EXPLORING SUBSCRIPTION RENEWAL INTENTION OF OPERATIONAL CLOUD ENTERPRISE SYSTEMS – A SOCIO-TECHNICAL APPROACH

Walther, Sebastian, University of Bayreuth, University Street 30, 95444 Bayreuth, Germany, s.walther@uni-bayreuth.de

Sarker, Saonee, Washington State University, Todd 442A, 99164 Pullman WA, United States, ssarker@wsu.edu

Sedera, Darshana, Queensland University of Technology, George Street 2, 4001 Brisbane QLD, Australia, d.sedera@qut.edu.au

Eymann, Torsten, University of Bayreuth, University Street 30, 95444 Bayreuth, Germany, torsten.eymann@uni-bayreuth.de

Abstract

Despite the fact that customer retention is crucial for providers of cloud enterprise systems, only little attention has been directed towards investigating the antecedents of subscription renewal in an organizational context. This is even more surprising, as cloud services are usually offered as subscription-based pricing models with the (theoretical) possibility of immediate service cancellation, strongly opposing classical long-term IT-Outsourcing contracts or license-based payment plans of on-premise enterprise systems. To close this research gap an empirical study was undertaken. Firstly, a conceptual model was drawn from theories of social psychology, organizational system continuance and IS success. The model was subsequently tested using survey responses of senior management within companies which adopted cloud enterprise systems. Gathered data was then analysed using PLS. The results indicate that subscription renewal intention is influenced by both – social-related and technology-specific factors – which are able to explain 50.4% of the variance in the dependent variable. Beneath the cloud enterprise systems specific contributions, the work advances knowledge in the area of organizational system continuance, as well as IS success.

Keywords: cloud computing, software as a service, SaaS, enterprise systems, IS continuance.
1 Introduction

The emergence of cloud computing has significantly transformed the application of enterprise systems (ES) within organisations (Raihana, 2012). Historically, ES have been implemented by large enterprises integrating different functional areas with the goal to provide a competitive advantage to the adopting organisations (Klaus et al., 2000) with only few small and medium enterprises (SMEs) being able to afford them (Raihana, 2012). However, cloud computing has revolutionised how IT is used in enterprises, leading to the emergence of cloud enterprise systems (CES) like SAP By Design, Microsoft Netsuite or Salesforce.com. CES are a special form of software as a service (SaaS), which allow traditional ES to be presented in the cloud, making it an affordable, easy to implement and flexible software solution (Salleh et al., 2012). According to Gartner, in 2009, SaaS sales had reached $7.9 billion dollars, with approximately 65% of the sales attributed to CES. It is projected that by 2015 SaaS sales will reach the $21 billion mark (Gartner, 2012). However, despite the economic relevance of CES and SaaS, there are innumerable stories about the difficulties that companies (e.g., Salesforce) have been facing in retaining their customers, and online tech bloggers have repeatedly emphasized the criticality of customer retention in the context of SaaS. Despite this acknowledgement within practice, only limited research has been done on the examination of the key antecedents of subscription renewal (in other words, customer continuance and retention) after the system has been implemented. This lack of research concerning the central concept of subscription renewal is even more surprising, as cloud computing has been labelled as “utility computing” on a commercial basis (Armbrust et al., 2010), where resources can be consumed “on-demand” with the (theoretical) possibility to immediately cancel the subscription if the service is erroneous (in contrast to classical IT-Outsourcing or licence-based on-premise ES). While this vision of “computing as a commodity” might already have become reality concerning infrastructure-services, IT decision-makers might face severe problems when discontinuing or switching their CES, i.e., due to the large implementation costs or a SaaS vendor lock-in, which can apply when introducing a CES. Therefore in this study we investigate the following research question:

- “What factors influence the subscription renewal intention of CES adopters?”

SaaS has seen a steadily growing body of research between 2007-2011 (Walther et al., 2012), with several theoretical and conceptual contributions concerning success, chances, risks and the adoption of SaaS. Many of the contributions are built on existing IT-outsourcing literature, where cloud computing can be seen as a special case of IT-outsourcing. Prior to model development we conducted a thorough literature review based on Webster and Watson (2002)\(^1\) (1/2000-5/2012) applying the search string “Software as a Service” OR “SaaS”. Results showed only a limited amount of research in and adjacent to SaaS continuation and adoption (see table 1\(^2\)). Only one study was found empirically investigating the organizational continuation of SaaS (marked grey in table 1) with focus on behavioural factors and the (technical) service quality. Overall, only two studies focused on continued SaaS use. In addition, whilst traditional ES have been explored to a large extent (Esteves & Pastor, 2001; Esteves & Bohoquez, 2007) cloud-based ES systems in general have received minimal attention. Existing ES publications have predominately focused on overall system success for traditional on-premise ES systems (e.g., Gable et al., 2008; Sedera and Gable, 2010).

