The Role of Institutional Pressures and Top Management Support in the Intention to Adopt Cloud Computing Solutions

1 Introduction

Cloud computing is a new form of information technology outsourcing (ITO) whereby computing resources are purchased over the Internet on a pay-per-use basis (Yigitbasioglu et al., 2013, Ross and Blumenstein, 2013, Marston et al., 2011). Organizations are attracted to the cloud computing delivery model due to its benefits such as cost advantages, flexibility, speed of deployment, and access to quality software (Benlian and Hess, 2011, Lee et al., 2013, Wu, 2011, Gupta et al., 2013). On the other hand, concerns in relation to the privacy and confidentiality of data, the hidden costs of contracting, its performance, as well as the lack of understanding of the technology impede the adoption of cloud computing services (Benlian and Hess, 2011, Lee et al., 2013).

Studies on ITO have most frequently used transaction cost theory (TCE) (Williamson, 1985) to explain an organisation's choice to outsource information technology (IT) despite concerns regarding its explanatory power (Lacity et al., 2011, Miranda and Kim, 2006). While TCE considers the implications of transaction costs and the risk of opportunism on the overall ITO costs, the resource dependence theory (RDT) focuses on IT activities that create value for the firm. Thus according to the RDT, resources of strategic nature are best kept in-house (Pfeffer and Salancik, 2003). Although TCE and RDT have different foci, both theories explain structural changes in organizations as a result of competitive forces and the desire for efficiency (Liang et al., 2007). In contrast to TCE and RDT, institutional theory argues that organizations are also driven by legitimacy concerns which often lead to mimetic behaviour and institutional isomorphism (DiMaggio and Powell, 1983). DiMaggio and Powell (1983) define three distinct institutional forces through which organizational transformation occurs, i.e. mimetic, normative, and coercive processes. The role of institutions has long been recognised in the IT innovation literature (King et al., 1994, Orlikowski and Barley, 2001). Orlikowski and Barley (2001, p.154) note that institutional theory "would offer IT researchers a vantage point for conceptualizing the digital economy as an emergent, evolving, embedded, fragmented and provisional social production that is shaped as much by cultural and structural forces as by technical and economic one."

There is some evidence that institutional pressures are moderated by organizational or environmental factors. For example, organizations can resist conformity if they have the financial capacity to invest in IT (Ang and Cummings, 1997). Although, arguably both institutional and economic factors affect the outsourcing decision of a firm, it is ultimately the management that makes the decision to outsource or not. Hence, top management support has been an important construct in the innovation and technology adoption literature (Wang et al., 2010, Chong et al., 2009). Top management support is also a construct in

innovation studies that adopt the Technology Organization and Environment (TOE) framework (Depietro et al., 1990). For instance, Alshamaila et al. (2013) in a qualitative study in England found that top management support along with other organizational, technological, and environmental factors had a favourable effect on cloud computing adoption.

While many studies have predominantly looked at the benefits and risks of cloud computing (e.g. Marston et al., 2011, Benlian and Hess, 2011, Wu, 2011, Gupta et al., 2013), little is known whether and to what extent institutional forces play a role in cloud computing adoption. This paper addresses this gap and focuses on the influence of institutional factors on the intention to adopt cloud computing, which is mediated by top management support. The theoretical framework of this paper draws on institutional theory, as well as elements of TOE (for top management support and financial capacity), consistent with the suggestions of a number of organizational researchers (e.g. Oliver, 1991, Eisenhardt and Brown, 1992, Hesterly et al., 1990), who encourage the adoption of multiple theoretical frameworks to study organizational phenomenon.

The structure of the paper is as follows. First, I define cloud computing and review the relevant studies and theories in the cloud computing literature. Next, the literature on top management support and institutional theory is presented, which is followed by the hypotheses and the theoretical model. In Section 4, the sample and the methodology of the study is explained. Next, the results are provided, which is followed by a discussion and the conclusion of the study.

2 Literature Review

While the effective use of IT has become a necessity for many organizations, the traditional in-house IT model is being increasingly challenged by the cloud computing delivery model. The *cloud* eliminates to a large extent the need to own and maintain expensive hardware and software and instead allows organizations to access IT resources over the Internet, much like electricity and other household utilities. There are three types of cloud services that organizations can purchase: Software as Service (SAAS), Platform as a Service (PAAS) and Infrastructure as a Service (IAAS) (Marston et al., 2011). With SAAS, organizations access software and do not have to worry about the maintenance. PAAS provides an online programming environment to meet organizations' need to develop and deploy software. Finally, with IAAS an operating system along with hardware is made available to the user without the technical support of the vendor (Marston et al., 2011).

