IMPLICATIONS OF SAAS ON COMPETENCIES OF IT-BROKERAGES

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Complete Research

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Abstract

The rise of cloud computing provides important challenges for organizations. One such challenge relates to the core capabilities organizations need in order to successfully deploy cloud computing. While implications of cloud computing for client capabilities have been studied, the implications for different types of suppliers are not well understood. Our research investigates the effects of cloud computing on the core capabilities of suppliers. In particular we focus on the consequences of Software as a Service (SaaS) for the required competencies of IT-Brokerages, intermediary parties between IT-providers and the client organization. Based on literature we developed three propositions which were examined in three in-depth case studies. Results indicate an increased importance of business facing skills, customer development and process re-engineering capabilities of the IT-Brokerage when engaging with SaaS. Results also indicate that governance of SaaS-applications at the client is diverse and often underdeveloped, possibly leading to lack of focus on SaaS-governance at the IT-Brokerage. The research contributes to an increased understanding of requirements for suppliers to optimize cloud usage for organizations. This is crucial for organizations as with cloud computing they become more reliant on the capabilities of their suppliers.

Keywords: Competencies, Capabilities, SaaS, IT-Brokerage, Customer development, SaaS-governance

1 Introduction

Cloud computing has changed the way organizations obtain and use IT and is considered as one of the most important strategic technologies of our time (Gartner Research, 2013). However, cloud computing is no silver bullet and provides many challenges for business and IT executives alike. Based on extensive research, Willcocks et al. (2012a) identified several major challenges for the present state of cloud use in organizations, including security risks, lock-in and legal and regulatory compliance considerations.

A critical challenge identified by Willcocks et al. (2012a) relates to management of the cloud and particular the role of the IT-department. Today business departments are able to directly employ a service from the cloud and therefore they disintermediate the IT-department as a service provider (Plummer, 2012; Yanosky, 2008). As a result, cloud computing challenges the strategic relationship between business and IT (Willcocks et al., 2012a). It also adds to the challenge of how to monitor and manage the outsourced services provided by multiple partners.

Moving IT to the cloud also has implications for the core capabilities organizations need in order to successfully deploy cloud computing (Willocks et al., 2012b). The capabilities of clients and suppliers have always been an important strategic theme in IT-outsourcing literature (Lacity et al. 2009; Lacity et al. 2012). Feeny and Willcocks (1998) are the first authors to meaningfully address capabilities needed when successfully engaging an IT-outsourcing relationship. In their research they focused on the client capabilities. Feeny et al. (2005) later created a complementary model to describe capabilities suppliers need for this relationship. They identified twelve capabilities for suppliers grouped in three partly overlapping competencies.

The client capabilities model was recently updated by Willcocks et al. (2012b) to suit cloud sourcing and resulted in a description of cloud implications on the original client capabilities model. Of course, cloud sourcing also has implications for suppliers. For instance, suppliers engage relationships directly with business departments as a result of the disintermediation of IT. Also new opportunities to provide value to the client arise, for example configuring a SaaS-application for the client, integrating techniques provided by multiple cloud providers or re-engineering a business process in order to enable the deployment of a cloud computing solution. This calls out for the need to update the supplier capabilities model to suit cloud sourcing. To our best knowledge no attempt has been made to update the supplier capabilities model of Feeny et al. (2005) to suit cloud sourcing. We believe that the rise of cloud sourcing makes it necessary to gain a deeper understanding of what supplier organizations should be capable of doing when engaging in cloud sourcing relationships (c.f. Lacity et al., 2012).

Our research investigates the effects of cloud sourcing on the competencies of suppliers. It aims to provide an update of the supplier capabilities model by Feeny et al. (2005) to suit cloud sourcing. As the delivery of cloud services and hence the roles of cloud suppliers can differ significantly (e.g. Plummer, 2012, Willcocks et al., 2011) we focus on a *specific type of supplier*, working with a *specific type of cloud computing*. That is, we focus on *Software as a Service* (SaaS) and on the *Cloud Services Brokerage* (CSB); an increasingly popular IT-Brokerage who acts as an intermediary party between cloud providers and the client organization.

This paper answers the following research question: *What are the consequences of SaaS on the required competencies of an IT-Brokerage?* The remainder of this paper is structured as follows. First, we provide a theoretical background on SaaS, the Cloud Services Brokerage and the Supplier capabilities model by Feeny et al. (2005). Next, we introduce three propositions related to our research question in order to guide our empirical study. We then present the methodology of our empirical study followed by results and a discussion of these results. Finally, in our conclusion we summarize our findings and indicate limitations as well as possibilities for future research.

2 Theoretical background

In this section we first introduce SaaS and its use in organizations. Next we elaborate on the Cloud Services Brokerage as a specific type of cloud provider. This section ends with an introduction of the Suppliers capabilities model of Feeny et al. (2005).

