in Paper II (Muhic and Johansson, 2017) favouring an internal solution, to make imitation harder of a strategically valuable IT sourcing solution, is less valid in a world with abundant cloud sourcing opportunities. The case studies also indicated that the four banks strived for, and also had achieved, a solution totally based on cloud sourcing. However, in some companies and industries, e.g., with high demand for security or sensitive data, an internal solution might be of strategic value. Nonetheless, overall the findings of this study indicate less strategic value of IT outsourcing solutions with the continued diffusion of the cloud sourcing solutions.

As some prior research have indicated, (e.g. Kathuria al. 2018, Willcocks and Lacity 2018) the strategic value and sources of competitive advantage lies in the capabilities of identifying, developing and integrating cloud sourcing with the business and innovation processes, i.e., dynamic capabilities, to develop and transform the company and its business model (Teece 2018). Paper III identifies a number of contextual, organizational and management process barriers to cloud sourcing, barriers that if not managed and overcome might slow down the cloud sourcing process. The time difference between companies having attained full cloud sourcing and those experiencing a slow process might be quite significant. In the two cases Quos managed to fully cloud source within 10 months while WasteHeroes had reached 70 % cloud sourcing after 3-4 years. While it is hard to draw any certain conclusions from this finding in two random cases, it is probably safe to assume that temporary competitive advantages based on fast adoption of cloud sourcing compared to slow adoption might be in the order of 1-5 years depending on industry (cf. Willcocks and Lacity 2018).

The barrier that seems most difficult to break is the integration of the IT-organization with the top management organization, indicated in both case studies. The evolution of the traditional role of the IT organization from being a support function to becoming a business and innovation function of the company seems farfetched by top management. There is an evolutionary path, described in a stage-based model in Paper IV, to go through where dynamic capabilities evolve to be able to sense, seize and transform cloud sourcing opportunities to innovations. The model describes this evolution in terms of dynamic junctures and stages where sensing, seizing and implementing process innovations comes first, followed by product and market innovations and then finally business model innovations.
Making cloud sourcing relationships with cloud sourcing partners work as a collaborative innovation network is another difficult step in realizing strategic value from cloud sourcing as high-lighted in Paper V. Also this is described as a stage-based process where the partners successively come to commit, trust and be satisfied with one another. This is because of its dynamically organised characteristics, were the relationship between the partners becomes so strong and unique that there is a greater loss in breaking it than continuing the cloud sourcing relationship. The developed innovations imply not only temporary competitive advantage, but also long term competitive advantage in the form of the dynamic capabilities of the cloud sourcing relationship that is able to constantly develop the relationship further, possibly leading to more innovations and sustained competitive advantage.

Taken together the sources of competitive advantage related to cloud sourcing can be summarized in a VRIO-framework as described in table 5.1. Looking at the dynamic capabilities related to cloud sourcing it emphasises the importance of developing and merging IT and business in order to endure competitive advantage. Whereas collaborative innovation with cloud sourcing partners requires external relations that are dynamic and innovation driven in order to reach enduring competitive advantage.

| Table 5.1. Cloud sourcing and competitive advantage |
|----------------------------------|--------|--------|-----------------|-----------------|-----------------|
| Cloud sourcing                   | Valuable | Rare   | Hard-to-imitate | Well organized | Competitive implication |
| Cloud computing - Technical      | Yes     | No     | -               | -              | Competitive parity   |
| Cloud sourcing                   | Yes     | Yes, but less over time | Yes, some barriers but manageable over time | - | Temporary advantage |
| Dynamic capabilities related to cloud sourcing | Yes | Yes, but less over time | Yes, but less over time | Yes, dynamically organized | Enduring competitive advantage |
| Collaborative innovation with cloud sourcing partners | Yes | Yes, but less over time | Yes, but less over time | Yes, dynamically organized | Enduring competitive advantage |

The implications for competitive advantage could be further explored by using the characteristics of inimitability of dynamic capabilities proposed by Teece (2010).

a) Differentiated business model architecture with co-specialized elements – Cloud sourcing provides opportunities (and sometimes pressure) to convert traditional software apps and systems to SaaS-based apps and systems. There will also be continuous possibilities to license new SaaS apps from third parties. Willcocks and Lacity (2018) reported that large companies like Procter & Gamble runs about 2000-3000 apps, whereof only some 30 were SaaS-based. However, the number of SaaS-based apps were growing much faster than the traditional apps. Thus, over time there will be an increasing amount of third party developed SaaS-based apps that the companies can license and integrate in their internal processes and/or as new services
towards the customers. The possibility to differentiate the business model architecture with third party or co-specialized elements will be substantial. As long as the company focus only on process innovations related to cloud sourcing the differentiation will be limited and the level of inimitability will be low. Utilizing also SaaS-based apps and systems for product/service innovations, market expansion and business model innovation will increase differentiation and thus the level of inimitability to medium and high respectively.

b) Complicated process steps, organizational structures, and/or arrangements

The changing of process steps, organizational structures or other arrangements of developing internal process innovations related to cloud sourcing does not necessarily have to be complicated. As long as cloud based apps only concerns internal affairs the changes might be limited. Users have to get accustomed to more frequent software updates and associated problems but that might not require more than training, some new competence and the organizing of feedback to third party cloud vendors. However, as new products/service apps becomes involved complexity increases as data need to be protected in more ways, new types of regulations and laws need to upheld, interaction between business/marketing and IT-functions need to be increased and so on. Thus, inimitability will go from low level to medium level. When it comes to business model innovation complexity will increase again, as top management needs to be involved, and typically also heavier investments and changing of customer interaction. At this point inimitability is at a high level.

c) combinations with (internal or external) complementory assets –

As long as the number of cloud sourced apps and systems are limited and data integration is low the combinations with internal and external providers are limited. As the business model architecture becomes more differentiated the number of combinations with internal and external partners will increase. This will increase the access to more complementary assets but will also be more difficult (contractual, financially, coordinating etc) to manage. A large net or ecosystem of partners will be more inimitable than a limited net of partners.

d) relationships with external actors, e.g., customers, suppliers, partners, which are unique and/or disturbing to competitors

A limited number of external partners will be easier to manage than a large amount of external partners. A large amount of external partners will probably require specific relationship managers and resources. To motivate, coordinate and control a large amount of external partners will be more difficult than a limited amount of external partners. While internal process innovations probably only require handling of a limited amount of external partners, product/service innovations, market expansion and business model innovation will require managing a growing number of external partners. The inimitability will go from low, to medium to high level respectively.
e) dynamic adaptation of business model elements and architecture, or dynamic adaptation of relationships with external partners

Traditional IT outsourcing often have long, e.g. 3-5 years, contractual agreements between the company and the IT supplier. Updates are infrequent and development work often have to be handled separately. In cloud sourcing updates and changes in apps are much more frequent. The possibility to dynamically adapt to changing circumstances, new customer needs, new related technologies, interoperability with other apps and systems and so on are much greater with cloud sourcing. For instance, a new pricing logic might be integrated into a customer app in a short time. Moreover, new external partners or expanded relationships might be added in a short time. As long as these adaptations only concern process innovations the dynamic adaptation of business model elements and relationships is limited and inimitability is low. However, product/service innovations, market expansion and business model innovation will lead to increased level of dynamic adaptation and relationships and thus to medium and high level of inimitability.

This discussion is summed up into an integrated model (figure 5.2. below) of how cloud sourcing leads to innovation and its implications for competitive advantage.
Figure 5.2 Different levels of innovation and implications for competitive advantage
6. Contributions, implications and future research

6.1 Research contributions

This thesis makes several research contributions. First, it contributes by establishing a knowledge foundation through literature reviews in paper I, paper III (on cloud continuance) and in chapter 2 of this summary (kappa in Swedish). In relation to the theoretical development of cloud sourcing by Wang et al. (2016) this thesis adds new knowledge to the burgeoning stage by addressing specific research topics. More specifically it contributes to the knowledge foundation of the transitioning process from traditional IT outsourcing to cloud sourcing which goes in line with Shuaib et al. (2019), i.e., the barriers to continuance of cloud sourcing.

It goes without saying that the literature review performed in 2014 (paper 1) already has diminished in value due to the rapid progress of the technology and subsequent diffusion in industry. However, more recent literature reviews on cloud computing research (Bayramusta and Nasir 2016; Senyo et al. 2018) have confirmed that the majority of research articles in cloud computing still have a technical orientation and are published primarily in technical or information systems journals. The research review by Bayramusta and Nasir (2016) finds that issues concerning cloud computing adoption continues to be the most frequent research area and Senyo et al (2018) finds that most of the cloud computing research lack theoretical underpinnings. Both reviews conclude that research journals in management and organization tend to ignore the topic even though the impact is likely to be immense in the near future and needs further investigation. Thus, some of the identified patterns in paper 1 still seem to be valid.

Second, the thesis contributes to cloud continuance research by constructing a model of barriers to cloud continuance in which a new type of barrier, management process barriers, is identified through two case studies. This is an addition to current research literature in cloud continuance compared to recent papers on cloud continuance by Ratten (2016) and Al-Sharafi et al. (2017). The management process barriers highlight the important roles of management to set objectives and strategies for cloud sourcing as well as organize communication with cloud vendors in an effective manner. The paper also identifies lack of top management support and lack of innovation capabilities as two of the more difficult organizational barriers to overcome in cloud continuance.
A third contribution concerns the theoretical underpinning of cloud sourcing. The research reported in paper IV and V have been theoretically underpinned by DCT and relationship theory respectively. In their review of cloud computing research Senyo et al. (2018) found that 82.5% of their 285 selected papers used no theory. While RBV has been used in a few prior cloud sourcing studies, such as paper II in this thesis and Senyo et al. (2018) finds no studies using DCT. Given the rapid technological development related to cloud computing DCT seems to be a superior theory when researching cloud sourcing from a firm strategic perspective. Another contribution to theoretical underpinnings is made by applying relationship theory in paper V by describing the business relationship process in phases, where catalyster sets make transitions between phases possible and development of TCS (trust, commitment and satisfaction) which triggers the transitions over time in cloud sourcing.

A fourth contribution relates to the longitudinal case studies of cloud sourcing in the cloud continuance process from a business and management perspective. Willcocks and Lacity (2018) are one of the few researchers that have reported results from empirical studies of cloud sourcing, both surveys and deeper case studies. However, the case studies performed here, especially in study c, seem to be more longitudinal in scope than the Willcocks and colleagues have performed.

Fifth, this study contributes to DCT on dynamic capabilities through its application in a new context - cloud sourcing - and developing a stage model in paper IV, that relates innovation types and dynamic capabilities to the cloud sourcing process. Even though the DCT claims to explain the sources for competitiveness in dynamic environments (Teece 2007, Teece 2017), it is a static theory, as we have limited understanding of the evolution of dynamic capabilities themselves (Helfat and Peteraf 2003). By combining the DCT (e.g. (Teece 2007, Teece 2017). with the stage-model (e.g. Romanelli and Tushman 1994) and lifecycle stages (Helfat and Peteraf 2003) a better understanding of the evolution of dynamic capabilities is provided than current main stream research on DCT.

6.2 Practice implications

Transitioning from traditional IT outsourcing to cloud sourcing requires several organisational, structural and strategic changes in order to stay in the cloud and reap the basic benefits of reduced cost, flexibility and scalability. Paper III provides a list of barriers, divided into contextual, organizational and management process barriers, which may inform managers about common implementation problems when transitioning to cloud sourcing. As a reminder the model of cloud continuance barriers is shown below.
Some general advice related to cloud continuance barriers are for the cloud customer needs to set clear requirements in the SLA, make sure that the cloud provider has the right competence, and reorganising of the internal IT department. To not only reap the basic benefits of cloud sourcing but also reach business advantages that affect revenues, larger changes are required. IT roles need to be restructured and enter the top management in order to take part in strategic decisions regarding the cloud sourcing. Furthermore, to change the business model and reach higher level of innovation with sustained competitive advantage collaboration and leadership with the other cloud partners is crucial. This requires continuous communication, meetings and engagement from all partners including trust, commitment and satisfaction.

Willcocks and Lacity (2018) have listed a number of lessons for managers based on their research of cloud sourcing. Overall their lessons resonate well with the results of this study. Below is selected list of seven such lessons, the ones mostly connected to dynamic capabilities and handling of relationships, with comments based on the studies in this thesis.
Lesson one. It’s not just about costs.

Cost savings is often an important driver for transitioning to cloud sourcing. However, scalability and speed are also important. In the long run it is to avoid being outcompeted and the innovation opportunities that are most important.

Lesson two. Don’t rebuild silos.

With minor organizational changes and some minor addition of new cloud computing competence to the current functions cloud sourcing might still work with some benefits reaped. But the real advantages of new applications typically requires integration of data and internal and external processes. Thus, business functions need to integrate with IT-functions in order to innovate and manage these new type of applications, either by regular meetings, committees, projects or some more permanent organizational structure.

Lesson three. Enable third-party services

Applications have to be developed so they allow for third-party authentication in order to enable third parties to easily take part in management and development of applications.

Lesson four. Develop new skills and capabilities.

Cloud sourcing demands new skills and capabilities especially in the frontend issues of cloud sourcing, i.e., applications, business model and innovation issues. Thus, persons and teams need to have both technical and business skills and capabilities in order to fully utilize cloud sourcing’s potentials. More people will also interact with external cloud providers which will require skills in handling external relationships.

Lesson five. New role - Broker, integrate, exploit

Once applications start to become standardized and interoperable there will be a move from development work as “design, build and run” to “broker, integrate and exploit”, that is to have a good overview of the market for applications, analyse their customer value and fit with current business or operations, integrate into current portfolio of applications and capture the commercial benefits.

Lesson six. Embrace innovation through the inevitability of the cloud

A large part of innovation for almost any business in the future will be related to the cloud. These innovations will not work without cloud computing. Thus, businesses which are not cloud based will not have the opportunity to adopt these innovations.

Lesson seven. Learn how to innovate through the cloud.

By seeing cloud sourcing as a learning process, first developing dynamic capabilities for process innovations, and then product and market expansion innovations and lastly for business model innovations the process might be smoother if trying everything at the same time. Successful process innovations will free up staff time to have a stronger
business and strategy focus. It will also allow to focus on potential external cloud providers that may supply new applications related to new revenue sources and at a more mature stage innovate the whole business model.

6.3 Limitations and avenues for future research

An obvious limitation to consider is the fact that a cloud customer can become vendor locked in initiating BRDP with several partners. The development of a model that can integrate and explain these threats and risks, together with the innovation opportunities outlined in the present models, would have been enriching.

In paper I, I identified a whole category of literature on risk apart from the risks of not reaping the benefits of cloud sourcing there are three main risks; security concerns, loosing data and vendor lock-in. Although I have not chosen to continue doing research on risk, it might also be a limitation and perhaps something for future research to look further into. Thus it has not appeared in my cases to be a big issue.

Another limitation is the empirical material. The case studies are limited to a few business sectors, i.e., banks, industrial maintenance and waste management. As more or less all business sectors will face opportunities and threats related to cloud computing this is obviously only a limited selection of business sectors and type of firms. Thus results may be biased due to this limited selection of cases. For instance, cloud sourcing processes for start-ups that are “born in the cloud” are very different from the cases studies presented here, as well as for very large and international firms with large portfolios of businesses (Willcocks and Lacity 2018).

Moreover, the discussion and role of related technologies has not been in focus in the studies. Many cloud applications depend on combinations of other digital technologies, such as social media, mobile internet access, business analytics, Internet of things and robotics (Willcocks and Lacity 2018). Apart from Internet of Things, i.e., sensors, this has not appeared as an important issues in the case studies. However, as applications become more integrated and advanced this might be an issue for future studies.

The findings of this thesis has spurred many more questions that I find interesting and important to be explored. Research suggestions for further development on how to reap the benefits of cloud sourcing involve seeing the evolution of IT into a more strategic role as crucial. The case studies in this thesis have opened up for further studies in this area, but in order to make generalisations the research needs to be scaled up with more case studies and large scale empirical studies in different industries for comparison. This would enrich and elaborate paper III and paper IV in specific. It could also be useful to gain increased knowledge on different companies’ management cultures in relation to cloud sourcing transition.
Another area of interest is the integration of IT and business that requires cultural and structural alignment, exploring managements’ role in this realisation. Perhaps identifying the decision-making process and governance roles might be a fruitful pathway, to better understand the mechanisms behind the action to cloud source, interact with cloud partners, develop business relationship and increase innovation capabilities.

Moreover, how to overcome the problem of finding the right cloud partners is still an important issue. My research can to some extent shed light on this issue as seen in papers III and V through the identification of barriers and a deeper understanding for the cloud sourcing relationship and what it is that makes it sustain referring to different levels of TCS. Although a cloud partner matching framework would have been even more helpful.

Indeed, I hope to see a stream of practice-based research emerge that investigates the challenges that have only been begun to be explored and overarch the limitations of this thesis.

Cloud sourcing as earlier discussed is not a ready made solution off the shelf that has the same outcome for all cloud customers. Instead it is highly mouldable depending on how it is interacted with and how management can utilise and develop its possibilities through new innovations summarised in figure 5.2. I hope that this insight might give some motivation to cloud sourcing customers’ management for higher engagement in the cloud sourcing relationship, and to make it part of the core strategic plan. In addition it would be interesting to see more research on the mouldable characteristic of cloud sourcing and to make a comparative cross case study on a larger scale.

Finally and perhaps most importantly, my case studies show how dynamic capabilities in different forms can design and transform cloud sourcing into innovations and perhaps competitive advantage in the long run through new business models, market expansion, new services etc. This can be seen when relating the different types of innovations from the case companies with the dynamic capability theory (Teece 2007, Teece, Peteraf, Leih 2016, Teece 2017, Teece 2018). Further research, combining cloud sourcing as an innovation enabler with its close integration to practice and strategic management as a more established field may provide new insights and legitimacy to each other and thus can progress jointly. The lack of business and management studies related cloud computing and cloud sourcing identified in this thesis and by other reviews (Bayramusta and Nasir 2016; Senyo et al. 2018) is a real concern as cloud sourcing will have immense impact on almost all businesses in the coming decade.
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Appendix

Interview guide

The aim of the interview guide was to provide a common structure for my case study. I reviewed some of the well known case study papers and text books but did not find any existing template, although Yin (2003) presented an example of a case study protocol. For this reason I constructed my own template based on basic case study methodologies described by Eisenhardt (1989), and Yin (2003). At a high level most of the approaches to case study conduct are quite similar, in spite of the very different philosophical approaches taken by different case study experts. The interview guide table below informs the questions in the agenda for each interview. I will choose the questions that are most suitable to ask each specific respondent (based on their title/role and the time that I have had with that respondent). I will also look at previous questions asked, and which new questions have arisen. These questions will be added in my meeting agenda for the next interview. Notes will be made on this (questions that I asked in addition, that developed after the interview). The agenda will structure the interviews.
<table>
<thead>
<tr>
<th></th>
<th>How many partners are involved?</th>
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<tbody>
<tr>
<td>1</td>
<td>1a. Have the partners changed over time?</td>
<td></td>
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<tr>
<td>2</td>
<td>What does each partner do?</td>
<td>2a. What does the division of power look like? Who is in charge? How much power?</td>
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<tr>
<td>3</td>
<td>What is your experience of the responsibility among the partners?</td>
<td>3a. Has it worked out as expected? If not, why not?</td>
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<td></td>
<td>3b. How do the responsibilities of these roles differ?</td>
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<td>4</td>
<td>What is your experience of control among the partners?</td>
<td>4a. What kind of control?</td>
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<td></td>
<td>4b. Why is the control divided in this way?</td>
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<td></td>
<td>4c. Have you considered any other ways?</td>
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<td>5.</td>
<td>What is your experience of trust among the partners?</td>
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<tr>
<td>5a</td>
<td>What does trust mean for you in this?</td>
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<td>5b</td>
<td>Do you trust each other that what you have agreed upon is fulfilled?</td>
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<td>5c</td>
<td>What is this trust based on?</td>
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<td>5d</td>
<td>What is this trust like in practice? Can you explain?</td>
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<th>6.</th>
<th>What is your experience of this whole engagement?</th>
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<tr>
<td>6a</td>
<td>How often do you communicate? Through which means?</td>
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<tr>
<td>6b</td>
<td>Has your communication evolved over time? In what way?</td>
</tr>
<tr>
<td>6c</td>
<td>Why did you enter this engagement? What is it that you give/take?</td>
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<th>7.</th>
<th>What is your experience of the communication among the partners?</th>
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<tr>
<td>7a</td>
<td>How has this whole engagement changed over time? Has it changed at all?</td>
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<tr>
<td>7b</td>
<td>What is your experience of the means through which you communicate?</td>
</tr>
<tr>
<td>7c</td>
<td>Has your communication evolved over time? In what way?</td>
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<th>8.</th>
<th>What is your experience of how you work together?</th>
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<td>8a</td>
<td>What is your experience of the support that you give?</td>
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<td>8b</td>
<td>What is your experience of the support that you get?</td>
</tr>
<tr>
<td>8c</td>
<td>What is your experience of the involved partners' interests?</td>
</tr>
<tr>
<td>8d</td>
<td>What is your experience of the involved partners' interests?</td>
</tr>
<tr>
<td>9. What is your experience of the different partners’ interests?</td>
<td>9a. Do you feel that these interests are balanced among you? In what way?</td>
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<tr>
<td>9b. What is your experience of the goals in this engagement?</td>
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<tr>
<td>9c. Do you feel that the goals are mutual? If yes, then in what way? If not, then why not?</td>
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<tr>
<td>9d. Do you feel that all partners involved are working towards achieving a common goal? If yes, then what is this common goal?</td>
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<tr>
<th>10. What is your experience of sharing resources between each other?</th>
<th>10a. What resources are shared with the cloud service provider/customer/sub provider/middlehand? Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>10b. What is your experience of the economic resources in this engagement?</td>
<td></td>
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<tr>
<td>10c. Would you consider any other economic resources? If yes, then why?</td>
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<td>10d. What is your experience of the technical resources in this engagement?</td>
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<tr>
<th>11. What is your experience of following the privacy agreement?</th>
<th>11a. Would you do it differently if you could? If yes, what would you change and why?</th>
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<tr>
<td>11b. How does it affect your relationship with the other partners?</td>
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</table>

| 12. What is your experience of the SLA? | 12a. The SLA tries to control the configuration, but what do you do to control the SLA? |
| 13. | What is your experience of how the different partners can work together? | 13a. *Is this structure of work between the different partners in any way based on the SLA, Legal, Technical and/or Economic resources?*  
  
13b. *What is the outcome of this structure?*  

13c. *What kind of structure is needed to make it work?*  

13d. *Would you structure it differently if you could? If yes, then why?*  

| 14. | What experience do you have of some kind of “reward” from this engagement? | 14a. *What is this reward based on?*  

| 15. | What experience do you have of some kind of “reward” for all partners involved? | 15a. *What problems have you encountered? If any, then why? Could you have eliminated those?*  