Research on cloud computing has so far focussed on three aspects of the technology/service, (i) the way it works or should work (e.g. Pearson et al., 2009, Foster et al., 2008, Youseff et al., 2008), (ii) the benefits and risks of using the technology, (iii) as well as the factors that affect the intention to adopt such services (e.g.

Marston et al., 2011, Benlian and Hess, 2011, Low et al., 2011, Wu, 2011, Gupta et al., 2013). Empirical literature on the perceived benefits of cloud computing reports that cost advantages, strategic flexibility, software quality improvements, speed of deployment, ease of use, and access to new software are among the drivers of its adoption (Benlian and Hess, 2011, Wu, 2011, Gupta et al., 2013, Lee et al., 2013). In particular, small to medium sized (SME) organisations are expected to benefit the most from cloud solutions as they bring about the democratisation of IT resources (Marston et al., 2011). This is especially true for SMEs that do not have access to large sums of capital to invest in cutting edge IT software and hardware. Organizations that use cloud computing are more likely to access better software due to the employment of an Op-ex model as opposed to a Cap-ex model (Marston et al., 2011). Although cloud computing offers many advantages, it also has many drawbacks. In terms of perceived risks of cloud computing, there is evidence that concerns in relation to its security and privacy, reliability, performance, legislation, hidden costs, and the lack of understanding inhibit its adoption (Benlian and Hess, 2011, Lee et al., 2013, Gupta et al., 2013, Wu et al., 2013).

Organizational factors may also play a role in the adoption of cloud computing such as firm size, organizational innovativeness, top management support, and entrepreneurial culture (Alshamaila et al., 2013, Wu et al., 2013, Lee et al., 2013). Factors external to the organisation that influence cloud computing adoption include competitive pressures, uncertainty, geo-restriction, trading partner power, and expert opinions (Alshamaila et al., 2013, Wu, 2011). Also, trialability, and prior experience with the technology (Alshamaila et al., 2013), as well as business process complexity, information system compatibility, and application functionality were found to be related to cloud computing adoption (Wu et al., 2013).

Theories used in cloud computing research include TOE (Alshamaila et al., 2013, Low et al., 2011), Theory of Reasoned Action (Benlian and Hess, 2011), Technology Acceptance Model combined with Rough Set Theory (Wu, 2011), and Diffusion of Innovation Theory (Wu et al., 2013). A theory that has been underutilized in the existing research on cloud computing adoption is institutional theory (DiMaggio and Powell, 1983). In the recent decades, institutional theory has become a powerful explanation to account for the influence of external institutions on organizational decision making and transformation (Mizruchi and Fein, 1999, Liang et al., 2007). The three institutional pressures (mimetic, normative, and coercive) lie at the core of institutional theory and explain institutional isomorphism. Accordingly, organizations transform into similar structures due to pressures exerted by regulators, peers, and the quest for legitimacy (DiMaggio and Powell, 1983).

Institutional theory has not only been underutilized in the more recent cloud computing literature but it was also largely ignored in the extant literature on ITO with the exception of a few studies (Vitharana and Dharwadkar, 2007). For example, a study by Loh and Venkatraman (1992) found that the Kodak-IBM

outsourcing arrangement legitimized ITO and triggered mimetic behaviour among Fortune 500 companies. Although, this finding was not supported by Hu et al. (1997), it was subsequently corroborated in Lacity and Willcocks (1998) as evidence of a bandwagon effect was found among UK and US organisations that outsourced their IT. Also a study by Ang and Cummings (1997) that combined institutional theory with TCE reported that, among others, asset specificity, supplier power, and slack resources moderated institutional pressures in the hypercompetitive US banking sector. Furthermore, Miranda and Kim (2006, p. 744) studied the moderating effects of institutional factors on the ITO decision and found support for the "institutional mitigation of the logic of TCE", particularly the effects on human frailty conditions (perceptions and expectations). Finally, a study by Hu et al. (1997) reported that a mixed model taking into account internal (face to face communication) and external institutional factors (mass media) best explained an organisations adoption of ITO.