In examining the research question, we focus on the beliefs, perceptions, and attitudes of the IT decision-makers and their role towards subscription renewal intention. It has been widely acknowledged that IT-related decisions in an organization are typically made by the IT managers. This is especially true in the context of CES, whose primary customers are SMEs, and where typically a small group of executives has a decent power to decide whether an information system within their company is continued or discontinued (Premkumar, 2003). Further evidence supporting this view is provided by Dibbern (2004), which found that sourcing and adoption decisions are mainly based on individuals and not made by organizations. In addition, tech blogs have also argued that decisions about whether or not to continue cloud solutions are made by single decision-makers, such as line of

---

\(^1\) The selection of the sources was based on the Saunder’s AIS ranking (2012) up to position 25, including the AIS basket of 8 and major conferences like ICIS and ECIS. Additionally, reference lists of the extracted articles were screened.

\(^2\) Papers were only mentioned once if they were transitioned from conference to journal article.
business managers (Martrain, 2011). Given the previously described organizational environment, where decisions about organizational IT artefacts are made by individual decision-makers, we argue that the strongest way to predict the continuation intention of an organizational IT artefact is to build on cognitive and behavioural processes of individuals, more specifically, the IT decision-makers. Hence, we assume that organizational change results out of the urge of the IT decision-maker to stay consistent in his beliefs, attitudes and intentions (Fishbein & Ajzen, 1975). Building on prior work which has made efforts to explain organizational adoption and continuance by focusing on the decision-makers’ viewpoint (e.g., Benlian et al., 2009; Benlian et al., 2011), we theorize and test a conceptual model, which takes a socio-technical approach (e.g., Bostrom & Heinen, 1977), examining the effect of both - social-related and technology-specific factors. Consequently, we have drawn on the IS success model for technology-specific variables and its interaction with social elements, the expectation-confirmation theory (ECT) (Oliver, 1980) from consumer satisfaction literature to represent social variables, as well as continuation inertia drawn from the existing literature on organizational system continuance (Furneaux & Wade, 2011), which are social-related and technological variables.

The rest of the manuscript is as follows. First, the theoretical framing is given. Second, the research model of subscription renewal of CES is presented. Third, the methodology is described. Fourth, the results are presented and subsequently discussed.

### Table 1. SaaS-Related Client-Side Adoption and Continuation Literature

<table>
<thead>
<tr>
<th>Authors/Paper</th>
<th>Level of Analysis</th>
<th>Adoption Phase</th>
<th>Nature of Investigated Factors</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xin and Levina 2008</td>
<td>IND</td>
<td>ADOPT</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>Benlian et al. 2009</td>
<td>ORGA</td>
<td>CONT</td>
<td>TECH</td>
<td></td>
</tr>
<tr>
<td>Susarla et al. 2009</td>
<td></td>
<td></td>
<td>NB</td>
<td></td>
</tr>
<tr>
<td>Heart 2010</td>
<td></td>
<td></td>
<td>CI</td>
<td></td>
</tr>
<tr>
<td>Yao et al. 2010</td>
<td></td>
<td></td>
<td>THRO</td>
<td></td>
</tr>
<tr>
<td>Benlian et al. 2011</td>
<td></td>
<td></td>
<td>EMP</td>
<td></td>
</tr>
<tr>
<td>Benlian and Hess 2011*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Janssen and Joha 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mista and Mondal 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wang 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wu et al. 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This Article</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: IND=Individual Level; ORGA=Organizational Level; ADOPT=Adoption; CONT=Continuation; CR=Continuance-related; TECH=Technological Quality; NB=Net Benefits; CI=Continuation Inertia; THRO=Theoretical/Conceptual; EMP=Empirical

*Study investigates adopter's and non-adopter's intention to increase the level of sourcing, therefore it is categorized as adoption.

