

Exploring Subscription Renewal Intention of Operational Cloud Enterprise Systems – A Stakeholder Perspective

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ABSTRACT

Retaining customers is a relevant topic throughout all service industries. However, only limited attention has been directed towards studying the antecedents of subscription renewal in the context of operational cloud enterprise systems. Cloud services have historically been offered as subscription-based services with the (theoretical) possibility of seamless service cancellation, in contrast to classical IT-Outsourcing contracts or license-based software installations of on-premise enterprise systems. In this work, we investigate the central concept of subscription renewal by focusing on different facets of IS success and their relevance for distinct employee cohorts. Analyzing inter-cohort differences has strong practical implications, as it helps IT vendors to focus on specific IT-related factors when trying to retain customers. Therefore an empirical study was undertaken. The hypotheses were developed on an individual level and tested using survey responses of IT decision makers within companies that adopted cloud enterprise systems. Gathered data was then analyzed using PLS. The results show that subscription renewal intention of the strategic cohort is mainly based on perceived system quality, whereas information quality explains most of the variance of subscription renewal in the management cohort. Beneath the cloud enterprise systems specific contributions, the work adds to the theoretical body of research related to IS success and IS continuation, as well as stakeholder perspectives.

Keywords

Cloud computing, software as a service, SaaS, IS Success, IS continuance.

INTRODUCTION

Software as a Service (SaaS) is a topic of rising importance in the enterprise applications market with a projected market volume of \$21 billion in 2015 (Gartner 2012). In addition, a steady rise of SaaS-related academic literature can be observed (Walther, Plank, Eymann, Singh, and Phadke, 2012). Therefore SaaS is both, a topic of economic and academic relevance. Historically, the main customer groups of enterprise systems (ES) have been large enterprises, where the implementation of an ES provided a competitive advantage to the adopting organization (Klaus, Rosemann and Gable, 2000). However, the emergence of cloud computing has dramatically changed the way ES are used in organizations, providing affordable and easy to implement software solutions (Salleh, Teoh and Chan, 2012), which explicitly focus on SMEs, like Salesforce.com or SAP Business ByDesign. Despite the strong growth of SaaS, there are various stories of tech bloggers emphasizing the difficulties established cloud players (e.g., Salesforce.com) are facing in retaining their customers. Therefore our work aims to understand the central concept of subscription renewal of operational cloud ES. More specifically, we focus on exploring which facets of “IS success” influence subscription renewal, and whether there are significant differences in the importance of specific factors between the strategic and management cohort. In accordance with Sedera, Chian and Dey (2006), we look at two different types of cohorts, namely the strategic and management cohorts. To investigate this topic, we follow the ideas of the IS success model. Theoretically, the IS success model is derived from the mathematical theory of communication (Shannon and Weaver, 1949), where system quality is described as accuracy and efficiency of the IS producing a specific

output, information quality, which is the degree to which the information conveys the intended meaning, and the influence or effectiveness level (Mason, 1978), which depicts the effect of the information on the receiver. We argue that each step of “success” will then influence the behavior, however, to varying degrees dependent on the cohort. Different positions in companies are usually associated with varying incentive schemes, encouraging beneficial behavior in organizations. While strategic cohort’s job performance is usually measured according to the overall company success as its tasks are more globally, the management cohort in the context of IT (e.g., IT executives), are usually concerned to keep the system running to support the relevant company stakeholders. Therefore, this paper argues that there might be significant differences in the predictive quality of specific variables in varying stakeholder groups. The inter-cohort differences have both important practical and theoretical implications. From a practical viewpoint, the findings are valuable, as they provide IT sales personnel with empirical data which IS success measures they should emphasize to make customers renew their subscription. This is especially relevant, as IT decision makers have little time to spare, and focusing on the most important factors might then be crucial for customer retention. From a theoretical viewpoint, our research contributes to linking the IS success model with technology continuation, where only a limited amount of research exists (Urbach, Smolnik and Riempp, 2009). In addition, our research is also interesting from a behavioral viewpoint, as the results show that defining “behavioral belief” (e.g., individual impact, which is a part of net benefits, has been equated with perceived usefulness (Rai, Lang and Welker, 2002), which is a behavioral belief) and “external variable” (e.g., system and information quality (Wixom and Todd, 2005)) is not per se clear. For instance, information quality might be a behavioral belief in certain situations, depending on how the job performance is measured in distinct cohorts, clarifying the urgent need for stakeholder separation in behavioral research (to the cost of external validity).

