

Association for Information Systems

AIS Electronic Library (AISeL)

ICEB 2013 Proceedings

International Conference on Electronic Business
(ICEB)

Winter 12-1-2013

Organisational Maturity: Configurative And Other Isomorphic Pressures In Institutionalisation Of ERP Systems

Azadeh Pishdad

Abrar Haider

Ku Maisurah Ku Bahador

Follow this and additional works at: <https://aisel.aisnet.org/iceb2013>

This material is brought to you by the International Conference on Electronic Business (ICEB) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICEB 2013 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

ORGANISATIONAL MATURITY: CONFIGURATIVE AND OTHER ISOMORPHIC PRESSURES IN INSTITUTIONALISATION OF ERP SYSTEMS

Azadeh Pishdad, University of South Australia, azadeh.pishdad@mymail.unisa.edu.au

Abrar Haider, University of South Australia, abrar.haider@unisa.edu.au

Ku Maisurah Ku Bahador, University of South Australia, kuykb001@mymail.unisa.edu.au

ABSTRACT

Each organisation is unique, because the way they are internally organised and the way they seek economic legitimacy is unique. Seeking economic legitimacy is the way an organisation competes within the industry. Therefore, in order to address the pressures exerted by competitive forces on the organisation, it has to develop and define certain competencies and maturities internally. At the same time, this competitive environment has a direct influence on economic incentives associated with the management of major technological platforms like ERP systems, since these technologies can influence the profitability and efficiency of the business extremely. As a consequence, organisations are required to create a dynamic internal environment. This dynamism is built around alignment of technology with business needs, achieving higher levels of technology maturity, conformance with the rules, norms and best practices of industry as well as external institutions, and using technology to support business sustainability, progress, and growth. The authors coin the term configurative isomorphic mechanism to address these forces. In fact, organisations desire to conform to their level of organisational information system maturity and internal capabilities to minimize these pressures. The authors believe that configurative pressure is indeed congruous with coercive, normative, and mimetic pressures and together can open up new research streams in institutional thinking of the role of technology in organisations.

Keywords: ERP systems, technology institutionalisation, configurative isomorphism, IS maturity, institutional theory.

INTRODUCTION

It is more than five decades that organisations have been using information technologies. During this time, a significant amount of research has been done to study why it is necessary for organisation to invest in these technologies. It is, however, surprising that some researchers like reference [5] believed that by increasing the availability of information technologies, they become ubiquitous and commodity. Therefore, from a strategic standpoint, they became invisible and no longer mattered and organisations should minimize their spending on these technologies. Nonetheless, contemporary literature do not consider information technologies as commodity and believe that information systems are more than technical installation of computers, software, and networks and believes that various sub systems need to work in concert with each other to take maximum advantage of technology and its capabilities in bringing profitability for the organisation ([1], [13], [15], [20], [37], [39])

The role of information technologies are evolving over time in organisations. As illustrated in figure 1, information systems were mainly treated as a technical change for organisations through early stages of their introduction to organisations. Nevertheless, later implementations of these technologies involved much larger part of the organisation than it did in the past and is become more a managerial change (who has what information about whom, when, and how often) and institutional "core" changes (what products and services are produced, under what conditions, and by whom). In the digital firm era, information systems are even more evolved and are influenced and/or influencing other institutional elements beyond the enterprise such as vendors, customers, and industry competitors ([1], [4], [16]).

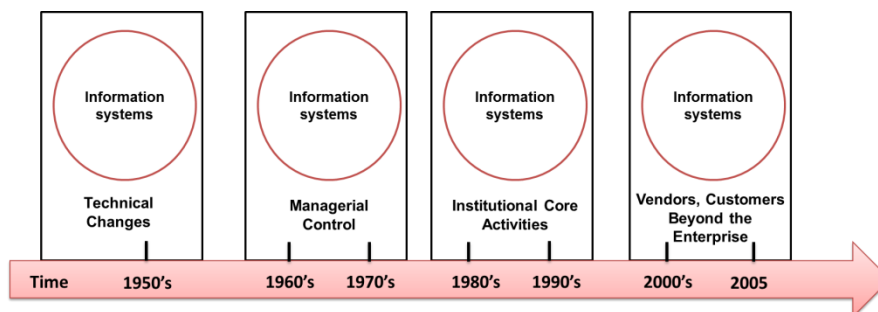


Figure 1: The Widening Scope of Information Systems [adopted from reference [16]]

Enterprise Resource Planning (ERP) systems are highly integrated and complex systems. These systems have become a core technology in many businesses since the past two decades; however, the implemented systems do not always bring about the planned results and still many ERP implementations fail to achieve the desired benefits. This is mainly because of the way these organisations have implemented ERP and the way this technology has been institutionalised within the organisations through interactions of various institutional elements such as people, technology, regulations, customers, and etc. ERP

institutionalisation, however, occurs when its usage becomes stable, routinized and embedded within the organisation's work processes and its value chain ([18], [19], [31]). Information system researchers, however, tended to limit their attention to the effects of the institutional environment (i.e., coercive, normative and mimetic pressure) on structural conformity, so they fail to study the role of other institutional contexts which affect technology implementation and institutionalisation.

This research aims to fill this gap by introducing configurative pressure as a new form of isomorphism which helps organisations to use technology to seek economic and structural legitimization. Seeking economic legitimacy is the way an organisation competes within the industry. Therefore, in order to address the pressures exerted by competitive forces on the organisation, it has to develop and define certain competencies and maturities internally, so as to address external challenges ([22]). Moreover, in order to explain how configurative pressure along with other institutional pressures influence various stages of ERP assimilation and institutionalisation, the authors present a case study of ERP adopting organisation in Australia.