### 2 Theoretical Framing

In the following paragraphs, we outline different conceptual areas and their conceptual relevance in the context of CES. As outlined earlier, in examining our research question, we examine the role of the beliefs, attitudes, etc., of the individual decision-makers with respect to CES continuation intention.

#### 2.1 The Dependent Variable: System Continuation

Literature on system continuance of individuals is mainly based on theories drawn from social psychology like the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) or the theory of planned behaviour (TPB) (Ajzen, 1991) which focus on the prediction of human behaviour. TRA has taken shape in IS in the form of the technology acceptance model (TAM) (Davis, 1989). System continuance has often been studied in the context of adoption, but is not limited to it. For instance continuation has been studied to evaluate the post-implementation phase (Benlian et al., 2011), to evaluate the success of e-commerce systems (Wang, 2008) and at the end of the lifecycle as discontinuance intention (Furneaux & Wade, 2011). From marketing or business perspective, continuation is an indicator for customer retention. Complementary research has investigated the continuation of IS on organizational level, which has been mostly guided by the technology-organization-environment-framework (TOE) (Tornatzky & Fleischer, 1990), and the diffusion of
innovation theory (DOI) (Rogers, 1983). In contrary to the system continuance of individuals, organizational adoption and continuation literature has focused on macro-factors like perceived benefits (Lee & Shim, 2007), system performance shortcomings or environmental pressure (e.g., Chau & Tam, 2000; Furneaux & Wade, 2011; Teo et al., 2003), ignoring individual attitudes and cognitive effects (Premkumar, 2003).

### 2.2 The IS Success Model

Even though research on IS success is a mature research stream, only a small number of studies have investigated the role of IS success on the continuation of IS (Petter et al., 2008). We use the IS success model for four reasons. First, the success categories have been shown to adequately represent IS success in a variety of contexts such as e-Commerce (Wang, 2008) or employee portals (Urbach et al., 2010). Second, the categories are comprehensive and easy to communicate. Third, it is the most widely used success measurement model (Urbach et al., 2009), and therefore its application allows comparability and external validity among studies. Fourth, prior work has shown that the IS success model exhaustively captures SaaS-specific (Walther et al., 2012) and ES-specific (Gable et al., 2008) success factors. The revised IS success model (Delone & McLean, 2003) consists of six interlinked success categories: system quality, information quality, service quality, user satisfaction, use and net benefits. In our study, in an effort to keep our model parsimonious, and in line with our socio-technical approach, we focus on the IS success variables which are primarily technology-focused; in other words, we examine the effect of system quality and information quality. In addition, we also examine the effect of using the CES in its organizational environment, which is represented by net benefits.

### 2.3 The Decision-makers’ Cognitive and Affective Responses

Premkumar (2003) has highlighted the lack of studies on factors specific to individual decision-makers, especially in the context of small enterprises. The expectation confirmation theory (ECT) (Oliver, 1980) is one of the predominant concepts in marketing and IS to study consumer satisfaction and customer loyalty, and is therefore well suited to study the effect of individuals’ perceptions in the post-acceptance phase. It has been empirically validated in several product and service continuanace contexts (e.g., Patterson et al., 1997). The process by which consumers build repurchase intentions is as follows (Oliver, 1980). Customers have (pre-purchase) expectations before consuming the service or product. Temporarily shifted, there is an initial consumption, which leads to a perception of the performance. This performance is then evaluated against the original expectations (confirmation). Based on their extent of confirmation, consumers form an attitude which then influences repurchase intentions. The expectation confirmation model (ECM) (Bhattacherjee, 2001) focuses on post-acceptance variables and modifies ECT in two dimensions. First, pre-purchase expectations are not included, as satisfaction and confirmation capture all effects of pre-acceptance variables. Second, perceived usefulness is introduced as post-consumption variable. It is noteworthy that the prominent extension of ECM by Bhattacherjee et al. (2008) replaces perceived usefulness by post-usage usefulness and introduces self-efficacy as antecedent of system continuance. According to Hossain and Quaddus (2012), recent research on system continuance in the context of ECM has focused on finding new independent variables influencing continuation intention.

