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Deinstitutionalising Existing Technologies to Institutionalise Cloud Infrastructure

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Deinstitutionalising Existing Technologies to Institutionalise Cloud Infrastructure

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Abstract

Cloud computing is attracting attention in business world as well as in academic research. This interest is spreading fast to different areas of demand and supply side of cloud computing. However, the decision to move to a cloud is dicey and requires lot of attention in deinstitutionalising existing organisational technical infrastructure to facilitate implementation, assimilation, routinization, and institutionalisation of cloud services. At the core of this process is as much of emphasize on unlearning as it is on learning to use cloud services. The overall aim of this research is to facilitate this process by developing theoretical and practical support for business organisations to transfer to cloud paradigm. However, this paper describes the background and the research framework that drives this research to obtain the overall objectives. This paper highlights that the process of deinstitutionalisation and reinstitutionalisation is evolutionary and nonlinear and its success depends on a number of organisational, technical, environmental, social, cultural, and other institutional factors and their mutual interactions.

Keywords

Cloud Computing, Deinstitutionalisation, Technology Institutionalisation, IS Adoption/ Diffusion, Technology Assimilation.

INTRODUCTION

According to the recent survey conducted by the information technology (IT) research firm Gartner (Gartner 2013), hybrid IT and cloud computing is ranked as one of the top ten strategic technology trends for 2013. Ried *et al.* (2011) predict an increase in IT cloud service spending from \$40.7 billion in 2010 to about \$241 billion by 2020, which suggests strong organisational tendency to adopt, implement, and assimilate cloud infrastructure in the organisation. Cloud service provides infrastructure, software, data access, shared resources, storage services, applications and information to computers and other devices as a utility via the network. Utilizing cloud service, end-users do not require to have any expertise in, or controlling over the technology infrastructure or even any knowledge of the physical location and configuration of the system that delivers the services (Briscoe and Marinos 2009; Mell and Grance 2011). Adopting cloud services can potentially allow organisations to save on IT expenses, have more flexibility in coping with high elasticity of demands, reduce the risks associated with owning and maintaining hardware structure, and increase flexibility, efficiency, quality, and chance in concentrating on core competencies of organisation (Armbrust *et al.* 2010; Aral *et al.* 2010). However, some factors like constant availability of services, security risks, technical risks, systemic risks, data lock-in, lack of standards, lack of information privacy, lack of understanding of the cloud by firms, reliability, jurisdictional complexity, performance unpredictability, and interruption of services consider as barriers to the adoption and routinization of cloud services within organisations (Leavitt 2009; Etro 2009; Nuseibeh 2011).

As a result, the decision to move to cloud infrastructure is dicey and requires lot of attention, first, to deinstitutionalise current organisational IT infrastructure, and then to adopt, assimilate and institutionalise cloud services. Adoption of cloud is similar to adopting a new technological innovation in an organisation. However, adoption is just one part of assimilation process which cannot make sure that this emerging technology can be full-scale deployed and utilized in the organisation. At the same time, implementation of cloud services should not be viewed as one off endorsement of technology; instead the organisation should engage in the process of cloud service assimilation and institutionalisation to maintain its legitimacy, technical cohesion, and economic

fitness on an on-going basis. In addition, the acceptance of cloud will vary, depending upon cloud consumer's location, access, needs and motivation. Therefore, it is significant to study how to adopt, implement, assimilate, and institutionalise cloud infrastructure in an organisation by considering all technical, organisational, social, environmental, cultural, political, and other institutional factors. Failure to this end may bring about economical losses, data loss/ theft, or loss of reputation because of interruption of services which will hold back the adoption of cloud services and its wide spread usage (Armbrust *et al.* 2010).

The rest of this paper is organised as follows. The next section presents an in depth analysis of literature, especially the theoretical foundation that shapes the research framework. The following section provides a discussion on institutional theory, the effect of institutional pressures, and the process of deinstitutionalising legacy IT infrastructure. The suggested research framework and questions are then elaborated in the next section followed by an explanation of the proposed research methodology. Finally, the last section provides discussion and conclusions of this work.