The rest of this article is structured as follows. The first section reviews literature on ERP assimilation and institutionalisation process followed by an in-depth overview of institutional isomorphic pressures derived from institutional theory. The next section introduces configurative pressure as a new form of isomorphic pressure, followed by describing proposed research methodology for doing this research. An illustrative case study of Australian ERP adopting organisation is then discussed to show how various isomorphic pressures shape understanding of, adoption, usage, adaptation and consequently institutionalisation of ERP. The final section summarizes learning from this research and highlights areas of future research.

ERP ASSIMILATION AND INSTITUTIONALISATION

ERP assimilation refers to the diffusion of ERP usage across organisational business processes and the routinization of activities within these processes. Once the organisation is making optimal advantage of ERP, its use will be taken for granted by the organisational stakeholders to contribute to the value of the organisation. This taken-for-grantedness to provide value in day to day operations results in institutionalisation of the ERP system ([14], [17], [19]). Reference [2] introduce a five stage ERP assimilation process called ERP life cycle starting from awareness for the need of ERP implementation to selection of appropriate package, preparation, implementation and finally operation. Most of the researchers more or less agree to these stages (see for example, [3], [9], [17], [38]). It is from this point onwards that researchers provide significant divergence in their views about institutionalisation of technology. For example, Reference [19] looks at ERP institutionalisation process by mainly focusing on post-implementation stage; Reference [31] studies the effect of institutional factors on decision to adopt ERP system at the organisational level; Reference [18] analyses institutionalisation as a process of transferring and stabilizing material artefacts and routines in the form of ERP systems. However, extant research does not provide a coherent insight into how and why ERP systems become institutionalised and what are the various organisational, technological, environmental, social, and cultural elements which make organisations more similar, giving rise to institutional isomorphism. The authors believe the main reason for this shortfall is because of the way researchers have treated ERP assimilation. This research concurs with reference [38] which suggests initiation, adoption, and routinization as the core elements of IT assimilation process that embody the pre-implementation, implementation, and post-implementation stages of ERP institutionalisation which offer a more comprehensive foundation. Reference [23] provides more detailed information about the characteristics and attributes of these three steps of ERP assimilation process.

In the normal progression of events, firstly the technology is implemented, and then it is assimilated in the organisation. Once its usage becomes routinized and embedded within the organisation's work processes and value chain activities, it leads to successful institutionalisation. Institutionalisation of technology, thus, is not a linear process, one that is independent of any organisational, cultural, technical, social, and environmental causes and effects that shape and reshape use of technology. In fact, ERP assimilation and institutionalisation can be summarized as an organisational effort to diffuse and appropriate technology within a user community. The user community has some aspirations attached to the use of technology, which characterize the values and interests of various social, cultural and organisational agents ([24]). Effectiveness of ERP implementation and assimilation, therefore, is a subjective term and depends on the maturity of the organisation as well as the alignment of technology with the context within which it is deployed. It, therefore, is not a one off endorsement of technology; in fact it is a continuing process of learning aimed at the evolving use of ERP systems. This means that value profile of ERP adoption cannot be realized with simple implementation and assimilation of technology, unless it is fully institutionalised within the organisation.

INSTITUTIONAL THEORY AND INSTITUTIONAL ISOMORPHIC MECHANISMS

Institutional theory has been applied to various dimensions of technology management paradigm (See for example, [10], [21], [25], [32]). Activities involved in development and use of technologies in general and ERP systems in particular are subject to the mutual interaction of social, cultural, organisational, technical, and other institutional factors. These factors could be from external sources such as competitors, suppliers, customers, and regulatory agencies as well as from forms, practices, and logics embedded within the organisational structure. Organisations respond to these forces by conforming to technology mandates, or by modifying their business practices to absorb technology within their technical as well as organisational infrastructure. In doing so, organisations address the opportunity of social approval and/or legitimacy within the industry as well as target market. ([27], [30], [39]).

Institutional isomorphism is a process in which organisations aim to excel by aligning themselves with the environmental

conditions through their social rules, ideals, and practices. These institutional pressures push organisations to adopt shared notions and routines developed within the organisation as well as within the industry they operate in. In fact, 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 and similarity with peers ([7], [10], [25], [27]). These institutional isomorphic pressures are explained with more details in the rest of this section.

Coercive Pressure

It occurs by organisational desire to conform to laws, rules, and sanctions established by institutional actors or sources. This similarity results in the organisation gaining legitimacy and external validation that improves its access to resources ([7]). Negative sanctioning is the central component of coercive institutional pressure, as it includes rules, regulations, and laws that are used to constrain organisational actions. The coercive pressure is exerted on an organisation intending to adopt ERP by other organisations upon which it is dependent, for example, business partners, suppliers and customers ([21], [27]). As a result, the powerful constituent in this equation can exert pressure on the organisation (that is adopting technology) by raising requirements such as conforming to a particular technology standard ([40]). The dependant organisations will call attention to the asymmetry of power when they perceive coercive pressure and, thus, better understand the consequences of adopting or not adopting the technology. Generally, the dependent organisation tends to comply with the powerful organisation's demands and is inclined to adopt and routinize technology usage into daily operations in order to maintain relationships with powerful partners. The motivating factors are to make transaction process more efficient, to secure the market status of the organisation and to continue accessing scarce resources provided by the powerful organisation ([15], [27]).