2.1 SaaS and its use

SaaS is a specific type of cloud computing. While cloud computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the datacenters that provide those services (Armbrust et al., 2009), SaaS only refers to the applications side of cloud computing. These applications are called Software as a Service (SaaS), and are deployed in the cloud. Clients can use SaaS-applications using various devices through a thin client installed on that device; usually a web browser (Mell and Grance, 2011). With SaaS the client does not manage or control the underlying cloud infrastructure including network, servers, operating systems or storage (Mell and

Grance, 2011): this is all abstracted from the client. This view on SaaS excludes software installed on private clouds as the client is responsible for managing this private cloud.

Managing the running of a SaaS-application is highly automated (Willcocks et al., 2012a). This means the client is not to worry about any issues related to ensure smooth operation of the application. As SaaS-applications are deployed in a public cloud, it is very likely to assume cloud providers use virtualization for this. But as the underlying cloud infrastructure is an abstraction to the client he does not know this and, moreover, should not care about this. Issues related to the abstraction and usage of a public cloud that clients do generally worry about are related to for example availability of service, data lock-in and security (Armbrust et al., 2009).

Whether or not it is appropriate to offer an application as SaaS depends on the complexity of an application. The more complex an application gets, the more tailoring is needed for each individual client (Sun et al., 2008), resulting in less clients adopting the SaaS-application as the amount of tailoring available in SaaS is always limited (Willcocks et al., 2012a). Two types of tailoring exist: configuration and customization (Sun et al., 2008). Configuration refers to setting predefined parameters to allow changes to, for example, datafield names and values, buttons and business rules. The creator of the application determines the amount of configuration available. Customization involves making changes to the source code of the application to create functionality beyond the configurable limit (Sun et al., 2008). This is avoided by the provider as allowing customizations to the source code provides all kinds of challenges. So tailoring SaaS-applications is limited to configuration as with SaaS there is only one instance of the code on the multitenant servers of the provider (Benlian and Hess, 2011; Xin and Levina, 2008; Yang and Tate, 2012).

SaaS is often directly marketed to business departments (Benioff and Adler, 2009**;** Willcocks et al., 2012a). A recent survey of European organizations showed this direct marketing to be very successful: 49% of the respondents report that business departments subscribe to cloud computing services (including SaaS) themselves, without consultation of the IT-department (Heier et al., 2012). With SaaS, business departments can deploy a whole service without depending on the IT-department. The business departments do however still suffer from dependencies (as they do not operate the service themselves), but these dependencies shift from the IT-department to the SaaS provider, outside of the company (Khajeh-Hosseini et al., 2010). Compared to other types of cloud computing like IaaS and PaaS, SaaS is relatively easy to deploy resulting in opportunities for business departments to bypass IT-departments (e.g. Plummer, 2012). As a result suppliers need to engage relationships directly with business departments instead of IT-departments. We expect this to lead to changes in the required competencies of suppliers and explains the choice for SaaS as the focus of our research.

2.2 Cloud Services Brokerage

In order to accurately update the supplier capabilities model emphasis must be added to a specific supplier. We believe this is necessary because different types of cloud suppliers exist with different interests and roles in providing cloud services. In literature (Hilkert et al., 2010; Makkar and Bist, 2012; Marston et al., 2011; Plummer, 2012; Stuckenberg et al., 2011; Willcocks et al., 2011) we identify at least two types of suppliers which are fundamentally different from each other; the *Cloud Provider* and the *Cloud Services Brokerage* (CSB). Cloud providers offer their services in the most standardized way possible and do not differentiate their service to suit specific client needs. The CSB is a third party company that adds value to cloud services on behalf of the client and acts an intermediary party between the provider of the cloud and the client organization (Plummer 2012). Where the cloud provider tries to standardize as much as possible the CSB customizes its services for each customer. This has implications on what capabilities are important for each of these types of suppliers in order to excel in their roles. In order not to mix up interests of different types of suppliers when determining cloud implications on supplier capabilities, the focus in our research is on these

CSBs, as the use of these brokerages seem to become an increasingly common approach among enterprises (e.g. Gartner Research, 2012).

There is no uniform view on the exact content of the tasks CSBs need to fulfil. On the basis of Stuckenberg et al. (2011) and Willcocks et al. (2011) we first make a distinction between two types of CSBs: *Specialist providers* and *Service integrators*. The specialist providers possess distinctive industry or functional expertise in order to help the client organization to adopt and use SaaS-solutions (Marston et al., 2011; Willcocks et al., 2011). With SaaS, there is a shift in the role of these specialist providers. As deploying a SaaS-solution has become very easy, specialist providers became obsolete to some extent, or at least less intensive required, for certain applications. This especially holds for applications that are easy to configure and extend via some digital marketplace; e.g. Salesforce CRM and its AppExchange platform (Hilkert et al., 2010). For more complex SaaS-applications however and also for certain tasks, like assembling different extensions to provide custom solutions, specialist providers are still needed (Hilkert et al., 2010; Makkar and Bist, 2012).