<table>
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<th>Participant pseudonym</th>
<th>Company</th>
<th>Position</th>
<th>Profile</th>
<th>Interview time (hours and minutes)</th>
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<td>3 Carina</td>
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<td>CIO</td>
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<td>Pranis</td>
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<td></td>
<td>Andi Boul</td>
<td>Cognais</td>
<td>Delivery Manager</td>
<td>Skypencall, Budapest, Hungary</td>
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<td>35</td>
<td>Ola</td>
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<td>CDO</td>
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<td>Date</td>
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<td>Type of observation</td>
<td>Meeting participants</td>
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<tr>
<td>19/9-2017</td>
<td>Quos and Cognais monthly meeting</td>
<td>Quos and Cognais</td>
<td>Videoconference from Quos headquarter in Stockholm with Cognais in Budapest and India</td>
<td>Quos Stockholm: Petra, CIO and Anders IT operations manager. Cognais Budapest: Andi Boul, Service delivery manager. Cognais India: Sarkhi Rumi Support integration officer and Dephak Service delivery manager</td>
</tr>
</tbody>
</table>
well as a back up summary. Petra says “one thing is to plan for patching, and another thing is to actually do the patching. Quos can see Cognais on video, but Cognais cannot see Quos. Quos Anders requests a test environment that is similar to the production environment. RFS test environment with similar functionality or to patch it. Anders will contact Drake to check the cost of making snap shots of RFS similar environment to the production environment. This is the risk perspective. Quos Finland complains on how employees perceive the system, it is too slow. 1-2 users are put on site to give feedback. The observation shows strong relationship, trust and understanding of the problems. A willingness to collaborate and resolve problems. Open, mutual communication. Petra leads the meeting to its end.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Type</th>
<th>Location</th>
<th>Participants</th>
<th>Details</th>
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<tbody>
<tr>
<td>19/9-2017</td>
<td>SLA meeting</td>
<td>IMM Oaxima, Quos</td>
<td>Support integration officers</td>
<td>To check how the delivered cloud services comply with the SLA. Oaxima 2018 upgrade, response times and availability. Petra asks what is good vs. bad response times? She also asks why there is no availability for the other months? Discussion about response times and availability is a little constrained. Not as relaxed as with Cognais. Petra is alert and asks critical questions. Upgrades of Oaxima 2018 system, plan of action is discussed. Scheduled meetings 2 times/week. Compared to the previous versions of Oaxima the system will be faster.</td>
</tr>
<tr>
<td>4/12-2017</td>
<td>Informal observation</td>
<td>Quos</td>
<td>On site in the office landscape, Quos headquarter, Stockholm, Sweden</td>
<td>IMM Oaxima needs a new environment with more licenses. Concurrent users are 150. A problem is that Quos has become locked in to its cloud providers that it is difficult to change even if the SLA is not fulfilled. For instance the proactive support that is promised in the SLA by Sintra is not fulfilled, still it is a service that Quos pays for.</td>
</tr>
<tr>
<td>Date</td>
<td>Meeting Type</td>
<td>Participants</td>
<td>Objective</td>
<td>Notes</td>
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<tr>
<td>6/12-2017</td>
<td>AX ERP Architecture meeting</td>
<td>Quos, Melsoft, Sintra</td>
<td>To discuss critical issues, system performance, topics across functions, CR-S and other main developments/projects.</td>
<td>Decision to have a meeting on Saturday to do a SQL cluster troubleshooting runback, deploy one set up and reinstall —&gt; Need to get back AX up and running</td>
</tr>
<tr>
<td>7/12-2017</td>
<td>CAB meeting</td>
<td>Quos, Cognais</td>
<td>Anders, Andi Boul, Dephak Hajar, Rashi Sariu, Mitr, Sela, Pat, Umo Shan, Yell Rai, Vivo Mali.</td>
<td>To go through the runbook Database migration, see excel file “QuosService-CABTracker 07-12-2017”.</td>
</tr>
<tr>
<td>7/12-2017</td>
<td>CAB meeting</td>
<td>Quos and Cognais</td>
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<tr>
<td>8/12-2017</td>
<td>Weekly ITO meeting</td>
<td>Quos and Cognais</td>
<td>Anders, Andi Boul</td>
<td></td>
</tr>
<tr>
<td>9/12-2017</td>
<td>SQL cluster troubleshooting meeting</td>
<td>Quos, Melsoft, Sintra, Cognais and Freelancer Robert</td>
<td>12 participants A problem with the SQL cluster lasts for more than 2 months, has been a problem since September 2017. The SQL cluster is back working so that Biz talk can be connected again. Quos has to ask Melsoft how this happened, why did this SQL cluster suddenly stop stop working? Melsoft needs to go back to its logs in Azzure to know why this problem occurred.</td>
<td>Anders, Robert and all Quos employees listen and control that the runbook SQL troubleshoot problem is solved. The discussion and actions are led by Melsoft and Sintra. Anders and Robert get in the discussion when something is not done properly. They steer the meeting.</td>
</tr>
<tr>
<td>Date</td>
<td>Meeting Type</td>
<td>Participants</td>
<td>Description</td>
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</tr>
<tr>
<td>14/12-2017</td>
<td>CAB meeting</td>
<td>Quos and Cognais</td>
<td>Quos needs to allocate the license costs better, therefore Quos will have a meeting with its finance department to discuss their needs.</td>
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<td>15/12-2017</td>
<td>Weekly ITO meeting</td>
<td>Quos and Cognais</td>
<td>Anders, Quos and Andi Boul, Cognais</td>
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<tr>
<td>24/1-2018</td>
<td>Monthly Governance meeting</td>
<td>Quos and Cognais</td>
<td>Cognais: Sarki Rashu, Andi Boul, Dephak Hajar, Martin Criss. Quos: Petra and Anders</td>
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<tr>
<td></td>
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<td></td>
<td>Quant wants a reduction in price from Cognais. See Quos Service monthly operations report dec 17-2017.</td>
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<td></td>
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<td></td>
<td>Windows 10 is already installed on new computers. There is a problem with images to be moved, it is not possible remotely (via cloud), a physical interaction is needed, images on usb or CD to reinstall.</td>
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<tr>
<td>Participant pseudonym</td>
<td>Company</td>
<td>Position</td>
<td>Profile</td>
<td>Interview time (hours and minutes)</td>
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<td>1 Mattias</td>
<td>WasteHeroes</td>
<td>IT operation manager</td>
<td>Face to face at Malmö Headquarter</td>
<td>40m</td>
</tr>
<tr>
<td>2 Mattias</td>
<td>WasteHeroes</td>
<td>IT operation manager</td>
<td>Face to face at Malmö Headquarter</td>
<td>20m</td>
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<td>3 Johan</td>
<td>WasteHeroes</td>
<td>Area manager</td>
<td>Face to face at Malmö Headquarter</td>
<td>20m</td>
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<tr>
<td>4 Sandra</td>
<td>WasteHeroes</td>
<td>Purchasing manager</td>
<td>Face to face at Malmö Headquarter</td>
<td>40m</td>
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<tr>
<td>5 Henrik</td>
<td>WasteHeroes</td>
<td>CFO</td>
<td>Face to face at Malmö Headquarter</td>
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<tr>
<td>6 Jonny</td>
<td>WasteHeroes</td>
<td>Change manager</td>
<td>Face to face at Malmö Headquarter</td>
<td>1h 10m</td>
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<tr>
<td>7 Linnea</td>
<td>WasteHeroes</td>
<td>Work environment coordinator</td>
<td>Face to face at Malmö Headquarter</td>
<td>41m</td>
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<tr>
<td>8 Joanna</td>
<td>WasteHeroes</td>
<td>Human Resource</td>
<td>Face to face at Malmö Headquarter</td>
<td>40m</td>
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<tr>
<td>9 Peter</td>
<td>Attoie</td>
<td>Project leader and sales manager</td>
<td>Face to face at Malmö Headquarter</td>
<td>1h</td>
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<tr>
<td>10 Anders</td>
<td>WasteHeroes</td>
<td>Archiver and registrator</td>
<td>Face to face at Malmö Headquarter</td>
<td>31m</td>
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<tr>
<td>11 Staffan</td>
<td>WasteHeroes</td>
<td>Business developer</td>
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<td>41m</td>
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<tr>
<td>12 Jennifer</td>
<td>WasteHeroes</td>
<td>Communication officer digital development</td>
<td>Face to face at Malmö Headquarter</td>
<td>32m</td>
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<tr>
<td>13 Mattias</td>
<td>WasteHeroes</td>
<td>IT operation manager</td>
<td>Face to face at Malmö Headquarter</td>
<td>1h 20m</td>
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<tr>
<td>14 Henry</td>
<td>WasteHeroes</td>
<td>Chief operations officer (COO)</td>
<td>Face to face at Malmö Headquarter</td>
<td>22m</td>
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<td>Meeting Location</td>
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<td>15</td>
<td>Larry</td>
<td>WasteHeroes</td>
<td>IT and security manager</td>
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<td>16</td>
<td>Roland</td>
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<td>Maintenance manager</td>
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<td>18</td>
<td>Carin</td>
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<td>Department Manager</td>
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<td>IT administrator</td>
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<td>Finance reporting and consolidating</td>
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<td>Screenshot of the SQL cluster trouble shooting meeting</td>
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<td>Sintra group profile</td>
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<td>Screenshot of Sintra’s consultancy services</td>
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<td>Screenshot of the second SQL cluster trouble shooting meeting</td>
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<td>Observations</td>
<td>Meetings regarding cloud sourcing</td>
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Relativism in the Cloud: Cloud Sourcing in virtue of IS Development Outsourcing - A literature review

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Abstract:
Nowadays Cloud Computing and Cloud Sourcing is on the agenda in many organizations. Many Chief Information Officers (CIOs) that urge for alternatives to traditional outsourcing are interested in how they can take advantage from Cloud Computing, by sourcing Information Technology (IT) from the cloud. This paper provides an overview of the research direction of Cloud Sourcing in the IS field. A literature review based on selected papers from top Information Systems (IS) journals and conferences were conducted. Findings from the review indicate that the attention of Cloud Sourcing in IS literature has mainly been directed towards security and risk as well as adoption issues, and that Cloud Sourcing is claimed to be the next generation of outsourcing. Unfortunately, this is where this strong claim ends without any further evidence, which indicate that there is a need for more research on Cloud Sourcing, especially in the direction of investigating relationships and implications when organizations start using Cloud Sourcing.

Keywords:
Outsourcing; Cloud Sourcing; Cloud Computing; IT operations; IT maintenance; IT development.

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1. Introduction

Information Technology (IT) outsourcing has been around for many years [1, 2] and organizations have been using outsourcing of IT for different reasons [3, 4]. Outsourcing of information systems development represents a significant transfer of assets, leases, and staff to a vendor that assumes profit and loss responsibility [5]. One of the reasons has been to more or less close down their own IT department and instead use another organization to deal with both IT operations as well as IT development but also IT maintenance. The IT operation part, which includes hosting of data centers, seems to be easy to replace with the Cloud Sourcing phenomena. However, it could be questioned if the other two parts, IT development and IT maintenance also could be replaced by a Cloud Sourcing solution. The first and maybe most obvious answer to that question is perhaps that Cloud Sourcing will not replace that, since Cloud Sourcing is basically delivery of services, and services are basically IT operation.

Outsourcing is traditionally based on a complex set of contractual relationships between a focal unit and a vendor. This is adopted to externalize simple tasks and refocus on core competencies, resources and capabilities. We believe that the implementation of a Cloud Sourcing solution in an organization would not change the IT-department drastically except excluding IT operations from their agenda, and giving them more time to work on IT development and IT maintenance (which indeed could be outsourced in a traditional way). Especially since adopting a cloud sourcing solution does not include a transfer of staff or any other assets. Cloud Computing or Cloud Sourcing is seen as a force to count on, and even companies that were skeptical in the beginning have now started to use cloud computing to retain their competitiveness on the market. Cloud computing has become the companies backbone of many social media intensive businesses such as Facebook, Google and Microsoft. According to Babcock [6] and Leimeister et al. [7], cloud computing is an evolution of outsourcing. Cloud computing or Cloud Sourcing as referred to from now on (these definitions will be used interchangeably) also entails similar purchase processes as the more traditional IT outsourcing which is defined by de Looff [8] as the act of shifting some or all of the IS-activities to be performed externally by contractual agreement. Thereby Cloud Sourcing can be defined as the outsourcing of IT resources [6]. The main reasons for outsourcing is according to Lacity et al. [9] cost reduction, access to technological expertise and shifting focus on the organizational core competences. Hirschheim and Lacity [10] suggest more studies to be conducted on how to manage IT outsourcing relationships the best way. It can definitely be said that this also relates to studies about Cloud Sourcing, especially since the estimation of usage of Cloud Sourcing is high. Muller [11] stated based on a survey published by Avande in 2011 “Global Survey: Has Cloud Computing Matured?” that an estimation is that 74 percent of enterprises are using some form of cloud services which is a 25 percent growth since 2009, which tells us that this is a highly relevant topic of research. The survey is based on 573 C-level executives, business unit leaders, and IT decision makers in 18 countries.

In this study we aim at providing new light on Cloud Sourcing as means of outsourcing. It can be stated that previous scientific studies have not addressed the relationship between IT outsourcing and Cloud Sourcing in depth. While it is true that Cloud Sourcing or the Software as a Service (SaaS) model has been discussed in sources aimed at practitioners, it does not necessarily as stated by Martens and Teuteberg [12] follow that the topic of concern has been as discussed in journals aimed at a scientific audience.

Vaquero et al. [13] defines cloud as a large pool of easily usable and accessible virtualized resources (such as hardware, development platforms, and/or services). Which but also entails the possibilities of outsourcing IT development and IT maintenance in the cloud. These virtualized resources can be modified and adjusted to utilize the most of organizations’ resources. Although there are concerns of security, privacy and vendor lock-ins being the negative side of Cloud Sourcing [14]. Indeed the main benefit of Cloud Sourcing is the elasticity and flexibility of computing that Cloud Sourcing offers.

Cloud Sourcing could be seen as part of an organizations IS strategy, just as traditional outsourcing has been in many ways. Dhar [15] compared the similarities and differences between traditional outsourcing and Cloud Sourcing and concluded that Cloud Sourcing creates a fundamental shift in the evolution of IT service delivery by reducing costs and increasing flexibility to a greater extent, which traditional outsourcing also does but in Cloud Sourcing these strategic
benefits are greater. Formalization, benefits and operationalization of Cloud Sourcing has not yet been fully addressed in academic research according to Hahn et al. [16] who also claims that Cloud Sourcing certainly is a form of outsourcing. Cloud computing vendors are competing with traditional vendors [17] and it is a matter of time to tell whether Cloud Sourcing indeed can replace traditional information systems development (ISD) outsourcing. Until then there is a huge lack in research on cloud strategies such as on cultural impact, application adoption risk profile, etc. that need to be addressed.

More specifically our research objective is to explicate visions and insights that have been researched and discussed in the academic world guided by the following questions:

- What is discussed in IS research around Cloud Sourcing?
- How does research in IS on outsourcing relate to Cloud Sourcing?

The first purpose of this paper is to review the field of Cloud Sourcing in IS literature. The second and foremost purpose is then to observe whether Cloud Sourcing in IS literature is seen as a future mean of outsourcing.

The rest of the article is organized as follows: In the next chapter, we present the research method that consisted of a literature review. The findings from the literature review is then presented in chapter 3. Finally we discuss the findings, presents some concluding remarks, and suggest future research.

2. Methodology

As presented in the introduction it is a fact that Cloud Sourcing is already in vision as seen by practitioners, however, a question to ask is how Cloud Sourcing has been addressed in research studies. What studies has been done and what are the focus of these studies. To say something about this a literature review was conducted. The review aimed at investigating what is written about Cloud Sourcing in relation to outsourcing. This means that a sober analysis of the IS sourcing literature on Cloud Sourcing was done. One reason behind doing the literature review is that Cloud Sourcing is claimed to even increase the benefits of sourcing [11]. This conclusion adds weight to the aim to reveal what has been researched on Cloud Sourcing and if it corresponds to the perception of Cloud Sourcing being the next generation of outsourcing as predicted by Gartner [18].

The literature review was based on IS top conferences: ECIS, AMCIS, ICIS, PACIS and the AIS basket of eight journals: European Journal of Information Systems, Information Systems Journal, Journal of AIS, Journal of Information Technology, Journal of MIS, Journal of Strategic Information Systems, MIS Quarterly, and Information Systems Research. The key words used for the search were Cloud Sourcing, IT sourcing, Outsourcing, IT outsourcing, and IT strategy. The reason for choosing both top journals and top conferences in the field of IS, is to be able to get hold of both the hottest topics of the conferences and what has been published academically in the journals. The searches were delimited to abstract, title and subject, and the publication time was not delimited even though it became obvious that the notion of cloud computing and Cloud Sourcing has not been discussed further back than to 2008. In total 33 papers were reviewed. Admittedly, the review process did involve to some extent personal interpretation of the definitions applied in the research papers. The majority of the papers focusing on Cloud Sourcing were written between 2011-2013.

Each papers abstract, introduction, analysis and conclusion sections were read. The selection criteria for papers to be included in the review was that the article must focus on Cloud Sourcing. We are aware that searching in other sources and databases might have resulted in different results to some degree.

In order to conduct our literature review we used a systematic way adopted by previous scholars in IS [19, 20] and is based on Dubé and Paré [21]. In particular, the steps we followed were: 1) Selection of Journals and Conferences 2) Identification of relevant articles 3) Classification of the articles into categories based on their content 4) Assessment of
the number of articles in each category 5) Analysis of the categories for discovering research trends and future recommendations. Especially, in the fifth step we also included a comparison between the Journals and Conferences.

3. Cloud sourcing in the IS-sourcing literature

The literature review, which initially focused on the publication years 2008–2013, found 33 papers. These papers were distributed among the years in the following way (year: number): 2008: 2, 2009: 1, 2010: 2, 2011: 9, 2012: 14, 2013: 5. Number of papers published 2008-2010 on Cloud Sourcing were evenly low in the IS field. This was followed by a boom in 2011, and then it increased almost to the double in 2012. The upcoming year 2013 shows a remarkable decrease in published Cloud Sourcing papers in the IS field. This decrease is believed to be temporary due to a shift in the Cloud Sourcing debate, which most likely will be followed by an increase again. A follow up search indicates that this is the case, however, in this specific paper we focus on the years 2008 – 2013, as the first 5 years in which Cloud Sourcing has been discussed.

The 33 papers were categorized in seven different topics, which resemble the main discussion in the presented papers and their contribution. The seven categories are as follows: cost, benefits/risks, strategies, capabilities, research, IS development and other. In table 1 we illustrate the categorization of the 33 papers found in the top IS conferences and IS journals that matched the search criteria.

Analyzing the areas and description gained from the identified literature, we can conclude that published papers have a focus on cloud adoption and different questions related to adoption. This is most likely expected if looking at Cloud Sourcing as a new phenomenon. Another highlighted area that seems common in relation to Cloud Sourcing is the question about contracts and security issues as well as strategies. This finding was also expected since literature as previously presented argues for the importance of this issue. However, one interesting finding that gives space for rethinking is that not much research seems to focus on the relationship between providers and customers despite the fact that this would be of high interest in the Cloud Sourcing area, and specifically when comparing it to traditional information systems development outsourcing were this is one of the key issues for successful outsourcing. This goes in line with what Hirschheim and Lacity [10] describe as an area which shows lack of research on and they suggest more studies to be done in specific on the relationship between providers and customers in Cloud Sourcing of ISD. The first finding is actually surprising and an unexpected result is that we actually found more papers in the journals than among the conference proceedings (13 conference papers and 20 journal papers). It is surprising primarily because, it could be suggested that a new phenomenon first shows up among conference papers and secondly, it could be suggested that publications in journals takes longer time to get published. However, one explanation could be that the journal papers discuss Cloud Sourcing as something related to outsourcing and that the conference papers discuss Cloud Sourcing from a more practical viewpoint. It is found that the journal papers have a much stronger focus on outsourcing. The fact is that the major part talks about open source which could be seen as a starting point of the Cloud Sourcing phenomenon. However, only two papers specifically mention Cloud Sourcing and one of the two papers suggests a framework for doing research on Cloud Sourcing. So, this indicates that research on Cloud Sourcing is in its infancy and we could predict but also suggest that more research especially in the direction of how Cloud Sourcing is related to IT outsourcing would be needed.

In order to get a better grasp of the analyzed papers discussion on Cloud Computing and in specific Cloud Sourcing we have categorized them into seven categories based on their topics. We found that the most common topic of Cloud Sourcing is within Strategy – were we found papers from 2008-2013 and mostly being published in journals. Second most common topic was benefits and risks with papers from 2011-2013 and most papers published in conferences. Third place shares topics on capabilities (most papers published in conferences from 2011-2013, research (all papers published in journals from 2011-2012) and IS development (all papers published in journals from 2008-2013). The topic of cost was unexpectedly on fourth place with only two published papers 2010-2013. Cost was expected to be a highly relevant topic in Cloud Sourcing as one of the main motives behind Cloud Sourcing adoption. A recent follow up search after papers gave a couple of articles; however, only 2 of them were added into Table 1, both of them is basically a call for more research on Cloud Sourcing.
### Table 1 Description of the 33 papers on Cloud Sourcing

<table>
<thead>
<tr>
<th>Category</th>
<th>Year</th>
<th>Area</th>
<th>Short Description</th>
<th>Authors</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>2010</td>
<td>Cloud BI</td>
<td>Reducing cost of BI through the Cloud</td>
<td>[22]</td>
<td>PACIS</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>IT outsourcing</td>
<td>Study on relation between IT outsourcing and decrease in IT operating costs</td>
<td>[23]</td>
<td>MIS Quarterly</td>
</tr>
<tr>
<td>Benefits/risks</td>
<td>2011</td>
<td>Cloud Adoption</td>
<td>Cloud Adoption, benefits and risks</td>
<td>[26]</td>
<td>ECIS</td>
</tr>
<tr>
<td>Benefits/risks</td>
<td>2011</td>
<td>IT outsourcing and Cloud Computing</td>
<td>Taxonomy development for IT risk management</td>
<td>[27]</td>
<td>ECIS</td>
</tr>
<tr>
<td>Benefits/risks</td>
<td>2012</td>
<td>Cloud Sourcing security risks</td>
<td>Perceived IT security risks in outsourcing through the cloud</td>
<td>[28]</td>
<td>ECIS</td>
</tr>
<tr>
<td>Benefits/risks</td>
<td>2012</td>
<td>IT events and CAPM outsourcing</td>
<td>Limitations around announcement periods of CAPM on IT events</td>
<td>[29]</td>
<td>PACIS</td>
</tr>
<tr>
<td>Benefits/risks</td>
<td>2013</td>
<td>Cloud Sourcing strategy</td>
<td>Cloud Adoption, benefits and risks as well as related strategies</td>
<td>[16]</td>
<td>AMCIS</td>
</tr>
<tr>
<td>Strategies</td>
<td>2009</td>
<td>Cojoint analysis of IT outsourcing and decision</td>
<td>The complexity of outsourcing and the motivation behind the decision</td>
<td>[31]</td>
<td>Journal of the Association for Information Systems</td>
</tr>
<tr>
<td>Strategies</td>
<td>2011</td>
<td>Collective agility</td>
<td>Systems development in a global collaborative community</td>
<td>[33]</td>
<td>Information Systems Journal</td>
</tr>
<tr>
<td>Strategies</td>
<td>2012</td>
<td>Innovation diffusion and IT strategy</td>
<td>Cloud Computing changes the IT strategies for SME's</td>
<td>[34]</td>
<td>ICIS</td>
</tr>
<tr>
<td>Strategies</td>
<td>2012</td>
<td>Contractual governance and IT outsourcing</td>
<td>The role of IT in IT governance outsourcing</td>
<td>[35]</td>
<td>ICIS</td>
</tr>
<tr>
<td>Strategies</td>
<td>2012</td>
<td>Cloud Computing at universities</td>
<td>Cloud Adoption and the driving force behind</td>
<td>[36]</td>
<td>PACIS</td>
</tr>
<tr>
<td>Strategies</td>
<td>2012</td>
<td>Value creation and value capture from open source software</td>
<td>Network collaboration and governance to create and keep value</td>
<td>[37]</td>
<td>European Journal of Information Systems</td>
</tr>
<tr>
<td>Strategies</td>
<td>2012</td>
<td>Challenges of Open Source Software</td>
<td>Lock in customers strategy in proprietary software</td>
<td>[38]</td>
<td>Information Systems Research</td>
</tr>
<tr>
<td>Strategies</td>
<td>2013</td>
<td>IT outsourcing</td>
<td>Chinese IT service suppliers expanding to new markets globally exploiting new opportunities</td>
<td>[40]</td>
<td>MIS Quarterly</td>
</tr>
</tbody>
</table>
Table 2 Description of the 33 papers on Cloud Sourcing (cont.)