Normative Pressure

It mostly concerns the moral and pragmatic aspects of legitimacy by assessing whether the organisation plays its role correctly and in a desirable way. It can refer to the positive pursuit of valued ends, as well as negative deviations from goals and standards ([27]). The progressive use of IT in an organisation could be viewed as the result of normative influences, such as, ATM service which is a standard service offered by retail bank. The banks who do not offer this service are at the risk of damaging their legitimacy within the industry as well as with other institutions that they interact. Normative pressures evolve through organisation-supplier and organisation-customer inter-organisational channels as well as through other trading partners, and professional and industry institutions ([17]). For instance, the frequency of technology usage among an organisation's suppliers and customers may make decision makers aware of the technology and contribute to the organisation's inclination to adopt it. Furthermore, compliance with norms with respect to environmental concerns can lead to profitability, e.g., reducing organisational cost by conforming to an industrial standard resulting in reduction in wastage of efforts, time, and resources ([7], [15]).

Mimetic Pressure

It is a cause of organisational tendency to remain similar to its peers in order to get positive evaluation from the industrial environment. This mechanism results in reducing uncertainty, improving predictability, and benchmarking organisations which are performing at or near optimum level ([7], [27], [17], [30]). Organisations that are structurally equivalent and have similar economic network position, similar goals, and products are more likely to imitate each other. In fact, organisations mimic because they anticipate similar benefits. Therefore, when an organisation adopts technology, competitors from the same industry become aware of its advantages and consider adopting it ([27]). However, it is conceptually not clear whether organisations mimic other organisations to gain legitimacy in technical terms or for economic advantage ([29]). The results of reference [31]'s study reveal that institutional factors, such as mimicry of peers, compliance with industry norms, and coercion from powerful entities influence ERP adoption decisions.

CONFIGURATIVE ISOMORPHIC PRESSURE

Each organisation is unique, because the way they are internally organised and the way they seek economic legitimacy is unique. Seeking economic legitimacy is the way an organisation competes within the industry. Therefore, in order to address the pressures exerted by competitive forces on the organisation, it has to develop and define certain competencies and maturities internally, so as to address external challenges ([22]). Configurative pressure forces the organisations to use technology to seek economic and structural legitimisation. Internally, through configurative pressure, businesses enable business processes, establish communication flows, and maintain reporting relationships. Externally, through this pressure, businesses use technology to themselves within the competition, by leveraging the strategy translation, business intelligence, and decisions support properties of technology. However, the degree of structural and economic legitimisation of a business is affected by the maturity of its information systems. Literature suggests various factors that influence information systems maturity, such as, organisational and people skills, the senior management's involvement in technology planning, the extent of technology diffusion within the organisation, coordination mechanisms, technology usage history, technology control mechanisms, degree of formalization, and technology performance evaluation criteria based on organisational goals ([6], [11], [17], [34], [37]). Nevertheless, through configurative pressure organisations aim to use technology definitively to create a structurally stable environment, such that each organisation unit takes technology for granted for maintaining the flow of business processes and communication relationships. For example, an ERP implementation aims to integrate the different

departments and functions of the organisation, and at the same time creates an information enabled integrated environment that helps the organisation to develop, sustain, and improve competencies and operational efficiencies which helps it to remain competitive. When an organisation aims to implement an ERP system, it desires to map business information requirements on to technology, so that not only the business automation needs are met, but at the same time the business processes and internal organisational designs become matured ([11], [12]). The stability of the internal structure and the flow of information contribute to the economic fitness/legitimacy of the organisation on an ongoing basis ([12], [22]).

IT mature organisations have better understanding of IS implementation, can collaborate effectively with ERP vendors and employees, and are more likely to succeed in ERP implementation. In fact, higher organisational maturity and favorable culture obtained through conformance to configurative mechanisms will make organisations more ready to handle complex technology ([11]). Conformance to configurative mechanism provides a more compatible environment for the development and usage processes associated with technology usage. As the organisational institutional structure becomes matured, more transparent information flow and more stable legal frameworks, institutional norms and government policies will be available. Therefore, more information about competitors' technological development could be obtained which forces the organisation to adopt technology to avoid competitive decline ([33], [36]). Furthermore, IT business value resides more in the organisation's skills to leverage IT than in the technology itself. Higher technology usage, thus, helps the organisation to develop unique capabilities from its core technological infrastructure ([22], [34], [35]). Conforming to configurative pressures, thus, requires organisations to understand business processes; and implicit and explicit rules, procedures, instructions, and communications that are to govern them ([37]).

RESEARCH METHODOLOGY

This research follows a qualitative exploratory approach with an explorative case study method. It is governed by the eight step framework proposed by reference [8]. These steps include getting started, selecting cases, crafting instruments and protocols, entering the field, analysing data, shaping hypotheses, enfolding literature, and reaching closure. This paper demonstrates the results of the within case analysis of an electricity distributor in Australia who have adopted ERP system. The within case analysis is central to the generation of insight because it helps researchers to cope early in the analysis process with the enormous volume of data. The overall idea of this analysis is to become intimately familiar with each case as a stand-alone entity. This process allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases ([8]).

The data was collected through on-site interviews of ten participants in the case study organisation. These participants include solution architect, IT change manager, business analyst, domain architect, configuration analyst, and etc., which are engaging in various stages of ERP institutionalisation. Direct quotations from the case study interviews are used to complement the overall point of view being presented. Quotations from case study interviewees represent opinions, perceptions, and experiences of technology users and organisational stakeholders regarding particular factors or situations. These quotes, therefore, have the potential to assist readers in obtaining insights into the respondents' understanding of the phenomena, as they provide the respondents' true feelings and beliefs on certain issues. In addition, secondary sources of data have also been used in this research, which include review of ERP implementation documentation, observation of execution of workflow, and day to day routine usage of ERP system.