While specialist providers are usually focussed on a certain type of application or industry, service integrators do work more high-level, connecting different applications (Willcocks et al., 2011). Part of this integration is provided by cloud providers, but it is unlikely that cloud providers will build integrations between SaaS-applications and all other applications available. This will leave the service integrators with small-scale application integrations, not accomplished by cloud providers (Stuckenberg et al., 2011). Furthermore service integrators could partner with client organizations in order to help them manage and continuously optimize their services ecosystem. This not only applies for the ecosystem of one specific SaaS-solution, but for all ecosystems used in the client organization, thereby partnering with the internal IT-department of the client organization (Willcocks et al., 2011).

Based on the distinction between specialist provider and service integrator and based on related literature (Gartner Research, 2011; Hilkert et al., 2010; Makkar and Bist, 2012; Marston et al., 2011; Plummer, 2012), we identify four possible roles for a CSB:

- Configurator: configuring a SaaS-solution based on industry best-practice knowledge
- Assembler: assembling SaaS-solutions and its extensions to provide custom business solutions (this may include transformation of existing extensions into SaaS-solutions)
- Trust builder: consulting on issues related to security, data lock-in and availability of service (these issues are among the top obstacles for using cloud computing, e.g. Armbrust et al., 2009; Willcocks et al., 2012a)
- Integrator: integrating SaaS-solutions with other type of solutions, like on-premise systems, at the client organization

2.3 Supplier capabilities model by Feeny et al. (2005)

Before introducing the capabilities model by Feeny et al. (2005) the difference between capabilities and competencies is explained shortly. A capability is a company's ability to deploy resources, usually in combination (Amit and Schoemaker, 1993). It is a set of human-based skills, orientations, attitudes, motivations and behaviours that, when applied, transform these resources into specific business activities (Willcocks and Griffiths, 2012). Capabilities are information-based, tangible or intangible processes that are company-specific and are developed over time through complex interactions among the company's resources (Amit and Schoemaker, 1993). Under certain conditions these capabilities may provide competitive advantage over other companies.

Companies can have many capabilities. Collections of those capabilities create high-level strategic competencies that positively influence business performance (Willcocks and Griffiths, 2012). These competencies can be thought of as the crown jewels of a company; it is what they excel in and do best

in the market (Collis and Montgomery, 1995). Three attributes must apply to a competency (Prahalad and Hamel, 1990): (1) It must provide the company access to a wide variety of markets, (2) Customers should perceive it as a significant contribution to the end product of the company, (3) It should be difficult for competitors to imitate.

Feeny et al. (2005) created a model to describe the capabilities suppliers need when successfully engaging an IT-outsourcing relationship. They identified twelve capabilities grouped in three partly overlapping competencies (see figure 1).

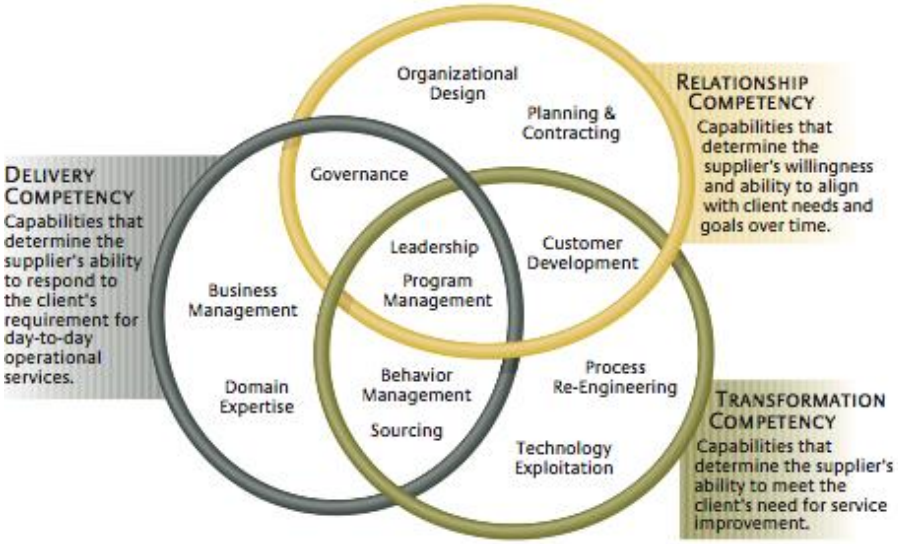

Figure 1. Capabilities and competencies of suppliers (Feeney et al., 2005).