LITERATURE REVIEW

Cloud service adoption and its challenges have recently attracted the attention of researchers and is almost a new research trend in information systems (IS) literature. In this section, first, an overview of various cloud deployment models and service types is presented. Then, theories relevant to adoption, implementation and assimilation of cloud services within organisations are described.

Cloud Deployment Models and Service Types

Cloud components could shape different deployment models such as public, community, hybrid, and private clouds. In public clouds, shared services and resources are delivered to the general public over the internet based on the standard cloud service model, and mainly free of charge or according to a pay-per-usage model. A community cloud manages share resources internally or by a third-party among organisations with the same community and concerns (such as security and compliance concerns). A hybrid cloud consists of the mixture of two or more clouds like private, public and community which tied together and allows programs and data to be moved easily from one deployment system to another. Finally, the private cloud operates solely for a single organisation, whether managed internally or by a third-party. This deployment model does not benefit logically from lower up-front capital costs and less hands-on management because users still have to buy, build, and manage them (Briscoe and Marinos 2009). In addition, cloud shared services could be delivered in four various forms, i.e., infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS), and business process as a service (BPaaS). These services and their characteristics are presented in table 1 (Yang and Tate 2009; Vaquero *et al.* 2009; Ried *et al.* 2010; Mell and Grance 2011).

The challenges presented in table 1 are quite profound. No matter what cloud computing model or service an organisation adopts, they are bound to be issues. However, the most important challenge is to unlearn old ways of doing business and learn new ways of using technology to execute the business. The following sections highlight the theoretical foundations of this research.

Table 1. Various Cloud Services, their Characteristics, and Challenges

Cloud Service	Description	Challenges
SaaS	Cloud Software as a Service (SaaS, or renting the full service, such as web-based email) over the network for delivering cloud application services, simplifies maintenance and support. Moreover, it eliminates the need to install and run the application on the customer's own computers. SaaS provides by vendor and developers and consumes by end-users. The consumer does not manage or control the underlying cloud infrastructure including operating systems, network, servers, storage, or even individual application capabilities. Google and Amazon are some examples of cloud vendors which provide resources.	Training, Information quality, Information integration
PaaS	Cloud Platform as a service (PaaS, on which software applications can run) delivers a computing platform and/or solution stack as a service which have great potential in developing. Through this service model, the consumer has control over the deployed applications, and possibly application hosting environment configurations, but still not able to manage the underlying cloud infrastructure including operating systems, network, and storage.	Technology compatibility, Technology consistency, Information integration and interoperability, Training, System integration

IaaS	Cloud Infrastructure as a service (IaaS or renting virtual machines) buys servers, software, data-center space or network equipment, and client's resources as a fully outsourced service. IaaS provides by vendors and consumes by developers. Through this service model, the consumer has control over operating systems, storage, deployed applications, and possibly limited control of select networking components (such as host firewalls)	Information ownership, Organisational evolution, Business and IT alignment, Organisational learning
BPaaS	Another type of service, business process as a service (BPaaS) refers to shared business processes that involve value-added human activity. This service provides higher business value with human involvement than just a business process management (BPM) software system running in a public cloud environment	Process maturity, Processes interface, Process alignment, Process infrastructure maturity

Theoretical Foundations

Once cloud service has been introduced into an organisation, it must be examined how people, technology and organisation are adapting to the broader operating environment of the business. There is significant theoretical support available at this level. The rest of this section, therefore, reviews the theoretical foundation for adoption, assimilation and institutionalisation of cloud services.

Diffusion of Innovation Theory

Diffusion of innovation (DOI) is a process in which an innovation is communicated through certain channels over time and within a particular social system (Rogers 2003). The proportion of the population adopting technology is approximately distributed normally over time as individuals possess various degrees of willingness to adopt innovations. Rogers (2003) argues that people judge an innovation and decide to adopt or reject an innovation based on their perceptions of five attributes of it, i.e., relative advantage, compatibility, complexity, trialability, and observability. Looking at the adoption of cloud, the perceived relative advantage, compatibility, trialability, and observability of cloud services positively affects the propensity to adopt cloud infrastructure. On the other hand, the perceived complexity of cloud services negatively affects the propensity to adopt, implement and assimilate cloud computing (Moore and Benbasat 1991; Nuseibeh 2011).