The relevance of differing stakeholder perceptions in the context of IS success has been highlighted by several prior studies (e.g., Cameron and Whetten, 1983; Sedera et al., 2006; Tallon and Kraemer, 2000). However, in contrast to the perceptual focus emphasized in the previously mentioned studies, our focus lies in studying the role of the IS success facets in a behavioral context, namely IS continuance. In addition to the theoretical insights, our work also contributes to the context-specific body of research on SaaS in the post-acceptance phase, where only limited empirical research has been conducted¹. The lack of research on SaaS continuation is surprising, as cloud computing has been labeled as “utility computing” on a commercial basis (Armbrust, Fox, Griffith, Joseph, Katz, Konwinski, Lee, Patterson, Rabkin, Stoica and Zaharia, 2010) or as “easy in, easy out” concept”, therefore strongly opposing “license-based” contract schemes usually found in classical on-premise ES solutions. Hence, while license-based continuation can be seen as “mandatory” to a certain degree, cloud services offer the (theoretical) possibility to quit the cancellation immediately and without financial penalties. Therefore, cloud computing can be seen as an ideal scenario to study IS continuation, especially concerning organizational level artifacts.

The rest of the paper is built as follows. First, the theoretical background is given shortly introducing the concepts of IS continuance and IS success. Second, the research hypotheses are developed. Third, research methodology and results are presented and subsequently discussed.

THEORETICAL BACKGROUND

IS Continuance

IS continuance research is mainly based on theories drawn from social psychology, such as expectancy-value theory (Ajzen and Fishbein, 1980). Per expectancy-value theory, external variables like system characteristics impact behavioral beliefs, which in turn influence the attitude towards performing the behavior. This attitude then affects the behavioral intention, which then ultimately impacts the behavior itself. According to the theory of planned behavior (TPB) (Ajzen, 1991), behavioral beliefs are the subjective expectations that the behavior will produce a specific outcome, whereas attitude toward the behavior is the degree to which the performance of the behavior is positively or negatively evaluated (Ajzen, 1991). Intention, in contrast, is the person’s readiness to perform a specific behavior. As postulated in the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), these relationships will be predictive of behavior, if time target and context are consistently specified between belief factors, attitude and the behavior to be investigated. The relationship between behavioral intention and actual use has been validated in IS and related disciplines (Ajzen, 1991). The mostly cited work in the context of IS continuance is the expectancy-confirmation model (ECM) (Bhattacharjee, 2001), which has been extended in several different ways (e.g., Bhattacharjee, Perols and Sanford, 2008). Research in the context of IS continuance has been mostly concerned on extending the ECM with factors influencing the confirmation construct, as well as finding direct

¹ A thorough literature review based on Webster and Watson (2002) (1/2000-5/2012) including the AIS basket of 8 and major conferences like ECIS and ICIS only revealed one empirical paper on SaaS continuation (Benlian et al., 2011).

antecedents influencing behavioral intention. The concept of continuation intention has been used to evaluate several scenarios, and among them are the post-adoption phase (Benlian, Koufaris and Hess, 2011), success of web-technology based business models (Wang, 2008) or the end of the lifecycle (Furneaux and Wade, 2011) as discontinuance intention.