3 Hypothesis Development

3.1 Top Management Team

Even if external factors such as institutional pressures are strongly present, it is the top management team (TMT) that ultimately makes the decision to innovate or not (Elbashir et al., 2011). Thus, TMT is considered to be the primary human agency that supports innovation. The literature defines TMT as the group with the most influential executives such as Chief Executive Officer (CEO), Chief Operating Officer (COO), and Chief Financial Officer (CFO) that have an overall responsibility for the organisation (Hambrick and Mason, 1984, Armstrong and Sambamurthy, 1999). There is strong evidence that top management support leads to successful innovation of products (Maidique and Zirger, 1984), as well as successful implementation and assimilation of information systems (Thong et al., 1996, Liang et al., 2007, Nah et al., 2001, Chatterjee et al., 2002).

Research investigating the role of top management in organisational innovation distinguishes between two conceptual stages of involvement, namely belief and participation (Liang et al., 2007, Lee et al., 2014, Chatterjee et al., 2002, Srivastva, 1983, Walsh, 1988). TMT belief refers to the psychological state regarding the potential of a certain initiative, while TMT participation refers to the behaviour and actions performed to implement an initiative (Jarvenpaa and Ives, 1991). The literature shows that the external environment influences top management beliefs, which in turn affect administrative behaviours (Walsh, 1988, Srivastva, 1983). According to Srivastva (1983), organizational strategies, decisions and behaviour are led by top managers' mental image of a desired future state for the organisation. Therefore, top management's belief about the benefit of cloud computing may drive certain managerial actions that may increase the level of cloud computing adoption. Past research found evidence for the two-stage top management involvement in the adoption or assimilation of web technologies (Lefebvre et al., 1997), enterprise- (Liang et al., 2007),

and business intelligence systems (Lee et al., 2014). Furthermore, Lefebvre et al. (1997) asserts that participation in organizational IT management activities are largely driven by top management beliefs rather than objective reality, which also supports the two-stage model of TMT support.

3.2 Mimetic Pressures

In this study, I argue that TMT support mediates the effect of institutional pressures on the intention to adopt cloud computing solutions. Given the uncertainty of cloud computing outcomes, firms might copy other organisations' successful efforts to implement information systems (Liang et al., 2007). For example, firms may face some uncertainty regarding the cloud computing implementation strategy. The ITO literature suggests a selective approach to outsourcing where only the non-critical applications are to be outsourced (Beaumont and Costa, 2002), whereas with cloud computing it is not yet clear what works best. Furthermore, a study by Teo et al. (2003) studying the intention to adopt inter-organisational linkages found that organisations tend to imitate structurally similar firms that are perceived as successful. There are different views on how top management mediates the impact of mimetic pressures on technology adoption (Liang et al., 2007). Liang et al. (2007) found a mediation through the-two stage top management support process but no direct relation between mimetic pressures and TMT participation as predicted. Thus, consistent with Liang et al. (2007) and Teo et al. (2003), I propose the following hypothesis.

H1: Mimetic pressure is positively associated with TMT belief

3.3 Coercive Pressures

Also there is evidence that coercive pressures affect the adoption of innovations (Hart and Saunders, 1998, Hugh, 2006). Coercive pressures originate from dominant customers or suppliers, as well as industry associations and regulators. For example, powerful customers might require new features that may be more cost effective if implemented through cloud computing solutions. Industry associations may also have a large influence on organisations. Furthermore, firms may be subject to pressures from parent companies or shareholders in the absence thereof (DiMaggio and Powell, 1983, Liang et al., 2007). Finally, the competitive conditions are also considered to be part of the coercive set of institutional forces that affect organisations (Liang et al., 2007). I argue that such forces affect TMT belief as captured in the following hypothesis.

H2: Coercive pressure is positively associated with TMT belief

3.4 Normative Pressures

Once an innovation like cloud computing becomes available, normative pressures prevail. Innovations are often evaluated and promoted by members of an organizational field such as customers, suppliers, consultants, and governments (Swanson and Ramiller, 1997). Cloud computing is being promoted in a number of countries by their governments. For example, in Australia, the government released 'The Australian Government Cloud Implementation Initiative' in 2012 that encourage the use of cloud computing solutions in governmental institutions. Also, consulting firms along with IT companies such as Salesforce are highly active in organizing events that promote new technologies such as cloud computing. Such pressures are most likely to affect TMT beliefs. Therefore, the following hypothesis is suggested.