<table>
<thead>
<tr>
<th>Category</th>
<th>Year</th>
<th>Area</th>
<th>Short Description</th>
<th>Authors</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capabilities</td>
<td>2011</td>
<td>IT capabilities</td>
<td>IT capabilities and IT resources affecting business processes</td>
<td>[41]</td>
<td>Journal of the Association for Information Systems</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>Crowdsourcing and capabilities</td>
<td>Capabilities development for facilitated Crowdsourcing</td>
<td>[42]</td>
<td>ICIS</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>Capability development though sourcing</td>
<td>Attaining new capabilities through IT sourcing</td>
<td>[43]</td>
<td>ECIS</td>
</tr>
<tr>
<td>Research</td>
<td>2011</td>
<td>Opening up the IS as a discipline</td>
<td>Opening up the IS field a commentary on IS research methods</td>
<td>[44]</td>
<td>Journal of Information Technology</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>Looking at cloud computing as an emerging form of IT/IS outsourcing</td>
<td>A literature review of cloud computing research in relation to traditional IT outsourcing</td>
<td>[48]</td>
<td>Journal of Information Technology</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>Coordination of Open Source Software development</td>
<td>Studying the Core-periphery movements in Open Source Projects</td>
<td>[50]</td>
<td>Journal of Information Technology Theory and Application</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>Cloud Computing migration theory</td>
<td>End-user migration from client-hosted computing to cloud computing</td>
<td>[51]</td>
<td>European Journal of Information Systems</td>
</tr>
<tr>
<td>Other</td>
<td>2012</td>
<td>Intersection of CSR and Global Information Technology Outsourcing</td>
<td>Outsourcing relationships and the importance of CSR</td>
<td>[52]</td>
<td>PACIS</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>Compliance between research and practice on the topic of outsourcing</td>
<td>The trends of outsourcing in practice</td>
<td>[53]</td>
<td>PACIS</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>Generation of business value from information services</td>
<td>Customer satisfaction predicted by information analyses of information services</td>
<td>[54]</td>
<td>European Journal of Information Systems</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>E-government initiatives and service providers</td>
<td>Service sourcing in E-governments and theoretical planning</td>
<td>[55]</td>
<td>Information Systems Journal</td>
</tr>
</tbody>
</table>
4. Discussion of Cloud Sourcing as the next generation of Outsourcing and suggestions for future research

Following from the literature review on Cloud Sourcing in top IS conferences and top IS journals (AIS) there is to some extent a discussion and statement about Cloud Sourcing being the next generation of outsourcing. Albeit, it can be concluded that it ends as an empty statement with no well-grounded evidences. No studies have been found, in the searched databases, only dedicated to this provoking statement and perhaps obsolete paradigm shift. Cloud Sourcing is barely mentioned and focus is instead shifted on capabilities, resources, processes entailing outsourcing, adoption of cloud computing etc. By only mentioning Cloud Sourcing and stating its future impact in the reviewed papers, the authors overlook the deeper problem of the lack of evidence for its claim. More recent papers extend to include other aspects outside of the security, risk and adoption issues [47, 48, 56-60] which are opening up for broader discussions on the topic. Still the topic is lacking in evidence based research.

As literature shows that cost reduction, flexibility and access to talent are the motives for outsourcing [61], and literature also claims that Cloud Sourcing could increase the benefits of the factors for motivation. It is puzzling that no research has been done on this topic which at first glance might seem researched, but on closer inspection reveals to be lacking in depth. If Cloud Sourcing is predicted to create an evolutionary shift in outsourcing of IT, then why is this evolutionary statement with a great impact not justified through research and with empirical evidence? Of course, many will probably disagree with this assertion that what is discussed in practice on Cloud Sourcing is still not captured by the academic world in published papers. But the growth of Cloud Sourcing as a field is real and, arguably, might be the most significant factor in the historical development of outsourcing. Whereas the literature review of this paper provides ample evidence that there is a lack of research on Cloud Sourcing that supports the statement made on its significance for an outsourcing evolution, Gartner [18] and Muller [11] convinces us that this is an area to catch up on in academic research. This research would be fruitful to both practitioners and academics bridging the gap and formalizing Cloud Sourcing especially in the fields of transaction cost economics, resource dependency theory, and knowledge management as it would offer a novel phenomena and give good grounds for critique of traditional outsourcing.

Limitations of our study regard mainly the uneven amount of papers studied and compared between selected journals and conferences which might at first thought appear to affect the results negatively. Although, we have delimited our study to specific sources of material in which we have used the papers that exist – and as such under those conditions we believe to have covered what was available with regards to amount of papers and their distribution.

References

Relativism in the Cloud: Cloud Sourcing in virtue of IS Development Outsourcing - A literature review


Relativism in the Cloud: Cloud Sourcing in virtue of IS Development Outsourcing - A literature review


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Paper II
Sourcing motives behind sourcing decisions exposed through the Sourcing Decision Framework

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Abstract:
There is no doubt that information systems (IS) are the backbone of today’s organizations. Having an initial inspection on sourcing motives in the financial sector it can be stated that resources used in development of information systems (IS) are seen as an important factor for sustained competitive advantage. However, it can be claimed that it depends to a high extent on the application of different sourcing modes. This leads us to a closer inspection on sourcing motives through selected case studies and the following research question: How can motives for sourcing options of IS-development be explained? The empirical investigation on sourcing decisions and the motives behind, in addition to a literature review on sourcing decisions and sourcing options ends in four propositions. These propositions are then used in tandem with the findings from the empirical data for initial development of the Sourcing Decision Framework (SDF). Ultimately, what is at stake here is our framework (SDF) that from the initial development and the first test has shown to be purposive and could be further developed to a useful framework for analyzing sourcing decisions and as a guiding tool for decision-makers when deciding on sourcing options for IS-development.

Keywords:
IS-sourcing; IS-development; Resource Based View; RBV; sustained competitive advantage; strategic value; sourcing motives.

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1. Introduction

When it comes to the topic of information systems most of us will readily agree that it is an important component of a firm. Yet some readers may challenge the view of information systems being used by organizations in the financial sector (such as banks) as a strategic tool for gaining competitive advantage. Indeed our own argument is that information systems have a strategic importance in the financial sector and should be therefore carefully sourced using tailored strategies.

Nevertheless new research show that computerization and information system (IS) reflect the new powerful uses of computers, for the purpose of information management supporting the achievement of an organization’s goals [1]. Yet a sober analysis of the matter reveals that the IS and the delivery of strategic systems play a meaningful role in the context of IS-strategy, which should be closely aligned with the overall organizational strategy [2].

The rapid and structural changes in the business environment of the financial sector due to the globalization of financial markets, technological innovations, and the growing importance of the Internet, increase the demand for a higher degree of flexibility in IS-development [3]. Although the strategic importance of IS in the financial sector may seem trivial, it is in fact crucial in terms of today’s concern over a rapidly changing market. The strategic importance of IS-development applies abundantly to the financial industry which is characterized by a high degree of IT-supported business processes [4]. Indeed our argument is that IS have strategic importance in the financial sector and especially in banks, and therefore it can be assumed that the sourcing option for their IS-development should be carefully considered. Consequently, if assuming that IS are of high importance for banks, the question is then if this also could be said about resources for IS-development.

Gottschalk and Solli-Sæther [1] concede that outsourcing is a strategic decision made by organizations in order to compensate for lost internal resources. Hence the strategic management within the organization adapts, reconfigures internal and external skills, reconfigures resources and functions, in order to get in pace with the changing surrounding environment and the competitive market.

Albeit, even if the sourcing strategy has been carefully selected dependent on the strategic goals underlying an IS-development project, the denouement is about the strategic value of the resources and capabilities possessed by the organization. To take a case in point, organizations have to consider strategic value of its resources and capabilities, and determine at what stage respectively what part of the software development process it wants to hand over ownership to a third party. This is in line with Balaji and Brown’s [5] statement: “As practice has evolved from simple make-or-buy decision to complex contracts and partnerships, sourcing research has endeavored to maintain relevance”.

From this our research question is as follows: How can motives for sourcing options of IS-development be explained? In order to develop knowledge related to this question we decided to use the resource-based view (RBV) of the firm as a starting point when analyzing sourcing decisions. In addition we also used existing research especially on outsourcing. Earlier research on sourcing has focused on outsourcing, which as a mode of sourcing has been around for decades as a strategic business tool in various forms and industries. Likewise the academic literature has generated a general understanding why, what, and how firms outsource [6]. What this research aims at is to give a deeper insight in sourcing motives of IS-development sourcing in the financial sector. As stated above, in order to do so we decided to use RBV as a theoretical lens. The reasons for selecting RBV is supported by the fact that RBV is a theory about how firms actually operate [7] and it focusses on organization of resources and capabilities in organizations [8]. Sourcing decisions can be approached from different theoretical perspectives. The resource based view (RBV) and transaction cost theory (TCT) are considered as extremely influential in the field of outsourcing [9, 10]. Past sourcing decisions were often driven by cost where the company would outsource if gained benefit exceeds the transaction cost [1, 6].
In contrast to the TCT perspective, RBV includes the relational view arguing that combining the organization’s resources in a unique way holds a source of competitive advantage [10]. We are interested in approaching sourcing from the analysis of the internal resources and how sourcing strategies can be seen as an opportunity to access complementary capabilities to strengthen internal competitiveness.

According to RBV, a resource is considered to be a resource if it holds the potential to “exploit opportunities and/or neutralize threats in a firm’s environment” [11]. A valuable resource has to fulfil three further attributes in order to achieve sustained competitive advantage, namely rarity, imperfect imitability and non-substitutability [11]. Barney [11] states that an organization gains a competitive advantage only if the value-creating strategy is not copied by a considerable number of competitors. As the organization’s resources are the source of competitive advantage, it can be concluded that those should be kept or gained internally. The central issue of the RBV is accordingly the identification of such resources [12]. The resource based view can be applied to the analysis of the relationship between IT and sustained competitive advantage. “The concept of a firm’s resources and abilities are defined broadly, and could certainly include the ability of an organization to conceive, implement, and exploit valuable IT applications” [13].

To summarize, the aim of this research is to develop a framework that has the potential to explain sourcing decisions in organizations that are heavily dependent on IS, such as banks, focusing especially on sourcing of resources for IS-development in the bank sector.

The rest of this paper is organized as follows. Next section discusses and defines four different sourcing options that later are used for development of the Sourcing Decision Framework. Section 3 presents the collection and the empirical data shortly. Section 4 then presents the Sourcing Decision Framework that is a result from the theoretical discussion supported by findings from the empirical data. The final section presents some conclusions and discussions around the suggested Sourcing Decision Framework.

2. Sourcing options for IS development

In the context of IS-development the literature reveals a multitude of IS-sourcing options from different foci. We give an overview and structure the different characteristics of sourcing options in order to finally apply the dimensions of sourcing by Lee et al. [14], deriving four options that build the foundation for the suggested Sourcing Decision Framework.

In general it can be said that IS-sourcing is often seen as the delegation of all or any part of technical resources, human resources and management capabilities associated with providing IT-services to an external vendor [5]. The provision and use of IT-based products and services underlies general economic principles. First of all, organizations – facing the need for a product or service – have two distinct options, to make it on their own or to buy it. However, the practice in IS-development goes beyond simple make-or-buy decision [5, 15]. IS-sourcing options can be classified into strategies with complete internal control, and in strategies with some degree of external involvement. Depending on the definition of the term, the latter category is denoted as outsourcing [16]. Outsourcing can be conceived as the reallocation of already present IS-assets and the associated resources to an external supplier. Here, the transfer of activities that are related to new IS-assets are not implied by the term outsourcing [6]. We follow the perception of De Looff [17] and Quelin and Duhamel [18] and define IS-outsourcing as follows: Outsourcing in the context of IS-development is defined as the act of shifting some or all of the IS-activities to be performed externally by contractual agreement.

2.1 IS-Sourcing Options

Based on the analysis above it reveals that IS-sourcing can be considered from different dimensions that give specific characteristics to a sourcing option. Considering all forms of sourcing options – including in-house development – it can be said that confusion exists about terms that may lead to difficulties for the comparability of research results [6, 12]. Johansson [12] concludes that there are at least four general sourcing options involving external providers: traditional outsourcing; insourcing; buy-in; and net sourcing. Lacity et al. [15] developed for practitioners five sourcing
modes namely buy-in, contract out, preferred supplier, preferred contractor, and in-house. Roy and Aubert [2] likewise derive four categories with different labels namely partnership, conservation, outsourcing and recuperation. Here, even though there is confusion about both terms in the literature [15], Roy and Aubert [2] do not further specify in-house development, which they denote as conservation and outsourcing.

With regards to the critique mentioned above, the categories suggested by Roy and Aubert [2] are adjusted to the four alternatives of sourcing strategies: insourcing; standardization of commodities; strategic partnership; and outsourcing as a service. The driving dimension of sourcing is the degree of control and the integration the organization possess in the IS-development. Duration is suggested as a further attribute within the categories. The following four sections describe the sourcing options in depth from these dimensions.

2.2 Insourcing

Basically insourcing is the opposite of outsourcing. However, there is some confusion in the literature. First, the term could simply mean that the organization performs an activity internally, thereby using internal resources and governance. Alternatively, insourcing could mean that external resources are involved but the governance is kept internally. As a third option, insourcing is also conceived as a strategy that retrieves outsourced activities to the organization [15]. Accordingly, we define insourcing: Insourcing is the opposite of outsourcing, i.e. the activity is governed and performed by internal resources. Here, staff augmentation through external resources is only implied in insourcing as long as it is driven by the need to increase staff capacity, rather than to replace lack of knowledge.

2.3 Standardization of commodities

Taking the model of Roy and Aubert [2] as a starting point, this sourcing option was denoted as recuperation. With this, Roy and Aubert [2] mean a strategy in which the organization collaborate with potential competitors in order to share the development cost for the IS. As Roy and Aubert [2] elaborate, cost sharing can be carried out in the form of a joint venture or the internal development and later selling of the IS-module to the competitors, to minimize costs.

The idea behind the option is the low strategic value of the specific IS and the internal presence of appropriate resources for the development. Thus, the IS is not seen as a source that provides sustainable competitive advantage. As a consequence, the IS can be freely shared with competitors without facing a competitive disadvantage or losing a competitive advantage. Mainly, the possibility to standardize the requirements for an IS leads to commoditization [19] and purchase from specialized supplier rather than proprietary development [20]. In standardization of commodities, we include the development process of an IS with focus on the resources that are present internally at an appropriate level. The standardization of commodities is defined as follows: IS-functionality regarded as commodities are standardized to maximize the effect of the economies of scale respectively minimize the organization’s transferred cost for the IS-development. Here, the IS-development is carried out with internal resources whereas the governance may be shared.

2.4 Strategic partnerships

Is the IS-development activity strategic but not a competence of the resources the company has in its possession, then a partnership with an external supplier is an appropriate sourcing option [2]. In line with Roy and Aubert [2], the main goal of the sourcing option is to access complementary resources and capabilities to in-house competences while retaining the ownership and control over IS-activities. The potential dependency on the supplier knowledge is addressed through mixed teams where the internal personnel gradually gains knowledge and takes over responsibility [2]. This sourcing option is in accordance to Roy and Aubert [2], nevertheless, we added the word strategic in order to stress the strategic intention underlying the partnership. Similarly with Roy and Aubert [2] we define this sourcing option as follows: A strategic partnership aims to gain access to complementary resources and capabilities that are not present internally. Herewith, the organization retains the ownership and control over the IS-project that is linked to the organization’s strategic needs.
2.5 Outsourcing as a service

With regards to IS-development, service implies the development process of an IS independently by an external supplier. Whereas, the delivery of the service finally results in a product, it does not necessarily mean that service provision inhibits the outcome of the development process which can be denoted a product. Furthermore, as the supplier owns the required resources for the IS-development the residual rights are also controlled on the supplier side till the service delivery [14]. It has to be noted that maintenance of the IS is likely carried out by the external supplier as the organization minimize control and involved resources.

However, in this option the customer has least control among the sourcing options. In return, the client uses a minimum of its own resources and pays only a fee for the service that was actually used. Conclusively, the client neither owns appropriate resources nor wants to develop competences related to development of IS. In the long run, the organization does not assign a strategic value to the IS. From this we define the sourcing option, outsourcing as a service as follows: Outsourcing as a service implies that the residual rights are owned by the supplier during the delivery process as it owns the required resources for the IS-development. The responsibility for delivery is exclusively on the part of the external supplier, i.e. no governance on the client side during the delivery process but at the acceptance test.

In Table 1 the four sourcing options are summarized from the dimensions: degree of integration; duration time; and allocation of control.

Table 1. Four sourcing options and description of respectively dimensions of these

<table>
<thead>
<tr>
<th>Dimension/Sourcing option</th>
<th>Degree of Integration</th>
<th>Duration</th>
<th>Allocation of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insourcing</td>
<td>Only internal resources except staff augmentation driven by the need to increase staff capacity</td>
<td>Short-term, long-term</td>
<td>Full governance by the organization, residual rights are owned by the organization</td>
</tr>
<tr>
<td>Standardization of commodities</td>
<td>Internal resources are involved to some extent respectively through a jointed venture</td>
<td>Short-term, long-term</td>
<td>Internal, maybe shared (joint venture)</td>
</tr>
<tr>
<td>Strategic partnership</td>
<td>Internal and external resources</td>
<td>Short-term, long-term</td>
<td>Full governance by the organization, residual rights are owned by the organization</td>
</tr>
<tr>
<td>Outsourcing as a service</td>
<td>External resources</td>
<td>Long-term</td>
<td>Full governance by the supplier, residual rights are owned by the supplier during the delivery process</td>
</tr>
</tbody>
</table>

3. Collection and Presentation of Empirical Data

In this study we use an investigation of sourcing projects to further develop our thoughts about the dimensions of the four sourcing options presented in Table 1. The empirical data was collected by semi-structured interviews conducted with persons in the upper management in charge of certain outsourcing projects or responsible for the strategic sourcing decisions in investigated organizations in 2011. In addition, publicly available sources such as annual reports, interviews with the organization’s CEOs in journals, and project documentation are used to provide a rich description of the cases. Interviewees were selected based on their organizational remit charge of sourcing strategies. In total four banks, three from Sweden and one from Germany were part of our study.

Interview guide questions were structured in four parts: general perception of IS-sourcing in the financial sector; characteristics of the IS-sourcing projects; underlying motives for sourcing; and questions concerning the presence of appropriate resources used for the development and its strategic value. Introducing questions seek to investigate the perception of the interviewee in order to test the assumptions underlying implicitly this study. The second part disposition follows the dimensions of sourcing: degree of integration; duration; and allocation of control that characterize the sourcing project. The sequent part gave the interviewee the opportunity to argue the motives underlying
the sourcing project. For the last part we used the four leading questions from the VRIO framework [21] in order to investigate the value, rareness, non-imitability and the organization’s exploration of specific resources.

For preparation pre-interviews with two banks were conducted to survey their IT-strategy and to find investigate-able sourcing projects. Actual data collection was then done with four interviewees, all in leading positions concerning IS-sourcing decisions. The interviewees have the following roles: Manager of strategic partnership (Bank A); Head of the development infrastructure (Bank B); Head of sourcing and vendor management (Bank C); and Head of sourcing IT-development (Bank D).

The interviews lasted between 45 min and 2 hours, and were recorded, transcribed and coded. The applied coding system followed the construction of the interview guide. Starting with investigating characteristics of the IS-sourcing project the guide uses the dimensions of sourcing to structure the description of the case. Subsequently, the interview guide exploits the organization’s resources guided by the VRIO framework. Derived from this, we used the pattern developed by Barney [21] to conclude the competitive and economic implications following from how the banks use its resources in IS-development. Consequently, the applied coding was concept driven and breaks down the interview text to key statements that then were categorized and condensed.

It has to be noted that the quantification of the strategic value is based on the interviewees’ evaluation of the resources. It was not our goal to investigate objectively the organization’s resources. Instead, we aimed at designing a theoretical model that have the potential to explain sourcing motives when deciding on a specific sourcing option. Moreover, the interview provides insight in the internal resources or capabilities before entering the IS-development project with regards to its value, rareness, inimitability and the organization’s exploitation. The perceived value of the resources were measured indirectly by the value of the IS itself.

**Sourcing motives and applied options in the banks**

Considering motives for sourcing we have identified an overlap across cases, and our investigation reveals the following main key motives for IS-sourcing in all four cases: flexibility; access to talent; and cost benefit. Based on the analysis of the empirical data, applied sourcing option and expressed main motives for the selection of respectively sourcing option are presented in table 2.

<table>
<thead>
<tr>
<th>Case</th>
<th>Applied sourcing option/options</th>
<th>Expressed main motive(s) for applied sourcing option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank A</td>
<td>Outsourcing as a service mode/standardization of commodities</td>
<td>Cost benefit (increased need of cost efficiency, pilot project)</td>
</tr>
<tr>
<td>Bank B</td>
<td>Outsourcing as a service</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Bank C</td>
<td>Outsourcing as a service</td>
<td>Access to talent, cost benefit (pilot project)</td>
</tr>
<tr>
<td>Bank D</td>
<td>Outsourcing as a service/strategic partnership</td>
<td>Access to talent (retaining customers through improved usability)</td>
</tr>
</tbody>
</table>

Major motives and key drivers were as stated above findings from the interviews. The following quotes illustrate the findings. The Manager of strategic partnership in Bank A, said: “There were several reasons. One was to reduce cost. Another one was access to talent. Flexibility and I would say improving efficiency. I think that are the four main ones”. The Head of the development infrastructure in Bank B, stated: “Bottleneck of staff, gain flexibility, avoid governance overhead”. However, he also said: “I think that it is misleading that we do not have the competence and that is why we do Out-tasking. We do have the competence, but we could not do it all alone loosely, if the contract book is too full, we need an outlet where we can make something else we could do just as good alone. This is actually the story behind it”.

Sourcing strategy and sourcing drivers were described by the Head of sourcing and vendor management in Bank C, as follows: “We have in our sourcing strategy identified sourcing driver, we call it. They are skills, the need for good skills for us, its cost, and the vendor reducing cost, its flexibility and that’s regarding both; flexibility regarding buying resources and also regarding cost. And we have the risk sourcing driver that we are not allowed to increase the risk...
when we outsourcing some maintenance or development. And finally we have the fifth one that we called focus, where we say that’s rather important that we can focus our own employees on strategic matters that are the important for the bank. And in this specific case the main drivers was cost - we had, we use a couple of expensive consultants for maintaining the system earlier, so we have significant reduce of cost when we were entering the agreement by the end.” Finally, the Head of sourcing IT-development in Bank D presented his view of drivers: “Three different drivers, first was cost we would like to see if we could achieve a cost benefit of the simple reason that they (Indian employees) have a lower salary than a Swedish employee would have. Technically it was a question of availability; we simply did not have that competence free internally. Of course we have the capability as such of the very simple reason that we have been doing this for a couple of years. But for that particular timing we did not have the availability on the resources. It is also a question of timing I would say, time to market, The third driver would be the scalability; they have the possibility to scale up on a very short period of time”. Table 3 summarizes main motives and key drivers with identification to respectively bank.

Hence we conclude that major motives for selecting IS-sourcing options in the four banks is access to talent and cost benefit, and thereafter flexibility.