Information Systems Success

The IS Success Model (Delone and McLean, 2003) is the most frequently used framework to structure IS success (Urbach et al., 2009). DeLone and McLean's work was based on a literature review, which aggregated the single success measures used in prior IS research. These success measures were then categorized according to the mathematical theory of communication proposed by Shannon and Weaver (Shannon and Weaver, 1949) and its expansion proposed by Mason (1978). The categories of IS Success identified by DeLone and McLean (1992) were analogously defined to the theory of communication. In 2003, Delone and McLean provided a ten-year update which, is subsequently referred to as revised IS Success Model. The revised model addresses the many theoretical concerns and criticisms in the previous ten years. For instance the service category is added to represent the fact that IT helpdesk services are gaining more and more importance. Additionally, individual and organizational impacts are collapsed into one construct. The IS success model is used for mainly three reasons. First, it has shown to exhaustively represent ES-specific (Gable et al., 2008) and cloud specific factors (Walther et al. 2012; Wieneke, Walther, Eichin and Eymann, 2013). Second, it is comprehensive and can therefore easily be communicated. And third, it has been used in several distinct contexts, such as e-commerce success (Wang, 2008) or employee portal success (Urbach, Smolnik and Riempp, 2010) and therefore provides high external validity. The six components of information systems success in the revised model are system quality, information quality, service quality, use, user satisfaction and net benefits. To allow comparability to the results of Sedera et al. (2006), we focus on information quality, system quality and net benefits. In the following, these categories are shortly introduced. The definitions are according to Petter, DeLone and McLean (2008). System quality is the "desirable characteristics of an information system" like ease of use, system flexibility and system reliability. Information quality is the "desirable characteristics of the system outputs" like relevance, understandability and accuracy. Finally, net benefits is the degree to which IS contributes to the success of the stakeholders like cost savings and productivity improvements. For an in-depth discussion see Petter et al. (2008).

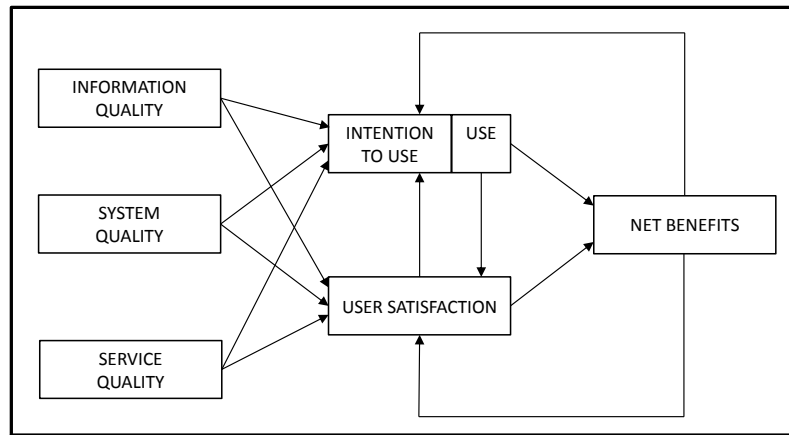


Figure 1. The Revised IS Success Model

Employment Cohort Classification

Anthony (1965) suggested three employment cohorts within organizations: (1) strategic, (2) management and (3) operational. In our study we focus on the strategic and management level, as these are the cohorts which decide about the renewal of the subscription of organizational IT artifacts. The cohorts can be classified according to focus of plans, complexity, degree of structure, nature of information and time horizon. The strategic level decides organizational-wide objectives and is responsible for the allocation of necessary resources to complete the company objectives. In addition, the strategic level has to cope with complex and irregular decision making and provides organization-wide policies. Strategic decision making is reliant on ad-hoc information with high predictive quality to reach company goals. In contrary, at management level, information is used to effectively and efficiently allocate company resources to achieve the company goals developed in the strategic level. Also, the longevity of decision making varies between short-term decisions to long-term decision. The different dimensions are subsumed in Table 1. For a thorough literature review on cohort classifications in IS see Sedera, Gable and Chan (2004).

Dimension	Strategic	Management
Focus of Plans	Futuristic, one aspect at a time	Whole organization
Complexity	Many variables	Less complex
Degree of Structure	Unstructured, irregular	Rhythmic, procedural
Nature of Information	Tailor made, more external and predictive	Integrated, internal but holistic
Time Horizon	Long term	Long, medium to short

Table 1. Employment Cohorts and Related Tasks (Adapted from Sedera et al., 2006)

HYPOTHESES DEVELOPMENT

As previously discussed, per TRA, behavioral beliefs are predictive of behavior, whereas external variables influence beliefs, but not the behavior itself. Both, information and quality have been labeled as external variables (e.g., Wixom and Todd, 2005), whereas perceived usefulness has been defined as a salient belief (Davis, 1989). However, we argue that interpreting information and system quality as external variables which are not predictive of behavior might be misleading in several real life applications. For instance, imagine an IT executive, who has been employed to manage the IT of an SME. In this case, one can easily argue that the decision to renew the subscription of a cloud offering will be more based on system characteristics than on the overall impact of the system on the company. In other words, system quality is not a means to end anymore, but the end itself (for the manager), which results in strong implications. For instance, a sole reliance on system characteristics compared to the overall influence of the IS on the company could lead to weak outcomes (e.g., the system is reliable with quick response times, but the costs are high and the business agility is limited). According to this argumentation, we explore to which degree the IS success dimensions are relevant to the different IT decision-makers.