Technology Acceptance Model

Technology acceptance model (TAM), theory of reasoned action, and unified theory of acceptance and use of technology (UTAUT) all study behavioural elements affecting individual's intention to use a technological innovation, and actual use of information system. User attitude towards the technology (beliefs, habits, affect), along with social norms, and other situational factors lead to increased utilization and performance of system usage (Davis *et al.* 1989; Wixom and Todd 2005). Recently, these theories have been studied in the context of adopting, implementing and assimilating of cloud services. For example, Wu (2011) combines TAM related theories with the security and trust elements in order to gain more insights into the adoption of SaaS services. Their proposed model consists of seven constructs which are influencing the adoption and implementation of cloud service, i.e., social influence, perceived benefits, attitude toward technology innovations, security and trust, perceived usefulness, perceived ease of use, and behavioural intention. These constructs are important to not only deinstitutionalise legacy systems, but also to reinstitutionalise cloud services in the organisation. It is, therefore, important to investigate how users perceive and accept technology in their day to day execution business.

Social Shaping of Technology

The theory of social shaping of technology (Mackenzie and Wajcman 2001; Law 2004; Latour 2005) explores the effects of social, organisational, and cultural factors on the content of technology and the processes involved in introduction of technology to an organisation. It views technology in general and cloud infrastructure in particular as a socially constructed product shaped by the social and cultural environment of its creation and use which influences the processes of adoption, implementation and institutionalisation of cloud services. For example, Stahl and Flick (2011) offer some issues regarding cloud service adoption which affects human agent's motives, and social and cultural environment of the business. Some of these issues are such as profiling, provider lock-in, user lock-in, security of data, privacy, jurisdiction and intellectual property ownership of data. When technology is physically adopted and socially composed, there is generally a consensus or accepted reality about what it is supposed to accomplish and how it is to be utilized. This temporary interpretation of technology is institutionalised and becomes associated with the actors that constructed it, until it is questioned again for reinterpretation. This requirement of reinterpretation may grow owing to changes in the context, or the learning that may render the current interpretation obsolete. The organisational actors follow the same cycle for deinstitutionalisation of legacy technologies and reinstitutionalisation of cloud infrastructure.

Technology-Organisation-Environment Framework (TOE framework)

It explores how technology assimilation process is influenced by the technological, organisational, and environmental context (Tornatzky and Fleisher 1990). The technological context consists of both internal/external technologies such as equipment and processes. The organisational context embodies characteristics and resources of the organisation, like managerial structure, managerial obstacles, firm's size, and degree of specialization, centralization, and formalization. The environmental context is the arena in which the organisation conducts its business and concerns the size and structure of the industry, such as the macroeconomic context, the firm's competitors, and the regulatory environment (Wang *et al.* 2010; Li *et al.* 2010). In fact, the way an organisation sees the need for, searches for, adopts, and routinize cloud services is influenced by these three elements. For example, Low *et al.* (2011) investigate the factors affecting the adoption of cloud by organisations belonging to the high-tech industry base on TOE framework. These factors are such as relative advantage, complexity, compatibility, firm size, top management support, technology readiness, competitive, and trading partner pressure.