It is also noteworthy that, as per the research ethics requirements, confidentiality agreement signed with the participating case organisation and individual interviewees state that these entities must not be identified by their real names and/or actual position titles. Every feasible and plausible effort has been made to conceal the identities, thus the case is referred to as company A or case A, and interviewees are referred to by their job description rather than their actual designation, for example solution architect, IT manager, and business analyst.

ILLUSTRATIVE CASE STUDY

Company A is one of the state's largest organisations in Australia, employing more than 2,000 people throughout metropolitan and regional areas. After deregulation in early 1990s, the state-owned utility corporation was broken down into different organisations between 1996 and 1998. Organisation A became an independent entity solely responsible for electricity distribution. In 1999, state government took the decision of privatising electricity industry in the state, thus, company A was sold to a commercial concern in Hong Kong. The main focus of company A is on the electricity networks (regulated and unregulated) serving commercial and residential customers in metropolitan state capital and regional and remote areas of the state. This organisation operates a distribution network that stretches across one of the states of Australia. This network comprises thousands of kilometres of power-line and hundreds of grid stations.

This company is one of the five largest electricity distributors in the National Electricity Market (NEM), which operates as a competitive spot market in which prices are adjusted in real time to supply and demand conditions. Company A operates its electricity distribution business under licence granted by the state government. In year 2001, the council of Australia governments (COAG) established a ministerial council on energy (MCE) to drive energy reform, including the potential to harmonise regulatory arrangements. Following a review of energy market directions, COAG entered into the Australian energy market agreement (AEMA). The agreement established two new institutions to oversee Australia's energy market. The Australian energy regulator (AER) was established as the national economic regulator and the body responsible for monitoring

and enforcing national energy legislation. The Australian energy market commission (AEMC) was established to undertake rule making and energy market development. Under the AEMA, AEMC is responsible for developing reliability service standards for organisation A. Regulation, however, primarily relates to the tariffs required to meet regulated service standards cost effectively. Company A, thus, concentrates its efforts on achieving regulated requirements for high levels of service, reliability, and safety. It also competes in the un-regulated energy market providing infrastructure construction and management services to industry and government. This organisation is proactive in renewing itself. To this effect, it continuously upgrades and updates its systems and processes to support its ageing infrastructures through smart technologies, capital investments, and strategic changes. Information technologies, therefore, are taken seriously at organisation A. Company A makes substantial investment in information technology area aimed at better productivity, resource planning, functional integration and operational efficiency. The rest of this section explains various institutional isomorphic pressures which are influencing ERP assimilation and institutionalisation in company A.

Coercive Mechanism

As mentioned earlier, Australian electricity market is quasi-deregulated market. The industry environment is deregulated, however, the prices and distribution is regulated by AER and AEMC. Once AEMC established reliability standards, AER is responsible for assessing the efficient level of expenditure required for company A to provide distribution services at the specified standards. In order to comply with these regulations, this organisation needs to have a technical solution which is capable of conforming to AEMA and AER standards and national legislative framework. The organisation was thus forced to adopt an ERP solution, because it not only enabled it to manage its operational requirements such as distribution at specified standards, but also helped with administrative requirements such as resources management. Implementing ERP system, therefore, helped the organisation to consolidate its market share. Company A faced strong pressure from AEMA and AER throughout the various stages of ERP assimilation, which is reflected by the response of IT change manager who noted that, We are under regulators, so the electricity industry regulators determine how electricity utilities must perform and what criteria they must meet. Nevertheless, every now and then, these regulations are changing. For example, fifteen years ago nobody had solar power; however, today our organisation has a large number of customers with solar power. Thus, the regulatory structure of our business and its relationships with partner are always changing, and we have to conform to new regulations.

IT Change Manager

The Effect of this coercive pressure extends beyond assimilation and has significant impact on post-implementation continuous improvements. For example, the senior business analyst, while describing the effect of change in industry regulations on ERP implementation, explained,

Mainly external forces for change are coming from regulations and legislative requirements than from other external institutions. For example, the electricity industry regulator comes to us and asks us to change some of the reporting requirements. In doing so, when different electricity and utility industry people are acknowledged by regulator about this new legal requirement, they will gather together to analyse how they are going to do this. Through these discussions, we may come with some new proposals for SAP provider/ vendors regarding upgrading and support packs.

Senior Business Analyst

The government regulates electricity distribution industry, and put financial pressures on company A. This pressure means that the organisation cannot exceed a certain amount of expenditure in five years term. Therefore, organisation's expansion, enhancement, and maintenance costs related to ERP implementation are restricted. Furthermore, compliance with AER standards exerts pressure on company A's pricing proposal which outlines tariff strategy in this organisation and indicates how tariff charging parameters are expected to vary. Standard control service tariffs and tariff classes that company A is subjected to are illustrated in figure 1. This requires centralised information processing from a number of different sources, which makes the choice of an ERP system a logical solution to the organisation's predicament.