Based on Bhattacharjee (2001), we define subscription renewal intention as the intention to continue running the cloud ES, whereas net benefits is defined as the degree to which the IS is beneficial to different company stakeholders and finally to the company itself (Petter et al., 2008). According to Davis, Bagozzi and Warshaw (1989), “people form intentions towards behavior if they believe it will increase their job performance”. Increased job performance, which is partially coupled to the performance of the IS, depending on the cohort, then leads to intrinsic and extrinsic rewards (e.g., monetary gains or reputation) (Vroom, 1995). Hence, IS being an instrument to achieve better job performance, a successful IS is likely to strengthen the intention to renew the subscription of the cloud ES. Fishbein and Ajzen (1975) have pointed out that TRA doesn’t directly include goal-oriented behavior. However, according to TRA, goals are positive evaluations of outcomes that one seeks through performing reasoned behaviors (Fishbein and Ajzen, 1975) (e.g., perceived usefulness is operationalized i.e., as “enhancing productivity”, which can be seen as a goal of technology usage). This is consistent with our interpretation, where the IS success dimensions represent different sub-spaces of positive evaluations on various semantic layers. For instance, in accordance with the mathematical theory of communication, system quality represents the technical layer, information quality represents the semantic layer, and net benefits can be interpreted as the effectiveness layer. All layers might therefore contribute to enhance job performance, depending on the personal goals which the stakeholders follow, which is ultimately based on how the job performance is evaluated. The relationship between IS success variables and continuation (as use) has been tested in some organizational contexts (for a review see Petter et al. (2008)), but not in the context of SaaS.

The strategic level makes company-wide decisions with a long term time horizon. Due to the futuristic and predictive focus of plans, the strategic cohort is likely to base its decisions on beliefs concerning certain outcomes if a specific behavior is conducted (e.g., the cloud enterprise system is continued/used). In the context of IS success, this means that beliefs about the extent to which a IS is beneficial for the organization and stakeholders (in other words, net benefits) are likely to build a foundation for decisions of the strategic cohort. The argument, that the strategic cohort evaluates success on more holistic organizational topics (e.g., organizational impact) was also empirically supported in the work of Sedera et al. (2006). In the context of cloud computing these are topics like ubiquitous access or better plan-ability of costs due to subscription based

payment models. Information quality is relevant for all cohorts, as it builds the foundation for decision making, and the need for advanced business intelligence tools has long been emphasized in IS. As the strategic cohort has a demand for tailor made, predictive information, it is likely that the quality of information plays an essential role in the subscription renewal of a system, as the outcome of certain companywide decisions relies on an adequate aggregation of fundamental data. System quality (e.g. security) is usually only a means to an end (the company benefits), however, a strategic decision maker might also take the system quality data into account, as it is a direct derivative of the system itself, and it can help make estimations about the benevolence of the system. This leads to hypotheses H1-H3:

H1. *Strategic cohorts' beliefs about the net benefits are positively associated with subscription renewal intention.*

H2. *Strategic cohorts' perceived system quality is positively associated with subscription renewal intention.*

H3. *Strategic cohorts' perceived information quality is positively associated with subscription renewal intention.*

Management cohorts are usually concerned with decisions which range from short term to long term. Even though the influence of IT-related management cohorts on the organization-wide net benefits might be restricted, a complete isolation of net benefits as basis for further subscription renewal (e.g., including cost savings as part of net benefits) might not be realistic. After all, the management cohort has to make consistent decision with the hierarchically higher strategic cohort. Therefore we predict a decent influence of net benefits on subscription renewal intention. A core task of IT-related management cohorts is to assure the system performance to run the operational business of the firm. Therefore, we argue that the quality of the system will be a strong predictor of subscription renewal intention. This is consistent with Sedera et al. (2006), who found that the management and technical cohort both place a strong emphasis on system quality. In addition, the management cohort has also the task to provide the correct information to the different stakeholders in the company, therefore the failure to provide adequate information quality (e.g., format, relevance, understandability) might then lead to discontinuance of the cloud service. This leads to hypotheses H4-H6:

H4. *Management cohorts' beliefs about the net benefits are positively associated with subscription renewal intention.*

H5. *Management cohorts' perceived system quality is positively associated with subscription renewal intention.*

H6. *Management cohorts' perceived information quality is positively associated with subscription renewal intention.*

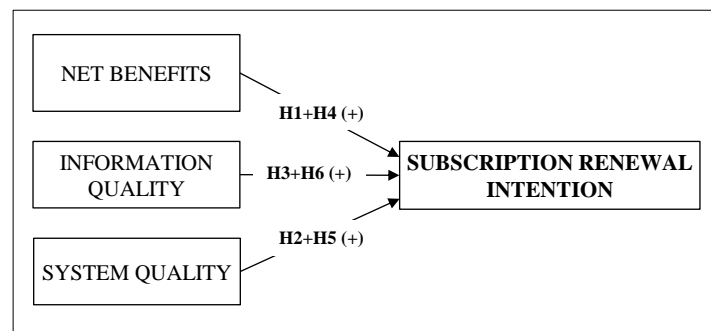


Figure 2. Research Model

METHODOLOGY

Even though cloud computing is a rather new phenomenon we decided to use a quantitative-confirmatory research approach. The reason for this is that Walther et al. (2012) have found that cloud ES success can adequately be represented by the IS success model, hence, can analogously be studied to ES and general IS success.

Data Gathering

A questionnaire was used for data collection, where items measuring the varying constructs were drawn from prior validated scales (see Tables 3 and 4)². The items were measured on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree”.

² One item each of information quality and system quality were removed, as participants in the pilot noted that they could not distinguish between the items.

agree”, with the possibility to not answer. After designing the survey, it was conducted twice (in a pilot and to test the complete research model). The pilot was conducted to refine wording, the design of the questionnaire and to receive comments on the business compatibility of the survey. The pilot consisted of four PhD students, four academics and eleven stakeholders of cloud ES providers. Small changes in wording and questionnaire design were applied. The survey was provided as an online survey, offline as interactive PDF and in paper form. The distribution was conducted via distinct channels, such as direct contacting of participants in professional networks like LinkedIn and via various media channels. After removing 13 surveys due to invalid data, 43 valid surveys for the strategic cohort (depicted as top management in the survey) and 33 surveys for the management cohort (depicted as IT executives in the survey) were used.

Strategic Cohort (n=43)				Management Cohort (n=33)			
# Employees	#	System Age	#	# Employees	#	System Age	#
1-99	20	1-6 months	10	1-99	3	1-6 months	8
100-249	4	7-12 months	10	100-249	5	7-12 months	8
250-499	7	13-18 months	14	250-499	14	13-18 months	13
500-999	7	18+ months	9	500-999	4	18+ months	4
1000+	5			1000+	7		

Table 2. Sample Characteristics

To handle the problem that individuals report about organizational properties, the key informant approach was used (Segars and Grover, 1998), as it can lead to wrong conclusions if the survey participants report about subscription renewal, however, they have no insights into company strategy. We coped with this problem by especially asking if the participant is involved into the IS continuation process at the very beginning of the questionnaire, as well as highlighted a note in the introduction that the study is solely for stakeholders who decide about the IS.

Data Analysis

Data was analyzed using SmartPLS (Ringle, Wende and Will, 2005). This was done for three reasons. First, PLS supports small and medium sample sizes well (Chin, Marcolin and Newsted, 2003; Hulland, 1999). The “rule of thumb” for minimum sample sizes was met (Hair, Ringle, and Sarstedt, 2011). Second, PLS is better suited for exploratory setups (Gefen, Rigdon and Straub, 2011), where new structural paths are developed building on prior model considerations (Chin, 2010). Third, PLS-SEM is better suited for predictive applications (Hair et al., 2011) due to its variance-based approach. Hence, we are testing different categories of success and its predictive relevance according to distinct stakeholder groups (in comparison to testing a new behavioral model), PLS-SEM is more suited for this application.