Resource Dependency Theory

This theory aims to study the effect of external resources of organisations on their behaviour, as procurement of these resources have direct influence on organisation's strategic and tactical management (Pfeffer and Salancik 2003). According to resource dependency theory (RDT), the lack of essential internal resources of an organisation is the main cause of its inclination to enter to an exchange relationship. This theory also suggests organisations attempt to minimize their dependence on other partners, or try to change their dependence relationship by making other organisations to depend more on them. In this way, they will achieve more power because resources are the basis of power which is viewed as an organisational success. On the basis of RDT, organisation's inclination to adopt cloud services is a cause of their desire to utilize resources which are not available internally. Some examples of these resources could be higher elasticity, economies of scale, virtualization capabilities, and possibly more expertise in running IT services or software. Nuseibeh (2011) propose that 'the importance of resources' negatively affects the propensity to adopt cloud, as in the structure of organisations utilizing cloud services, important resources such as IT software or services are outsourced to outside organisation, and is migrated to cloud. This will increase the dependency of organisation on the cloud service provider, and thus contributes to its power decline. Moreover, 'degree of control over resources' negatively affects organisational tendency to adopt cloud services, as in this way the organisation gives the control over IT services or software to the cloud provider (ENISA 2009; Nuseibeh 2011). Nevertheless, control defines as discretion over resource allocation and use (Pfeffer and Salancik 2003). This theory helps in understanding issues like business/ IT alignment and process management within a cloud service environment.

Transaction Cost Theory

Transaction cost theory (TCT) is one the widely used theories in literature for studying information sourcing and outsourcing decisions. If the decision is on outsourcing then the concern would be the type of contract which is needed to put in place by the organisation with the outsourcing vendor (Bahli and Rivard 2003). Although production costs are decreased by outsourcing due to the economies of scale at providers' end, the costs associated with the transaction like monitoring, controlling and managing transactions cause the increase in expenses which may make the outsourcing decision less attractive. The opposite scenario is applicable for insourcing. i.e., increase in production costs and decrease in transaction costs (Williamson 1981). Asset specificity as one of the constructs of TCT emphasizes the degree of customization vs. standardization of the transaction for both sides which may influence the propensity of cloud adoption. Asset specific transactions may increase the risk of lock-in to provider. Due to the fact that providers mainly offer a standardized offering in terms of service to the customer, or partially customized offerings, it can be assumed that organisations requiring high level of customization will be less willing to adopt cloud infrastructure for lock-in concerns (Nuseibeh 2011). In addition, uncertainty as another construct of TCT refers to the degree of possible variation in the needs of the organisation, which may change the outsourcing requirements (Williamson 1981; Rogers 2003). Looking at cloud service adoption, high uncertainty in requirements may not be easy to handle in current provider's offering, and thus, negatively affects the decision of outsourcing (Nuseibeh 2011). This theory helps in investigating issues relating to information management and ownership in a cloud service environment.

ORGANISATIONAL INSTITUTIONAL THEORY

Institutional theory deals with institutionalisation of a phenomenon within an organisation. It mainly focuses on the environmental factors, and offers explanation for social actions, social structure, and cultural persistence through a process by which social schemas, rules, norms, routines, and typifications (cultural beliefs and scripts) become established as authoritative guidelines for organisational behaviour (Powel and DiMaggio 1991; Greenwood 2008; Abrutyn and Turner 2011). Organisations as institutions are viewed as independent variables influenced not only by direct consequences of individuals' attributes and stakeholders motives, but also by

cognitive and cultural explanations which are continuously reproduced through the socialization process. Technology institutionalisation process is characterized by three stages, i.e., habitualization (the production of shared social meanings), objectification (facts become independent as a reality experienced in common with others), and sedimentation (objectified facts become part of routine behaviour) (Tolbert and Zucker 1999). Institutionalisation process, therefore, embodies both objectification (i.e., the articulation of ideals, discourses and techniques), and subjectification (i.e., individuals' enactment through role development), whereby organisational routines shape and are shaped by its sub-institutions (Powel and DiMaggio 1991; Scott 2001; Greenwood 2008).

Applying institutional theory to cloud computing provides a suitable theoretical lens for conceptualizing the latest development in the cloud service market as well as the opportunity to enrich the IS literature by elaborating the process of creating new market categories. For example, Su (2011) studies the effect of institutional theory in conceptualizing the social processes surrounding the emergence of global cloud based business models. This research concludes that adopting, utilizing, and institutionalising cloud services gains increasing legitimacy as a new market category.