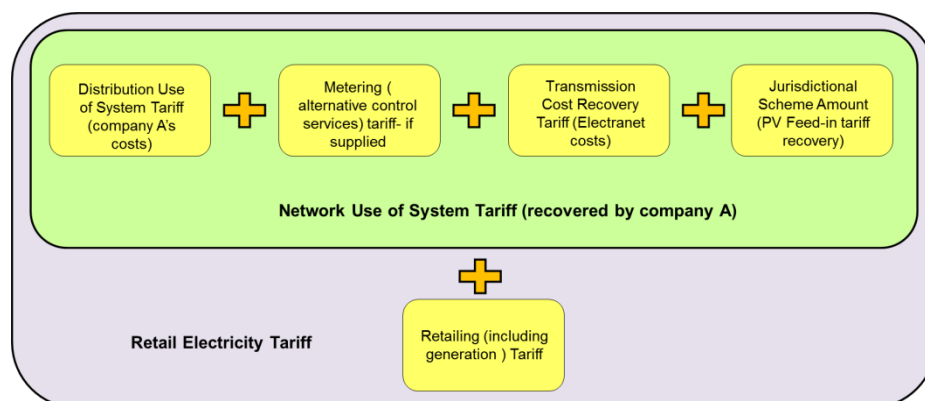


Figure 1- Component of network tariffs (case A's annual pricing proposal 2013-2014)

Company A is also required to conform to some technical requirements such as data and information format. These data sources include customers, suppliers, regulators, and a variety of third parties. Noncompliance with data standards and structures introduces a range of issues like lack of data quality, and interoperability. At the same time, company A itself exerts

coercive pressure on other organisations in its external environment. For example, the domain architect posited that, Other external parties in the environment of our organisation understand that we have an ERP system and we are not going to get rid of it, so they try to adjust themselves with our infrastructure and incorporate their data with our standard data processes. We rarely do changes to our core ERP technology and it is more the other way around.

Domain Architect

Normative Mechanism

Company A is concerned about the moral and pragmatic aspects of its legitimacy, and constantly assesses whether this organisation plays its role in a desirable way by looking at its internal and external information needs and norms. Company A takes this seriously and maintains close contact with vendors and ERP user community. For example, the SAP configuration manager expressed company A's desire to conform to prevailing norms as, Our SAP team goes to various national and international conferences and web sessions to find out what is happening, where we should go in future, what other organisations are using, and how we can bring that on board here. At the same time, people executing business processes come to us and ask for customising ERP technology. We, however, accept those changes which help us to consolidate our organisational norms and to gain legitimacy in the view of our industry.

SAP Configuration Analyst

This organisation follows two types of norms, one relating to technology adoption and the other concerning technology use. Technology usage norms are also facilitated by vendors. For example, SAP has created industry verticals of specific industries which bring together users from the same industry. Company A participates in one such vertical where it collaborates with other players in the utility industry to improve its technology usage. For example, the IT manager explained that, Our organisation has developed the culture of being trend setter of ERP adoption with the industry. We are not afraid of trying latest features and capabilities of technology. We have a group of people whose job is to go to conferences and web sessions to follow the last updates in technology which helps us to be up-to-date. We try to integrate recent technologies such as mobile, social media, and tablets to our current SAP solution to have better acceptability and usability of the system among business managers and technology users. These developed norms aim to facilitate the usage of ERP system within our organisation as well as industry.

IT Manager

The users of technology in this organisation have developed norms which define the standard expectations or normal behaviour including what is right or wrong in a particular context. To this end, company A mostly seeks to conform to the national and state norms (formal and informal) established in its environment. In the words of domain architect, The predominant norms and culture of our organisation as well as country or state affect usage of technological innovations. For example, cloud-based solutions are not that much a norm among organisations in this state of Australia. We, therefore, do not have any aspects of ERP on cloud yet. However, this trend may be changed in the future. In fact, although we know moving to cloud may lead to more accessibility and cost savings, but we are not sure how it really would affect our business which aims to keep the lights on.

Domain Architect

One of the dominant norms in company A is customer intimacy. This encourages customers to voice their concerns and demands. For example, a recent demand within utility industry is to allow customers to control their energy usage. Company A has made changes in its technical infrastructure to involve customers in the process of energy usage monitoring, in order to comply with the new industry norms.

Mimetic Mechanism

Australian electricity industry was deregulated in early 1990s. However, it is not a fully deregulated environment because of the significant influence from regulatory agencies. Company A, therefore, is operating in an industry that is still going through the process of reorganisation. The use of major platform like an ERP system has not been formalised and institutionalised within the industry. It is for the same reason that this organisation does not face appropriate mimetic pressures. This view is reflected in the observation of the solution architect of company A, when he notes that, There are lots of external forces on our organisation to change, or modify the ERP system. However, these forces are not from our competitors or peers. In fact, one of the main external elements which affect our organisation via ERP implementation process is the reorganisation of electricity industry and the impact of regulatory agencies. For example, the government asks us to put more information in our reports as part of industry changes, and we have to change the system to be able to produce it.

Solution Architect

It is worth pointing out that company A is a monopoly and has tight coupling with its business partners, institutions and industry members. However, this organisation takes significant mimetic pressure from SAP implementation in other industries. For example, company A tries to set regular workshops with SAP consultants to find typical trends in other industries as well as utility industry around the world. This understanding helps organisation A to find out what other businesses are doing, why they use these modules and how new modules could help company A to achieve its goals and future directions. In summary, the organisational desire to know more about how others have implemented ERP system helps it to reduce uncertainties about its operating environment. While describing this, the configuration analyst suggests that,

We have a committee between our organisation and its partners. For example, we work pretty close with one of our industry partners who own transmission stations. They sometimes come to us and explain an issue they had with ERP system, and ask us for advice. Sometimes we catch up with them and ask 'what they are doing'. We, therefore, cannot stay away from the improvements each party is making to their systems. Even sometimes if one of the parties does not have the capability to deliver a system, other peers will help it to solve this issue. This helps in reducing organisational uncertainties about the effect of technology.