### 2.4 Social and Technological Commitment: Continuation Inertia

In addition to socio-centric variables from marketing and social psychology, we also look at socio-centric and technological variables from organizational system continuance literature. Similar to perceived behavioural control from TPB, continuation inertia enforce behavioural persistence. In our model we focus on system investment and technical integration as organizational and technological commitment (Furneaux & Wade, 2011). Both concepts are especially interesting in the context of CES for two reasons. First, flexibility has often been named as one of the major advantages of cloud computing (Armbrust et al., 2010). This includes technological flexibility, where the usage of service oriented architectures should enable a seamless integration and transfer of cloud services, reducing the

---

3 Several studies (e.g., Rai et al., 2002; Petter et al., 2008) have used the term use from the IS success model and continuation from ECT/TRA synonymously. However, to be consistent, we refer to continuation.
technological complexity and sophistication of the ES. In contrary, ES are generally very complex IS, where, i.e., vendor lock-in can apply. Second, it has often been stated that one of the value propositions of cloud computing are “low up-front costs”. However, ES research has shown the implementation is one of the major cost drivers of ES, leading to the conclusion that system investments might also play a role in the context of CES. Therefore the exploratory result of both hypotheses can give further insights if cloud computing can generally be labelled as “utility computing”.

3 Hypotheses Development

3.1 IS Success and Subscription Renewal Intention

Subscription renewal intention is defined as the intention to continue using the ES (Bhattacherjee, 2001), where net benefits is the extent to which an IS is beneficial to the individuals, groups and organizations (Delone & McLean, 2003). As Davis et al. (1989) note: “people form intentions towards behaviour if they believe it will increase their job performance”. Therefore enhanced organizational performance enabled by the CES is coupled to several extrinsic and intrinsic rewards for the responsible IS executive like promotions, monetary gains and reputation (Vroom, 1995). Hence, CES being an instrument to support these goals, high net benefits of the CES are likely to strengthen subscription renewal intention. The net benefits-continuation relationship has been empirically validated in the organizational IS context showing a positive correlation (Petter et al., 2008), but has not been studied in the context of SaaS.

H1. **IT decision-makers’ beliefs about the net benefits are positively associated with CES subscription renewal intention.**

We define system quality as the degree, to which the system has desirable characteristics, whereas information quality is the desirable characteristic of system output (Delone and McLean, 2003). As the system in the context of ES is usually designed to support business processes and organizational goals, analogously to H1, supporting these tasks by high system and information quality will lead to several extrinsic and intrinsic rewards, strengthening the intention to renew the subscription. The relationship between system quality and continuation has been theorized in the IS success model and has gathered mixed empirical support (Petter et al., 2008). Information quality and continuation have been tested to be positively correlated in an organizational context (Fitzgerald & Russo, 2005), however the hypothesis still lacks further empirical support. Both hypotheses haven’t been tested in the context of SaaS.

H2. **IT decision-makers’ perceived system quality is positively associated with CES subscription renewal intention.**

H3. **IT decision-makers’ perceived information quality is positively associated with CES subscription renewal intention.**

3.2 Cognitive and Affective Responses and Subscription Renewal Intention

Conflicting conceptualizations of the satisfaction construct (Yi, 1989) have made it difficult to compare results of user satisfaction and behavioural literature. Satisfaction was initially defined as “a pleasurable or positive emotional state resulting from the appraisal of one’s job” (Locke, 1976). Even though attitude and satisfaction have been used synonymously in literature (LaTour & Peat, 1979), both have to be seen as different concepts. Oliver (1980) argues that attitude is a more enduring affect incorporating all prior experiences, while satisfaction is a transient and experience-specific affect. Based on this, we use attitude instead of satisfaction, as it better suited for the research setting, as is not likely that an IT executive bases his decision on a “transient emotional state”. Therefore affect is conceptualized as attitude. From a pre-purchase perspective high confirmation is associated with the realization of a good performance. In contrary, the lack of confirmation is often associated with failure of the product or consumed service. There is strong evidence that attitude is a function of (dis-) confirmation (Oliver, 1980). The relationship has been positively tested in an organizational SaaS context as affective response (Benlian et al., 2011).
H4. IT decision-makers’ extent of confirmation is positively associated with their attitude.

Per expectancy-value theory (Fishbein & Ajzen, 1975), external variables like system characteristics impact behavioural beliefs, which in turn influence the attitude towards performing the behaviour. This attitude then affects the behavioural intention, which then ultimately impacts the behaviour itself. Therefore a positive attitude towards using the CES will have positive influence on subscription renewal intention. The affect-continuation relationship has been positively validated in an organizational SaaS context (Benlian et al., 2011) and specifically as attitude in an organizational SaaS adoption context (Benlian et al., 2009).