RESULTS

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

Measurement Model

The measurement model was assessed by estimating the internal consistency, as well assuring discriminant and convergent validity. The measurement instrument showed desirable reliability with all reflective factor loadings above 0.69 which is clearly over the proposed threshold level of 0.5 (Hulland, 1999). Composite reliability showed necessary level for most constructs except for subscription renewal intention, which was slightly below the threshold level of 0.8 (Nunnally and Bernstein, 1994). Average variance extracted (AVE) of all latent constructs was above the recommended threshold level of 0.5 (Fornell and Larcker, 1981), showing the necessary convergent validity. Discriminant validity of all latent constructs was established 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 5 and 6).

Items with Loadings and Weights					
<i>ID</i>	<i>Item</i>	<i>Quality Criteria</i>			
<i>Reflective Measures</i>		<i>Outer Loadings</i>	<i>t-value</i>	<i>Composite Reliability</i>	<i>AVE</i>
<i>Net Benefits (Adapted from Wixom and Watson, 2001)</i>					
<i>NB1</i>	Our CES has brought significant benefits to the company.	0.9	4.81	0.91	0.83
<i>NB2*</i>	Overall, my CES is beneficial for the company.	0.93	4.96		
<i>Subscription Renewal Intention** (Adapted from Bhattacharjee, 2001)</i>					
<i>SRI1</i>	We intend to continue the subscription of our CES rather than discontinue ist subscription	0.69	3.35	0.78	0.64
<i>SRI2</i>	We intend to continue the subscription of our CES than to subscribe to any alternative means.	0.9	14.00		
<i>Information Quality (Adapted from Wixom and Todd, 2005)</i>					
<i>IQ1</i>	Overall, I would give the inforamtion from our CES high marks.	0.98	4.54	0.97	0.94
<i>IQ2</i>	In general, our CES provides me with high-quality information.	0.96	4.52		
<i>System Quality (Adapted from Wixom and Todd, 2005)</i>					
<i>SQ1</i>	In terms of system quality, I would rate our CES highly.	0.98	16.09	0.97	0.94
<i>SQ2</i>	Overall, our CES is of high quality.	0.97	14.85		
* <i>Newly created</i>					
** <i>One item was dropped due to poor psychometric properties.</i>					

Table 3. Strategic Cohort Instrument Assessment

Items with Loadings and Weights					
<i>ID</i>	<i>Item</i>	<i>Quality Criteria</i>			
<i>Reflective Measures</i>		<i>Outer Loadings</i>	<i>t-value</i>	<i>Composite Reliability</i>	<i>AVE</i>
<i>Net Benefits (Adapted from Wixom and Watson, 2001))</i>					
<i>NB1</i>	Our CES has brought significant benefits to the company.	0.97	41.31	0.97	0.95
<i>NB2*</i>	Overall, my CES is beneficial for the company.	0.98	48.07		
<i>Subscription Renewal Intention** (Adapted from Bhattacharjee, 2001)</i>					
<i>SRI1</i>	We intend to continue the subscription of our CES rather than discontinue ist subscription	0.95	27.07	0.78	0.65
<i>SRI2</i>	We intend to continue the subscription of our CES than to subscribe to any alternative means.	0.63	2.01		
<i>Information Quality (Adapted from Wixom and Todd, 2005)</i>					
<i>IQ1</i>	Overall, I would give the inforamtion from our CES high marks.	0.93	10.46	0.93	0.87
<i>IQ2</i>	In general, our CES provides me with high-quality information.	0.93	15.05		
<i>System Quality (Adapted from Wixom and Todd, 2005)</i>					
<i>SQ1</i>	In terms of system quality, I would rate our CES highly.	0.96	13.60	0.97	0.93
<i>SQ2</i>	Overall, our CES is of high quality.	0.97	14.48		
* <i>Newly created</i>					
** <i>One item was dropped due to poor psychometric properties.</i>					

Table 4. Management Cohort Instrument Assessment

Latent Construct	1	2	3	4
1. Net Benefits	0.91			
2. Subscription Renewal Intention	0.4	0.8		
3. System Quality	0.31	0.58	0.97	
4. Information Quality	0.31	0.32	0.77	0.97