H3: Normative pressure is positively associated with TMT belief

3.5 Slack Resources

One of the main selling points of cloud computing is that it is often promoted or considered as an IT cost reduction strategy for organisations (Marston et al., 2011, Benlian and Hess, 2011). Thus, companies with relatively higher IT budgets are less likely to face pressures to decrease their IT costs. Ang and Cummings (1997) found support for this premise in a study on institutional forces and ITO. Thus, I argue that companies with a higher IT budget are to a smaller extent impacted by institutional pressures, which may therefore affect TMT belief. I therefore propose the following hypothesis.

H4: Slack resources moderate institutional pressures and TMT belief

3.6 TMT Support and the Intention to Adopt Cloud Computing

Previous literature highlighted the significance of top management in supporting information system initiatives (Thong et al., 1996, Liang et al., 2007). Top management through their leadership role ensure sufficient resources are allocated to IT initiatives and act as change agents by motivating employees (Lucas, 1981). As previously discussed, top management support is considered to be a two-stage process (Lefebvre et al., 1997, Liang et al., 2007, Lee et al., 2014, Chatterjee et al., 2002). I therefore adopt the two-stage process of top management support in this study, which is consistent with recent studies. Given that there is support from TMT, organisations would consider increasing the use of cloud computing services as suggested by the IT innovation literature. This leads to the following two hypotheses and the theoretical model.

H5: TMT belief is positively associated with TMT participation

H6: TMT participation is positively associated with the intention to increase the level of CC adoption.