Access to talent would according to RBV be knowledge and experiences that are difficult to copy. Here talent itself is seen as a resource and can be alluded to vendor management (since access to talent depends on the talent that a specific vendor holds). This resource is valuable for our case organizations since it has high strategic value in terms of gaining sustained competitive advantage due to its connection to organizational values and core competencies.

The second motive for sourcing option is cost benefit, which is not directly seen as a resource of strategic value from RBV. Yet indirectly it is a resource of strategic value, since a cost benefit implies that the organization has some kind of financial advantage, a fiscal surplus to invest in access to talent for instance.

The third occurring motive is flexibility. Flexibility is here seen as organization’s ability to mitigate threats and find new opportunities under pressure.

<table>
<thead>
<tr>
<th>Major motives for selecting IS-sourcing option</th>
<th>Main key drivers, taken literally from the interviews (in respectively bank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to talent:</td>
<td>Lack of competence internally (Bank D), availability (Bank D), improving efficiency (Bank A), skills (Bank C), focus on core competencies (Bank A), focus in terms of focus own employees on strategic matters (Bank C), the value of an IS is assessed if the IS mitigates threats and exploits opportunities in the competitive environment that financial institutions face to today.</td>
</tr>
<tr>
<td>Cost benefit:</td>
<td>Cost reduction (Bank A, C, and D), avoid governance overhead (Bank B).</td>
</tr>
<tr>
<td>Flexibility:</td>
<td>Scale up the resources bound to the project in a very short period of time (Bank D), flexibility in terms of cost giving the possibility to transform fixed cost for internal employers to variable cost of external one, balance temporary shortage of staff (Bank C), time to market (Bank B and D).</td>
</tr>
</tbody>
</table>

Divided in four options, the definition of the applicable sourcing option was derived from the presence of appropriate resources and its strategic value. In the next section we use the findings from the investigation of sourcing projects to further develop a framework for explaining sourcing motives.
4. Extending the Sourcing Decision Framework

Embraced as the foundation of our study, the categories from Roy and Aubert [2] are adjusted to the four alternatives of sourcing: insourcing; strategic partnership; standardization of commodities; and outsourcing as a service. In the upcoming section, we expand the IS-sourcing model from Roy and Aubert [2] by adding the four sourcing options derived, and from that we state the implicit propositions from Roy and Aubert [2] explicitly. Using the RBV, Roy and Aubert [2] derived two main factors influencing sourcing decisions in relation to firm’s resources: the presence of appropriate resources and the strategic value of those resources. Referring to these thoughts we have developed our model with some variations in emphasis and formulations which is discussed in the following section. Initially, the terms strategic value and appropriate resources are defined in the context of IS-development since these concepts are basically the foundation of the framework.

4.1 Strategic value

With regards to IS-development projects, the decision whether the development activities respectively the needed resources hold a strategic value, depends on the strategic value of the resulting IS. Thus, the organization’s resources can only be measured indirectly. As Roy and Aubert [2] argue, the contribution of an employee can only be measured in relation to the value of the IS, i.e., the activity that is performed becomes tangible when the outcome of it is measured. The lower the strategic value of the certain activity and the related expertise of the IS-development, the more organizations are willing to outsource. Conversely, the higher the strategic value of the certain activity, the more organizations are interested in preserving the expertise internally [2]. However, a resource may contribute to a strategic goal and organizational success – such as cost reduction – without being a source of sustained competitive advantage: “IT adding value to a firm – by reducing cost and/or increasing revenue – is not the same as IT being a source of sustained competitive advantage for a firm” [13]. In comparison to Roy and Aubert [2] we want to specify the quantification of the strategic value in accordance to the VRIO framework developed by Barney [21]. Following from our perception of this, a resource holds a high strategic value only if it is potentially a source of temporary or sustained competitive advantage. In contrast a resource holds a low strategic value if it is potentially a source of competitive parity. Indeed, it is expected that the IS-development project is only carried out, if it is to some extent valuable, i.e. sources of competitive disadvantage are not considered.

4.2 Presence of appropriate resources

Subsequent to the evaluation of the strategic value of the IS, the question of whether appropriate resources are available internally is examined. According to the RBV, organizations are seen as the sum of its resources [12]. Barney [11] defines organizational resources categorized in human capital, organizational capital and physical capital controlled by the firm and that allows the firm to strategically use them to boost efficiency and effectiveness. Applied to the attributes of IT and its ability to generate sustained competitive advantage, resources can be narrowed down to financial capital, proprietary technology, and managerial IT-skills together with technical IT-skills of the human capital [13]. In the context of IS-development, the term appropriate resources, refers to availability of financial capital, technology and especially the competence of the employees. Assuredly the competence of the employees is knowledge, which is a significant driving factor in IS-development. The less the company’s resources own appropriate expertise, the more the company will seek to overcome the knowledge gap by accessing external, complementary resources and capabilities. Conversely, the more the company’s resources possess appropriate expertise, the more the company will seek to max out this competence [2].

From this discussion the following four propositions can be suggested:

Proposition 1: Insourcing - If resources used in IS-development activities hold a high strategic value and appropriate resources are available internally, then IS-development should be kept in-house. The proposition strictly state that if IS-development is of high strategic value and if the needed competencies are available these are then motives for keeping
IS-development in-house. The overall focus of the sourcing strategy is to gain a sustained competitive advantage by internal resources.

Proposition 2: Strategic Partnership - If resources used in IS-development activities hold a high strategic value and appropriate resources are not available internally, then IS-development done in a strategic partnership is suitable. If IS-development is of a high strategic value but needed competencies are not available internally then a partnership with an external supplier is an appropriate sourcing option. The main goal of the sourcing strategy is to gain knowledge through the partnership and keep tight control due to the potential dependency on the supplier. The overall focus of the sourcing strategy is to gain a sustained competitive advantage by complementary, external resources.

Proposition 3: Standardization of Commodities - If the resources used in IS-development activities hold a low strategic value and appropriate resources are available internally, then the IS-development is conducted as standardization of commodities. If IS-development is of low strategic value but a competence of the resources the company has in its possession, then standardization and sharing the cost for the IS with competitors or other interested parties is the appropriate sourcing option [2]. The internal resources could be utilized in a jointed venture or the activity is produced internally and sold to interested parties. The main goal of the sourcing strategy is to recuperate some of the investments that are made for the activity [2]. The overall focus of the sourcing strategy is cost reduction through standardization and the utilization of the economies of scale.

Proposition 4: Outsourcing as a Service - If the resources used in IS-development activities hold a low strategic value and appropriate resources are not available internally, and then IS-development is acquired as a service. Is the IS-development of low strategic value and not a competence of the resources the company has in its possession, then an appropriate sourcing option is based on the provision of IS-development as a service by an external provider. The overall focus of the sourcing strategy is cost reduction and cutting management overhead.

By extension hereinafter two questions in relation to sourcing decisions could be asked:

- Do IS-development activities hold a strategic value for the organization?
- Are resources needed for the IS-development activities present at a sufficient level internally?

In line with Roy and Aubert [2] and inspired by McFarlan’s [22] “Strategic Grid” and the more recent work by Nolan and McFarlan [23] on “The Strategic Impact Grid”, we suggest “The Sourcing Decision Framework”. The framework suggests combining the factors: presence of appropriate resources and the strategic value of those resources. Depending on the constellation, it is believed that one of the sourcing option defined earlier – insourcing, strategic partnership, standardization of commodities, and outsourcing as a service – could be positioned in the Sourcing Decision Framework, as shown in Fig. 1.

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**Fig. 1: The Sourcing Decision Framework**
5. Conclusions and further development of the framework

The findings from this study add weight to the argument that it is important to look at the relationship between strategic motivation, sourcing options and organizational performance [23-25]. The excepted benefits from the right sourcing option decision based on the right motive may contribute to performance improvements such as reduced cost, higher flexibility and access to skilled talent [26, 27]. Some companies apply a sourcing strategy to reduce costs for instance, to later found out that it is not what they expected [28, 29]. Others have not been able to pursue their overall market strategy as they hoped. Consequently, this makes the motive and decision of sourcing option crucial. Companies that seek to expand to new markets may be more likely to get involved in outsourcing and in specific offshoring or near shoring. While companies seeking operational advantages may source to lower cost locations such as the BRIC countries (Brazil, Russia, India and China) or South Eastern Europe. [23]. This is a question though for future research. Nerveless our discussion of sourcing motives and sourcing decision for a certain sourcing option address the larger matter of the fact that these decisions depend highly on the internal resources and with that said implicitly also organizational characteristics and management strategies.

The research presented in this paper had the aim of developing a framework that would provide answers on the question: How can motives for sourcing options of IS-development in banks be explained?

It can be concluded that the RBV gave the explanation behind the motives for sourcing as well the identification of resources or capabilities that are of strategic value for sustained competitive advantage. Analyzing this, the selection of sourcing mode becomes more comprehensible in terms of understanding and comparing applied mode of sourcing with RBV suggested mode of sourcing.

The RBV approaches IS-sourcing from the internal analysis of its resources and the questions whether those resources mitigate threats and address opportunities. In order to achieve strategic goals, resources are needed that enables the organization to carry out its strategy. For the investigation of the four cases, the RBV helped to identify these resources and its strategic value. Regarding access to talent it was identified that needed competences was not present internally in the organizations. The organization’s need for flexibility was caused by labor regulations; however, the underlying basic thought is the competence of internal resources that is maybe present but not at a sufficient level. When it comes to cost benefits the analysis of the organization’s internal resources has to be seen in two steps. The first step is the relocation of IS-development to a low-cost country, maybe even though this capability is present internally. As argued before, the relocation of the IS-development to a low-cost country cannot in itself imply a capability of strategic value. Further, it has to be noted that the salary more or less can be seen as a measure of the resources productivity and efficiency. Following from this, this thought contradict RBV that always involves internal resources if they are appropriate and present at a sufficient level.

From the theoretical perspective of the VRIO framework and by suggesting propositions on four sourcing options we developed “The Sourcing Decision Framework”. This framework has the ambition to elucidate organizations’ motives for selecting a specific sourcing option by posing questions on strategic value and presence of appropriate resources.

Starting from a broader scope and narrowing down, it can be concluded that the empirical findings do support the general assumption that internal resources and their strategic importance for gaining a competitive advantage are considered when making sourcing decisions. Further, the empirical findings reveal that our suggested Sourcing Decision Framework does explain the applied sourcing option in the banks. Considering the variety of possible sourcing options in practice and the limitation of a framework that by its nature tries to simplify the observed real world, this outcome can be interpreted as support for the question regarding how to explain motives for selection of sourcing options.

Looking at motives for sourcing we have identified flexibility, access to talent and cost benefits as reasons for deciding on a specific option. However, subsequently to the attempt – save cost through outsourcing – new capabilities are needed that enable the organization to manage this engagement. This capability – vendor management – is crucial to be kept internally and is assessed as a potential source of sustained competitive advantage. With this said gaining cost
benefits is linked inevitably to the analysis of the organizations’ internal resources and associated capabilities. In a nutshell, the motives for selecting a specific IS-sourcing option are driven by the analysis of internal resources and its potential being a source of competitive advantage. It follows then that RBV to some extent gave the explanation behind the motives for sourcing and the importance of resources in doing so. Although, analyzing this in more detail it can be claimed that there is a need to deepen the theoretical base for a more normative usage of the framework. We would suggest that adding some thoughts from transaction cost theory and the resource dependency theory, in the application of the framework for explaining how and why organizations move around in the framework would most likely do the framework even more useful.

References


Sourcing motives behind sourcing decisions exposed through the Sourcing Decision Framework


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Paper III
Barriers to cloud continuance: Evidence from two case studies

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Barriers to cloud continuance: Evidence from two case studies

Abstract
The drivers and barriers for companies moving their IT-systems from traditional outsourcing to cloud sourcing have been studied extensively in cloud adoption studies. However, there also indications that cloud sourcing and its benefits are not so easy to implement for companies calling for cloud continuance research. This is one of the first studies of cloud continuance processes at the organizational level contributing to the management and business research literature of cloud computing. In particular we have contributed with: 1) a literature review identifying two types of barriers which includes twelve individual factors which influence cloud continuance, 2) two case studies verifying the existence of ten of these factors as well as identifying an additional type of barrier: management process barrier, i.e., lack of objectives and strategies for cloud sourcing and lack of cloud vendor communication. Our study provide a model of barriers to cloud continuance that could be further explored.

Keywords: Cloud sourcing, Barriers, Cloud continuance
1. Introduction

The drivers, barriers and reasons for companies moving their IT-systems from traditional outsourcing to cloud sourcing (Willcocks, Venters & Whitley 2013, Muhic & Johansson 2017), have been studied extensively in cloud adoption studies (Al-Sharafi, Arshah & Abu-Shanab 2017). However, there are several examples of companies that have cloud sourced, then back sourced and ended the cloud sourcing abruptly (e.g., Latamore 2011, Walther et al. 2018) highlighting the difficulties of cloud continuance (Ratten 2016). Previous research in the field gives us important insights in preadoption and adoption barriers (Luoma & Nyberg 2011, Saeed, Juell-Skielse & Uppström 2012, McGeogh & Donnellan 2013, Trigueros-Preciado, Pérez-González & Solana-González 2013, Oliveira, Thomas & Espadanal 2014), as to a better understanding of why companies might struggle to adopt cloud computing. Current research (Luoma & Nyberg 2011, Saeed et al. 2012, McGeogh & Donnella 2013, Trigueros-Preciado et al. 2013, Oliveira et al. 2014) has, however, not looked into barriers for a sustained cloud sourcing. Furthermore, previous studies have been mainly cross-sectional, at the individual and an aggregate level, lacking granular insights into the organizational level and cloud continuance processes over time (see literature review below).

Against this backdrop, our research question is: What are the barriers to cloud continuance? To answer this research question, and to contribute to the research on cloud continuance barriers, i.e., factors that hinder companies from continuing or making full use of cloud sourcing, we have performed a literature review on extant cloud continuance research and two longitudinal case studies at an industrial maintenance company (Quos) and a re-cycling company (WasteHeroes). Both companies are based in Sweden and are service companies. Quos is a large company (approx 3000 employees) with global operations in 28 countries focusing on B-to-B markets. WasteHeroes is a medium-sized company (approx 300 employees) with operations in one region of Sweden with both B-to-B (waste from companies) and B-to-C markets (waste from households). The two case companies have been chosen because of their differences in size, reach of operations, type of markets served as well as their differing success in implementing cloud sourcing. Quos has largely been successful in implementing cloud sourcing while WasteHeroes has struggled more with its cloud sourcing continuance.

Having laid out the background for our study, the next section presents a review of extant research. Based on existing theory we then introduce our approach to analyzing contextual and organizational barriers leading to problems sustaining cloud sourcing continuance. Thereafter, we address the methodological decisions behind the study. Then, we use two case studies to investigate the cloud continuance barriers. Finally, we discuss the use of our approach and its implications for theory and practice.

2. Review of cloud continuance research

In a review of cloud computing research, Wang, Liang & Jia et al. (2016) demonstrated how cloud computing research has evolved through three stages, namely, incubation, exploration, and burgeoning. Papers in the incubation stage do not explicitly define the term of cloud computing but use similar constructs. Papers in the exploration stage mainly focus on the definition, technical features, opportunities, and challenges associated with the development of cloud computing (cf. Senyo, Addae & Boateng 2018). Papers in the burgeoning stage show how there is very little published on continuance or post adoption of cloud computing and thus recommend more research on the topic. Building on this review our paper can be positioned in the burgeoning stage and beyond. Table 1 summarizes the eleven papers that have been published reporting on cloud continuance studies.
The literature review was conducted through Google Scholar, using the key words: cloud continuance, cloud sustenance, cloud sourcing continuance, cloud sourcing sustenance, cloud computing continuance, cloud computing sustenance. The searches were delimited to abstract, title and subject, whereas the publication time was not delimited. As there were not many papers found the selection was rather straight forward. At least each papers abstract, introduction, analysis and conclusion sections were read. Only peer-reviewed papers were selected. We are aware that searching in other sources and databases might have resulted in to some degree different results.

Six of the studies (Chen, Chen & Chen 2009, Venkatesh et al. 2011, Trenz 2013, Trenz 2014, Trenz 2015, Yang & Lin 2015) investigate only cloud continuance related to external individual users (customers, clients) that use a cloud-based service. The study by Mirusmonov and Kim (2013) focus on cloud continuance of employees’ use of cloud-based services and discuss no organizational factors. There are only four studies (Schlagwein, Fischbach & Schoder 2011, Vetter, Benlian & Hess 2011, Schlagwein & Thorogood 2014, Ratten 2016, Al-Sharafi et al. 2017) investigating cloud continuance on the organizational level.

<table>
<thead>
<tr>
<th>Paper on Cloud Continuance</th>
<th>Summary of paper</th>
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<tbody>
<tr>
<td>Chen, Chen &amp; Chen (2009). Determinants of satisfaction and continuance intention towards self-service technologies.</td>
<td>Quantitative study. Develops an integrated model to predict and explain continuance use of self-service technologies based on technology readiness, technology acceptance model, and theory of planned behavior. 481 surveys from self-service technology user.</td>
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<td>Benlian, Koufaris &amp; Hess (2011). Service quality in software-as-a-service: Developing the SaaS-Qual measure and examining its role in usage continuance.</td>
<td>Mixed method SERVQUAL and SaaS literature, field interviews, focus groups, card-sorting exercises and two surveys using companies to develop an instrument ”SaaS Qual” a zones of tolerance based service quality measurement of SaaS solutions.</td>
</tr>
<tr>
<td>Trenz, Huntgeburth &amp; Veit (2013). The role of uncertainty in cloud computing continuance: Antecedents, mitigators and consequences.</td>
<td>Quantitative study, survey based, 143 individual users (students) of general cloud storage services using principal agent theory.</td>
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<td>Authors</td>
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<tr>
<td>Schlagwein &amp; Thorogood</td>
<td>Married for life? A cloud computing client-provider relationship continuance model.</td>
</tr>
<tr>
<td>Trenz &amp; Huntgeburth</td>
<td>Understanding the viability of cloud services: A consumer perspective.</td>
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<td>Trenz, Huntgeburth &amp; Veit</td>
<td>The flock in the cloud - How social influence processes shape cloud service relationships.</td>
</tr>
<tr>
<td>Yang &amp; Lin</td>
<td>User continuance intention to use cloud storage service.</td>
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<tr>
<td>Ratten</td>
<td>Continuance use intention of cloud computing: Innovativeness and creativity perspectives.</td>
</tr>
<tr>
<td>Al-Sharafi, Arshah &amp; Abu-Shanab</td>
<td>Factors influencing the continuous use of cloud computing services in organization level.</td>
</tr>
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</table>

Table 1: Summary of papers published on cloud continuance

Two of the studies are based on cross-sectional data, i.e., surveys to managers (Benlian, Koufaris & Hess 2011, Ratten 2016), one study on a literature review (Al-Sharafi et al. 2017) and one is a conceptual study with some case illustrations (Schlagwein & Thorogood 2014). Thus, there is no prior empirical study on the process of cloud continuance, i.e., managing cloud continuance by encountering barriers and issues that has to be managed with continued use of cloud sourcing. The four papers have however, in different ways identified organizational factors that may act as barriers to continued and successful use of cloud sourcing. Al-Sharafi et al. (2017) has compiled a list of the most frequently mentioned factors of cloud computing adoption in 30 selected journal papers, but try to select only those factors that would be relevant also for continued use and not only adoption. Benlian et al. (2011) has developed a service quality instrument specifically for continued usage of Software as a Service (SaaS). Ratten (2016) has identified both individual and organizational factors for continued use of cloud computing using a survey to managers. Lastly, Schlagwein & Thorogood (2014) conceptually identifies some organizational factors affecting the continued use of a client-provider relationship in cloud computing.
After having compiled all mentioned barriers in the four papers related to the organizational level, de-selecting individual users’ barriers and barriers only related to adoption, then consolidating similar barriers we have ended up with 12 barriers that may act as barriers to continued use of cloud sourcing. After further analysis of the 12 barriers led to a further categorization of four factors as contextual barriers and eight as organizational barriers (see figure 1). Contextual barriers represent factors that are external to the organization but may indirectly, by causing organizational barriers, or directly shape the process of continued use of cloud sourcing. Some are partly manageable by the organization, e.g., lack of cloud vendor support, others are not manageable such as laws and regulations and lack of competitive pressures. Organizational barriers are internal structures or states that shape the cloud continuance process and may act as barriers.

Contextual barriers are hindering laws and regulations that may slow down continued use or make it more costly or cause organizational barriers such as lack of commitment from top management. Lack of competitive pressure, i.e., competitors do not forcefully commit to cloud sourcing, may also slow down continued use of the cloud. In a similar vein general technical risks that are associated with cloud computing or lack of cloud vendor support may slow down the pace of cloud sourcing continuance. Organizational barriers are lack of organizational commitment to cloud computing and lack of top management support. Additional barriers are lack of satisfaction with cloud performance, due to cloud computing not meeting expectations, lacking relevant IT-competence, lacking innovation capabilities and lacking trust for cloud vendors. High complexity, technical, legal and administrative, might also act as a barrier towards continuance. Smaller firms have more limited resources to devote to cloud continuance, thus it may act as barrier relative to larger size firms (cf. Gupta, Seetharaman & Raj 2013).

Figure 1: Contextual and organizational barriers leading to decreased or increased continuous use of cloud sourcing compiled and categorized from the literature review.
Figure 1 illustrates the two types of barriers and how they relate to cloud sourcing continuance as distilled from the literature.

3. Case studies – Cloud sourcing at Quos and WasteHeroes

3.1. Case companies

The aim of the case studies was to investigate the contextual and organizational barriers to cloud continuance in two companies that were in the cloud continuance process. The aim was also to investigate how the case companies managed to lower or avoid barriers. Quos is a global leader in industrial maintenance services. They have more than 25 years of experience in industrial maintenance management and execution, supporting its customers throughout the entire maintenance value chain. Quos optimizes maintenance cost and improves plant performance by reducing technical failures and continuous improvement of productivity, maintaining the value of assets. The company is spread across 5 continents, on 71 sites in 28 countries with some 3000 employees in total. Virtual teams working 24/7 is common. They started their cloud sourcing process in 2015 and at present, all systems are in the cloud hosted by international cloud providers in India, Belgium, UK, Finland, Spain and the Netherlands.

WasteHeroes, a Swedish waste management company has some 300 employees and 7 IT systems cloud sourced as SaaS (Software as a Service). They have a long relationship with the main cloud sourcing suppliers some 3-5 years back. Still there are problems in the relationships, which has prohibited WasteHeroes to move all its IT systems to the cloud. WasteHeroes now aims to cloud source all IT systems within five years.

3.2. Data collection

Data was collected primarily through (69) interviews (managers and users of cloud based systems, and persons responsible for client services in the cloud providing firms), on-site observations and reviewing documents as SLAs, internal reports, meeting notes and protocols, presentations, and change-orders. Data was collected during a period of one and a half year in several phases. This allowed us to study the changes over time, by comparing past and present practices i.e. activities, decisions, problems and solutions that arose over time.

The two cases were selected for their similarities to ensure relevance, as well as their differences (industry, integration speed, structure, and culture) to allow for useful contrasts to be made during data analysis (cf. Eisenhardt 1989, Yin 1994). Comparing and contrasting the two cases challenged and elaborated the findings in this study.

3.3 Data analysis

The analysis of empirical data was guided by the barriers identified in prior research outlined in Figure 1. The data were organized, analyzed and classified according to the suggested barriers. This allowed creating a rich and insightful account of how the contextual and organizational barriers leading to problems sustaining cloud sourcing continuance enfolded at the case com-
panies. Key informants were asked to read and comment case descriptions and analysis to validate empirical findings.