Configurative Mechanism

Configurative pressures force this organisation to use technology to support its business structure and follow of information that enable the entire business. Each organisation consists of various functions and together they contribute to the realisation of business value chain. Configurative pressure also forces company A to harness different functions of the organisation, appropriately utilise organisational resources, and integrate its business operations to seek economic legitimacy. This economic legitimacy helps the organisation be competitive and respond to the competitive, economic, regulative, and other social and cultural changes acting on it. Company A has responded to configurative pressure by deriving technology implementation, diffusion and assimilation strategy from business strategy. At the same time, it has established ex-ante performance evaluation criteria for choosing appropriate technology for the organisation based on the high level organisational goals defined in the business case. In doing so, this organisation aims to use technology to achieve higher level of maturity for the internal organisational structure. In theory, this maturity helps company A to enable stable internal environment and facilitate the organisation to be responsive to the outside change, thereby achieving continuous economic fitness on an ongoing basis. Moreover, alignment of ERP technology with the internal business structure, business processes, and business execution help this organisation to conform to its internal structure and external interactions and grow its internal sub systems in sync. Technology and organisational maturity at company A highlighted the following factors,

Technology Objectives

Having definitive and clear technology objectives result in more consistent direction to ERP implementation rather than just fulfilling individual and ad-hoc requests. Company A has a five-year rolling plan and strategy that matches what the business wants to achieve. In order to fulfil those business directions, the architecture team does strategic planning to determine business needs for the coming year and then assess and prioritize them. This results in a plan for upgrading modules or configuring SAP system. The IT change manager describes technology implementation objectives at company A as, The organisational goals and/or visions direct the pre-assessment process, and govern the implementation and post-implementation phases. The IS performance evaluation criteria, therefore, are strongly based on organisational goals and technology objectives. These criteria help us to ensure that technology is mapped properly onto business needs and information is at hand to reduce wastage of effort and money through effective resource utilisation.

IT Change Manager

Strategic Alignment

Company A tries to follow a top-down approach to ERP implementation, which helps it with clear definition of business information needs and the ability to address these needs with technology capabilities. However, the complexity of organisational structure at company A (which is becoming even more complex with passage of time) results in the lack of strategic alignment at some stages of ERP implementation and assimilation. In the words of IT manager, Alignment of business information needs with technology becomes more difficult, when the complexity of organisational structure increases. In fact, each department or division has its own managerial strategies, business rules, processes, and cultural and political considerations which make it difficult to strategically align information needs with technology capabilities.

IT Manager

In addition, company A had no experience with major technological platforms. It has traditionally used legacy systems and moving to an integrated ERP system was a major change. The organisation, therefore, relies heavily on system integrating partners and consulting to guide them on what the technology could deliver for the organisation and what it could not. This dependency, however, has decreased over time as ERP system becomes embedded within everyday life of organisational members. Bringing in outside knowledge into the ERP implementation and assimilation process helps it to align technology better with business needs and not repeating some of the fundamental mistakes that it otherwise would. The solution architect suggests that,

We have various support channels with SAP to help us even after the system goes live. However, as people become more comfortable with ERP and it becomes embedded in the organisation, the support structure will change accordingly. As we reach higher level of IS maturity, their support are more limited to strategic point of view, instead of operational level and day to day basis.

Solution Architect

Regular Evaluations & Upgrading of Technological Infrastructure

Company A believes that IT infrastructure needs to be re-evaluated every four to five years to ensure that it is up-to-date and aligned with the business needs. History and technology trend show that if company A leaves its IT infrastructure for too long without evaluating and upgrading, it becomes less reliable and does not operate properly. Besides, external vendors may not be able to support obsolete infrastructure by passing time. This organisation, thus, started a project eight years ago to re-architect ERP infrastructure in order to comply with configurative pressures exerted on it. This project aims at integrating the technological infrastructure of company A with its value chain to enhance organisational competitiveness.

User Competency

Company A operates on two extremes. There are some employees who are not technology savvy and nearing the end of their career and have less desire to learn new technologies. At the same time, they are fresh workforce who have been brought up with technology and consider technology as the integral part of their work. Those people who are not technology savvy have

the tendency of creating, implementing, and using ad-hoc solutions within technologies they are comfortable with. As a result, it not only adds to technology discrepancy in the organisation, but at the same time, information captured is not integrated and interoperable. This discrepancy manifest itself into much more profound issues due to lack of availability of right information in right format at a right time to make decision. As a result, there are some sections in the organisation which are technologically more mature than other sections. In the words of senior business analyst,

The level of IT maturity among some business sections is insufficient which exert significant amount of pressure in routinization of ERP usage. Although we built an integrated IT infrastructure, most of our employees are not motivated enough to move to the new system.

Senior Business Analyst

Skills and Expertise of Project Team

Company A is conscious of configurative pressure and using technology for logical organisation and economic legitimacy of the organisation. However, it has not achieved these two objectives completely. This is because people engaged at ERP implementation project at company A had no experience of implementing a major technological platform like ERP before. At the same time, there were not aware of technology abilities, requirements, and how to align technology capabilities with business needs.

Identifying Exact Information Requirements

Company A will face difficulties in designing and implementing ERP technology, if it does not define the exact information requirements at the beginning of the project. This organisation goes through series of workshops for any technology procurement and/or change proposal. As mentioned earlier, these workshops aim to bring together all key stakeholders to discuss what the exact requirements are and how these requirements help this organisation to satisfy its goals. This helps in conforming to configurative mechanisms exerted on this organisation to be logically organised.