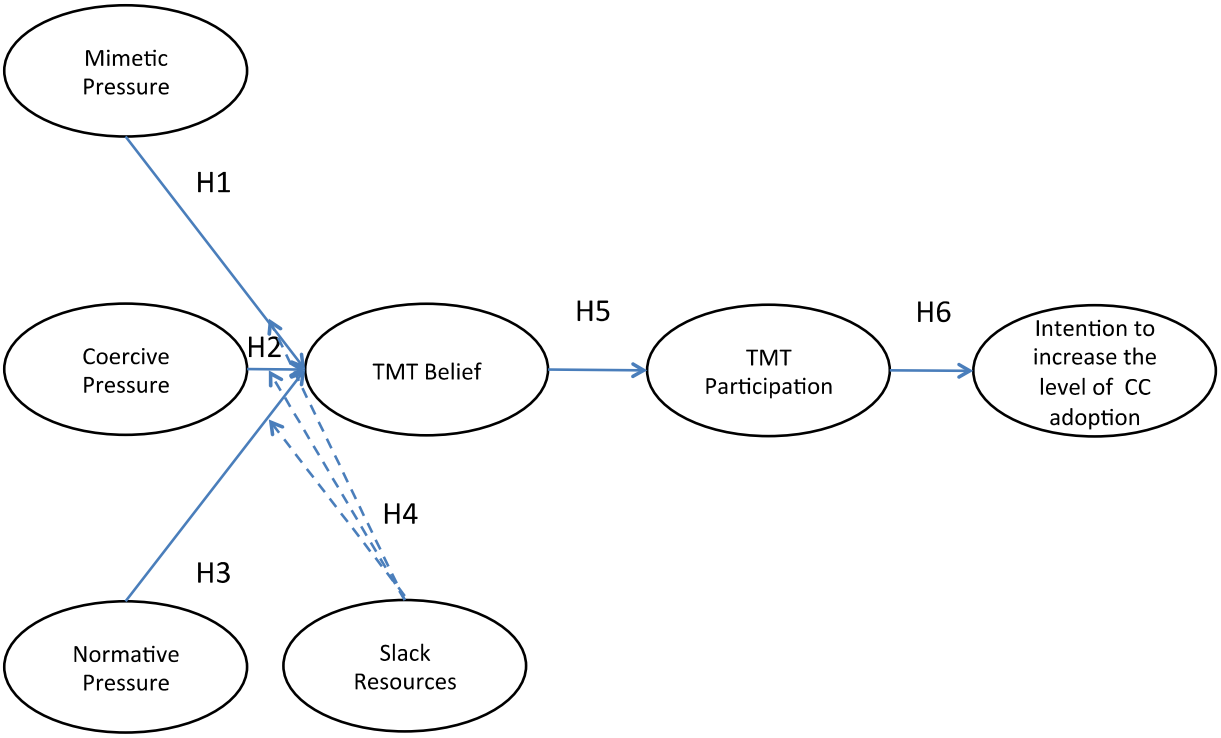

Figure 1: Theoretical Model

4 Sample and Method

4.1 Data Collection and Sample

The sample for this study consisted of 1,170 Australian firms in manufacturing and service industries. The survey was administered online in April 2014. I sent the link to the survey with a letter introducing the researcher and the research project to IT decision makers within the sample companies. A reminder was sent to the participants after two weeks in an effort to increase the number of completed questionnaires. E-mails of participants were purchased from an Australian list broker. After eliminating responses with missing values, the total number of usable observations equalled to 120. The sample size was adequate based on the established rule of thumb (Chin and Newsted, 1999). I checked for response bias but there was no significant difference between early and late responders. I also tested for common method bias

using Harman's single factor test. The results showed that this was not the case as no dominant factor emerged that explained a large part of the variance (Podsakoff and Organ, 1986).

Most of the respondents were senior IT managers that had more than 10 years of experience in their current position. In terms of industries, there were many represented as evident from Table 1. Furthermore, most of the companies had a turnover of over 100 million AUD, as well as employees above 100.

Insert Table 1 here

4.2 Method for Hypothesis Testing

I used Partial Least Squares Analysis (PLS) to test the hypothesized relationships. PLS is a structural equation modelling technique with a number of advantages over covariance-based techniques such as LISREL and AMOS. Many researchers prefer PLS over other techniques because it works better with small sample sizes and it does not require data normality (Chin, 1998). This study used the WarpPLS software to model and test the hypotheses.

4.3 Measures

Pretested instruments were used for all the measures in the study, although some adjustments were made to suit the context of the study. A seven point Likert scale was used to capture all the responses where 1 indicated "strongly disagree" and 7 represented "strongly agree". Table 2 shows the indicators and the studies where the measures were previously used. All the constructs consisted of at least three indicators. Coercive pressure was operationalized as a formative construct as in Teo et al. (2003) with three items including shareholder pressure (Ravichandran et al., 2009). Mean values and Cronbach's alpha values are presented in Table 2. Cronbach's alpha values and indicator loadings for all reflective measures were higher than 0.7, which confirmed that the scales were reliable (Fornell and Larcker, 1981). Scale reliability is not applicable to formative constructs and therefore the weights of the indicators are only presented (Diamantopoulos and Winklhofer, 2001). The constructs 'TMT belief', 'intention to increase the level of cloud computing adoption', and 'mimetic pressures' had high mean values. This suggested that organizations regarded cloud computing as beneficial.

Convergent validity was satisfactory as all the indicator loadings were higher than 0.7 for reflective constructs (Fornell and Larcker, 1981).

Insert Table 2 here

5 Results

5.1 Discriminant Validity and Correlation Analysis

Discriminant validity of the constructs was evaluated by comparing the square root of variance extracted (AVE) with inter-construct correlations (see Table 3). The square root of AVE values were larger than the inter-construct correlations which indicated that discriminate validity was met (Chin, 1998). The correlations were of medium to high strength except for budgetary slack, which was very low, indicating that the majority of the hypotheses were potentially supported.