Data collection and subsequent analysis followed an abductive cycle: throughout the process, we have gone back and forth between the theory and the empirical observations to gradually improve our understanding of the phenomena under observation. In particular, we sought to understand which barriers the managers perceived, how they managed them and how they impacted the overall cloud continuance process.

4. Case analysis of encountered barriers

4.1. Encountered barriers in the Quos case

Overall Quos have had a cloud continuance process with rather few problems and encountering of barriers. As mentioned above they started their cloud sourcing process in 2015 and at present, all systems are in the cloud hosted by international cloud providers. Some of their competitors have also moved into the cloud which have put some pressure on Quos management to continue cloud sourcing. Of the contextual barriers they only experienced one: lack of cloud vendor support. Quos’s Chief Information Officer (CIO) explains “In the beginning we had a contract with ABC as our cloud vendor. In the negotiation processes they seemed to be the best choice for us. Unfortunately very soon after we started collaborating with them it showed that they could not live up to the agreed requirments in the SLA. This was a big disappointment for us, as they lacked the right competence. This experience taught us to look for cloud vendors with the same standards and similar practices as we have. Soon after we changed to a new cloud vendor; CBA with whom we still have a good relation as they have helped us move all our IT systems to the cloud in record time and to successfully stay there”.

Overall the commitment to utilize cloud solutions have been high from the Quo’s management. The Quo’s management agreed on a strategic framework for the cloud platform. The strategic framework contained the following principles:

- A standardized and centralized infrastructure on a global level (limited IT on region / site level)
- Lean IT organization with a minimum of IT applications
- Largest possible degree of cloud sourcing
- Ensure critical business application knowledge in-house as well as IT management capabilities
- Scalable IT platforms to support further business growth without major changes
- Variable IT cost base (e.g. pay per use with 3rd parties)
- Set-up and integration towards customer environments based on standardized blueprint and playbooks
- Future focus that IT is important for our customers
- The platform and back bone should decrease time to market of additional maintenance services.

Quo’s management have also been careful to convert IT-systems into the cloud platform in a step-wise manner. “Preference of several small servers than a few larger ones – standardize set up and make clones”. However, when Quos had reached the full potential of cloud sourced IT-systems it became clear that they did not have enough IT-competence to drive digital innovation.
They hired a new chief of digitalization (CDO) that launched development projects, among them a sensor-project, i.e., increase the number of sensors in the customer’s equipment to build new services and service levels. The new CDO also scanned the market for new services, SaaS, which could be supplied by third-party companies. The latest initiative from the CDO is to provide third-party services independent of the base offering of their industrial maintenance services. If scaled up further this would mean a change in Quos business model but has not been decided yet. The CDO was after some time invited to join the top management team. Previously the top management team has not included any person from the IT-function. Thus, the support from top management to use a cloud platform now also include the support from top management to drive innovation, mainly to develop or provide, through 3rd-party, new customer services.

Quo’s management have also been very attentive to the communication and relations with the main cloud vendor companies. The CIO of Quo says “*We communicate with our vendors on almost a daily basis. Since we are all located in different countries it is usually through Skype conference call. With some of the vendors like BCA and CBA we have weekly and monthly meetings in addition to the daily communication. This is crucial to pick up on problems and solve them as they arise. Earlier when the communication was more sparse, we had problems that we’re not detected until it was too late which caused negative effects on the relationships to our vendors. That is the reason why we have assigned persons, such as our ERP-specialist (Enterprise Resource Planning system) to take the daily calls and hint to the rest of the internal IT people when problems arise as well as to contact the vendors*. Moreover, this communication is not only about detecting and solving problems early, they are also crucial in maintaining and fulfilling the requirements. Another IT manager says “*To follow up and always be in touch with the vendors is important. Otherwise the vendors will do what they need to do, but no more than that. We as customers have to set requirements and make sure that they are fulfilled*”.

The Quo case revealed a third type of barrier, and ways to overcome it, not suggested in previous research, i.e., management process barriers. As most prior studies on cloud continuance have been cross-sectional, managements’ activities, or lack thereof, to manage the cloud continuance process has not been in focus. In a case study with a longitudinal design, managements’ activities become visible. As the citations above illustrate, we have identified two types of management process barriers; lack of objectives and strategies related to cloud sourcing and lack of communication with cloud vendors. In the Quo case they have been very clear regarding setting objectives and strategies for their cloud sourcing but had initial problems with cloud vendor communication. The Quo case also illustrates that not only can management activities affect organizational barrier, but also contextual barriers, in particular lack of vendor support.
In figure 2 we sum up the Quos case and the encountered barriers towards cloud continuance.

4.2. Encountered barriers in the WasteHeroes case

Overall WasteHeroes have had a much more difficult and cumbersome cloud continuance process. WasteHeroes have encountered many more of the cloud continuance barriers than Quos. Moreover, the encountered barriers have not been managed as well and diligently as in the Quos case. As described above at the end of the study period they had 7 IT systems cloud sourced as SaaS (Software as a Service) but many more remain managed in a traditional outsourcing solution. WasteHeroes now aims to cloud source all IT systems within five years which is much slower than originally envisioned.

The objective for WasteHeroes in cloudsourcing its IT systems is to enable its employees to
focus on its core business, which is waste management. WasteHeroes is a publically owned company responsible for waste handling and re-cycling from households in 14 municipals in south-east Sweden. WasteHeroes have a monopoly on handling household waste and re-cycling and thus experience a low level of competitive pressure, even though municipal owners and household users exert pressure on the company management to be reasonably efficient, adopt progressive re-cycling standards and offer good service to the households. However, the issue of adopting cloud sourcing had not been a priority from the owners or the management of the company. To adopt and implement cloud sourcing was an initiative from IT-manager. As a public company they have to comply with public procurement rules and make public tenders for cloud computing services. In 2012 WasteHeroes started to procure two IT-system: customer relationship management system (CRM) to handle customer data and enterprise resource planning system (ERP) to handle financial data. The contract was won by cloud provider XYZ. An SLA was signed with cloud provider XYZ but it was soon discovered that the cloud provider could not deliver according to the SLA due to competence problems and due to inexperience at WasteHeroes to write good procurement tenders and SLAs for cloud sourcing. The platform maintenance was poor as well as the application updates. The contract was however written in such way that it was hard to exit from and WasteHeroes had to organize another solution until the contract terminated. On the other hand, the IT-manager learned that it is not only about writing a good SLA, it is necessary to be an active customer and have working relationship with the cloud provider. The IT manager of WasteHeroes: "We are the ones that make decisions, we have a SLA between each other...and the responsibility is on us, the customer. If something does not turn out as it should, it is the customers problem, as long as the cloud provider delivers what is agreed upon ... If you do not make a good SLA, well then you can congratulate that cloud provider. But if you have a good relationship, all these things can be fixed later on and we have to rewrite that part in the SLA. We do not want any conflicting issues, since it takes energy from all parties involved. If a function in a cloud system is missing, we can add it later as an addition in the SLA if the relationship is good. I think that this is very important".

The satisfaction with the cloud sourced systems have not been entirely positive. As the IT manager of WasteHeroes says "We face problems often. It is not painless. You should not expect that. Many think that the cloud is worry free, that it never shuts down...of course it does, everything does. But the advantage is that if it shuts down it does not only affect us, but all other customers of cloud provider XYZ which puts pressure on that cloud provider to fix the problem faster. My view is that we have not been clear of what we expect of our cloud provider and what it is that we want...so when I told cloud provider XYZ that this is not OK, that they should do this...they replied ”no one has told us about that, we thought that you were satisfied with this”.

Another barrier is the internal support from and internal communication with top management. So far top management have mostly seen the IT-department as a support function and not a strategic function for innovation of services and internal processes. In terms of management process barriers, the IT-manager has asked the top management for guidance of future development plans of the company in order to investigate how cloud solutions could contribute to the development plans. Top management have been reluctant or unable to provide this guidance to the IT-manager, i.e., setting objectives and strategies for cloud sourcing in relation the overall company strategies. However, the IT-manager has recently entered a group of managers which has a monthly meeting with top management, giving the IT-manager possibility to probe some cloud-based innovation projects. As described above there have at times been lack of communication with the cloud vendors but is now better handled.
In figure 3 we sum up the WasteHeroes case and the encountered barriers towards cloud continuance.

![Figure 3. Barriers to cloud continuance in the WasteHeroes case. Encountered barriers in bold text style.](image)

5. **Case study findings**

The two cases reveal that almost all the cloud continuance barriers extracted from prior cloud continuance research have been encountered, at least temporarily, by the two case companies, except technical risks and high level of complexity. These lacking barriers might be due to the increased level of standardization of cloud computing over time and generally a cautious way to cloud source, i.e., to move in a step-wise manner and not try to cloud source all systems at once. Moreover, the cases have shown that if the company encounters many barriers it will slow down the cloud continuance process and vice versa. In addition our cases highlight that overcoming two types of management process barriers are key to cloud continuance: 1) management of the cloud continuance process in terms of setting strategies and objectives...
related to cloud sourcing, i.e., setting goals, priorities, follow-up and solve problems as early as possible, 2) continuous communication with cloud vendors about problems and solutions, as well as future company development and innovation projects.

As indicated in figure 2 and 3 the efficiency of cloud continuance processes depend on one hand on overcoming or reducing contextual, organizational and management process barriers. Managing the cloud continuance process without the support from cloud vendors, commitment from the organization and top management will most likely result in very little achieved. On the other hand, management efforts to facilitate cloud continuance and increase the dialogue with cloud vendors may reduce the contextual, organizational and management process barriers over time in a learning-by-doing as well as a learning-by-observing manner.

6. Contributions, implications and limitations

This is an exploratory study on cloud continuance, hence our contributions are preliminary and need to be researched further. As far as we know this is one of the first studies of cloud continuance processes at the organizational level and a contribution to the lacking management and business research literature of cloud computing (Bayramusta & Nasir 2016, Senyo et al. 2018, Oliveira et al. 2019). In particular we have contributed with: 1) a literature review identifying two types of barriers which include twelve individual factors that influence cloud continuance, 2) two case studies verifying the existence of ten of these factors as well as identifying an additional type of barrier, i.e., management process barrier, including two types of factors, i.e., lack of objectives and strategies for cloud sourcing and lack of cloud vendor communication. Our study provide a categorization and a model of barriers to cloud continuance that could be further explored and/or verified. Our case studies and research framework indicate that these barriers are connected and reinforce each other, leading either to a spiral development of positive cloud continuance (where barriers are reduced by management efforts, specifically contextual and organizational barriers) or a spiral development of negative cloud continuance and possibly discontinuance (when barriers are not managed properly and contextual and organizational barriers not reduced).

The implications of our findings for management is firstly that it is important to set objectives and strategies for cloud sourcing in light of the overall development of the company, i.e., for top managers to know why the company should cloud source and what it aspires to achieve through cloud sourcing, and not only follow the hype around cloud computing. Secondly, determining the SLA with cloud providers is necessary but not sufficient. The continuous relationships and the capability to manage these relationships with cloud vendors are key to cloud continuance (cf. Garrison, Wakefield & Kim 2015, Willcocks & Lacity 2018).

Our research has several limitations. First, the finding of management process barriers are based on two case studies and thus need further studies, even though some prior cloud adoption studies show similar findings (Lin & Chen 2012, Garrison et al. 2015, Ali, Warren & Mathiassen 2017, Oliveira, Martins et al. 2019). Second, the absence of management perception of technical risks and other risks associated with cloud sourcing might indicate that we have not investigated these types of factors and that managers are unwilling to share information about them. Further studies focusing risks and risk management with cloud continuance is thus called for (cf. Ali et al. 2017, Oliveira et al. 2019). Third, while we have done our best to systematically identify prior research on cloud continuance we may have overlooked some prior research. Additional
literature reviews utilizing other databases and updating the review with the latest publications could therefore be of high research interest.
References


Paper IV
Dynamic capabilities triggered by cloud sourcing – a stage model

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Dynamic capabilities triggered by cloud sourcing – a stage model

ABSTRACT
Current research offers with very limited insights on the process of how the adoption and continued use of cloud sourcing might trigger and push the development of innovations and competitive advantage of a firm. Applying an abductive approach, with two longitudinal case studies of cloud sourcing firms, and a theoretical framework based on stage-based models of business development and the dynamic capability view of the firm, we develop a model of stage-based business development path related to the adoption and continued use of cloud sourcing. The model identifies three business development stages characterized by specific types of capabilities. In between the three stages we identify three dynamic junctures that the firm and its managers have to overcome in order to progress from one stage to another. In the dynamic junctures three types of dynamic capabilities were key; sensing, seizing and transformation capabilities, to pass to the next stage. The model contributes to a better understanding of the evolution of dynamic capabilities as well as the evolution of the cloud sourcing firm and the cloud-based business model.

KEYWORDS
Cloud sourcing, Stage based model, Dynamic capabilities, Business model innovation

JEL: M15, O32
Dynamic capabilities triggered by cloud sourcing – a stage model

1. INTRODUCTION

The introduction of cloud computing (Schneider & Sunyaev 2016) and cloud sourcing (Willcocks, Venters, & Whitley 2013a; 2013b; Muhic & Johansson 2014) represent a potentially important option to not only simplify the outsourcing of IT elements but more importantly to develop strategic innovation capabilities in order to strengthen the firm’s competitive advantage (Legner et al. 2017; Willcocks et al. 2013b). However, given the historic technology focus of the IT-function, the traditional role as an internal service provider and the separation between the IT-department and business departments (Legner et al. 2017; Vithayathil 2018) the potential of cloud sourcing to become a driver of strategic innovation remains problematic and challenging (Vithayathil 2018).

Cloud computing provides on-demand access to a pool of scalable and manageable IT-resources on a pay-per-use basis (Mell & Grance 2011). IT-resources here refer to infrastructure and hardware (Infrastructure as a Service, IaaS), platforms for development (Platforms as a Service, PaaS), and application software (Software as a Service, SaaS) (Mell & Grance 2011). Examples of IaaS are Amazon EC2 who offers virtualized computing services (servers, network, data storage) where customers can deploy, control and run any software, operating systems as well as applications, without owning, managing or operating the virtualized IT-resources. PaaS, e.g., Micosoft Azure, offers an integrated environment where customers and their IT-consultants can design, build, test and deploy custom applications. SaaS offers software applications that are run on cloud infrastructure, remotely accessed through the internet by the customer firm’s clients, typically through a web-browser. Examples include many standard applications such as e-mail and office applications, to complex application such as enterprise resource planning (ERP) systems such as SAP Business byDesign. The key characterics of
Cloud computing has been described by Mell and Grance (2011) as: the provision of (i) on-demand self-service access to (ii) virtualized, shared, and managed IT resources, (iii) scalable on-demand, (iv) available over a network, and (v) priced on a pay-per-use basis.

The decision to outsource a firm’s IT-resources and activities from the cloud, i.e., to adopt, integrate and continued use of cloud services from external cloud providers, we here define as cloud sourcing (Muhic & Johansson 2014; Schneider & Sunyaev 2016). Current research on cloud sourcing from an organizational perspective has been dominated by issues regarding the characteristics and advantages of cloud sourcing (e.g., Mell & Grance 2011), cloud adoption (e.g., Schneider & Sunyaev 2016) and to a lesser degree on cloud continuance (e.g., Ratten 2016). The research shows that changing to cloud sourcing, from traditional IT-outsourcing, is a challenging proposition, especially for larger firms (Willcocks et al. 2013a; 2013b). The advantages of cloud sourcing, such as relief of managing IT-resources, on-demand and pay-per-use, does not seem so easy to reap (Willcocks et al. 2013a). For continued use of cloud sourcing current research indicate that factors such as personal attitudes, behavior characteristics and leadership support (Ratten, 2016) are important. However, current research on cloud adoption and continuance are primarily technical in nature (Schneider & Sunyaev, 2016), or end-user oriented (Ratten, 2016) and to large degree based on larger data-sets and cross-sectional. Thus, current research offers with very limited insights on the process of how the adoption and continued use of cloud sourcing might trigger and push the development of innovations and competitive advantage of a firm. Specifically, many firms with traditional IT-functions lack capabilities to describe and analyze their function in relation to the firm’s sources of competitive advantages (Willcocks et al. 2013a; 2013b) and how they might develop over time. Secondly, most firms with a traditional IT-function and traditional outsourcing typically lack the capability to innovate new products, services and business models (Willcocks et al. 2013a; 2013b). Thirdly, traditional IT-sourcing typically mean Vithayathil (2018) a 1:1
relationship between the client and vendor, while cloud sourcing involves an arrangement of several cloud provider firms (cloud broker, cloud provider, cloud sub provider, IT-consultant firms etc), requiring a capability from the cloud sourcing firm to interact with and manage an eco-system of cloud provider firms.

The lack of dynamic capabilities might hinder cloud sourcing firms from utilizing the full potential of cloud computing and other related new technologies, e.g., internet of things, artificial intelligence, as well as the opportunities to transform the firm’s business model and competitive advantage (cf. Teece 2007; 2018). However, if the cloud sourcing firm is able to sense and seize the opportunities related to cloud computing, it might be able to realign its structures and cultures to gain competitive advantage (cf. Teece 2007; 2018).

This paper aims to address these issues by an abductive approach, a combination of an empirical investigation of two case studies of firm’s and their processes of developing their cloud sourcing arrangements over time and a theoretical framework of stages of business development and the dynamic capabilities theory of the firm. We specifically address two research questions:

1) What stages do cloud sourcing firms go through in their business model development?

2) What are the key challenges cloud sourcing firms face in their business model development?

We drew upon two separate research literatures theoretically guiding our abductive approach. First, we draw on research relating to stage-based models of business development. Overall, stage-based models describe organizational characteristics in each development stage and changes required in practices to progress to the next stage (Greiner 1972; Smith 1985; Miller & Friesen 1984; Romanelli & Tushman 1994). The role of feedback and non-linear development have been increasingly recognized in later stage model research (Eisenhardt 1989;
Helfat & Peteraf 2003). Accommodating these aspects we aim to understand how, when and why the transitions occur in the strategic development trajectory of cloud sourcing. Second, we will use the dynamic capability view of the firm (Bharadwaj et al. 2013; Teece 2007; 2018) that view the firm as a heterogeneous bundle of dynamic capabilities, related semi-permanently to the management of the firm. Deficiencies and weaknesses in firm dynamic capabilities might constrain development of the firm and its use of cloud sourcing (Helfat & Peteraf 2003; Legner et al. 2017). A non-business oriented environment such as a traditional IT-function with a traditional outsourcing solution may further exacerbate the development constrains. A dynamic capability view suggests that to progress through stages of development, cloud sourcing firms have to develop and deploy relevant dynamic capabilities (Teece 2007; 2018).

The following section of the paper presents the abductive approach and methods of data collection and analysis. The third section presents the theoretical framework. The fourth section presents the empirical context, the two cloud sourcing firms. The fifth section summarizes the findings into a stage-model of the development of the cloud sourcing firm. The final section discuss the theoretical contributions and implications for the management of the cloud sourcing firm.

2. RESEARCH DESIGN – THE ABDUCTIVE APPROACH

We utilize an abductive approach combining two case studies on the overall management in two firms which has adopted cloud sourcing and a theoretical framework combining stage-based models of firm development with a dynamic capability view of the firm.

The research process started with two case studies of firms that had implemented cloud sourcing covering a period of two years. We choose to study one cloud sourcing firm (CS-A) that had mainly positive experiences from implementing cloud sourcing and another firm (CS-B) that
had mainly troublesome and problematic experiences with the same process. The initial research aim was to understand the differences between the two implementation processes, i.e., how and why they evolved into a more positive or negative development path. We made three key findings in our initial case studies. First, both of the implementation processes started as technology-triggered processes trying to make the cloud sourcing solution work as intended. Second, in both processes more business-oriented issues started to appear after the cloud sourcing solution had stabilized from a technical and operational perspective. Third, the main difference between the two implementation processes seemed to be that in CS-A the firm sensed and seized many more business opportunities with cloud sourcing than CS-B. CS-A also involved themselves in more development work and re-organization activities related to cloud sourcing than CS-B.

The initial case study findings led to the conclusions that overall business development of the firm related to the cloud sourcing implementation occurred in stages where certain capabilities (or lack thereof) in the firms made it possible to advance to a new development stage. As we were aware of stage development models and the dynamic capabilities view of the firm we decided to use and integrate these theories to further develop our findings. The stage-based models sensitized us to view the process of development as a series of stages where the firm’s practices related to cloud sourcing became more advanced over time, i.e., advancing from providing IT-services with the assistance of cloud sourcing, to becoming more integrated in the firm’s strategic development and a source for innovation of products, services and the business model. The dynamic capability based model made us sensitive to possible critical dynamic junctures between the stages, where sensing, seizing and transforming activities played major roles to pass into a new stage of development or possibly hinder further development due to lack of sensing, seizing and transforming capabilities. Based on the theories we re-analysed the case studies as well as complemented the case studies with additional interviews. This resulted
in a more elaborate description of development stages and critical dynamic junctures where available or lack of available dynamic capabilities made it either possible or hard to progress to the next development stage.

The two cases, cloud customers CS-A and CS-B, includes related cloud vendor firms; i.e., cloud providers, sub providers, and cloud brokers in order to comprehensively study the evolving cloud sourcing process. There were eight partners involved in each of the two studied cases, 16 companies in total. The data was collected primarily through semi-structured interviews (66 formal interviews in total), on-site observations in the form of meeting participations (30 formal and 20 informal weekly meetings), and documents such as SLA, internal reports, meeting notes and protocols, presentations, and change-orders (130 documents in total). Interviews were conducted with managers, individual users, developers, project leaders, and employees from different departments using cloud systems at CS-A and CS-B, as well as managers and project employees from their cloud providing partners. In addition, we attended 50 meetings between our case companies and their 16 respective cloud providing partners. Our data collection started with interviewing the top IT management at the case companies, and continuing with heads of departments and employees down to the cloud sourcing providers. The participation of both case firms’ top management ensured the firms’ willingness to cooperate, availability of multiple sources, and the potential for purposeful sampling (Peppard, 2001; Yin, 1989). Moreover, a researcher in our team obtained a workspace at the headquarters of both case companies and spent two months at CS-A and one month at CS-B. This enabled the researcher to participate in the everyday activities on site as well as key insights into strategic intents and practices, which helped in checking the validity of early results, as well as furthering credibility and authenticity of our findings (Miles & Huberman 1994). In addition, discussions with various employees during this three-month fieldwork enriched the contextual understanding for the cases. In conclusion, this approach enabled us to analyse practices from the perspectives of professionals.
and helped to engage in productive discussions with employees on a daily basis (Geertz 1988; Ngwenyama & Klein 1994).

In line with e.g. Gummesson (2005) and Creswell (2013), data collection and data analysis were conducted in parallel and in several rounds of data collection and subsequent data analysis. In other words, data collection, data analysis, and writing process were interrelated, and constantly shifting between the empirical world and the theoretical framework (Dubois & Gadde 2002). The data was analysed by systematically grouping and combining the insights into themes (Creswell 2013; Miles & Huberman 1994), which were subsequently constantly matched with the theoretical framework in order to direct the research in the direction of abductive iteration (Dubois & Gadde 2002).

In this study, we define the cloud sourcing process as the unit of analysis, with the rest of the firm and its managers as well as external cloud providers as the relevant surrounding environment. We particularly focus on mid-size firms with prior use of traditional IT-outsourcing and an IT-function with the traditional role as an internal service provider which have decided to utilize cloud sourcing.