The *Delivery* competency refers to the ability of the supplier to deliver on day-to-day operational requirements of the client. The *Transformation* competency refers to the ability of the supplier to deliver on the formal or informal expectation of clients regarding improvements on the outsourced services. The *Relationship* competency refers to the extent to which the supplier is willing and able to cultivate a win-win relationship, which will align client and supplier goals and incentives over time.

3 Implications of SaaS

In order to identify the SaaS implications for the capabilities model of Feeny et al. (2005) we partly follow the approach of Willcocks et al. (2012b) who identified the cloud implications for the client capabilities model. On the basis of available literature, for each of the competencies of Feeny et al. (2005) expected implications of SaaS on the IT-Brokerage will be described, thereby putting emphasis on the relevant capabilities. In addition, for each competency we formulate a proposition focussing on what we believe is the most important implication of SaaS for that particular competency.

3.1 Relationship competency

Traditionally the brokerage engages a relationship with the IT-department of a client organization. These brokerages are technology organizations as well as the IT-departments. The introduction of cloud computing, and more specifically SaaS, represents a shift in the way end-users (the business departments) are able to obtain applications they want (Yanosky, 2008). In the pre-cloud computing era they had to use the internal IT-department of their organization as an intermediary in order to

obtain the application. Today however, business departments are able to directly employ a service from the cloud and thereby they disintermediate the IT-department as a service provider. As a result business departments often bypass IT-departments (Heier et al., 2012; Plummer, 2012; Yanosky, 2008).

From a client perspective, Willcocks et al. (2012b) identified the growing importance of business orientation and business facing skills in the client capabilities model as a result of cloud sourcing. For suppliers this means that they need to engage relationships with IT-departments with a much better understanding of the business departments they support or, as is often the case with SaaS, directly with business departments instead of IT-departments. This implicates that the business facing skills of brokerages are expected to become increasingly important in the relations they maintain. Clients become more business savvy and capabilities of the supplier that determine the alignment with needs and goals of the client over time need to account for that.

Looking more closely at the *Relationship* competency, we believe that in particular the *customer development* capability becomes more relevant. With this capability, suppliers are able to help business departments at the client to develop themselves from being users to being customers (Feeny et al., 2005). Now that service provisioning is external, and with SaaS even without intermediation of the IT-department, these business departments become customers who should make informed choices about service levels, functionality and costs (Willcocks and Griffiths, 2012). While these tasks were formerly addressed by IT-departments, with SaaS the business departments should perform these tasks themselves. The IT-Brokerage is in the position to help the business departments to make this shift, and consequently the importance of this capability is expected to increase with SaaS.

> *Proposition 1: Increased need of "customer development" is an important consequence of SaaS on the "Relationship competency" of an IT-Brokerage*

3.2 Delivery competency

As an intermediary between the client organization and the cloud provider, the CSB plays an important role in keeping the information system up and running. In the eyes of the client this might be the responsibility of the CSB, or at least the CSB has to initiate solving any system failure or technical problems on behalf of the client. With SaaS this become increasingly important, as business departments using SaaS often bypass IT departments (see previous section) which were formerly involved in addressing these problems.

In addition, as CSBs potentially mix the services of multiple cloud providers, it becomes increasingly important to track and measure their performance in order to serve the client organization with the best cloud solution possible. While SaaS providers automatically provide the customer with updates of the software, they are also known for extending the functionalities of their applications further with every update. In doing so they aim for broader acceptance of their application in the client organization (Willcocks et al., 2012a). As brokerages might possibly combine extensions from multiple vendors and for multiple customers it becomes increasingly important to formulate strategies in order to manage this increasingly complex network of extensions (c.f. Willcocks et al., 2012a).

Looking at the capabilities of the *Delivery* competency we expect that in particular the *governance* capability increases in importance. It becomes indispensable to define, track and evaluate performance of the many applications in order to serve the client organization. Acting as assemblers of SaaS-solutions this becomes even more important in order to deliver these solutions to their clients. It is also expected that brokerages play a more prominent role in the support structures on behalf of the clients, and thus becoming part of their governance.

> *Proposition 2: Increased need of "governance" is an important consequence of SaaS on the "Delivery competency" of an IT-Brokerage*

3.3 Transformation competency

Cloud providers try to standardize their services as much as possible (Plummer, 2012). As explained in section 2.1, customization of the source code is avoided. This might however lead to problems for clients as it might be hard or even impossible to support a certain business process with a standardized SaaS-application. With SaaS it is most often only possible to configure the application within the very limited boundaries the cloud provider determined. CSBs play an important role here as they help the client organization with implementing the SaaS-application (the configurator role of section 2.2). This involves mapping the business processes of the client organization to the SaaS-application. This can be achieved by either configuring the application or by modifying the business processes (Xin and Levina, 2008). As SaaS puts more boundaries on the degree of configuration more adaptations to the business processes will be necessary compared to other types of solutions, e.g. on-premise applications.