Insert Table 3 here

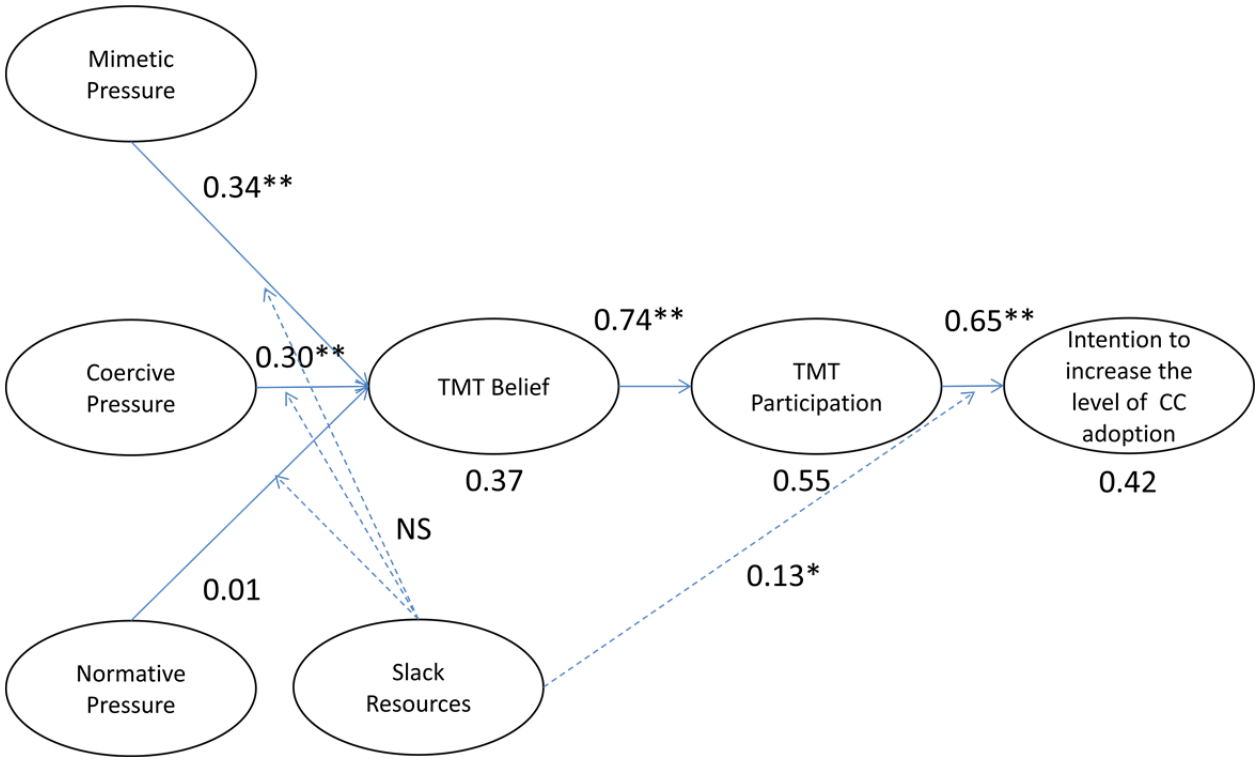

Figure 2: Path coefficients and R-Squared
NS: Not significant
**significant at 0.01 level
*significant at 0.01 level

5.2 PLS Analysis

PLS analysis resulted in a number of significant paths with predicted signs as evident from Figure 2. Mimetic and coercive pressures had positive and highly significant relations to TMT belief and explained 37% of the

variance. Therefore, Hypotheses 1 and 2 were both supported. These results agree with Liang et al. (2007) who also hypothesized a relation between mimetic pressure and TMT belief. Although not hypothesized in this study, the medium correlation value between mimetic pressure and TMT participation as per Table 3 suggested that there might have been a significant path between the two constructs. Therefore, a separate PLS analysis was carried out to see whether this was the case and as put forward by Liang et al. (2007). Consistent with Liang et al. (2007), no significant path was found. The same was true for the relation between coercive pressure and TMT participation.

Hypothesis 3 was not supported as the path between normative pressure and TMT belief was not significant. Again, a direct relationship between normative pressure and TMT participation was plausible as per the results in Table 3. However, no support was found for such a relationship.

Hypothesis 4 was not supported, as slack resources did not moderate institutional pressures and TMT belief. However, further PLS analysis revealed a small moderation effect of slack resources on the relation between TMT participation and cloud computing adoption intention, which is discussed later in the paper.

The results confirmed Hypothesis 5 and 6, as TMT participation mediated TMT belief and the intention to increase the level of cloud computing adoption. The path coefficients and the significance levels were both high. R-squared for TMT participation and cloud adoption were 55% and 42% respectively. The results confirmed previous studies that have focussed on the mediating role of TMT support on various information system initiatives (Lefebvre et al., 1997, Liang et al., 2007, Lee et al., 2014). It also confirmed the two-stage conceptualization of TMT support (Lee et al., 2014, Liang et al., 2007, Jarvenpaa and Ives, 1991, Chatterjee et al., 2002).

6 Discussion and Conclusions

6.1 Research Synthesis

This study contributes to the cloud computing adoption literature by applying the institutional framework, a theory that received little attention in existing cloud computing studies. The paper focussed on the mediating role of top management support of institutional pressures and the adoption intention of cloud computing solutions. On the whole, the model performed well and predicted a significant degree of variation in the various constructs. As hypothesized, there was evidence that mimetic pressures influenced TMT belief (H1). This was consistent with Liang et al. (2007) and reinforced the notion of organizational isomorphism. No doubt, the extensive media coverage of cloud computing adoption initiatives by reputable organizations locally and internationally serves to strengthen the effects of mimetic pressures (Hu et al.,

1997). For example, Quantas, the national carrier of Australia, the National Australia Bank and, Suncorp, a leading Australian insurance firm have all announced that they are moving some of their systems into the cloud (ZDNet, 2013, Australian, 2013, itnews, 2013). Such publicized examples may also drive the adoption strategy of organizations in terms of what vendor to choose and the types of applications to be outsourced by drawing upon the common competence (Swanson and Ramiller, 2004).