3. THEORETICAL FRAMEWORK

3.1. Dynamic capability based theory of the firm

The dynamic capability based theory of the firm (Teece 2007; 2018) is an extension and development of the resource-based theory of the firm (Barney 1991; Wernerfelt 1984). Both theories assume that valuable, rare and hard-to-imitate or substitute resources and capabilities are the basis of a firm’s competitive advantage. The difference is that the resource-based theory of the firm maintain the view that these strategic resources could lead to sustained competitive advantage while the dynamic capability theory assume that the value of strategic resources will
erode over time as competition will catch-up (Teece 2018). The only competitive advantage that will last over time is the ability to develop, re-configure and divest the firm’s capabilities in a more effective way than its competitors (Teece 2007). Dynamic capabilities include the sensing, seizing and transforming capabilities that are needed to design, implement and innovate the business model (Teece 2018). The dynamic capabilities depend on managerial competences to identify opportunities, commit resources to the development and refinement of parts of the business model, and make structural and cultural alignments resulting in transformation of the firm and its business model (see figure 1).

Figure 1. Dynamic capabilities, business models and strategy (Teece 2018:45)

The role of strategy in relation to dynamic capabilities has been debated but we here adhere to the view of Teece (2018), as shown in figure 1, that strategy is about how the firm will compete. As shown in figure 1, a common trigger for sensing a business opportunity are technological possibilities, i.e., the development of a new technology. A new technology, like cloud computing, and the possibility of sourcing IT-systems in a new way, cloud sourcing, may set
off a transformation process driven by the firm’s dynamic capabilities. Cloud computing and cloud sourcing represent new forms of organizational flexibility that could be used to innovate the firm’s business model (Teece, 2018). The presence and strength of dynamic capabilities decides the speed and degree of renewal and re-configuration of resources and ordinary capabilities in response to market changes. Vice versa, less-developed and weak dynamic capabilities, will hinder the transformation process.

While the role of technical innovation, such as cloud computing, is well recognized as a trigger for transformation of business models (e.g. Teece, Peteraf, & Leih 2016), the process following the trigger is not very well understood in the dynamic capabilities theory and there is no coherent view of the transformation process within firms (Salvato & Vassolo 2018) or across partner firms (Bouncken et al. 2016). That is why we now turn to the stage-based models.

3.2. Stage-based models

Stage-based models of business and strategic development has a long history in management research with important research contributions based on case studies starting in the beginning of 1970’s (e.g. Greiner 1972; Normann 1971). Later, large empirical studies confirmed and deepened our understanding of stage-based firm development (e.g. Miller & Friesen 1980; D. Miller & Friesen 1984; Romanelli & Tushman 1994) as a process largely driven by technological development (Tushman 1986) resulting in relatively long periods of stability in firm development followed by relatively short periods of fundamental changes, the so called punctuated equilibrium model of organizational transformation (Romanelli & Tushman 1994). Overall, stage-based models describe organizational characteristics in each development stage and changes required in practices to progress to the next stage (Greiner 1972; Smith 1985; Miller & Friesen 1984).
The researchers developing the dynamic capability theory often stress the need for firms and their management to continuously and vigorously change and innovate (e.g. Eisenhardt & Martin 2000; Teece 2007; 2018), however at the same time organizational structures and cultures are path dependent, inert and resistant to change (Hannan & Freeman 1984). While simultaneous exploration and exploitation is preferable for a firm facing a dynamic environment (March 1991), empirical research has shown that exploration and exploitation activities tend to drive out each other making it difficult for firms to perform both activities at the same time (Holmqvist 2009). Instead, we will here infer a temporal division of exploration and exploitation activities as the stage-based models imply. That firms manage dynamic environments, with success, by temporally dividing exploration and exploitation activities, have been confirmed in many empirical studies as related above.

4. EMPIRICAL CONTEXT – TWO CASE STUDIES OF IMPLEMENTING CLOUD SOURCING

The first case company in our study was CS-A, global leader in industrial maintenance, with 30 years of experience in industrial maintenance management and execution. The company operates across six continents, on 400 sites in 28 countries with 3000 employees in total, commonly working in 24/7 virtual teams. CS-A entire systems are fully cloud sourced, utilizing all forms of the cloud IaaS, PaaS and SaaS, with cloud providers located in India, Belgium, UK, Finland, Spain and the Netherlands. For example, Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), employee’s personal documents, and other systems are located in the cloud. CS-A is a successful case of cloud sourcing as it has implemented of full cloud sourcing in less than 2 years’ time.
Our second case company is CS-B, a Northern European waste management company with 306 employees. The company is owned by 14 municipalities with a joint population of slightly more than 710,000, and is commissioned to manage the household waste in all owner municipalities as well as for approximately 6,000 corporate customers. The company utilizes all forms of cloud sourcing; IaaS, PaaS and SaaS, and has transferred seven systems to the cloud, i.e., they have retained some systems in-house. They have been in the cloud sourcing process roughly five years. Their cloud providers are located in Sweden, Austria and USA. CS-B has had several problems when implementing cloud sourcing and the process has been far from straightforward.

In terms of innovations, i.e., new (to the firm) and implemented processes, organizational, products, markets and business model, related to cloud sourcing, the two cases show very different profiles. In CS-A we see evidence of all types of innovations, while in CS-B has innovated mostly new internal processes to handle cloud sourcing.

Table 1. Innovations in the two cases related to cloud sourcing

<table>
<thead>
<tr>
<th>Case/type of innovation</th>
<th>CS-A</th>
<th>CS-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process innovations</td>
<td>Night time shut-down Sensor-based processes Customer-oriented sales process</td>
<td>Application for internal coordination of units</td>
</tr>
<tr>
<td>Organizational innovations</td>
<td>ERP-specialist Change advisory boards (CAB) Development meetings with cloud broker Virtual customer sales teams Chief Digital Officer (CDO) with business-oriented duties</td>
<td>Super users Cloud specialist</td>
</tr>
<tr>
<td>Product/service innovations</td>
<td>Modular services, base-package + more advanced services</td>
<td>Application to measure dangerous waste</td>
</tr>
<tr>
<td>Market innovations (new markets)</td>
<td>China</td>
<td>-</td>
</tr>
<tr>
<td>Business model innovation</td>
<td>Modular business model</td>
<td>-</td>
</tr>
</tbody>
</table>
5. FINDINGS

The analysis of the cases, using the theoretical framework, suggest three key findings. First, the development is non-linear over three distinct stages. While both firms went through the first stage into the second stage, CS-A progressed further to the third stage. CS-B progressed to the second stage, but has later oscillated between the first and second stage. Second, the cloud sourcing firms encountered dynamic junctures when progressing from one stage to another. These dynamic junctures had to be overcome to make the transition from one stage to the next. In each dynamic juncture, the management of the firms had to draw on the three types of dynamic capabilities, sensing, seizing and transforming capabilities, to progress to the next stage. Third, the firm differed before and after each stage in qualitative terms, i.e., capabilities and relations were different, even though the differences was much large in CS-A:s than in CS-B. We recognize that cloud sourcing firms do not have to go through discrete stages of development, but rather through non-linear stages divided by the dynamic junctures. We will examine these findings in an integrated fashion describing the stages and dynamic junctures as they appear in our integrated stage-based model of the cloud sourcing firm.

5.1. Decision to cloud source

Both firms decided to cloud source due to the usual arguments for cloud sourcing relative to traditional outsourcing: lower cost, facilitating expansion, standardization of processes and more frequent maintenance of programs and systems. In case CS-A, the decision coincided with spinning out the firm from a major corporation, while in CS-B there were no major organizational changes in conjunction with the decision to cloud source. The management in both firms did not mention any major strategic or business model changes as motives for the decision to cloud source. The overall motives concerned greater flexibility and cost.
5.2. *Dynamic Juncture one: Implementing cloud sourcing*

When starting to implement cloud sourcing, transferring systems incrementally to the cloud, both firms encountered a number of issues that they had not experienced before. One issue was the frequent, typically every week, update of programs and systems that made users of the systems confused. The users were used to updates of systems once every year or so. Now, the updates and changes were more frequent and in the beginning not announced from the cloud system provider. The users could suddenly meet a new interface for the same system from one day to another. A new routine had to be established concerning scheduling and informing about content of the updates. The cloud provider firm proposed that skilful users at the CS-B should be appointed “super-users” and get special training and tasks to assist their peers with different kind of problems related to updates and general questions. CS-B also did so and this worked well.

One of the systems much used in both firms is the ERP-system (Enterprise Resource Planning). Frequent updates and the complexity of the system resulted in many problems and questions to cloud provider. In order to structure this process and solve some of the problems already in the customer firm an ERP-specialist was appointed and trained to be the internal recipient of all questions and problems in CS-A. In case this person could not solve the problem, the ERP-specialist contacted a special contact person at the cloud provider firm to try to solve the problem.

Chief IT Officer (CIO) of CS-A was overall positive to the frequent updates of the cloud systems referring to higher security of the systems, constant development and improvement which in turn pushes the internal organisation to change its work routines accordingly – and thereby become a constantly evolving organisation in a higher pace than with traditional IT outsourcing. This implies refined work processes and value added from the cloud sourcing in
the form of internal process innovation. The more efficient way of working releases time for CS-A to focus on its core business. Cloud sourcing also enables easier collaboration between employees across the globe, by encouraging collaborative functions integrated in the cloud systems – e.g. by reducing amount of emails sent through real time collaboration through the cloud platform.

The level of IT-competence was generally a bit lower at CS-B than CS-A. Both the cloud vendors and the management of CS-B experienced problems in communicating due to the level of technical competence. CS-B then hired a “cloud-specialist”, a person with prior experience of cloud sourcing in another firm, resulting in somewhat better communication.

CS-A and their cloud providers organized a new weekly meeting, called Change Advisory Board (CAB), to handle all kind of operational and technical problems and issues related to cloud sourcing. CABs took place on Skype and worked well. CS-A also organized a monthly meeting, so called ITOs, to discuss more development-oriented issues, with the cloud broker firm. However, the ITOs were organized as ad-hoc meetings, roughly one time every fortnight, when needed. CS-B has not organized any permanent organisational structures to handle coordination and development issues.

When most of the immediate technical and operational implementation problems was under control both firms launched other small development projects to utilize the flexibility of cloud sourcing. In CS-A an external consultant was commissioned to investigate shutting down systems in night-time, as many of these systems were idle during the night, and proposed a solution which resulted in substantial cost savings for CS-A. CS-B developed an app that could be used by all waste collecting units and better coordinate their routes and to able to re-direct the units in real-time.
5.3. Stage 1 - Cloud sourcing capability and internal process and organizational innovations stage

After some time most implementation problems were routinely handled through introduction of new routines/processes and minor changes in organizational structures, such as appointing specialists and new type of meeting structures. From a technical and operational point of view, the systems worked and the staff operated the systems in a competent manner. Moreover, the Chief IT officer (CIO) of both firms, the specialists in collaboration with cloud providers and commissioned external consultants were identifying internal process improvements and changes that could utilize some of the flexibility advantages of cloud sourcing.

CS-B experienced after some time problems with one of its cloud providing firms that could not deliver according to the agreed service-level agreement. Thus, it had terminate the contract and find a new cloud provider. This led to new implementation problems and CS-B re-experienced some of the problems they had encountered in dynamic juncture one.

5.4. Dynamic Juncture two - Product innovations and geographic expansion

One of the advantages of cloud sourcing is that it facilitates expansion, both in terms of adding new geographic markets and new services. This is especially evident when the services can be developed on the cloud platform (PaaS) or delivered as software-based service (SaaS). CS-A’s services consist of both physical processes and physical presence, but many of their processes for maintaining industrial machines and equipment are based on software systems which monitor and control the customer firm’s industrial machines. CS-A had plans to expand to new markets, primarily China but also other Asian markets with industrial manufacturers. In order to increase the pace and capacity to expand in Asia, CS-A introduced a new unit headed by a new Vice-president for Sales in Asia. In order to facilitate expansion to China a new sales
process, based on virtual sales teams and a customer-oriented, i.e., starting with customer needs and customer expectations, was developed. Discussion of adding new digital services, aiming for more advanced predictive maintenance, started.

At this juncture the CIO at CS-A started to plan for the development of new databased products. The possibility to collect more data with sensors in addition to the data CS-A already collected attracted the CIO. The leadership of CS-A decided to hire a new Chief Digital Officer (CDO), which were given the task to develop a sensor-solution to collect more data from the machines that CS-A maintain, and to develop new services based on the collected data. Overall, the new CDO was expected to be more involved in business-oriented development issues than the CIO. CS-B has hired a cloud specialist, as described above, but in general has a more technical orientation towards operational and technical issues. Thus, CS-B has limited capabilities to identify new services and propose development of new services. However, there are a few examples of new services, based on a new software application. It is a software application that automatically scans waste for toxic and dangerous content. It is still in development and the main motivation for development are internal, safety issue, rather than business oriented.

5.5. Stage 2. Product innovations and geographic expansion capability stage

At this stage cloud sourcing and related technologies is viewed as triggers of new product innovations and geographic expansion. By appointing new positions in technology- and product development and in marketing and sales, as well as regular meetings with cloud providers concerning development projects, routines and structures are at this stage in place to sense, seize and integrate candidates for geographic expansion and product/service innovations. The sensing, seizing and integration of new software based services take place by interacting with cloud vendor firms, collaboration in developing new software-based services on the cloud platform and/or inviting partners in the cloud eco-system to deliver their software-based
services through the cloud platform directly to the firm’s customers product innovation. At this stage IT-function and business development functions start to connect more routinely.

5.6. Dynamic Juncture three - Business model innovation

The modular structure of cloud sourcing, i.e., systems and data storage capacity could be added (or subtracted) from the cloud in modules with a corresponding cost structure, has at this point started to attract attention from the CIO and CDO together with other C-level executives at CS-A as a way to structure the value proposition for the customers when it comes to the digital part of the maintenance business and the whole maintenance business.

The value proposition to the customer is partly re-designed to a base package with certain digital tools and other organizational routines concerning safety and maintenance basics. Then the customer can add modules with more advanced digital tools based on added sensor-capabilities, online surveillance and big data analytics, to increase machine reliability and uptime further through predictive maintenance. The customer can also add service modules concerning operations of machines (and not only maintenance), some developed and delivered by CS-A, other services delivered by license from other cloud vendor firms.

In order to integrate the IT-function with the business development functions to deliver the base package and add-on modules to a potential customer a partly new sales process was created with virtual customer project teams and a customer-oriented sales process. The project team did a customer review of needs resulting in an agreement on a maintenance strategy and customer expectations. The customer project team normally recommended the customer to install and try the base package (or some variant of it) in a period of three months to establish that maintenance basics was working. In the next three months tangible results are demonstrated and root-causes to problems are analysed resulting in recommendations for add-on modules for
strengthening the predictive maintenance capabilities in the customer solution. In the following three months further tangible results are demonstrated, e.g., costs, uptime, and possible new digital tools to install are discussed.

5.7. Stage 3 - Business model and digital strategic innovation stage

At this stage cloud sourcing and related digital technologies are viewed as triggers and enablers of business model and digital strategic innovation. The transformation of the organizational structure with a tighter communication between business- and IT-oriented C-level executives, routinized development meetings and interaction with cloud partner firms, together with virtual customer oriented integrated sales teams and the modular structure of cloud sourcing and related digital technologies ensures that routines and structures in place to sense, seize and integrate candidates for business model innovation.

5.8 Summarizing empirical case findings according to dynamic capabilities, dynamic juncture and stage

In table two below we summarize the empirical case findings, together with exemplary interview quotes, according to dynamic capabilities (sense, seize and transforming), the stages and dynamic junctures.
Table 2. Empirical case findings according to dynamic capabilities, dynamic juncture and stage in summary.

<table>
<thead>
<tr>
<th>Dynamic Capabilities</th>
<th>Sensing</th>
<th>Seizing</th>
<th>Transforming</th>
<th>Examples of interview quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dynamic Juncture 1 – Effective implementation of cloud sourcing</strong></td>
<td>a) Cloud vendors propose training of staff and to appoint super users b) Internal staff and external consultants propose how processes related to cloud sourcing could become more efficient c) Shutting down operations at night d) Organizing complaints and bug reports related to the ERP-system d) Problems communicating with cloud vendors</td>
<td>a) Training of staff and super users b) External consultant investigates closing night operations c) Training and appointment of ERP-specialist d) Appointment and training of Cloud specialist (with prior experience of cloud sourcing)</td>
<td>a) Introducing and implementing super users b) Implementing scaling down of night time demand for cloud computing services c) Implementing ERP-specialist in organization d) Implementing Cloud specialist in organisation</td>
<td>a) “We assigned super users and implemented digital learning platforms to ensure a more smooth transition” Change manager at CS-B. b) “Our external consultant helped us optimise our cloud usage, and to allocate our license costs better”. CIO at CS-A. c) “The need for an internal ERP specialist role grew as not all problems could be solved by our support line, or that it took too much time to get problems resolved”. IT manager at CS-A. d) “We needed someone that has the experience and knowledge of cloud solutions from a consultant perspective, but that could be integrated in our organisation”. IT manager at CS-B. d) “Needs to have high technical skills and knowledge, be on the front of what is new in technological development in specific cloud utilization, and how that can facilitate CS-B’s business, a good communicator with external cloud partners”. IT manager at CS-B.</td>
</tr>
</tbody>
</table>

| Stage 1. Cloud sourcing capability stage and internal processes innovations | Characteristics: Cloud sourcing implemented from a technical and operational point of view. Staff operates systems in a competent manner. Routines and structures in place to sense, seize and integrate candidates for internal process innovations utilizing cloud sourcing benefits, such as metering by use, and standardization of processes. |  |  |  |
| Dynamic Juncture 2 – product innovations and | a) New markets – China b) Sensors | a) Entering new markets, scaling up | a) Appointing and implementing new SVP for Asia | a) “Entering new markets is easier having a centralized system that is the same for our 28 country sites”. CDO at CS-A. |
| geographic expansion | c) Digital platforms | cloud computing services  
|                      | b) Testing sensors on industry sites. Developing digital tools and intelligence that are based on cloud technology, introducing new services on IoT platforms to increase predictive maintenance capabilities | b) New digital development director CDO  
|                      |                               | b) "CS-A can focus on the front end technology instead of the back end technology". "We have developed sensors to help our customers monitor the industrial sites". CFO at CS-A.  
|                      |                               | c) “We had to build new platforms that are interconnected with the current, to collect more data which the sensors require”. Cloud broker at CS-A.  
| Stage 2. Product innovations and geographic expansion capability stage | Characteristics: Cloud sourcing and related technologies viewed as triggers and enablers of product innovations and geographic expansion. Routines and structures in place to sense, seize and integrate candidates for geographic expansion and product innovations. |  
| Dynamic Juncture 3 – Business model innovation | Added capabilities to integrate sensors in customer solutions, new IoT-platform with added services, IT-executives communicating more with business executives, results in ideas of new value propositions based on modular services and | Modular value proposition to customers: base package for maintenance basics, add-on modules to maximize equipment uptime, by predicting equipment deterioration. New services by adding on services from new cloud system | CIO working with rest of C-level  
| | | CDO working with rest of C-level  
| | | New sales process with integrated teams and customer orientation | “The core business has been complemented with new services based on cloud technologies and digital platforms. This has resulted in internal changes with required new competence”. CDO at CS-A.  
| | | “The IT department has been re organised and complemented with new competence, were parts of the old organisation has become obsolete”. CDO at CS-A.  
| | | ”The company culture has changed starting with smaller groups with a new type of operation that did not exist previously. We have sort of an
| **Stage 3. Business model innovation capability stage** | **Characteristics:** Cloud sourcing and related technologies viewed as triggers enablers of business model innovation. Routines and structures in place to sense, seize and integrate candidates for business model innovation. | modular pricing structure | vendors. Pricing structure reflects cost structure of cloud sourcing (pay per use and per module). | internal start up company now in Budapest”. CDO at CS-A. “We have gained new contact areas for our customers because we currently deliver services that we did not do before. Then we have got in touch with new companies which we might not have had contact with if we did not create the supplemented services”. CDO at CS-A. |
5.9. The stage-based model of the cloud sourcing firm

Our theoretical framework combined with case empirical findings have resulted in a model describing the stages and junctures of business development related to the adoption and continuance use of cloud sourcing. The stage-based model indicate a linear development path, but as we have stressed, and as especially the CS-B case have shown, the development might go backwards and oscillate between two stages. The important message from the model is that lack of dynamic capabilities will make transition to the next stage difficult or impossible. The presence of sensing capabilities is not enough, seizing and transformation capabilities also have to be available. The model is graphically shown in figure 2.

Figure 2. Model of stage-based business development path related to the adoption and continued use of cloud sourcing.
6. CONTRIBUTIONS AND IMPLICATIONS

Our paper has modelled the business development path of the cloud sourcing firm. We have identified three business development stages characterized by specific types of capabilities. In between the three stages we have identified three dynamic junctures that the firm and its managers has to overcome in order to progress from one stage to another. In the dynamic junctures three types of dynamic capabilities were key; sensing, seizing and transformation capabilities, to pass to the next stage. We will now discuss the contributions and implications of our stage-based model of business development related to cloud sourcing.

6.1. Contributions

We will here highlight four types of research contributions. First, much of the literature on cloud computing and cloud sourcing concerns cloud adoption and cloud continuance in a static perspective, i.e., based on cross-sectional data at one point in time (Schneider & Sunyaev 2016). Here we have taken a process view on cloud adoption and continuance stressing the capabilities to exploit cloud sourcing for business and competitive advantages over time. The capabilities to change, the dynamic capabilities, are here key to reap the business and competitive advantages from cloud sourcing.

Second, Willcocks et al. (2013a) concluded in their empirical investigation of cloud sourcing and innovation that progress in terms of cloud sourcing triggering innovation in firms seemed surprisingly slow and that technological challenges were among the most important challenges. Our model confirms that technology issues are challenging and indeed become a barrier for further business development in the initial stage. However, in later stages, according to our model and empirical findings, the lack of dynamic capabilities combining IT- and business
competences through re-aligning structures and internal culture, as well as establishing a good continuous innovation dialogue with cloud providing partners, are more important challenges.

Third, our research has treated the IT-function as part of the environment of the cloud sourcing process, thus we have not systematically studied the whole IT-function. However, it is clear from our study that the IT-function and its capabilities are key in the sensing, seizing and transforming of the business development related to cloud sourcing. Our model and empirical findings show that the IT-function must be able to lead and govern the collaboration with cloud providers, first organizing the routines for handling technology issues and internal process and organizational innovations. Then to organize and lead the cloud providers into a more business-oriented path with product/service innovations, geographic expansion and lastly business model innovation. This requires business competence in the IT-function as well as more communication and coordination with business functions in the firm. Overall our model agrees with the research done by Willcocks et al. (2013b) on the future of the IT-function that has adopted cloud sourcing.

Fourth, even though the dynamic capability view of the firm claims to explain the sources for competitiveness in dynamic environments (Teece 2007, 2018), it is a static theory, as we have limited understanding of the evolution of dynamic capabilities themselves (Helfat & Peteraf 2003). By combining the dynamic capability view of the firm (e.g. Teece, 2007, 2018) with the stage-model (e.g., Romanelli & Tushman 1994) and lifecycle stages (Helfat & Peteraf 2003). We contribute to a better understanding of the evolution of dynamic capabilities. The stage-based model presented here, stress that not all the advantages of cloud sourcing can be exploited and explored at the same time, there is a temporal pattern to this process. Certainly, firms with more developed and strong dynamic capabilities relevant for cloud sourcing might
be capable of executing a faster and more thorough process, but there would still be a temporal pattern according to our model.