Three Institutional Isomorphic Pressures

Institutional isomorphism is a process in which organisations try to excel in their practice of social rules, ideals, and practices by aligning themselves with the environmental conditions. The interpretation of intention to adopt technology and the prevailing context of the organisation is affected by its perception of these pressures. Coercive, normative and mimetic are three isomorphic mechanisms which influence organisations in gaining operational efficiency, similarity with peers, and success (Powel and DiMaggio 1991; Greenwood 2008). The coercive isomorphism occurs by organisational desire to conform to laws, rules, and sanctions established by institutional actors or sources. This similarity results in gaining legitimacy and external validation that improves the organisation's access to resources. Usually, the powerful organisation can exert coercive pressure on their dependent partners by raising requirements such as conforming to a security standard as a condition for customer requirements. The normative mechanism mostly concerns the moral and pragmatic aspect of legitimacy by assessing whether the organisation plays its role correctly and in a desirable way. The progressive use of IT in an organisation could be viewed as the result of normative influences, such as, ATM service is a standard service offering by retail banks, and banks who are not offering this service are more in the risk of damaging their legitimacy in the view of their industry and other institutions. The mimetic isomorphism is a cause of organisational tendency to remain similar to its peers in order to get a positive evaluation from the organisational environment. This mechanism results in reducing uncertainty, improving predictability, and benchmarking organisations that are performing at or near optimum level. In general, when an organisation starts adopting and implementing a technology, other competitors from the same industry becomes aware of it and considers adopting it (Powel and DiMaggio 1991; Scott 2001; Zsidisin *et al.* 2005; Jei and Sia 2011). These mechanisms need to work in concert with each other in order to bring higher degrees of isomorphism.

Kshetri (2013) studies some of institutional pressure in adopting cloud computing. For example, it believes that cloud market undergoing a major technological upheaval which produces an environment that lacks norms, templates, and models about appropriate strategies, structures and sources of legitimacy. In fact, the existing institutions are inadequate and obsolete to deal with the security and privacy problems facing the cloud. The formation of legal and regulatory infrastructures for the cloud industry, thus, helps organisations to deal with many issues including security and privacy. A normative mechanism mainly concerns the ethical and social views influencing cloud issues. Organisations, therefore, need to have rich and well developed ethical codes, guidelines and traditions develop in the cloud industry to facilitate its wide spread usage (Kshetri 2013). Moreover, institutional actors vary in their timing of responses, as they have various levels of understanding about cloud services. For instance, trade and professional associations and industry bodies have responded to security and privacy issues, whereas government agencies have been slow to adopt necessary legislative and regulatory measures to monitor users and providers. However, by passing time norms and structures are standardized and institutions deepen their taken-for-grantedness.

DEINSTITUTIONALISING LEGACY TECHNOLOGICAL INFRASTRUCTURE

Institutions are subject to incremental and discontinuous change processes. Change is natural, almost inevitable and progressive. It takes decades for the need for change to be endorsed (Greenwood *et al.* 2002). The introduction of cloud services to the organisation calls the attention of contemporary organisations to adopt it and thus, make required changes to the current technical infrastructure of their business. Deinstitutionalisation of legacy systems facilitates unlearning in the organisation to learn new facts, realities, and concepts. Through the process of deinstitutionalisation, institutions weaken and disappear because of new beliefs and practices (Scott 2001). Oliver (1992) introduces three main sources of pressures that can lead to the erosion of legitimacy or the taken-for-grantedness which characterize institutions, i.e., functional, political, and social pressures. Perceived

problems in performance levels, or changes in the perceived utility associated with institutionalised practices are the main drivers of functional pressure. Political pressures mainly arising from shifts in the pattern of interests and underlying distributions of power that have supported and legitimated existing institutional arrangements. Finally, social pressures are mostly associated with increased differentiation among members of a group (such as increasing workforce diversity), structural changes to organisations that reduce the coherence of beliefs and practices, and changes in social expectations or laws that might prevent the continuation of a practice (Dacin *et al.* 2002; Clegg and Bailey 2008).