Also, coercive pressures were found to be associated with TMT belief (H2), indicating that competitive conditions and pressures from external stakeholders such as customers and regulators affect TMT's belief system. Thus, TMT is unlikely to promote new technologies if they do not believe in the benefits of cloud computing, which explained the strong path (β =0.74) between TMT belief and participation. This was somewhat in contrast to Liang et al. (2007) who reported a direct relation between coercive pressures and TMT participation, without the mediation of TMT belief. I did not hypothesize this relationship and further tests in PLS did not find support for the said relation. However, more studies are required to reaffirm the results of this study and those of Liang et al. (2007).

On the other hand, normative pressures were not associated with TMT belief (H3). This somewhat agreed with Liang et al. (2007), although they hypothesized a direct relation between normative pressures and TMT participation but which also lacked evidence. Similarly, additional analysis in PLS did not reveal the existence of a significant path between normative pressures and TMT participation. According to the literature, there is evidence that the more a certain IT is used by the supply network community, the larger normative pressures are faced by firms (Teo et al., 2003). Thus, it may be that cloud computing wasn't pervasive enough within the surveyed firms' supply network to be considered a significant force.

There was no support for a moderation effect of slack IT resources on the relation between institutional pressures and TMT belief (H4). It may be that the existence of slack resources available to IT did not change TMT's belief of cloud computing benefits. Also the model in this study was significantly different from that of Ang and Cummings (1997) who did find some support for a moderation effect but who did not include TMT as a mediator, which might explain the lack of support. However, I did find a small (β =0.13) but significant moderator effect of slack resources on the relation between TMT participation and cloud computing adoption intention. This might suggest that organizations may be more receptive to TMT promotions for new initiatives when firms face higher levels of financial constraints.

Consistent with earlier studies that focused on TMT support (Liang et al., 2007, Jarvenpaa and Ives, 1991). I found evidence for a two-stage TMT support process in the cloud computing adoption context (H5). This suggests that TMT participation is predominantly driven by TMT belief, although there is the view that belief may not be a prerequisite for participation (Liang et al., 2007).

Finally, as predicted in this study, TMT support explained the intention to increase the level of cloud computing adoption (H6), which agreed with studies on information system implementation and assimilation (Thong et al., 1996, Nah et al., 2001, Chatterjee et al., 2002, Liang et al., 2007). The results highlight the continuing importance of top management support in the adoption of new technologies. However, this does not mean that innovation or adoption of new technologies is always driven by a top-down approach. Local agents in decentralized structures may also mobilize efforts in a bottom-up process (Mintzberg, 1990). This may be especially significant in the context of cloud computing given the accessibility of such solutions and the extent of local experimentation (Mintzberg, 1990, Mintzberg et al., 2005).

6.2 Contribution

The paper makes a contribution to the growing empirical literature on cloud computing adoption (e.g. Gupta et al., 2013, Lee et al., 2013, Alshamaila et al., 2013) through the application of institutional theory and the two-stage TMT support process. Previous empirical studies on cloud computing neither adopted institutional theory nor focussed on TMT support. This research therefore provides a new theoretical lens which can be used to interpret organisations' intention to adopt cloud computing services. This research might also be of value to practitioners: Consistent with the innovation literature, this study highlights and reinforces the role of TMT in promoting new IT initiatives. Given the influence of institutional forces and the plethora of solutions on the market, it is recommended that TMT exercise a high degree of caution when deciding for the type of applications to be outsourced as organizational requirements in terms of performance and security will differ.