Of the capabilities belonging to the *Transformation* competency, the *process re-engineering* capability describes to what extent suppliers are able to design and implement improvements to the business processes of the client (Feeny et al., 2005). As described above this capability becomes more relevant with SaaS-solutions, as these can only be configured to accommodate for individual client needs. SaaS might therefore act as a driver of business process re-engineering. Questions the client seek answers to, before engaging a relationship with a supplier, are related to who will own the changed process, who will benefit from the changes and how well the supplier is able to create a business case for these kinds of changes (Feeny et al., 2005). The CSB can help the client organization with the needed adaptations to the business processes. In order to provide added value to the client we expect this to be an increasingly important capability for brokerages.

> *Proposition 3: Increased need of "process reengineering" is an important consequence of SaaS on the "Transformation competency" of an IT-Brokerage*

4 Methodology for empirical study

To empirically examine the implications of SaaS for IT-Brokerages, we conducted an in-depth case study. Our propositions act as a predicted pattern, and through our case study we examine whether the empirically established pattern matches the predicted one. In order to assure the internal validity of the research we have to replicate our study in another case. We will do this by means of a "literal replication" and a "theoretical replication" (Yin, 2009). Literal replication refers to another case where the same independent variable can be found (in our case the use of SaaS). We would then expect to find the same results regarding our dependent variables. Theoretical replication applies to a case where the independent variable is different (in our case this means SaaS is not being used). We would then expect to find different results regarding our dependent variables. This means we have three cases:

1. An original case where SaaS-solutions are involved
2. A theoretical replication case where on-premise solutions are used
3. A literal replication case where SaaS-solutions are involved but at a different CSB

In each case we included the perspective of the IT-Brokerage and the perspective of one or more client organizations. To improve comparability between cases, we chose a particular type of application, i.e. CRM, as CRM is among the most popular SaaS-applications (Winkler et al., 2011). Applications we studied were Oracle CRM On Demand, Microsoft Dynamics CRM and SalesForce.

Data was gathered by both document analysis and semi-structured interviews. The document analysis included project proposals, project progress reports and project evaluations as its main sources of

input. These documents were related to the selected clients in the different cases described above. The results were used both as preparation for the interviews (e.g. concerning definitions of crucial concepts) and as an independent source of input for the data analysis phase.

Interview questions were carefully designed based on the approach of Emans (1990). Questions were formulated based on rough variables, which in turn were created out of theoretical variables. Linking questions to these variables made sure the necessary information could be extracted from the interview when analysing the results. To enable ourselves of being open to effects of SaaS not related to the propositions, we included variables and related questions to account for this. We conducted nine expert interviews with consultants, business analysts and different types of (business) managers including a managing director and a co-owner. Interviews were conducted during the first half of 2013 and were face-to-face at the site of the interviewees. Each interview was audio recorded and then transcribed for in total 72.202 words.

Data was analysed using a pattern matching strategy to compare the empirically discovered pattern with the predicted one. This was supported by computer assisted qualitative data analysis software (CAQDAS). First, codes were assigned to the transcripts. In some cases codes were based on the exact wording of an interviewee, so called in-vivo coding (Saldana, 2009; Scales, 2013). In other cases codes attribute a more evocative meaning to the data (Saldana, 2009); this is used when it is already possible to interpret words of an interviewee at this point in time, and to make sure only one code gets created regarding the exact same topic with the same perspective. This is necessary because exact phrasing used by interviewees might be different, while the meaning is the same. When interviewees addressed the same topic with a different perspective (i.e. brokerage or client), two codes were created. So in our research a code refers to a unique "topic-perspective" pair.

The identified codes were then categorized into code families, one for each theoretical variable. In addition links between codes were identified. This helps with analysing the data as it creates structure between all codes in a code family. A link between codes could be for example, "is associated with" or "is cause of". Codes used in many links are said to have a high density and present themselves as good starting points for further analysis. As codifying and categorizing are iterative processes and consolidate meaning and explanation to the data (Saldana, 2009) we made sure to check for counter examples and other possible interpretations. Results were shared between members of the research team and further examined when needed. Finally, the code families were visualized and were input for further analysis where we carefully used the results of the document analysis and our literature review before we drew conclusions.

5 Results and discussion

In this section we first present, for each competency, the important themes that emerged from the data (a theme is a pattern, trend or concept; Saldana, 2009). Then we review the three propositions of our research, followed by results that were not specifically related to one of these propositions. We end this section with an overview of our main findings.

5.1 On the relationship competency

One of the central themes from the data we found related to the *Relationship* competency was the bypassing of the IT-department by business departments using SaaS. We found two reasons in the data: 1) the IT-department is unwilling or unable to respond to changing user demands and 2) the IT-department does not offer a service matching the SaaS-solution. As a result IT involvement with SaaS was found to be low for several client organizations.