Greenwood *et al.* (2002) introduce a model for institutional change (illustrated in figure 1). Disequilibrium is the first stage of this model which occurs when events or jolts destabilize established practices. These events could be in the form of social and technological disruptions, competitive discontinuities, or regulatory changes. These changes result in deinstitutionalisation of forms and practices, disturbance of socially constructed norms, introducing new ideas, emergence of new players, domination of existing actors, and institutional entrepreneurship (Stage 2). In the third stage, i.e., preinstitutionalisation, organizations start to innovate independently, and look for technically better and viable solutions to perceived problems. The next stage i.e., theorization involves both the specification of the failings of existing norms and practices for which a local innovation is a solution or treatment, and the justification of new norms, practices, and technical innovations in terms of moral or pragmatic considerations. These concepts have been neglected conceptually and empirically in the extant literature. If new ideas were more appropriate than existing ones, they would diffuse throughout an organization or among organizations in a given field; thus, new norms and practices take on a greater degree of legitimacy and, in turn, become institutionalised. This is a journey from theoretical formulation to social movement and institutional imperative which give technological innovations moral and pragmatic legitimacy. When innovations objectify or gain social consensus concerning their pragmatic value, they diffuse into organization, and various organizational actors can observe the institution and its interactions, and thus the new round of socialization starts. The next stage, i.e., full reinstitutionalisation occurs as the result of cognitive legitimacy. This is when ideas are taken-for-granted as a natural and appropriate arrangement and are accepted as the definitive way of organizational behaviour. After technology becomes sedimented and taken-for-granted by actors in a social system, they may even not recognize that their behaviour is partly controlled by the institution (Scott 2001; Greenwood *et al.* 2002).

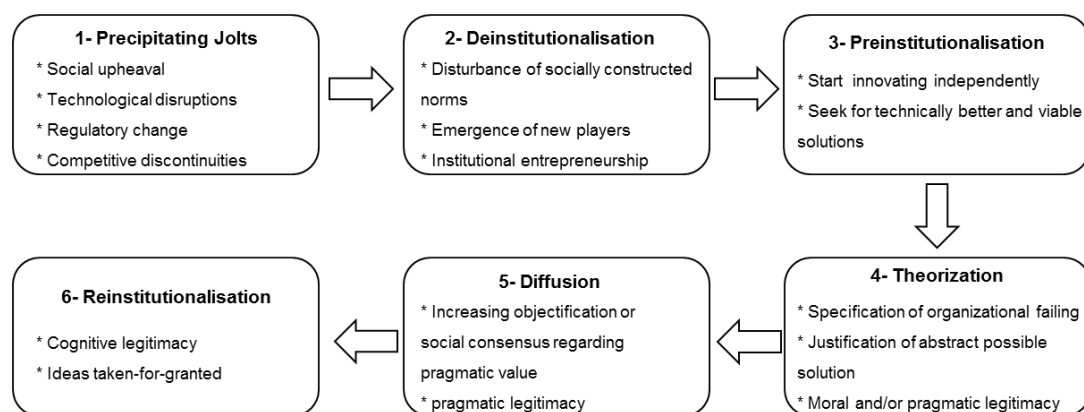


Figure 1: Stages of Institutional Change (source Greenwood *et al.* 2002)

RESEARCH FRAMEWORK AND QUESTIONS

The main question of this research is 'How to deinstitutionalise existing IT infrastructure and reinstitutionalise cloud?' In the rest of this section, the suggested research framework (figure 2) and its fundamental elements are elaborated, and the sub-questions arising from each layer are also discussed. The inner most layer of this framework is technology deinstitutionalisation, which is the final stage of legacy technology lifecycle, i.e., a dynamic and nonlinear cyclic process of technology evolution within organisation. Through this lifecycle, technology is introduced to the organisation, used, becomes dominant, and then its use erodes or declines in the organisation. Deinstitutionalisation is a result of institutional change, erosion of existing institutions and creation of new ones (Seal 2003). This process is elaborated in more details in previous section. Considering institutional pressures (i.e., coercive, normative and mimetic) provides new insights into how the behaviours of individuals within an organisation are influenced by organisational norms, values, regulations, and culture. It also explains how these pressures result in deinstitutionalisation of organisational forms and practices. In response to institutional pressures, the need for cloud computing will be created/ or recreated, which affects deinstitutionalisation of legacy technologies in the organisation. The fundamental question at this stage is 'How technology is deinstitutionalised within organisations?'