6.3 Limitations and Future Research

As with every study, this study has a number of limitations, which at the same time leads to new avenues for future research. A limitation of the study relates to the sample size. Although adequate, it would be useful to confirm the results of the study in also other geographical areas such as Europe and the US. Another limitation of the study was the focus on a top-down approach to technology adoption. Future studies could also incorporate the influences of local actors who might press for innovation. Also, I did not focus on any particular types of cloud computing solutions. Future research might benefit from looking at, for example, the outsourcing of Enterprise Resource Planning Services or other mission critical applications. For this purpose, a multiple case study approach with both, successful and unsuccessful cloud computing initiatives might be fruitful to determine the critical success factors in such endeavours. Furthermore, this study considered only one moderator, that is, the extent of slack resources. Future studies could incorporate other moderators that may be of interest such as technological uncertainty or functional complexity (Ang and Cummings, 1997). Finally, future research would benefit from additional qualitative studies that would provide a deeper understanding of the issues involved.

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Demographic Characteristics of Respondents (n=120)	Count	%
Respondents Position		
CIO (CTO)	28	23
IT Manager	46	38
IT Decision Maker	17	14
Other	29	24
Sector		
Manufacturing	20	17
Retail	13	11
Financial and Insurance Services	11	9
Construction	11	9
Wholesale	10	8
Information, media, and telecommunications	9	7
Utilities	7	6
Other Services (real estate, professional, food etc.)	39	33
Turnover		
Less than 1 M	4	3
1 – 10 M	9	7
11 – 50 M	28	23
51 – 100 M	17	14
More than 100 M	62	52
Number of employees		
Less than 50	12	10
51-100	13	11
101-500	41	34
501-1000	11	9
More than 1,000	43	36

Table 1: Demographic Characteristics of Respondents

Construct	Indicators	Mean values	Cronbach's alpha and Loadings (weights)
Mimetic pressures (Liang et al., 2007)			0.896
	Our main competitors who have adopted or are likely to adopt cloud computing …	4.60	0.849
	will greatly benefit from it		
	will be favourably perceived by others in the same industry	4.21	0.956
	will be favourably perceived by their suppliers and customers	4.18	0.924
Normative pressures (Liang et al., 2007)			0.731
	The extent of cloud computing adoption by your firm's suppliers	3.78	0.823
	The extent of cloud computing adoption by your firm's customers	3.33	0.869
	The extent to which the Government promotes the use of cloud computing	3.06	0.723
Coercive pressures (Liang et al., 2007, Teo et al., 2003)			NA
	Institutional pressures external to the firm (e.g. industry associations, customers) require the use of cloud computing	3.39	(0.421)
	Our firm's parent company (or shareholders) of our firm require the use of cloud computing	2.98	(0.445)
	The competitive conditions requires our firm to use cloud computing	4.00	(0.370)
Slack resources (Ang and Cummings, 1997)			0.809
	Compared with our competitors, our firm has more money that could be invested in Information Technology	3.56	0.841
	We are facing tighter Information Technology budget limitations than we did three years ago*	3.13	0.842
	We have a bigger budget allotted for Information Technology than our competitors	3.44	0.873
TMT Belief (Chatterjee et al., 2002)			0.878
	The senior management of our firm believes that …		
	cloud computing has the potential to provide significant business benefits to the firm	4.77	0.921
	cloud computing will create a significant competitive arena for firms	4.65	0.894
	it is NOT necessary to use cloud computing to conduct business activities*	3.45	0.892

TMT participation (Chatterjee et al., 2002)	The senior management of our firm …		0945
	actively articulates a vision for the organizational use of cloud computing	3.99	0.947
	formulated a strategy for the organizational use of cloud computing	3.91	0.956
	promotes the use of cloud computing	4.21	0.944
Intention to increase the level of CC adoption (Benlian and Hess, 2011)			0.929
	If there are superior offers, cloud computing providers should be used for computing resources	4.97	0.925
	Our company should increase the use of cloud computing services	4.82	0.943
	I support the further adoption of cloud computing	5.27	0.938

Table 2: Measures
NA: Not Applicable
*reverse coded

	Coer.	Mim.	Norm.	Belief.	Part.	Intent.	Slack
Coer.	(0.811)						
Mim.	0.578**	(0.911)					
Norm.	0.502**	0.447**	(0.807)				
Belief.	0.435**	0.520**	0.266*	(0.902)			
Part.	0.469**	0.519**	0.338**	0.734**	(0.949)		
Intent.	0.455**	0.601**	0.250	0.596**	0.637**	(0.935)	
Slack	0.009	-0.020	0.176	0.052	-0.003	-0.023	(0.852)

Table 3: Inter-construct correlations and square root of AVE in brackets
**significant at 0.01 level
*significant at 0.05 level