Another important theme we found was that SaaS leads to more direct and closer interaction between IT-Brokerages and business departments. Because of bypassing of the IT-department and because

SaaS-applications are easy to configure and implement, business departments take the initiative in obtaining SaaS-applications. It was found that business departments are more able to directly tell the CSBs what their needs are, and that CSBs help business departments to match these needs with possibilities that SaaS-solutions offer.

We also clearly found that business departments and CSBs work together in order to build a clear understanding of issues related to functionality and costs of SaaS-solutions. This includes configuration options, matching with business processes and (often) the need for process re-engineering. With SaaS CSBs have more personal contact with end users and CSBs help them to make informed choices about these issues. A typical example of how this interaction works is described by an interviewee from Brokerage3[1]:

> *"From day 1 the client is involved. That makes it convenient: the application is 'live', you can immediately show the application, and the solution. And on-the-fly you can make changes. This is also how we do many of our workshops[2]. We take a business process, we examine this step by step, then we identify the screens that should support the process. Sometimes you miss a certain feature; create new field, refresh and there it is. New object in the same way. This is much more interactive."*

5.2 On the delivery competency

One of the themes we found concerning the *Delivery* competency was related to responsibilities related to the functioning of SaaS. It is the responsibility of the cloud provider to keep the SaaS-application up-and-running. Nevertheless, the CSB was be perceived by several clients as being the supplier of the application, and therefore is held responsible for correct functioning of the application. A client from Brokerage1 explicitly states that he perceives the CSB to be the only supplier. An interviewee from Brokerage3 states that the CSB has to make sure the cloud provider fixes *any* issue on behalf of the client. However he immediately questions whether the CSB has enough power to make the cloud provider do this. For instance, for the CSB there is no way of technically troubleshoot the application, as this is abstracted by the cloud provider.

Related to this theme is the issue of support structures. Distributed among all cases we found different support structures at the client and related to this different or no roles for the CSB for support. Some clients choose to either troubleshoot themselves and contact the provider when necessary. Others contact the CSB to troubleshoot and get in contact with the provider on behalf of them. It is also possible for the client to get in contact with an account manager of the provider, who, in case of a big issue, will take care it gets solved. In addition the routes from the user to the internal administrator inside the client organization differ. Some clients choose to assign one administrator responsible for handling issues with their SaaS-application, where users can directly contact this person. Other clients choose to formalize the process and assign handling issues to the already existing IT service desk. About these support structures, a consultant from Brokerage1 remarked: "*it all depends on the client*".

On tracking and evaluating the performance of SaaS-applications we found that this was not seen as highly important for the CSB, especially for Brokerage1. In general the CSB acted in a reactive way rather than proactive, for instance when the client asks to fix an issue of low response time when generating a certain report. However, the importance of tracking and evaluating performance was also found to be dependent on the particular client the CSB serves.

[1] The number after Brokerage refers to the case number (see section 4).

[2] These workshops are organized together with the client and usually take place at the client's location.

The last theme we identified here relates to new training requirements with SaaS. We found that consultants who work with SaaS need more social and analytical skills. For instance a consultant from Brokerage1 stated that, compared to on-premise systems, you need broader skills i.e. more business oriented skills and he remarked that not every consultant possesses these skills.

5.3 On the transformation competency

An important theme we found concerning the *Transformation* competency is related to limitations in customization. We found that organizations try to limit the amount of custom code allowed on all their CRM-applications. Still, customizations of on-premise applications often occur for different reasons, e.g. some parties earn more for adapting the system than for adapting the business processes.

With SaaS temptations to customize the application instead of adapting the business processes do not exist. As a business analyst from Brokerage1 states, this is due to the inability to customize the application, as a result of which the client "*is forced to adapt its processes*". In our research we found evidence that clients of CSBs do not encounter great difficulties in adapting the business processes to the standard processes in the SaaS-application. As our research focussed only on CRM-applications we have to be careful not to draw general conclusions related to this matter. An interesting implication we found of sticking to standard processes with SaaS is that the party implementing the system, i.e. CSB, is forced to cooperate with business departments to adapt its processes. This further strengthens the observation of section 5.1 that SaaS leads to more direct interaction between IT-Brokerages and business departments.

Some interviewees point to opportunities to bypass the standard limitations present in the SaaS-applications. Customizations (as changes to the source code, see section 2.1) can be developed on a cloud platform and made available as separate add-ons to the SaaS-application, for example in an app-store. However, we found this was not common practice.

5.4 Review of propositions

Regarding our three propositions (introduced in section 3) we found evidence for proposition 1 and 3, but not for proposition 2. These findings are elaborated on in this section.