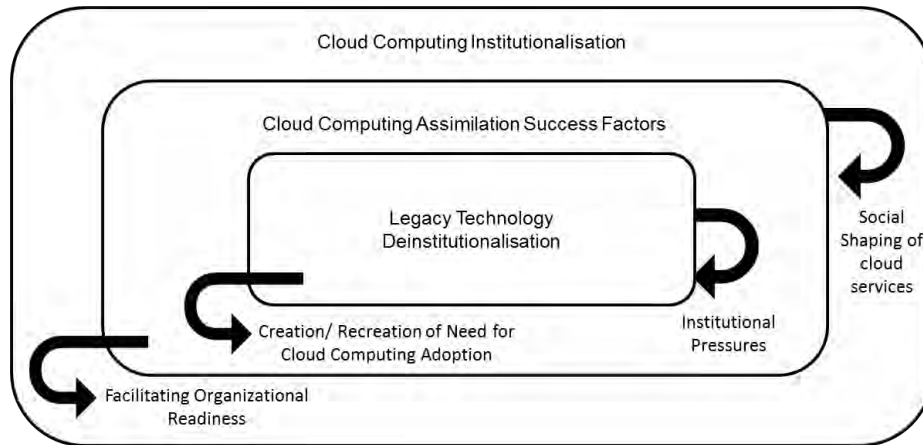


Figure 2: Research Framework

The second layer of research framework aims to study the success factors influencing on various stages of cloud computing assimilation in organisations. The assimilation and diffusion of IT in organisations has been of great interest to researchers on information systems for about two decades. However, the assimilation of complex and emerging technologies like cloud computing is never easy, and a myriad of institutional, social, and political forces blend together to influence how potential adopters make sense out of the technology and, accordingly, assimilate its use (Purvis *et al.* 2001). Assimilation is defined as the extent to which the use of technology permeates organizational work processes and activities and becomes routinized in the activities of those projects and processes (Ranganathan *et al.* 2004). This process extends from initial awareness to full institutionalisation within the organisation (Cooper and Zmud 1990; Fichman and Kemerer 1997; Tolbert and Zucker 1999). There is significant theoretical support for factors influencing cloud assimilation success/ failure such as social shaping of technology, diffusion of innovation, TOE framework and etc., which has been described in previous sections. In fact, at this stage, organisation needs to ascertain how cloud service is shaped with the social, organisational, and technical contexts of the organisation. The social shaping of cloud services should be considered as a critical phenomenon for cloud service assimilation success. In other word, the success and failure of cloud assimilation process is interpreted and evaluated by objectives, goals and intentions of those social groups who socially construct it. At this stage, the interactions between technical, organisational, social, cultural, and competitive aspects define the factors that help with the assimilation of cloud computing within the organisation, thus, raising the question 'What are critical success factors (CSFs) for cloud computing assimilation in the organisation? '.

Cloud computing institutionalisation is the third layer of suggested research framework. Technology institutionalisation involves a full understanding of technological innovations so that it becomes ingrained into organisations work processes. In fact, through this process, technology gradually becomes so deeply embedded in business processes and work practices that the technology simply becomes 'part of the furniture' in organisational life and people take for granted in doing their work (Currie 2004; Baptista 2009). When cloud service is institutionalised, it is taken for granted by actors of social system and they even may not recognize that their behaviour is controlled by an institution. At this stage, cloud services become aligned with the user's environment, and it is deployed completely throughout the organisation. Moreover, at this stage, acting in compliance with the institution is viewed as logical by those who share the institution. In summary, considering all influencing cloud service success factors and their effects, an organisation could facilitate its readiness over various stages of assimilation and institutionalisation of cloud service. The sub-question at this stage should, therefore, be 'How cloud computing becomes institutionalised within organisations?'