H5. IT decision-makers’ attitude is positively associated with CES subscription renewal intention.

Theoretical support for the relationship between confirmation and net benefits is found in cognitive dissonance theory (Festinger, 1957), where cognitive dissonance arises, when two cognitions are contradictory. The executives might then try to reduce this dissonance by changing their net benefits perceptions towards conflicting cognitions like confirmation. The hypothesis has been empirically validated in the organizational SaaS context as perceived usefulness (Benlian et al. 2011), which can be interpreted as “individual impact” (Rai et al., 2002), hence a part of net benefits, but not specifically as net benefits-confirmation.

H6. IT decision-makers’ extent of confirmation is positively associated with their beliefs about the net benefits.

3.3 Continuation Inertia and Subscription Renewal Intention

We define system investment as “the financial and other resources committed to the acquisition, implementation and use of an information system” (Furneaux & Wade, 2011). System investment can be relevant, as the discontinuance of a running system in a post-adoption phase would mark a “loss” aka sunk costs. The sunk cost effect has been thoroughly studied and describes the situation, where executives continue to make commitments of resources despite the fact that rationally seen discontinuance would make sense (Arkes & Blumer, 1985). The relationship has been studied in the context of organizational replacement intention (which is the opposite of continuation intention) by Furneaux and Wade (2011), where it was insignificant, but not in the context of SaaS:

H7. Higher system investments are positively associated with CES subscription renewal intention.

Technical integration is defined as “the extent to which an information system relies on sophisticated linkages among component elements to deliver needed capabilities” (Furneaux & Wade, 2011). Sophisticated integration of IS within the organization increases the probability of system shortcomings when switching an information system. Therefore, the executive might not discontinue the usage of a system due to the associated difficulties. This relationship has been empirically validated to have positive influence on continuation intention of IS (Furneaux & Wade, 2011), but has not been empirically validated in the context of SaaS.

H8. Higher extent of technical integration is positively associated with CES subscription renewal intention.
4 Methodology

4.1 Data Collection

Data was collected using a survey methodology, where items measuring the different constructs were drawn from previously validated scales⁴ (see table 4). Each item was measured on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree”, with the possibility of not answering. After designing the questionnaire, it was conducted twice (one pilot and one to test the complete research model). The goal of the pilot was to refine wording, questionnaire design and to receive additional comments on the business compatibility of the survey. The pilot sample consisted of 4 doctoral students, 4 senior academics and 11 stakeholders of CES providers, including customers and employees. Minor changes in wording and questionnaire design were applied. The survey was made available as online questionnaire and as offline version. It was distributed via distinct channels, including direct contacting of participants within business networks like LinkedIn and via media channels. After dropping 13 surveys due to invalid data, 98 valid surveys were used to test our research model (see table 2 for sample characteristics).

<table>
<thead>
<tr>
<th>Position in Company</th>
<th>Percent</th>
<th># Employees</th>
<th>Percent</th>
<th>System Age</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management</td>
<td>44</td>
<td>1-99</td>
<td>30</td>
<td>1-6 months</td>
<td>23</td>
</tr>
<tr>
<td>IT Executive</td>
<td>34</td>
<td>100-249</td>
<td>14</td>
<td>7-12 months</td>
<td>23</td>
</tr>
<tr>
<td>Line of Business Manager</td>
<td>16</td>
<td>250-499</td>
<td>29</td>
<td>13-18 months</td>
<td>35</td>
</tr>
<tr>
<td>Senior IS Personnel</td>
<td>5</td>
<td>500-999</td>
<td>13</td>
<td>18+ months</td>
<td>19</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>1000+</td>
<td>14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Sample Characteristics

To cope with the problem that individuals report about organizational or group properties, the key informant approach was applied (Segars & Grover, 1998). This is necessary, as it can lead to wrong conclusions if the respondent reports about his own attitude and confirmation, while not being a substantial part of the decision process. In this study we coped with this problem by especially asking whether the participant is involved into the decision making process at the beginning of the survey, as well as a clear note in the introductory text that the study is focused on stakeholders which decide about the information system. Additionally, to raise content validity, we explicitly asked the respondent to fill out the questionnaire for one specific type of ES. Due to the distribution method no reliable response-rate can be made. To address the issue of response rate bias, we applied a stratified sample of IT decision-makers hence limiting the probability of non-response bias.