In our research we found that business facing skills become more important for an IT-Brokerage when working with SaaS-applications. Explanations are found in lower IT-involvement at the client because of bypassing the IT-department and SaaS-applications having the nature to be easy to configure and to implement. This leads to closer interaction between business departments and CSBs. This was found to be particular important for *customer development* where CSBs work together with clients so they become able to make informed choices about functionality and costs. It was found that this becomes more important for SaaS (proposition 1). However, we found that not much attention was given to build an understanding of service levels of SaaS-applications. A possible explanation is that the CSB cannot add much value here as possibilities to differentiate SLAs of SaaS-applications are non-existent or at least very limited (c.f. Willocks et al., 2012a).

The need of the *governance* capability of an IT-Brokerage was found *not* to increase as a result of the usage of SaaS. Tracking and evaluating the performance of SaaS-applications by the CSB was not found to be very important. Some results show greater dependence on the cloud provider for support related to SaaS-applications. But whether governance resides with the CSB or with the client organization was found not to be dependent on the usage of SaaS, but how the client organization decides to structure itself and on the particular CSB-client relation. This result is not in line with what we expected (proposition 2). A possible explanation is that for the CSBs in our cases the assembler role was relatively unimportant. When there are no multiple extensions to combine, there is less need from a CSB perspective to manage this complex network of extensions. Rather we found that CSBs often act reactively, when clients explicitly ask to fix problems. Looking more closely at the client we

have already seen that CSBs do not focus much attention on building an understanding of service levels of SaaS-applications. Assuming that this results in business departments of clients which are not fully informed of the importance of these service levels, and some of the data indicates in this direction, it is not surprising that these clients underestimate the importance of SaaS-governance. When this is the case there is no real incentive for the CSB to perform governance on behalf of the client. We believe that the customer development capability of the CSB, which aims to help business departments to understand service levels (apart from functionality and costs), may result in an increased awareness of the importance of SaaS-governance at the client and consequently in an increased role of the CSB in executing (part of) this governance on behalf of that client.

Looking more closely at SaaS-governance at the client, Winkler et al. (2011) found there is no appropriate SaaS-governance form for all organizations. It rather depends on organizational and application-specific contingencies. In their study they found that organizations have different ways to organize their SaaS-governance which include different locus of decision authority and task responsibilities like support. This aligns with our finding of differences in support structures among cases. Winkler et al. (2011) also argue that SaaS-governance in practice is not always effective e.g. when there is a misfit between the governance mode and the different contingencies. This is in line with Willcocks et al. (2012a) who observed that companies are still slow in developing capabilities for managing cloud services, like monitoring usage, SLAs and performance. Also our cases indicate that SaaS-governance at the client is often not sufficiently implemented, e.g. when business departments bypass IT to acquire SaaS-applications they sometimes also bypass, or try to bypass the overall IT-governance which results in frictions between business and IT. We believe that ineffective SaaS-governance at the client results in reduced pressure from the client towards the CSB to perform governance on their behalf.

During our empirical research we found the practice to stay as close to standards in CRM-applications as possible. As a result, business processes are adapted to the processes in the system as much as possible. As sticking to standard functionality is not a choice but a necessity with SaaS-applications this is an important skill of CSBs. Consequently, there is a bigger need of the *process re-engineering* capability for brokerages (proposition 3), which we clearly found in our research.

Considering the issue of standard vs. customized applications we observed that sometimes customizations for SaaS-applications are developed on a cloud platform and made available as separate add-ons on the application, for example in an app-store. Although hosting custom code on a cloud platform is not SaaS anymore (because the cloud provider does not maintain the custom code used in the cloud and does not take responsibility for the code; see section 2.1), we believe that CSBs should either learn how to leverage existing add-ons or specialize in developing these add-ons themselves. The latter presents an opportunity for new business for these CSBs for which the *technology exploitation* capability obviously becomes more important.

5.5 Other implications of SaaS

We found two other implications of SaaS related to capabilities of an IT-Brokerage, but were not specifically related to one of the propositions.

First, we identified an increased need for architecture planning and design at the client organization. This result aligns with Willcocks et al. (2012b) who identified that the architect capability is key for the client when it comes to cloud. We argue that the client's IT-department needs to manage the incorporation of SaaS-solutions in their blueprint; a blueprint already increased in size because SaaS-applications present themselves as good solutions to specific issues, possibly enlarging the amount of SaaS-applications used within organizations and creating different islands of SaaS-applications. Although in our research we did not find any signs of CSBs acting as service integrators in this way, we believe this provides new opportunities for CSBs to help clients to achieve the desired integration.

Seizing this opportunity implicates that the required capability of *technology exploitation* changes towards integrating existing technology instead of developing new improvements.