DISCUSSION AND CONCLUSIONS

Technology institutionalisation involves a full understanding of technological innovations so that it becomes ingrained into organisations work processes ([3], [19]). The assimilation and diffusion of information technology in organisations has been of great interest to researchers on information systems for about two decades. However, the assimilation of complex technologies is never easy, and a myriad of institutional, external, and internal forces blend together to influence how potential adopters make sense out of the technology and, accordingly, assimilate its use ([1], [4], [16], [26]). Traditionally, ERP systems were used mainly to handle organisation's back-end processes and business transactions. However, today, organisations integrate both back-end and front-end (such as CRM, SCM) applications together to achieve more efficiency in functional and non-functional capabilities of the organisation ([28]). This makes ERP as a complex technology, which encounters more assimilation and institutionalisation challenges. In fact, ERP institutionalisation is a continuing process of learning aimed at the evolving use of ERP systems. This means that value profile of ERP adoption cannot be realized with simple implementation and assimilation of technology, unless it is fully institutionalised within the organisation. It, thus, becomes a continuous process aimed at organisational learning through alignment between the organisation's strategy, its business needs, and the application of ERP system within the organisation, where the use of ERP system is shaped by the organisational context and actors and guided by the evolving value profile of the organisation ([23], [24]).

This paper concludes that the degree of structural and economic legitimization of a business is affected by the maturity of its information systems and the degree to which its technological infrastructure is mapped properly onto business needs and information is at hand to reduce wastage of effort and money through effective resource utilization. The organisational desire to conform to its internal organisational competencies and information systems maturity leads the authors to come with a new form of isomorphic pressures, i.e., configurative isomorphic pressure. This paper presents an illustrative case study of ERP adopting organisation in Australia to show how various isomorphic mechanisms affect ERP assimilation and institutionalisation process. The case organisation works as a private electricity distribution organisation to manage a significant piece of public infrastructure in one of the states of Australia. This paper reviewed the results of within case analysis of data gathered in this organisation including direct quotes from interviewees, internal document reviews, and observation of work place.

The case analysis reveals that ERP institutionalisation is influenced by the desire of case A to conform to coercive, normative and configurative isomorphism. This organisation needs to technically comply with certain coercive requirements, standards and codes of regulatory arrangements such as AER, AEMA and COAG. At the same time, company A seeks to gain technical legitimacy by following professionals in electricity distribution industry, and latest technological trends achieved through online web sessions and national and international conferences. Furthermore, as mentioned before, Australian electricity industry was deregulated in early 1990s. Company A, therefore, is operating in an industry that is still going through the process of re-organisation which resulted in company A not facing appropriate mimetic pressures. At the same time, the internal and external environment of company A is changing which influences its demand for new technological innovations. However, this organisation does not have a clear idea of exactly what technologies are going to be adopted and how the technology will be integrated with the core SAP solution or substitute it, and how the regulatory framework will adapt to and encourage changes. In these circumstances, configurative pressure forces company A to harness different functions of the organisation, appropriately utilise organisational resources, and integrate its business operations to seek economic legitimacy. Through the next step of this study, the authors will conduct another three to four case studies among Australian ERP adopting

organisations. The gathered data will further studied through within-case as well as cross-case analysis to find emerging relationships between variables.