4.2 Data Analysis

Data was analysed using SmartPLS (Ringle et al., 2005). This was done for the following three reasons. First, PLS supports small and medium sample sizes well (Hulland, 1999; Chin et al., 2003) providing parameter estimates at relatively low sample sizes. The recommended “rule of ten” with a minimum sample size of 10 times the maximum numbers of arrows pointing towards a construct was met (Hair et al., 2011). Second, PLS is better suited for exploratory setups (Gefen et al., 2011). Therefore PLS is appropriate within incremental studies, which build on prior models by developing new structural paths (Chin, 2010). Third, PLS-SEM is better suited for predictive application due to its variance-based approach (Hair et al., 2011). As the goal of the research is to find out the impact of different conceptual area on subscription renewal intention and not to theoretically test a new behavioural model, the research is more focused on prediction than on theory testing.

5 Results

PLS estimates were evaluated and are reported according to recommendations by Hair et al. (2011) (see table 4) in a 2-step approach proposed by Chin (2010).

⁴ Information quality and system quality were measured as 2-item scale due to the redundancy of the the items.
5.1 Measurement Model

The assessment of the measurement model included the estimation of the internal consistency, as well as assuring discriminant and convergent validity. The measurement instrument showed adequate reliability with all reflective factor loadings above 0.78 which is clearly over the proposed threshold level of 0.5 (Hulland, 1999). Composite reliability also showed satisfactory level with all constructs being above 0.8 (Nunnally & Bernstein, 1994). Average variance extracted (AVE) of all latent constructs was above the recommended threshold level of 0.5 (Fornell & Larcker, 1981), showing sufficient convergent validity. Discriminant validity of all latent constructs was given as the square root of each construct’s AVE was greater than the latent-variable correlation between each construct and its comparing construct (Hair et al., 2011) (see table 3).

Table 3. Test for Discriminant Validity

<table>
<thead>
<tr>
<th>Latent Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Confirmation</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. System Investment</td>
<td>-0.03</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Technical Integration</td>
<td>0.17</td>
<td>0.73</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Net Benefits</td>
<td>0.54</td>
<td>-0.02</td>
<td>0.09</td>
<td>0.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Attitude</td>
<td>0.03</td>
<td>-0.12</td>
<td>-0.07</td>
<td>0.48</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Subscription Renewal Intention</td>
<td>0.34</td>
<td>-0.13</td>
<td>-0.28</td>
<td>0.45</td>
<td>0.55</td>
<td>0.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. System Quality</td>
<td>0.52</td>
<td>-0.25</td>
<td>-0.15</td>
<td>0.42</td>
<td>0.6</td>
<td>0.55</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>8. Information Quality</td>
<td>0.52</td>
<td>-0.12</td>
<td>-0.09</td>
<td>0.33</td>
<td>0.51</td>
<td>0.45</td>
<td>0.71</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Note: The diagonal (bold) shows the construct’s square root of AVE.

Table 4. Measurement Instrument

5.2 Structural Model

To test the significance of the paths between the latent constructs and therefore to calculate t-values, the bootstrap algorithm was applied with 98 cases and 5000 subsamples (Hair et al., 2011). The results indicate that the constructs accounted for 50.4% of the variance in subscription renewal intention. All
paths except for H7 showed significant relationships above the p<.05 level with medium to large effect sizes (Cohen, 1988). H6 showed a negative relationship in opposition to the predicted positive correlation. The lack of support for H7 shows that information quality does not contribute to the formation of subscription renewal intention. Total effects of confirmation on subscription renewal intention of .2911 showed a moderate indirect effect. In addition to R² values, predictive relevance was assessed using the blindfolding procedures to obtain cross-validity redundancy (Chin, 1998). Results showed good predictive relevance, with all Q²>0 (Geisser, 1975).