Second, we identified that the *behaviour management* capability changed as a result of new training requirements with SaaS. Firstly, this is due to the limited configuration possibilities with SaaS. Consultants can learn all configuration possibilities of the application in a limited amount of time (see also Winkler et al., 2011). Secondly, consultants who work with SaaS need more social and analytical skills as a result of the increased need of business facing skills by IT-Brokerages. They should be able to gather and understand the business requirements and be able to re-engineer the business processes if needed. When training employees and hiring people to work in SaaS-projects specific attention should be paid to these skills, adding to the expected fierce competition for highly qualified people with good business, technical and interpersonal skills as a result of cloud sourcing (Willcocks et al., 2012b). This result is in line with Plummer (2012) who also identified the need for CSBs to retrain existing staff and hire new people, where our result further details what new skills are required.

5.6 Overview of main findings

In Table 1 we present the main findings of our empirical research discussed above.

Capability	**Main findings**
Customer development	SaaS makes it more important and even necessary for IT-Brokerages to help business departments to make informed choices about important SaaS-issues esp. functionality and costs.
Governance	The need of the governance capability was found *not* to increase as a result of the usage of SaaS.
Process re-engineering	There is a bigger need of the process re-engineering capability for brokerages. With SaaS, business processes are adapted to the processes in the system as much as possible.
Technology exploitation	1. We found that sometimes customizations for SaaS-applications are developed on a cloud platform and made available as separate add-ons on the application. IT-Brokerages could either learn how to leverage existing add-ons or specialize in developing these add-ons themselves. 2. We found an increased need for architecture planning and design at the client organization. When deciding to help clients to achieve desired integration of SaaS-solutions, the required capability of technology exploitation changes towards integrating existing technology.
Behaviour management	Consultants of IT-Brokerages who work with SaaS need more social and business analytical skills as a result of changes in customer development & process re-engineering capabilities.

Table 1. Findings on implications of SaaS for an IT-Brokerage

6 Conclusion

In order to successfully deploy SaaS-solutions for clients, CSBs need to possess certain capabilities and competences. Our research provides evidence that changes in required competencies occur for IT-Brokerages when they engage themselves with SaaS: the *customer development* and *process re-engineering* capability become more important. Also the *behaviour management* capability changes, i.e. people working with SaaS need more business analytic and social skills, as CSBs work more closely with business departments. In addition we found new business opportunities for CSBs to add value to their clients, i.e. help clients to integrate SaaS-solutions in their architecture/blueprint, to leverage existing add-ons and/or specialize in developing these add-ons. When taking up these opportunities, the *technology exploitation* capability of the brokerage has to change as well.

Our research did not provide evidence of an increased importance of the *governance* capability for brokerages due to SaaS for which different explanations were provided. In particular we believe that the observed diverse (and often underdeveloped) SaaS-governance at the client is important, as the

CSB performs governance *on behalf of the client*. This further adds reason to study the severely understudied topic of SaaS-governance (Winkler et al., 2011). In particular we suggest to focus on integration within overall IT-governance as we found clear evidence that use of SaaS leads to bypassing IT-departments.

The *customer development* and *process re-engineering* capability are not frequently studied in the IT Outsourcing (ITO)-literature (Lacity et al., 2012). Results of our research reveal that these capabilities are crucial for brokerages that provide SaaS-solutions. Future research needs to be done to corroborate these findings, e.g. whether these capabilities positively impact ITO-outcomes or whether customer development on service levels improves SaaS-governance. In ITO-literature it has been shown that the *behaviour management* and *technology exploitation* capability positively and significantly affect ITO-outcomes (Lacity et al., 2012). We believe that our findings on these capabilities should be taken into account when examining ITO-outcomes in SaaS-settings.

Several limitations to this study can be identified. Conducting the research only amongst brokerages and their clients and not with cloud providers puts limitations on external validity. The same applies to only including CRM-applications into the scope of this research and not the broad spectrum of all cloud computing varieties and on-premise applications. Another limitation on external validity is related to the focus of the CSBs in our cases not being on the assembler and integrator role (see section 2.2). In addition, we only investigated a limited number of cases and although the original and literal replication case produced the same results, the literal replication case turned out to be less extensive than initially anticipated. This implicates that more research is needed to increase the external validity of our study.

To our best knowledge this is the first research to address the changes in competences of brokerages engaging with SaaS. It thereby contributes to knowledge and understanding of the changed role and required competencies of these brokerages. In doing so it helps to address an understudied area in the IT-outsourcing literature i.e. the required capabilities from a supplier perspective in rising markets (Lacity et al., 2012). This is highly relevant as organizations today become more and more reliant on the capabilities of their suppliers. Our research also adds further relevance to the discussion on the changing role of the IT-department in organizations (see for instance Erbes et al., 2012; Goldstein, 2008; Marston et al., 2011; Sarkar and Young, 2011; Willcocks et al. 2012a) as we find clear evidence that the use of SaaS leads to bypassing IT-departments. This challenges the strategic relationship between business and IT (Willcocks et al., 2012a). At the same time, we identified opportunities for IT-departments to optimize the use of SaaS for businesses, thereby keeping themselves relevant.

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