RESEARCH METHODOLOGY

This research applies a qualitative interpretive approach with an illustrative case study in order to find more in-depth understanding of human and organisation behaviour and the reasons that govern such behaviour through the process of adoption and assimilation of cloud service in the organisation. Case study research is an appropriate strategy for answering 'how' and 'why' questions that investigate a contemporary phenomenon within its real-life context especially when the boundaries between these two concepts are not clearly evident (Yin 2009). The process of this research is governed by the eight step framework proposed by Eisenhardt (1989), which include getting started, selecting cases, crafting instruments and protocols, entering the field, analysing data, shaping hypotheses, unfolding literature, and reaching closure. This study aims to triangulate data from various sources, such as interviews, personal observations, surveys, and organisational documents. Interviews will be conducted with executive IT managers, R&D member, planners, designers, enterprise architects, solution

architects, users, and maintainers, who engaged in various stages of technology implementation, assimilation, and institutionalisation. Interviewees will be selected from various organisational levels, i.e., strategic, planning and management, and operational/ functional levels. The reason of this choice is that technology is physically adopted and socially constructed by actors in a given social context, therefore, planners, designers, and users must be investigated in this study.

The qualitative data collected will be analysed using data analysis software, i.e., NVivo to obtain in-depth description of this distinctive contemporary phenomenon within real life context (Yin 2009). This software is useful in organizing data according to different themes emerging from the data collected, which allows testing theories or in directing the study to generate new theories. Furthermore, it could be used to form relationships between different themes to bring about cause and effect analysis, tree maps, and cluster analysis, which would help with the within-case analysis as well as cross-case analysis.

CONCLUSIONS

Technological solutions in general and cloud computing in particular work as the binding factor that shapes organisations and gives them their existing form and legitimacy by integrating together institutions of an organisation. Organisational institutions are broader concept embracing both external and internal elements such as competitors, regulatory bodies, people, technological infrastructure, culture and internal organisational structure. These sub-institutions are interdependent and changes in one will affect whole system (entropy). Thus, changes in the technical infrastructure of an organisation will affect whole organisation and its operational environment. In line with this fact, the decision to move to a cloud service requires lots of efforts and challenges in first, deinstitutionalising legacy technological infrastructure, and then adopting, assimilating and institutionalising cloud computing technology. Moreover, studying the deinstitutionalisation of technology as the last stage of technology lifecycle is an interesting aspect of research which has sparsely been covered by the contemporary IS literature.

Cloud computing is a new trend in IS research. The focus of extant IS literature has been restricted to technology initiation and adoption. However, the authors believe that studying the routinization stage as a post-implementation phase of assimilation and institutionalisation process would be the main concern of managers and organisations in near future. This is because organisation adopting and implementing cloud services as a result of organisational institutional pressures and other environmental, technical, cultural, political, and social forces, are bound to face the friction between institutionalisation and deinstitutionalisation forces. Applying institutional theory to cloud computing provides a suitable theoretical lens for conceptualizing the latest development in the cloud service market as well as the opportunity to enrich the IS literature by elaborating the process of creating new market categories. Most of the studies in technology adoption area address technological issues such as performance, network, and data management. It is highly likely that this trend continues and, thus, results in overlooking social, organisational and institutional implications of adoption and assimilation of cloud service. This research fills this gap by offering a more pragmatic view on organisational evolution through institutionalisation of cloud in the organisation. It, therefore, allows an organisation to account for technical, organisational, environmental, political, and socio-cultural determinants of technology in an integrated structure. This facilitates in creating and recreating technology as an organisational institutions and shaping the behaviour of organisational actors.

In the next stage of this research, the authors will engage different Australian organisations who may already have adopted cloud service or are aiming at utilizing it. This would help in understanding more granular assessment of cloud service assimilation success drivers over various stages, and the process involved in deinstitutionalising current technological infrastructure of organisations.

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