6.2. Implications for research and management of cloud sourcing

The temporal pattern in our model imply that management of cloud sourcing should be carefully paced by managers that intend to cloud source or expand its current cloud sourcing further. First, managers need to be aware that even though many new ideas can be generated in relation to cloud sourcing, these ideas have to be combined with adequate development and transformation capabilities, in order to result in innovations. Second, internal process innovations and organizational innovations might be the most important innovations in the initial phases of cloud sourcing to reap cost and efficiency advantages from cloud sourcing. Third, many innovations will come from collaboration with cloud providing firms, thus inter-organizational innovation collaboration is key (cf. Bouncken et al. 2015). Fourth, for more advanced business development the re-alignment and integration of IT-functions and business functions is imperative.

We propose further research to develop our stage model of cloud sourcing and business development. The temporal pattern in our stage model is a testable proposition in large scale surveys concerning cloud sourcing in non-software intensive firms and the pattern of business development. The context of cloud sourcing with its interorganizational relationships and collaborative innovation, sometimes with competing firms, might be a fruitful context for research on coopetition (Bouncken et al. 2015) as well as interorganizational learning (Larsson et al. 1998).
7. REFERENCES


Paper V
Fostering sustainable business relationships in a cloud sourcing context

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Fostering sustainable business relationships in a cloud sourcing context

ABSTRACT

Previous research on business relationships lacks more extensive insights into the business relationship development process. Thus, the purpose of this article is to provide a comprehensive framework of the business relationship development process and illuminate what makes business relationships more sustainable.

The research is conducted in the cloud sourcing context and we base the results on 69 interviews and 50 observations related to two cloud customers. The findings reveal an intricate interaction of factors analyzed as catalyzers, catalyzer sets, and triggers within the distinct phases of the process, affecting trust, commitment, and satisfaction, and advancing the relationship toward sustainability.

KEYWORDS

Business relationships, Business relationship development process, Sustainable business relationships, Cloud sourcing, Relationship marketing
1. Introduction

Nurturing business relationships is crucial for a firm’s continued existence in the market. Successful business relationships contribute to a firm’s performance; they can enhance its effectivity and effectiveness, and they contribute to e.g. supply chain performance and perceived service quality (Arslanagic-Kalajdzic & Zabkar, 2015; Jeong & Oh, 2017; Rauyruen & Miller, 2007; Ryals & Humphries, 2007). Thus, the question of what makes business relationships successful has been continuously relevant for business practice, as well as in business marketing research (Holmlund, 2008). This is why the business relationship development process (BRDP) emerges as an important concept to understand – especially the issues of how a business relationship progresses and what contributes to its success.

The extant research on BRDP offers relatively incomplete portrayals of this process and the factors contributing to its success, as well as the role of TCS in it. For example, previous explorations of BRDP focused solely on the role of communication in the development of business relationships (Olkkonen, Tikkanen, & Alajoutsijärvi, 2000), while other stressed the emotional states along the stages of BRDP (Andersen & Kumar, 2006) or how cultural factors contributed to BRDP (Abosag & Lee, 2013). In addition to these “soft” factors, other authors stressed technical and economic dimensions (Holmlund, 2008) while also exploring value in business relationships (e.g. Arslanagic-Kalajdzic & Zabkar, 2015; 2017). Additionally, adaptations between the parties in business relationships were explored (e.g. Viio & Grönroos, 2014; 2016; Weck & Ivanova, 2013). However, few studies offered a more comprehensive portrayal of BRDP.

In addition, relationship marketing has established trust, commitment, and satisfaction (TCS) as the three ground pillars of successful business relationships (Athanasopoulou, 2009; Morgan & Hunt, 1994; Walter, Müller, Helfert, & Ritter, 2003). Starting from and building on the trust-commitment theory (Morgan & Hunt, 1994) to more recently include the concept of relationship
quality (e.g. Athanasopoulou, 2009), research has focused largely on the particularities of TCS. Thus, one or a couple of these constructs have been explored in more detail (e.g. the antecedents of commitment (Hocutt, 1998) or the distinctiveness of trust (Akrout & Diallo, 2017)), or, alternatively, TCS was inventoried together with other factors contributing to successful business relationships (e.g. Holmlund, 2008; Falkenreck & Wagner, 2017). Yet the role of TCS in BRDP is largely under-researched.

Against this background, a more comprehensive approach to BRDP is called for – an approach which would simultaneously acknowledge the complexity of the topic (Athanasopoulou, 2009) and the inherent dynamics present in both factors explored (Akrout & Diallo, 2017; Čater & Čater, 2010; Gustafsson, Johnson, & Roos, 2005) and the business relationship process itself (Andersen & Kumar, 2006), including how they interact with each other and how this interaction reflects on TCS. In other words, such an approach would provide a more nuanced and dynamic view within relationship marketing, which is what Finch, O’Reilly, Hillenbrand, and Abeza (2015) called for.

Hence, our study attempts to bring more complexity and comprehensiveness to the understanding of BRDP. Studying business relationships as a process, the research questions guiding our study are:

RQ1. How does a business relationship unfold?

RQ2. What contributes to the initiation, development, continuation, and sustainability of business relationships?

RQ3. How does TCS change as the business relationship unfolds?

Hence, we contribute to the extant research on BRDP by laying out a comprehensive framework for the process of business relationship development and offering a more nuanced view of factors crucial for the initiation, development, continuation, and sustainability of a business
relationship, identifying factors as *catalyzers* grouped in *catalyzer sets* helping the relationship proceed from one phase of the process to the next, and the role that TCS plays in the process. We achieve this by setting up a preliminary research framework based on previous theoretical insights and then collecting empirical data in several rounds to iteratively refine the framework by constantly comparing the data with existing frameworks and constructs from the literature. Thus, the purpose of this article is to provide a comprehensive framework of the business relationship development process and illuminate what makes business relationships more sustainable.

Our research context is business relationships in cloud sourcing, a sector bringing significant changes to modern business (Hardy, 2018) and, therefore, highly relevant to study. We base the results on 69 interviews, 50 observations, and extensive secondary data (130 documents) related to two cloud customer companies: Quos, a global leader in industry maintenance, and WasteHeroes, a waste management company. We focus on their cloud sourcing activities and relationship partners. Thus, our study also makes a contribution in the form of a novel empirical context of cloud sourcing, as well as the qualitative and abductive approach, which has so far been neglected in a field dominated by quantitative studies (see Athanasopolou, 2009; Osobajo & Moore, 2017).

The rest of the article is structured as follows. First, we present the theoretical background and delineate the main insights about business relationship development from the literature. At the end of that section, the main insights relevant to our study are consolidated in the study’s preliminary research framework. Next, we present our research context and research approach. Third, we present the main results of the research, focusing on phases of BRDP, catalyzer sets advancing BRDP, and changes in TCS throughout the process. Finally, the discussion highlights the study’s contributions, offers implications for business practices, and illuminates limitations and suggests areas of further research.
2. Theoretical background

2.1. Factors contributing to successful business relationships

Exploration of factors contributing to the success of business relationships starts with the trust-commitment theory (Morgan & Hunt, 1994). In their seminal article, the authors defined relationship marketing as establishing, developing, and maintaining successful relational exchanges (Morgan & Hunt, 1994). They also delineated trust and commitment as pillars of relational exchanges, a view also asserted by Grönroos (1996). Eventually, these two factors were complemented with satisfaction (see e.g. Garbarino & Johnson, 1999). Thus, the literature lands in the triad of trust, commitment, and satisfaction (TCS). Inspired by Morgan and Hunt (1994), we understand TCS in the following manner: Trust is conceptions and interpretations of things a priori, such as thinking favorably about the provider. Commitment is behavior and activities resulting in mutual dependence and the elimination of alternative options. Satisfaction is the perception of received deliveries in relation to expectations, i.e. a posteriori conceptions that a customer might have of its provider.

The literature on factors contributing to the success of business relationships was further developed to explore one of the TCS constructs in more detail, or a combination of some of these three constructs. For example, some studies focused on the antecedents of commitment (Hocutt, 1998), while others explored the distinctiveness of the factor of trust (e.g. Akrout & Diallo, 2017; Padma, Rosa, & Antonio, 2017), understanding this factor as a more dynamic construct. Others understood commitment similarly, i.e. as more dynamic (Čater & Čater, 2010; Gustafsson et al., 2005), while Abosag and Lee (2013) postulated that TCS changes over time. Simultaneously, other studies explored links between trust and satisfaction (Crosby, Evans, & Cowles, 1990; Shamdasani & Balakrishnan, 2000), while still others complemented this view with commitment (Hennig-Thurau, Langer, & Hansen, 2001; Hewett, Money, & Sharma, 2002; Roberts, Varki, & Brodie, 2003). Also, the interaction of these three factors has been
emphasized (e.g. Hennig-Thurau et al., 2001); the factors were linked to loyalty in business relationships (Bardauskaite, 2014).

Alternatively, TCS has been complemented with other sets of relationship factors which also contribute to business relationship success. One of the earlier additions to TCS was relationship value, in the meaning of relationship performance (Ulaga & Eggert, 2006). The authors’ study offered relationship value as a “hard” complement to TCS, which was portrayed as social factors and, thus, “soft”. Another factor added to TCS was communication (Grönroos & Ojasalo, 2015), especially communication oriented towards agreements, resolution of possible conflicts, and mutual learning. In this, the authors emphasized the relevance of frequent, clear, and open communication. Also, Gylling, Elliott, and Toivonen (2012) showed how mutual understanding between the firm and its customers improved the relationship and raised the level of value creation in relationships. More recently, more nuanced explorations of value in business relationships have emerged (e.g. Arslanagic-Kalajdzic & Zabkar, 2015; 2017).

Other studies added a broader array of factors contributing to the success of business relationships. For example, Ryals and Humphries (2007) discussed trust, commitment, and communication, with value creation and value capture, flexibility, reliability, creativity, and relationship stability as other factors contributing to successful business relationships. In their comprehensive review, Agarwal, Singh, and Agariya (2017) identified trust, economic satisfaction, psychological satisfaction, communication, conflict handling, and information sharing as the most cited factors contributing to the success of partnerships and relationships in general, with trust, satisfaction, commitment, communication, grievance handling, and information exchange particularly important in the business relationship context. Finally, some studies focused on certain research contexts such as construction (Jelodar, Yiu, & Wilkinson, 2016) and service outsourcing (Rhodes, Lok, Loh, & Cheng, 2016) as well as cloud sourcing.
2.2. Processual frameworks of business relationship development

A more dynamic view of business relationships is provided in studies focusing on business relationships as a process and on their development and how they change over time, i.e. what we label BRDP. Some examples increasing the understanding of BRDP include frameworks focusing primarily on the role of communication (Olkkonen et al., 2000) and emotions (Andersen & Kumar, 2006) in the development of business relationships. In their efforts, the former authors developed a framework stressing the processual and dynamic nature of the development of business relationships, while the latter authors charted emotional states among different groupings in relationship development throughout the seminal phases of business relationship development: initiation, development, and termination or continuation.

Furthermore, in her exploration of relationship quality, Holmlund (2008) developed a more comprehensive model and posited that the perceived quality of the relationship depended on the two parties’ standards, perceptions, and experiences, respectively, and that relationship quality comprised three dimensions: technical, social, and economic. She described the technical dimension as the technical outcome related to the features of the product, while the social dimension corresponds to the soft factors of trust, as well as personal qualities. The economic dimension relates to relationship performance and relationship costs. This model opened new research possibilities (e.g. Falkenreck & Wagner, 2017); some authors combined it with the factor of successful interactions (Medlin, 2004). In addition, some studies followed and mapped mutual adaptations of partners in business relationships. For example, Weck and Ivanova (2013) presented different forms of adaptation during different relationship phases (awareness, exploration, and expansion), while Viio and Grönroos (2016) demonstrated the existence of different types of adaptation in business relationships, their focus being sales.
2.3. Business relationships in the cloud sourcing context

Overall, cloud computing and cloud sourcing are bringing significant changes to business management (Hardy, 2018). Organizational structures, product design, and customer experience are all affected, moving to more collaborative modes. In such settings, business relationships and relationship marketing arise as particularly relevant, both practically and in terms of research. Existing empirical studies on BRDP are predominantly conducted in more traditional empirical contexts (e.g., see Holmlund, 2008; Jelodar et al., 2016; and Rhodes et al., 2016, among others). In the few studies of relationships within the field of cloud sourcing, the necessity of building the relationship over time (Dempsey & Kelliher, 2018) and explorations of continuance leading to success (Walther, Sedera, Urbach, Eymann, Otto, & Sarker, 2018) have been noted. We understand cloud sourcing to be a model enabling convenient, on-demand network access to a shared pool of configurable computing resources (networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction (Mell & Grance, 2011). This view engrains the expectation of mutual value creation between the cloud customer and the cloud provider, and the cultivation and nourishment of the relationship to build loyalty (Dempsey & Kelliher, 2018). In particular, research on business relationships in cloud literature is sparse and mainly quantitative, looking at the relationship quality (Chou, Chen, & Liu, 2017), trust and commitment (Goode, 2018), compatibility and output quality (Cheng, 2018), and socio-organizational and technology-related factors (Walther et al., 2018), offering limited insights in comparison to business relationship literature. This is hardly surprising because cloud literature draws most of its theoretical background from the latter literature stream. More recently, cloud literature has emphasized issues of sustainable market positions and success factors in the provision of cloud services (Trenz, Huntgeburth, & Veit, 2019) as well as discussed the particularities of business models in this context (Veit, Clemons, Benlian, Buxmann, Hess,

2.4. The preliminary research framework

Following our RQs and extrapolating the theoretical background, we consolidate our preliminary research framework, consisting of three elements corresponding to our three RQs. First, we understand that a business relationship unfolds in distinct phases and we build a preliminary model, adapting primarily Andersen and Kumar (2006) and Weck and Ivanova (2013), designating the phases in a BRDP as awareness, initiation, development, and continuation/termination. We subsequently add the sustainable relationship phase. Second, we tap into the plethora of factors contributing to the success of business relationships presented in section 2.1 and, in particular, infuse our preliminary framework with the factors of communication (Grönroos & Ojasalo, 2015) and relationship value (Ulaga & Egert, 2006; Ryals & Humphries, 2007; Arslanagic-Kalajdzic & Zabkar, 2015; 2017), as well as the technical, social, and economic factors of Holmlund (2008), also present in e.g. Walther et al. (2018), as well as innovation and business model innovations from the cloud literature (Legner et al., 2017; Veit et al., 2014; Willcocks et al., 2013). However, other factors are not disregarded. Finally, to answer RQ3, we focus on TCS and how it changes throughout the phases of BRDP. In this manner, we acknowledge the dynamic nature of this construct (Akrout & Diallo, 2017; Čater & Čater, 2010; Gustafsson et al., 2005).

In summary, the preliminary research framework guided our analysis, allowing for both adequate research rigor and the freedom to iterate between the theory and the empirical data.
3. Research process

To provide a comprehensive framework of BRDP, we applied longitudinal case research (Yin, 2009) of a cloud sourcing arrangement. Our research approach was qualitative, echoing recommendations by Athanasopoulou (2009) and Osobajo and Moore (2017) for more of such studies in the field – more specifically, iterative and abductive, meaning that we continually reviewed our analytical framework by moving from the empirical material to theory and then back again (Dubois & Gadde, 2002). In this manner, we matched theoretical insights with the reality of the cases and constantly refined our findings. Although we let the empirical data guide our research, we referred to our preliminary research framework and remained receptive to other theoretical possibilities.

In line with e.g. Gummesson (2005) and Creswell (2013), data collection and data analysis were conducted in parallel and in several rounds of data collection and subsequent data analysis. In other words, data collection, data analysis, and the writing process were interrelated and constantly shifting between the empirical world and the theoretical framework (Dubois & Gadde, 2002). The research process started with a literature review and an exploratory case research, during which we collected data through interviews to identify gaps in the literature. In the second stage, we conducted another literature review and an explanatory case study in which we conducted interviews and made observations. As the case and our theoretical framework evolved, we conducted a second explanatory case research with interviews, observations, and text analysis and matched theory with evidence to further direct our research. Finally, a third literature review helped us identify studies that supported our findings and challenged the first and second literature reviews.

We analyzed the data by systematically grouping and combining the insights into themes (Creswell, 2013; Miles & Huberman, 1994), which were subsequently continually matched with the preliminary research framework to direct the research in the direction of abductive iteration.
Drawing on relationship marketing, we focused on the situated actors and practices that shaped BRDP, intending to foster strategic change at our case companies. Figure 1 illustrates BRDP and the relations we studied. Bold lines represent direct relations and dotted lines represent indirect relations. The cloud customer was the focus of our attention because a business relationship is created around it. The relationships between the partners are not hierarchical and the partners are involved in mutual communication. A cloud provider is responsible for making the total cloud service available to the cloud customer. A cloud sub-provider is a provider proposing to perform work through a contractual agreement with the prime provider. A cloud broker is a partner that manages the usage, performance, and delivery of cloud services and that negotiates relationships between cloud providers and cloud customers.

Figure 1: An illustration of a cloud sourcing arrangement relationship and the relations being studied
3.1 Overview of the cases and the data collection

The first case company in our study was Quos, a global leader in industrial maintenance, with 25 years of experience in industrial maintenance management and execution. The company operates across six continents, on 400 sites in 28 countries, with a total of 3,000 employees, commonly working in 24/7 virtual teams. Quos’ systems are fully cloud sourced, with cloud providers located in India, Belgium, the UK, Finland, Spain, and the Netherlands. For example, Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), employees’ personal documents, and other systems are located in the cloud. Quos is rather unique because of the scale and speed of cloud sourcing it has achieved (i.e. a majority of IT systems cloud sourced within 10 months). Quos’ experience in BRDP is rich and varied, with both positive and negative examples.

Our second case company is WasteHeroes, a Northern European waste management company with 330 employees. The company is owned by 14 municipalities with a joint population of slightly more than 710,000, and is commissioned to manage household waste in all owner municipalities on 16 sites, as well as for approximately 6,000 corporate customers. The company transferred seven of its systems to the cloud and its BRDP has lasted for three to five years. Its cloud providers are located in Sweden, Austria, and the USA. Although the company’s experience with BRDP is generally favorable, it has encountered certain problems, which prevented it from moving all the systems to the cloud. However, its aim is to cloud source everything in the next five years.

We focused on two complex cases with cloud customers Quos and WasteHeroes, involving multiple parties (see Figure 1), namely, two Quos and two WasteHeroes cloud providers, four Quos and four WasteHeroes sub-providers, and two Quos and two WasteHeroes cloud brokers. Each provider has a Service Level Agreement (SLA) with the customer, as well as with sub-providers and brokers because they are simultaneously competitors and collaborators. Although
we collected data from all involved partners, we eventually focused on those partners that provided the richest data about BRDP. We explored both successful and unsuccessful relationships to achieve an understanding of a comprehensive set of factors contributing to successful business relationships, as well as to attain deeper insights into how business relationships change and how TCS change in relationships.

The data was collected primarily through semi-structured interviews (69 formal interviews in total), on-site observations in the form of meeting participation (30 formal and 20 informal weekly meetings), and documents such as SLAs, internal reports, meeting notes and protocols, presentations, and change orders (130 documents in total). The interviews were conducted with managers, users, developers, project leaders, and employees from different departments using cloud systems at Quos and WasteHeroes, as well as managers and project employees from their cloud sourcing partners. In addition, we attended 50 meetings among our case companies and their 16 respective cloud sourcing partners. We started our data collection by interviewing the top IT management at the case companies, then continued with heads of departments and employees involved in a BRDP, down to the cloud sourcing providers. Hence, in line with Klein and Myers (1999), we strove to include all partners involved in the BRDP to develop a better understanding of relation-specific problems and advantages. The participation of both case companies’ top management ensured the companies’ willingness to cooperate, the availability of multiple sources, and the potential for purposeful sampling (Peppard, 2001; Yin, 2009). It also provided rich and direct access to the 16 partners and allowed us to elicit data about BRDP.

Moreover, a researcher on our team obtained a workspace at the headquarters of both case companies, spending two months at Quos and one month at WasteHeroes. This enabled the researcher to participate in everyday on-site activities as well as to gain key insights into strategic intents and practices, which helped use check the validity of early results and boosted the credibility and authenticity of our findings (Miles & Huberman, 1994). In addition, discussions
with various employees during this three-month fieldwork enriched the contextual understanding of the cases. In conclusion, this approach enabled us to analyse practices from the perspectives of professionals and helped us engage in productive discussions with employees on a daily basis (Geertz, 1988).

4. Results

Our findings add complexity to the business relationship literature by categorising factors contributing to the success of business relationships into catalyzers grouped in catalyzer sets. These sets expedite the process of advancing from one phase to the next, and interact with triggers, which stem from conceptions, activities, and perceptions that the cloud customer has with respect to the cloud provider and other parties. The data analysis revealed that factors functioning as catalyzers advance the BRDP, meaning they are crucial for the initiation, development, continuance, and sustenance of a business relationship. Depending on the presence and character of catalyzers in each catalyzer set, TCS develops and changes along the BRDP. The impact of TCS is dual, as it can enable or inhibit the transition. Therefore, we designate them as triggers (and inhibitors) because of their power of action. Moreover, even the nature of TCS is dual, as they are simultaneously the trigger and the outcome. They trigger (or inhibit) the progression to the next phase, but are also the outcome of the transition from the previous phase (i.e. the character of TCS; weak or deep).

We illustrate this intricate interplay in Figure 2, which is the final research framework of our study. The framework combines the phases of business relationship development (Andersen & Kumar, 2006; Weck & Ivanova, 2013) and illuminates sets of catalyzers, with each set consisting of several catalyzers. These catalyzer sets develop TCS throughout the phases over time, which in their own turn trigger or inhibit the transition throughout the phases of a business relationship in a BRDP. The interplay of catalyzers and triggers affects BRDP progression. A
relationship can terminate in any phase, but the transition from Phase 3 to Phase 4 marks a breaking point (higher level of mutual value creation), differentiating it from previous transitions and phases (lower level of mutual value creation). Until that particular transition, the BRDP develops to reap the basic level of the value of cloud sourcing, such as cost reduction, flexibility, scalability, etc. If the BRDP manages to transition further into Phase 4, it has created a higher level of value. It is here that value for all the parties involved is maximized and the business relationship reaches its full potential, landing in a lasting, sustainable relationship.

Figure 2. The Business Relationship Development Process (BRDP) model

In addition, Table 1 compares the cases and their BRDPs, simultaneously accounting for the fluctuations of TCS over time. Quos had high expectations and a positive attitude towards Tento in the Prep-Phase, which affected TCS and triggered the relationship to the Initiation Phase. Then, as TCS stagnated, especially during the transition to the following phase (Development), while interacting with the motivation catalyzer set, the business relationship discontinued. Moreover, Quos was by then initiating a relationship with Sintra, which would eventually reach the Sustainable Relationship Phase. TCS acted as a trigger during the phases of the Quos-Sintra relationship, interacting with catalyzer sets. Lastly, in the case of WasteHeroes and its cloud
provider, Attoie, although TCS acted favourably in the Prep-Phase, it stagnated in the Initiation Phase and deteriorated during interaction with the motivation catalyzer set. This caused the relationship to discontinue when it should have entered the Development Phase.

Generally, from our analysis, we can conclude that transition along the phases of the process is inhibited when TCS is weaker. However, stronger TCS in one particular phase does not necessarily imply strong TCS in the following phases of BRDP. Rather, it is how TCS is affected by, and how it interacts with, the catalyzers, in particular catalyzer sets throughout the phases of BRDP. Thus, TCS can trigger or inhibit the process depending on the presence of catalyzers, itself ideally becoming stronger as the process evolves, until the business relationship reaches its sustainable phase. Table 1 shows a comparison of the interrelation between the triggers of TCS.