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

Table 5. Strategic Cohort Discriminant Validity

Latent Construct	1	2	3	4
1. Net Benefits	0.97			
2. Subscription Renewal Intention	0.62	0.81		
3. System Quality	0.56	0.67	0.96	
4. Information Quality	0.47	0.75	0.65	0.93

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

Table 6. Management Cohort Discriminant Validity

Structural Model

To test the significance of the paths and to calculate t-values, the bootstrap algorithm was applied with 43 and 33 cases and 5000 subsamples each (Hair et al., 2011). The results indicate that the constructs accounted for 44.8% (strategic cohort) and 67.1% (management cohort) of the variance in subscription renewal intention. System quality did not significantly contribute to the explanation of subscription renewal intention in the management cohort. The highest effect size for the strategic cohort was observed as system quality, with a negative effect size of information quality. For the management cohort, information quality contributed most to the prediction of subscription renewal intention. 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). Omission distance was iterated between 5 and 10, showing consistent results (Hair et al., 2011).

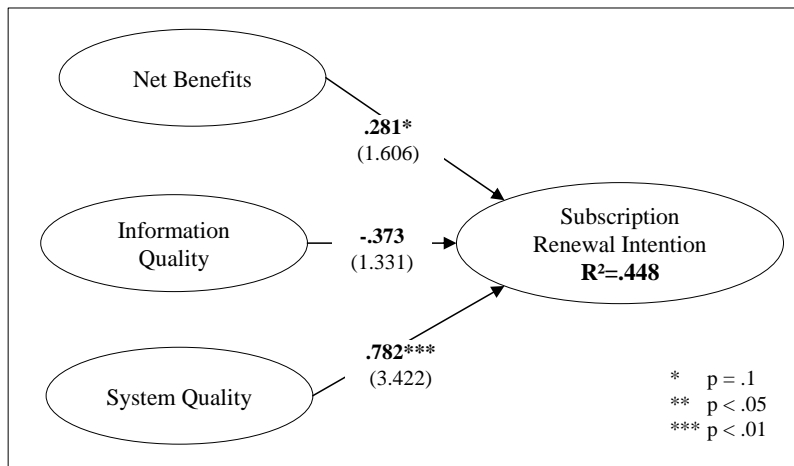


Figure 3. Strategic Cohort Path Model

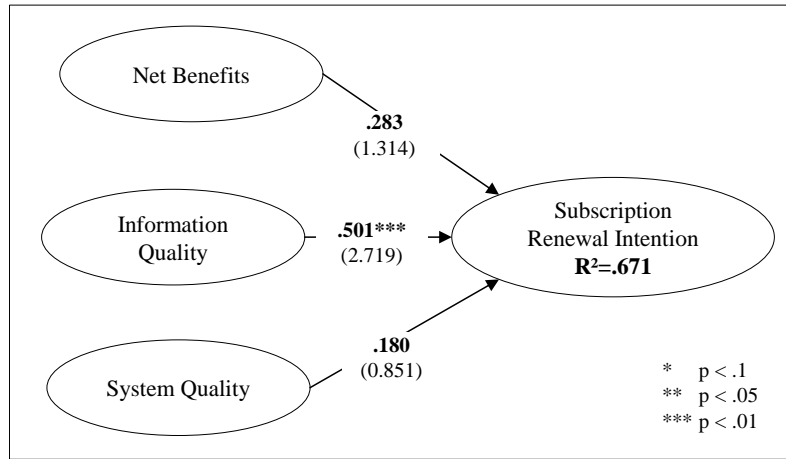


Figure 4. Management Cohort Path Model

Group Comparison

As outlined in the introduction, another important and seldom considered factor to further explore fundamental differences in IT decision makers’ behavioral intention between cohorts, we conducted a group comparison between the strategic and management cohort. Differences between the management and strategic cohorts were i.e., identified by Sedera et al. (2006) in the context of ES success. To test whether significant differences between the two samples exist, the t-test suggested by Chin (2004) was applied, with SE as standard error, m as sample size of the strategic cohort and n as sample size of the management cohort.