Figure 2. Path Model Results

6 Findings, Limitations and Future Research

We believe that our model yielded interesting results by being able to explain 50.4% of the variance in subscription renewal intention. Net benefits and system quality showed to have significant impact on the subscription renewal intention of CES. This is not surprising, as the role of IS within companies has often been described as context activity supporting and enabling the company to manage their business processes or to save costs. Surprisingly, however, information quality does not contribute to the prediction of subscription renewal intention, even though support of decision making can be seen as one of the major tasks of ES. Given the limited time IT decision makers usually have to spare, the results suggest that CES providers’ sales team should emphasize on the high system quality of the CES, as well as its net benefits for the company. The insignificance of information quality allows synthesizing our findings with the results of Furneaux and Wade (2011), which do not include information quality but system reliability and system performance shortcomings (both dimensions can be seen as sub-dimensions of system quality) as change forces. A possible reason for the insignificance of information quality might lie in the fact that IT decision makers evaluate and therefore judge on “hard system” facts like system uptime, but do not include the quality of information (such as formatting) into their considerations, especially if they are not system users by themselves. From a theoretical viewpoint, the significant path between the IS success dimensions and renewal intention shows a clear linkage between the success of an IS and its organizational continuance. Affective and cognitive responses had a strong influence on the subscription renewal intention, either directly and indirectly. While studies on organizational system continuance have usually cancelled out behavioural factors, our results show that these models can lack validity at least in our context of application – CES - and can significantly contribute to predict subscription renewal intention. As previously outlined, we see the main reasons for the impact of individual behavioural factors on group properties in the fact that decision in the cloud context are usually made by individual decision-makers. The results also propose that it is possible to structure the constructs according to TRB as individual behavioural mechanism, where net benefits and confirmation can be seen as behavioural beliefs, the system and information quality as external variables, attitude as affect and continuation inertia as influencing perceived behavioural control. As result, TPB would provide a single theoretical lens structuring the findings. Practical implications for the influence of affective and cognitive responses can be found in marketing literature, where attitudes can be manipulated separately from service itself, e.g., by creating brand awareness or a well-managed customer relationship management. Additionally, the strong impact of confirmation shows that expectations might not be set too high, as they might then be disconfirmed. From a theoretical viewpoint, our study suggests that attitude is a significant predictor of subscription renewal intention making it necessary to re-think organizational system continuance in the context of CES (or generally). Continuation inertia showed to significantly influence subscription renewal intention. This is especially interesting in the
context of cloud computing, as cloud computing has seen a strong labelling towards low up-front investments, system flexibility, low entrance barrier, etc. Our study opposes the generalizability of this view in the context of CES. Especially implementation and personnel training costs of CES are still substantial investments, posing severe barriers on changing or discontinuing a cloud service. Contrary to Furneaux and Wade (2011) we find a significant relationship of system investment, which might be due to the fact that we are looking at an earlier stage of the lifecycle. Cloud service providers should clarify the amount of implementation costs which are to be expected within the implementation phase to reduce frustration. Technical integration showed to have a negative impact on subscription renewal intention, contrary to our prediction. The reason for this can be that technical integration is no direct predictor of behavioural intention, but influences system satisfaction negatively as conceptualized by Wixom and Todd (2005). As we used PLS, another reason could be that other influences are relatively stronger. This work has several limitations which need to be discussed. First, it is important to highlight that our measurement was based on the view of individuals reporting about organizational properties and their affective and cognitive responses. It may thus be argued that the dependent variable in our model might be biased given that it reflects an individual perspective rather than a shared opinion within the organization. This problem has been highlighted by several prior studies (e.g., Benlian et al., 2011; Furneaux and Wade, 2011) studying organizational system continuance. However, we believe that this problem is less severe in our study, as it is likely that in the context of CES, organizational system continuance is typically decided by an individual or a small number of individuals. Second, even though we were able to explain a decent portion of variance in the target construct, there might be factors which we did not include but are relevant (e.g. internal pressures). Even though risks have been often studied in the adoption phase, the novelty of cloud computing might also raise awareness after the system has been adopted (Benlian and Hess, 2011). Therefore future research might draw on these variables. Third, as we conducted a cross-sectional study, we are not able to see how good our model tests actual behaviour. Additionally, we draw the directions of our causalities from theoretical assumptions, which cannot be empirically validated. Therefore future research should include “hard data” to limit biases which are connected to survey methods. Finally, our sub-samples should consider different ES, firm sizes, implementation times and industries. Clustering these sub-samples might lead to more specific insights about specific industries or ES, i.e., the role of system investment for less complex ES.

References