Table 1. Comparison of cases in relation to the BRDP model and TCS

<table>
<thead>
<tr>
<th>Phase</th>
<th>Trust (T)</th>
<th>Commitment (C)</th>
<th>Satisfaction (S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep-Phase</td>
<td><em>Quos with Tento</em></td>
<td><em>Quos with Tento</em></td>
<td><em>Quos with Tento</em></td>
</tr>
<tr>
<td></td>
<td>Favorable conceptions</td>
<td>Favorable activities</td>
<td>Favorable outcome</td>
</tr>
<tr>
<td></td>
<td>Favorable conceptions of the cloud provider</td>
<td>Open for mutual dependency</td>
<td>Positive perception of deliveries</td>
</tr>
<tr>
<td></td>
<td>Signing SLA</td>
<td>Signing SLA</td>
<td>Signing SLA</td>
</tr>
<tr>
<td></td>
<td>No previous experience</td>
<td>No previous experience</td>
<td>No previous experience</td>
</tr>
<tr>
<td></td>
<td><em>Quos with Sintra</em></td>
<td><em>Quos with Sintra</em></td>
<td><em>Quos with Sintra</em></td>
</tr>
<tr>
<td></td>
<td>No change in activity in relation to BRDP with Tento</td>
<td>No change in outcome in relation to BRDP with Tento</td>
<td></td>
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<tr>
<td>Catalyzer set 1</td>
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<tr>
<td>No change in conceptions in relation to BRDP with Tento</td>
<td>Favorable activities</td>
<td>Favorable outcome</td>
<td></td>
</tr>
<tr>
<td><strong>WasteHeroes with Attoie</strong> Favorable conceptions</td>
<td>Open for dependency Signing SLA</td>
<td>Positive perception of deliveries Signing SLA</td>
<td></td>
</tr>
<tr>
<td>Favorable conceptions of the cloud provider Signing SLA No previous experience</td>
<td>No previous experience</td>
<td>No previous experience</td>
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<tr>
<td><strong>Quos with Tento</strong> No change in conceptions</td>
<td>No change in activities</td>
<td>Inhibiting outcome</td>
<td></td>
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<td>No change in activities</td>
<td>Disappointment with the deliveries in relation to expectations</td>
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</tr>
<tr>
<td><strong>WasteHeroes with Attoie</strong> No change in conceptions</td>
<td>No change in activities</td>
<td>Triggering outcome</td>
<td></td>
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<td></td>
<td></td>
<td>Positive perception of deliveries</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>WasteHeroes with Attoie</strong> Inhibiting outcome</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Disappointment with the deliveries in relation to expectations</td>
<td></td>
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<tr>
<td>Phase 1</td>
<td>Quos with Tento</td>
<td>Quos with Tento</td>
<td>Quos with Tento</td>
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<tr>
<td>Unfavorable conceptions</td>
<td>Unfavorable activities</td>
<td>No change in outcome</td>
<td></td>
</tr>
<tr>
<td>Unfavorable conceptions due to previous negative outcome</td>
<td>Search for an alternative cloud provider</td>
<td></td>
<td></td>
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<tr>
<td>Quos with Sintra</td>
<td>Favorable activities</td>
<td>Favorable outcome</td>
<td></td>
</tr>
<tr>
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<td>Elimination of alternative provider options</td>
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<td>Signing SLA</td>
<td>Signing SLA</td>
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<tr>
<td>WasteHeroes with Attoie</td>
<td>WasteHeroes with Attoie</td>
<td>WasteHeroes with Attoie</td>
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<tr>
<td>No change in conceptions</td>
<td>Unfavorable activities</td>
<td>Unfavorable outcome</td>
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<tr>
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<td>Disappointment with the deliveries in relation to expectations</td>
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</tr>
<tr>
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<td>Inhibiting activities</td>
<td>Inhibiting outcome</td>
<td></td>
</tr>
<tr>
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<td>The customer wants release</td>
<td>Negative perception of deliveries</td>
<td></td>
</tr>
<tr>
<td>The business relationship does not transition to the next phase</td>
<td>The business relationship does not transition to the next phase</td>
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<tr>
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<td>Triggering outcome</td>
<td></td>
</tr>
<tr>
<td>Phase 2</td>
<td>Favorable conceptions of mutual interest</td>
<td>Elimination of alternative provider options</td>
<td>Positive perception of deliveries</td>
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<tr>
<td></td>
<td>The provider proves its ability to solve problems and respects the SLA</td>
<td>The cloud provider shows its engagement with the customer and respects the SLA</td>
<td>Positive feedback and self-reflection on deliveries</td>
</tr>
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<td>WasteHeroes with Attoie</td>
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<td>WasteHeroes with Attoie</td>
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<tr>
<td></td>
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<td>Inhibiting activities</td>
<td>No change in outcome</td>
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<td>Unfavorable conceptions due to a previous negative outcome</td>
<td>Search for an alternative cloud provider</td>
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<td>Negative perception of deliveries</td>
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<tr>
<td>The business relationship dissolves</td>
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<tr>
<td>Catalyst set 3</td>
<td>Quos with Sintra Triggering conceptions</td>
<td>Quos with Sintra Triggering activities</td>
<td>Quos with Sintra Triggering outcome</td>
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<tr>
<td></td>
<td>Frequent and clear communication reflects mutual interests and creates favorable conceptions</td>
<td>Regular meetings contribute to frequent communication</td>
<td>The deliveries surpass customer expectations</td>
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<td>Frequent and clear communication reflects mutual interests and maintains favorable conceptions</td>
<td>Regular meetings contribute to frequent communication</td>
<td>The deliveries continue to surpass customer expectations</td>
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<td>Favorable conceptions of mutual value creation</td>
<td>Developing new products and new business models</td>
<td>The relationship generates value for all included parties</td>
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<td><strong>Phase 4</strong></td>
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<td><strong>Quos with Sintra</strong></td>
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<td>Favorable conceptions</td>
<td>Favorable activities</td>
<td>Favorable outcome</td>
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<tr>
<td></td>
<td>Favorable conceptions are maintained</td>
<td>New innovations and new business models are either in place or in development</td>
<td>The relationship continues to generate value for all included parties</td>
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We continue with accounting for the intricate interplay between the catalyzer sets and TCS, embedded in the phases of the BRDP, following the BRDP model.

### 4.1. Catalyzer set 1 – Initial Conditions

Initial conditions comprise the catalyzer set developing TCS, which then triggers the transition of BRDP into Phase 1, Initiation, from the Preparation Phase. (In the latter, the partners gather information, evaluate possible collaborations, and decide to cloud source.) In other words, Catalyzer Set 1 is the basis for the development of initial TCS. Catalyzer Set 1 consists of three catalyzers: required competence, matching standards, and institutional practices. Our analysis shows that if one catalyzer, or a couple of catalyzers, from the catalyzer set initial conditions is absent, the business relationship will not initiate. For example, if matching standards are not present, it will be difficult to initiate BRDP regardless of the other two catalyzers’ existence because the expectations are not met, as different partners have different quality expectations, which also affects TCS.

In more detail, required competence is the competence present in a particular project at a specific time. Searching for competence outside the organization is not always possible, which
can affect the initiation of a relationship. For example, if the cloud provider does not possess the competence required for a cloud customer, the provider can search for it outside its company. Meanwhile, the cloud customer might consider the time factor to be crucial and, therefore, terminate the relationship. Our analysis demonstrates that required competence is crucial for the initiation of a relationship, as seen in the Quos case. Its cloud provider, Tento, lacked the required competence which it had agreed to provide. Without this catalyzer, Quos could not move its IT systems to the cloud within the planned 10 months. Quos’ CIO explains: “In the beginning, we had a contract with Tento as our cloud vendor. Unfortunately, very soon after we started collaborating with them, it was revealed that they could not live up to the agreed requirements in the SLA. This was a big disappointment for us, as they lacked the right competence and we had to terminate the relationship”. Previously, in the Preparation Phase, Quos had high expectations and positive conceptions of initiating a business relationship with Tento, which affected TCS positively. Later, while no change in trust and commitment in relation to the Preparation Phase had been noticed, satisfaction deteriorated due to a lack of required competence. This led to a deterioration in trust and commitment in Phase 1, and to further stagnation, as expectations were not met. Eventually, to ensure that it could perform this cloud journey, Quos terminated its affairs with Tento and found a new cloud provider with the required competence – in its case, Sintra.

The second catalyzer in this set, matching standards, considers the quality expectations and the interoperability of the provided cloud service in terms of the requirements and expectations of the cloud customer from technical and legal perspectives. Our interviewees highlighted this catalyzer as a balance of quality expectations among the cloud customer, cloud provider, and cloud broker. Analyzing why the relationship between Quos and Sintra worked, unlike that between Quos and Tento, we can see that expectations of quality were mismatched. Quos expected Tento to deliver a higher quality of service than it actually received. Tento, on the
other hand, had lower expectations of delivery to its cloud customer, Quos. This created problems of interoperability and inhibited TCS. In our other case, WasteHeroes’ IT manager emphasized the importance of specific and clear requirements: “If we had set firm requirements from the beginning, we would not have had these problems. It’s important as a customer to know what you want and need, and to not be afraid to ask for it. Otherwise, your demands will not be met”. Thus, matching standards can be understood as well-thought actions enabling TCS.

Institutional practices arose as the third catalyzer in the set of initial conditions. Quos’ CIO explains: “This experience taught us to look for cloud vendors with the same standards and similar work procedures as we have. Soon after, we changed to a new cloud vendor, Sintra, with whom we still have a good relationship, as they have helped us move all our IT systems to the cloud in record time and to successfully stay there.” In other words, the cloud customer and cloud provider should have similar views on core values, company culture, and work practices. In the case of Quos and Tento, there was a clash in work practices and company culture. For example, Tento’s employment of external consultants to work with Quos did not resonate well with the customer and was, for Quos, an unacceptable work practice. This mismatch in institutional practices created problems in the relationship and weakened TCS.

4.2. Catalyzer set 2 – Motivation

Further analysis showed that motivation based on the catalyzer’s problem-solving, mutual interest, and fulfillment of the SLA is important for the continued development of a business relationship. Catalyzer set 1, initial conditions, is important for the initiation and start-up of the relationship, while catalyzer set 2, motivation, is important for the relationship to reach the development phase. Similar to previous notions, the analysis shows that the absence of only one catalyzer in this set will not lead to the next phase, even if other catalyzers in this set or all the catalyzers in the previous set are present. For example, if SLA is not fulfilled, the
relationship will not develop, despite skilfull problem-solving and mutual interests. Also, the impact on TCS will be negative, weakening them to a level that makes the business relationship impossible.

The analysis identified problem-solving as the first catalyzer in this set. The inability to solve problems among partners in a relationship may impede its development because e.g. it puts system operability on hold, negatively affecting both employees and customers using the system. Another example is when different partners had different views on responsibility, which put the cloud customer in a difficult situation because it had to identify the problem and the liability of partners. This negatively affected business and work processes connected to the system, and eventually weakened satisfaction, then commitment, and then trust. The key is a mutual willingness to solve problems on a regular basis. The IT manager of Quos said: “With some of the vendors like Calabro and Sintra we have weekly and monthly meetings in addition to daily communication. This is crucial to pick up on problems and solve them as they arise. Earlier, when the communication was more sparse, we had problems that we didn’t detect until it was too late, which caused negative effects on the relationship to our vendors”. On the other hand, in the case of WasteHeroes, its provider, Attoie, did not show such willingness. A manager at Attoie explained: “WasteHeroes is our first municipality-owned customer. With regards to their structure and slower work pace than private companies, we deliver only what we have to deliver at a good enough level”. (Attoie is publicly procured, which guaranteed them the cloud provider role for as long as the SLA lasts.) Thus, WasteHeroes’ TCS was weakened due to Attoie’s passivity, which hindered the development of the relationship.

Mutual interest is the second catalyzer in this set. The analysis showed that balanced mutual interests between partners in a business relationship deepened TCS, which in turn triggered the development of the business relationship, contributing to the transition from Phase 1 to Phase 2. The IT manager of WasteHeroes said: “I anticipate that our IT department will have to
develop a new role that is both strategic and IT-competent”. He continued to reason and argue for the need for an organizational function that can communicate both with the internal organization, understanding its needs, and with the cloud vendor, being on top of technical developments in the cloud and how they can benefit the organization. Initiating, fostering, and keeping this mutual interest between the internal organisation and external cloud providers was recognized as highly important for increasing TCS. Similar developments were noticed at Quos; its IT manager said: “That is the reason why we have assigned a person, our ERP-specialist, to take the daily calls and hint to the rest of the internal IT people when problems arise as well as to contact the vendors. In that way, we are always in tune with what is happening in the cloud”.

Lastly, fulfilling the SLA is exemplified by another IT manager of Quos: “To follow up and always be in touch with the vendors is important. Otherwise, the vendors will do what they need to do, but no more than that. We as customers have to set requirements and make sure that they are fulfilled”. This enhanced the satisfaction aspect of TCS in this stage for all involved parties. Additionally, it deepened trust and commitment, as follow-ups reduced the risk of misinterpretations of the SLA and how it should or should not be fulfilled. Our analysis exhibited how this catalyzer affected TCS more directly because the comparison of supply and demand in relation to the SLA is visible and measurable. WasteHeroes’ IT manager said: “Our demand is not met by the current cloud providers, which creates a problem for us to evolve in the cloud”. On the other hand, Quos’ cloud provider, Sintra, was engaged and delivered above expectations, which positively affected TCS (especially satisfaction), deepened its level, and triggered the transition to the development phase.

4.3. Catalyzer set 3 – Knowledge and Communication

Catalyzer set 3 (Knowledge and Communication) consists of frequent communication, clear communication, and low human capital turnover. It enables the transition from Phase 2
(Development) to Phase 3 (Continuation/Termination). Because cloud-sourced systems are continuously updated at a fast pace, all the catalyzers in the set must be present for the relationship to transition to Phase 3. In addition, the presence of all the catalyzers in previous sets is required. Knowledge and communication are crucial because changes in the systems are reflected in partners’ relationships and in their organizations; they must be well-documented and absorbed by the partners throughout the relationship. In other words, a lack of knowledge and communication provides the relationship partners with less opportunity to affect the changes, prepare the organization for changes, and find optimal adaptation solutions. Ultimately, constant involvement of users and partners with and in the system profoundly affects TCS and leads to continuation or termination of the relationship.

Frequent communication among partners is important for several reasons. These include solving current issues, joint work on systems development, and setting up strategies for future developments. The latter requires involving all the parties in discussions of what is happening and where they are heading next. Moreover, our analysis showed that frequent communication increased the level of interaction between the partners in the business relationship. It increased the level of exchange of information and knowledge, as well as their relevance, and it solidified the loyalty between the parties in the relationship. With regards to catalyzer frequent communication, the IT manager of Quos said: “We communicate with our partners on a daily basis. Since we are all located in different countries, it is usually through Skype conference calls”. Ultimately, frequent communication has an overall positive impact on TCS, vastly improving it.

However, frequent communication alone does not suffice to strengthen TCS. Clarity of communication is just as crucial to eliminating the transition bumps that lead to the next phase. In other words, partners in a business relationship must communicate openly, share their insights and knowledge on certain topics, and discuss issues with few or no restrictions or
reservations. Sharing is indeed caring, as clear communication helps resolve current issues in a smoother, more expedient manner. Also, this clear and open communication is built on previous levels of TCS, but also contributes to strengthening TCS. The clear communication catalyst is illustrated by the CIO of Quos: “Our experience shows that strong relationships, trust, and understanding of the problems, a willingness to collaborate and restore problems, as well as open and mutual communication is the key”.

Finally, our analysis exhibited that low human capital turnover also acts as a catalyst in this stage. Knowledge is, in our case, largely embedded in human resources and can dissolve or disappear with the disappearance of skilful and resourceful individuals. This may impede cloud system developments and delay the continuation or terminate the business relationship. Thus, the replacement of knowledgeable individuals negatively impacts TCS. Logically, different individuals have different competencies and skills, but they also communicate differently. This has been shown to create tensions and disbalances, and it provides insights into personal chemistry. The analysis shows that when partners in a relationship are used to each other and work well together, they become attached to each other (and TCS deepens). The replacement of a partner risks the termination of the business relationship. As the CDO of Quos put it: “In relationship with the other partners, it is important for us to keep the same people that we are used to collaborating with. These people are used to us and our organization; we have a good relation and understanding of each other. If that particular person leaves, that can cause the whole cloud sourcing arrangement to fail”.

4.4. Catalyzer set 4 – Business Development

Catalyzer set 4 (Business Development) consists of two catalyzers – new innovations and new business models. It helps the business relationship transition from the Continuation Phase to the Sustainable Relationship Phase. According to our analysis, this last phase represents the
pinnacle of the BRDP, when the process reaches the level of value creation for all partners. At this point, it is of greater benefit for them to sustain the relationship than to terminate it. Ideally, in this phase, a competitive advantage is established through collaborative innovation. Levels of TCS are considerably high.

The first catalyst in this set is new innovations, exemplified by the Quos CDO: “We have developed sensors to help our customers monitor the industrial sites”. This is a new service developed for Quos’ customers, building on cloud technology to provide artificial intelligence (AI) and Internet of Things (IoT) functionalities that improve the industry and the infrastructure of work and production procedures through digitalisation. Such new innovations are indirect results of previous developments in TCS throughout the BRDP. They simultaneously represent sources for competitive advantage for the parties in the relationship. Thus, they help deepen TCS. Moreover, we noticed that cloud brokers enable the support of different partners involved in the business relationship by creating relationship-dependent business opportunities, creating a win-win situation. For example, in Quos’ case, new platforms have been developed, as the cloud broker explained: “We had to build new platforms that are interconnected with the current, to collect more data which the sensors require”. This type of innovation generated revenue for all involved partners because they all shared the new infrastructure.

The second catalyst in this catalyst set is new business models. One example in our data is how Quos used cloud systems to change maintenance for its customers, reframing it from cost focus to value generator. In short, the overall equipment effectiveness of Quos improved due to improvements in cloud systems. It improved Quos’ technical availability and, thereby, decreased its customers’ production losses and enabled continuous on-site condition monitoring. Maintenance functions became more flexible and communication played the key role in optimizing and securing more efficient utilization of its customers’ assets. This has enabled sustainable maintenance in improving its customers’ general productivity and overall
equipment effectiveness. With new services, Quos streamlined process department and captured data on production flows, consistencies, and trends on a daily basis. In other words, with the help of smooth cloud systems, Quos developed a new business model and shifted from delivering services to delivering opportunities for development.

5. **Contributions and implications**

Our study makes several contributions to the extant literature on business relationships. First and foremost, we portray the BRDP in more detail than had previously been done, identifying specific factors contributing to the initiation, development, continuation, and sustainability of business relationships, as well as the role of TCS throughout the phases of the process. More specifically, we emphasize factors as catalyzers interacting with each other within particular catalyzer sets leading the business relationships to more mature phases, in which TCS is both the trigger of these transitions and the outcome of previous transitions. Hence, building on previous insights (Andersen & Kumar, 2006; Athanasopolou, 2009, Falkenreck & Wagner, 2017; Holmlund, 2008; Morgan & Hunt, 1994; Olkkonen et al., 2000; Walter et al., 2003; Weck & Ivanova, 2013), we extend the understanding of BRDP, providing a more nuanced, dynamic, and complex view of the process.

This complexity involves identifying different categories of factors throughout the phases of BRDP, designated as catalyzers, catalyzer sets, and triggers. Catalyzer sets are crucial for the development of TCS, which function as triggers transitioning the business relationship (see Figure 1 and Table 1). However, TCS can not only trigger, but also inhibit, the process. All the catalyzers in a specific set must be present for the relationship to transition to the next phase. Likewise, catalyzers in later phases will work only if all the catalyzers in previous phases are in place.
Interestingly, the framework which is the result of our study intuitively distinguishes between ‘hard’ and ‘soft’ catalyzers (factors), similar to the work of previous authors (e.g. Holmlund, 2008). For example, harder catalyzers such as technology, contracts, and competencies emerged across all the catalyzer sets in the analysis, yet they were more prominent in the initial condition catalyzer set. On the other hand, although the softer type of catalyzers, such as communication (confirming e.g. Grönroos & Ojasalo, 2015), was also present throughout the process, it was more prominent in the later phases. This nuance can be explained by how contracts and demands for mutual standards serve as the connective tissue of business relationships in their earlier phases, whereas only later does frequent and clear communication add to Grönroos and Ojasalo’s (2015) mutual learning and value creation, according to our findings.

Moreover, our study extends the understanding of TCS and how it relates to BRDP. Instead of previous explorations of TCS focusing on e.g. antecedents of commitment (Hoccutt, 1998) or the distinctiveness of trust (Akrout & Diallo, 2017), we followed Abosag & Lee’s (2013) notion that TCS changes over time and we traced its development throughout the phases of BRDP. In doing this, we provided a more dynamic view of TCS and how it is embedded in this process (see Table 1). According to our findings, catalyzers not only help the relationship advance, but also contribute to TCS.

Finally, we have also contributed to the literature by performing the study in a novel context of cloud sourcing. In this manner, we have provided a fresh setting for the exploration of business relationships. The empirical context is highly relevant because of the profound changes it makes to business in general (Hardy, 2018). Simultaneously, our study makes a significant contribution to the cloud sourcing literature, where business relationships are, to date, an understudied area, with a few notable exceptions (e.g. Dempsey & Kelliher, 2018; Walther et al., 2018). Thus, our efforts have combined literature streams on business relationships and cloud sourcing, enriching both in the process.
5.1. Managerial implications

The results of our study offer several implications for practitioners involved in business relationship management. First, they can use the BRDP model as a framework for determining the position and attractiveness of their current business relationships. In other words, our model can function as an evaluation tool for a firm’s business relationships. Moreover, catalyzers grouped in catalyzer sets provide an additional understanding of where the managers should focus their attention to improve or advance their business relationships. In this sense, depending on how a business relationship is positioned and whether TCS is stagnating or threatening to inhibit the advancement, an understanding of catalyzers relevant to a specific phase transition may facilitate discussion with the business relationship partners.

Further, the technological aspect of our empirical context makes our findings particularly relevant for companies in similar contexts. Such companies should pay special attention to technology-related catalyzers, such as required competence and matching standards. The results of our study indicate that these factors are more relevant in the initial phases of the relationship, whereas soft factors such as frequent and clear communication are more relevant in the later phases of the relationship. Ultimately, the aim of the business relationship should be to develop to a sustainable degree such that it can be used for the development of new offerings and new business models by all parties involved in it.

5.2. Limitations and future research

Our study suffers from several limitations which offer possibilities for future research. One limitation is the empirical context of the research. Although novel and relevant because of its
technological actuality, the cloud sourcing context has its specificities. Applying our BRDP model in other empirical contexts would increase its relevance and provide further adjustments of catalyzer sets. For example, we can assume that some of the catalyzers, such as frequent and clear communication, might appear sooner in professional service business relationships.

Moreover, in our study, we focused on the interplay between the catalyzers and TCS, and on how they promote or inhibit the business relationship throughout the phases of the process. There is extant previous research delineating the antecedents of TCS, either jointly or separately or in certain pairs of e.g. trust and commitment, or trust and satisfaction. Thus, to further refine our model, we suggest more research on specific elements and antecedents of TCS, which might have relatively higher or lower relevance depending on the catalyzer set and the phase of the process. For example, our research suggests that some of the catalyzers might simultaneously act as antecedents of TCS.

Also, more qualitative research in general is recommended. The field is largely dominated by quantitative research (Athanasopolou, 2009; Osobajo & Moore, 2017). More qualitative studies would expand the theoretical understanding of business relationships, BRPD, and TCS in a more complex and comprehensive manner, similar to the attempts of our study. Thus, such future studies would provide a more nuanced and dynamic view within relationship marketing (Finch et al., 2015).
6. References


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