$$t = \frac{Path_{Sample\ 1} - Path_{Sample\ 2}}{\sqrt{\left[\frac{(m-1)^2}{(m+n-2)} \times S.E.^2_{Sample\ 1} + \frac{(n-1)^2}{(m+n-2)} \times S.E.^2_{Sample\ 2} \right]} \times \left[\frac{1}{m} + \frac{1}{n} \right]}$$

Formula 1. T-Value Calculation

The results show that only information quality shows (a weak) significant difference between the two stakeholder groups. Especially net benefits is difficult to discriminate between the stakeholder groups. The non-significance of system quality → subscription renewal intention between the two cohorts has to be further investigated, as the t-value (see formula) rapidly rises with larger sample sizes, thus making significant differences more likely, especially as the effect sizes strongly differ between the two cohorts.

Path	t-value	Sig (2-tailed)
Net Benefits → Subscription Renewal Intention	0.0037	p > 0.1 (ns)
Information Quality → Subscription Renewal Intention	1.6163	p = 0.1 (s)
System Quality → Subscription Renewal Intention	0.4725	p > 0.1 (ns)

Table 7. T-Values of Inter-Cohort Differences

DISCUSSION, CONCLUSION AND LIMITATIONS

Our paper yielded interesting results by including distinct stakeholder perspectives into the investigation of the central concept subscription renewal intention. System quality contributed most to the prediction of subscription renewal intention of the strategic cohort. This result was unexpected, as we argued that the strategic cohort's job performance is mainly measured by the overall performance of the company, which can be represented more accurately by net benefits. Hence, the way we developed the hypotheses (i.e., job performance, where the IS is a means to that end), this is an unexpected result. It is hence possible to argue in various directions, such as that due to the high amount of information the strategic cohort is presented (Sparrow, 2000) from various parts of the firm, that they highly focus on raw system data to reduce the complexity of their decision process. However, the focus on system quality (and not the influence of the system on the company) is partly alerting, as the system itself is only a means to an end (i.e., company performance). Therefore a more holistic view on the company might be beneficial. From marketing perspective this also has interesting implications, such as that the top management has to be approached by discussing in favor of system quality, more than on net benefits or even information quality. Concretely, this means that sales managers should emphasize the reliability, integration ability or other important characteristics of the system. Information quality contributes most to subscription renewal of the management cohort. This result is less surprising, as the management cohort (i.e., IT executives) are more integrated into the daily operations, thus have to deal with the task specific, real-time data needs (Anthony, 1965) of the operational cohort. If one thinks of the dimensions, which information quality has been modeled as, such as "well formatted" or "ease of understanding", the direct needs of the operational cohort might influence the considerations and intention to continue the subscription or discontinue the information system. From a behavioral perspective, these are interesting results, as it might show that the development of the hypotheses via "job performance" might not be universally applicable on each cohort, and an "organizational" hypotheses development might be more adequate. For instance, pressure between different organizational units might be a better or more accurate way to develop the hypotheses, yielding higher predictive power for distinct cohorts. In contrary to our prediction, system quality did not contribute to the prediction of subscription renewal intention of the management cohort. This is a rather surprising finding, as one would assume that dimensions like reliability or timeliness are of utmost importance for IT executives. Further research should tackle this finding and try to explain why the management cohort focuses on information quality, and not system quality using qualitative methods.

This study's results have to be interpreted in the light of its limitations. First of all, the small sample sizes have to be noted. Even though the "rule of thumb" for minimum sample sizes was met, non-significant paths can turn significant if the sample size (in PLS: cases) rises. Therefore, future research should not dismiss single paths and further investigate the role of IS success in IS continuation from various stakeholder perspectives. In addition, there is also the problem that individuals report about group properties. This is especially important, as the hypotheses are developed by taking an individual perspective acting as a company stakeholder with specific tasks within the organization. The development from the individual perspective (incentive through job performance, whereas the specific incentive is coupled to the cohort type) might be insufficient to explain the specific behavioral intention. Further research has to clarify, whether these hypotheses can be better explained (and therefore better predicted!) on an organizational level. Third, we defined "top management" as strategic cohort, and IT executives as management cohort. This is consistent with Sedera et al. (2006), however, we did not assure complete convergence between the two groups due to the research design (e.g., we did not give the cohort definitions to the participants and let them decide whether they are part of the strategic or management cohort).

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