REFERENCES

- [1] Alter, S. (2008). 'Defining information systems as work systems: implications for the IS field'. *European Journal of Information Systems*, 17(5), 448-469
- [2] Bajwa, D. S., Garcia, J. E., and Mooney, T. (2004). 'An integrative framework for the assimilation of enterprise resource planning systems: phases, antecedents, and outcomes', *Journal of Computer Information Systems*, 44(3), 81-90.
- [3] Baptista John, J. (2009). 'Institutionalisation as a process of interplay between technology and its organisational context of use', *Journal of Information technology*, 24(4), 305-319.
- [4] Buhalis, D., & Law, R. (2008). 'Progress in information technology and tourism management: 20 years on and 10 years after the Internet—The state of eTourism research'. *Tourism management*, 29(4), 609-623.
- [5] Carr N (2003). 'IT doesn't matter'. *Harvard Business Review*, 81(5), 41-49.
- [6] Chatterjee, D., Grewal, R., and Sambamurthy, V. (2002). 'Shaping up for e-commerce: institutional enablers of the organisational assimilation of web technologies', *MIS Quarterly*, 26 (2), 65-89.
- [7] DiMaggio, P.J., and Powell, W.W. (1983), 'The Iron Cage Revisited: institutional isomorphism and collective rationality in organisational fields', *American sociological review*, 48(2), 147-160.
- [8] Eisenhardt, K. M. (1989). 'Building theories from case study research', *Academy of management review*, 14(4), 532-550.
- [9] Gallivan, Michael J. (2001). 'Organisational adoption and assimilation of complex technological innovations: development and application of a new framework', *Database for Advances in Information Systems*, 32 (3), 51-85.
- [10] Greenwood, R. (2008). *The SAGE handbook of organisational institutionalism*. Los Angeles: Sage.
- [11] Huang, Z., and Palvia, P. (2001). 'ERP implementation issues in advanced and developing countries'. *Business Process Management Journal*, 7(3), 276-284.
- [12] Karimi, J., Somers, T. M., and Bhattacharjee, A. (2007). 'The role of information systems resources in ERP capability building and business process outcomes'. *Journal of Management Information Systems*, 24(2), 221-260.
- [13] Kirby, M., and Rosenhead, J. (2010). 'IFORS'Operational Research Hall of Fame'. *International Transactions in Operational Research*, 17(1), 145-151.
- [14] Kouki, R., D. Poulin, and Pellerin, R. (2007). 'ERP Assimilation Challenge: An Integrative Framework for a Better Post-Implementation Assimilation', *Journal of Operations and Logistics*, 2007, PP. V.1-V.16.
- [15] Lammers, J. C., and Barbour, J. B. (2006). 'An institutional theory of organisational communication', *Communication Theory*, 16(3), 356-377.
- [16] Laudon, K. C., & Laudon, J. P. (2012). *Management information systems: managing the digital firm* (Vol. 12). Pearson
- [17] Liang, H., Saraf, N., Hu, Q., Xue, Y. (2007). 'Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management'. *MIS quarterly*, 31(1), 59-87.
- [18] Lyytinen, K., Newman, M. and Al-Muharfi, A.R.A. (2009). 'Institutionalizing enterprise resource planning in the Saudi steel industry: a punctuated socio-technical analysis', *Journal of Information Technology*, 24, 286-304.
- [19] Maheshwari, B., Kumar, V., and Kumar, U. (2010). 'Delineating the ERP institutionalisation process: go-live to effectiveness', *Business Process Management Journal*, 16(4), 744-771.
- [20] Meyer, J. W. (2008). Reflections on institutional theories of organisations. R. Greenwood, C. Oliver, K. Sahlin, R. Suddaby, eds. *Handbook of Organisational Institutionalism*. Sage Publications, Thousand Oaks, CA, 790-811.
- [21] Mignérat, M., and Rivard, S. (2009). 'Positioning the institutional perspective in information systems research', *Journal of Information Technology*, 24(4), 369-391.
- [22] Pavlou, P. A., and El Sawy, O. A. (2006). 'From IT leveraging competence to competitive advantage in turbulent environments: The case of new product development'. *Information Systems Research*, 17(3), 198-227.
- [23] Pishdad, A., & Haider, A. (2013a). 'ERP Institutionalisation: Exploring the Influential Factors'. *Journal of Enterprise Information Management*, 26(6), 642 - 660.
- [24] Pishdad, A, and Haider, A (2013b), 'Social and Cultural Issues in Institutionalisation of ERP Systems', *19th Americas Conference on Information Systems (AMCIS)*, 15-17 August, Chicago, Illinois, USA.
- [25] Powell, W. W., and DiMaggio, P. J. (Eds.). (1991). *The new institutionalism in organisational analysis*, Chicago: University of Chicago Press.
- [26] Purvis, R. L., Sambamurthy, V., and Zmud, R. W. (2001). 'The assimilation of knowledge platforms in organisations: An empirical investigation'. *Organisation Science*, 12, 2, 117-135.
- [27] Scott, W. R. (2001), *Institutions and organisations* (2nd ed.), Thousand Oaks, CA: Sage.
- [28] Seddon, P. B., Calvert, C., Yang, S. (2010). 'A multi-project model of key factors affecting organisational benefits from enterprise systems'. *MIS quarterly*, 34(2), 305-328.
- [29] Staw, B. M., and Epstein, L. D. (2000). 'What Bandwagons Bring—Effects of Popular Management Techniques on Corporate Performance, Reputation and CEO Pay', *Administrative Science Quarterly*, 45(3), 523-556.
- [30] Teo, H. H., Wei, K. K., and Benbasat, I. (2003). 'Predicting intention to adopt interorganisational linkages: An institutional perspective'. *MIS Quarterly*, 27(1), 19-49.

- [31] Ugrin, J. (2009). 'The Effect of System Characteristics, Stage of Adoption, and Experience on Institutional Explanations for ERP Systems Choice', *Accounting Horizons*, (23)4, 365–389.
- [32] Weerakkody, V., Y. K. Dwivedi, and Irani, Z. (2009). 'The diffusion and use of institutional theory: A cross-disciplinary longitudinal literature survey', *Journal of Information Technology*, 24 (4), 354-368.
- [33] Zhu, K. (2004a). 'Information transparency of business-to-business electronic markets: A game-theoretic analysis'. *Management Science*, 50(5), 670-685.
- [34] Zhu, K. (2004b). 'The complementarity of information technology infrastructure and e-commerce capability: A resource-based assessment of their business value'. *Journal of Management Information Systems*, 21(1), 167-202.
- [35] Zhu, K., and Kraemer, K. L. (2002). 'E-commerce metrics for net-enhanced organisations: Assessing the value of e-commerce to firm performance in the manufacturing sector'. *Information Systems Research*, 13(3), 275-295.
- [36] Zhu, K., Kraemer, K. L., and Dedrick, J. (2004). 'Information technology payoff in e-business environments: An international perspective on value creation of e-business in the financial services industry'. *Journal of Management Information Systems*, 21(1), 17-54.
- [37] Zhu, K., and Kraemer, K. L. (2005). 'Post-adoption variations in usage and value of e-business by organisations: Cross-country evidence from the retail industry'. *Information Systems Research*, 16(1), 61-84.
- [38] Zhu, K., Kraemer, K. L., and Xu, S. (2006). 'The process of innovation assimilation by firms in different countries: A technology diffusion perspective on E-business'. *Management Science*, 52(10), 1557-1576.
- [39] Zilber, T. B. (2002). 'Institutionalization as an Interplay between Actions, Meanings, and Actors: The Case of a Rape Crisis Center in Israel'. *Academy of Management Journal*, 45(1), 234-254.
- [40] Zsidisin, G. A., Melnyk, S. A. and Ragatz, G. L. (2005). 'An institutional theory perspective of business continuity planning for purchasing and supply management', *International journal of production research*, 43 (16), 3401–3420.