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# Institutionalisation of Enterprise Systems through Organisational Isomorphism

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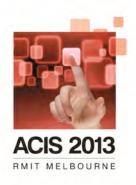*University of South Australia*, abrarhaiders@gmail.com

# Information Systems: Transforming the Future

# 24th Australasian Conference on Information Systems, 4-6 December 2013, Melbourne

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## Abstract

*The analysis of IS implementation and lifecycle management theories concludes that, ERP systems or for that matter any information system is a socio-technical system; and the social, cultural, organisational and competitive context of their implementation cannot be ignored. Various institutional pressures are exerted on ERP initiation, adoption, and routinization by organisations to achieve competitive, economic, technical, environmental and organisational legitimacy and authority. There are theoretical supports available for environmental isomorphic mechanisms; however, comparing to tremendous amount of studies on coercive, normative, and mimetic, there are little studies that actually look at other organisational and internal institutional elements which are influencing technology implementation, assimilation and institutionalisation process. This research aims to fill this gap by introducing perceptive, confirmative, and configurative mechanisms as new forms of institutional isomorphism, i.e., organisational isomorphism.*

## Keywords

Enterprise systems, technology institutionalisation, organisational isomorphism, institutional theory

## INTRODUCTION

Contemporary business organisations are more concern about the physical implementation of technology rather than the factors and the cause and effects that help shape the use of technology in the organisation and help technology as well as other institutions within the organisation to grow and mature in relation with each other. In fact, the role of information technologies is evolving over time in organisations. According to Laudon and Laudon (2012), 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 (Alter 2008; Buhalis and Law 2008; Laudon and Laudon 2012).

Information systems are social systems and have an integral role in evolution and maturity of the organisation as well as its structures, culture, and operations. Technology implementers and managers should not aim at 'adaptive' fixing of organisation's information and automation problems; in fact they should aim at institutionalisation of technology within the organisation to benefits from the 'generative' influence of technology. Tolbert and Zucker (1999) characterized technology institutionalisation process 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). ERP institutionalisation, therefore, occurs when its usage becomes stable, routinized and embedded within the organisation's work processes and its value chain (Ugrin 2009; Maheshwari *et al.* 2010). 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 address this issue by investigating other institutional elements which are influencing ERP institutionalisation process. This paper contributes to technology diffusion and institutionalisation theories by asserting that organisations have to seek

organisational isomorphism along with environmental isomorphism to properly and completely institutionalise technology. According to organisational isomorphism, organisations desire to create technological infrastructure that is perceptive (comply with organisational learning capabilities and future organisational goals), confirmative (look similar to cultural values and assumptions of the organisation), and configurative (conform to internal organisational competencies and information systems maturity). This paper describes a case study of an ERP adopting organisation in Australia to show how the interplay between various isomorphic mechanisms leads to successful institutionalisation of ERP systems within the organisation.

This paper is structured as follows. The next section reviews literature on different perspective in technology assimilation and institutionalisation. The following section describes institutional theory and various known institutional isomorphic mechanisms, i.e., coercive, normative and mimetic. The paper then explains proposed methodology for doing this research followed by introducing perceptive, confirmative, and configurative pressures as new sources of organisational isomorphic mechanism. An illustrative case study is then presented to reveal how various isomorphic pressures shape understanding of, adoption, usage, adaptation and consequently institutionalisation of technology. The last section summarizes conclusions of this research.

## TECHNOLOGY ASSIMILATION AND INSTITUTIONALISATION

Technology assimilation refers to the diffusion of ERP usage across organisational business processes and the routinization of activities within these processes. After technology is implemented in an organisation and its usage becomes routinized and embedded within the organisation's work processes and value chain activities, it leads to institutionalisation of technology (Rogers 2003; Ugrin 2009; Maheshwari *et al.* 2010). Technology institutionalisation, thus, involves a full understanding of technological innovations so that it becomes ingrained into organisations work processes (Baptista 2009; Maheshwari *et al.* 2010). 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, 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).

Various authors have elucidated the process of technology implementation, assimilation and institutionalisation in different ways [as illustrated in table 1]. Although the use of terms is diversified, the explanation of meaning and definition remains similar, thus, some words are not really differentiated in terms of concept, but mere terminologies. For example the word 'infusion' used by Cooper and Zmud (1990) and the word 'routinization' by Zhu *et al.* (2006) and 'general deployment' by Fichman and Kemerer (1997) bring about the same meaning, i.e. the full use and understanding of technology by the whole workforce in an organisation. This research, however, concurs with Zhu *et al.* (2006) who suggest initiation, adoption, and routinization as the core elements of IT assimilation process. These three steps embody the pre-implementation, implementation, and post-implementation stages of ERP assimilation which offer a more comprehensive foundation. More detailed information on ERP assimilation process is discussed in Pishdad and Haider (2013b).

Table 1. Different Perspectives in Technology Assimilation/ Institutionalisation (Literature Review)

| Author | Subject/term | Classification of Stages |
|---|---|---|
| Cooper and Zmud (1990) | Technology Implementation | **IT Implementation Model** — 1. Initiation  2. Adoption  3. Adaptation  4. Acceptance  5. Routinization  6. Infusion |
| Gallivan (2001) | Technology Assimilation | 1. Initiation  2. Adoption — **Early Stages of Assimilation**; 3. Adaptation  4. Acceptance  5. Routinization  6. Infusion — **Later Stages of Assimilation** |
| Zhu *et al.* (2006) | Technology Assimilation | **Three Stages of Technology Assimilation** — Initiation → Adoption → Routinization |
| Fichman and Kemerer (1997) | Technology Assimilation | **Assimilation of Software Process Innovations** — 1. Awareness  2. Interest  3. Evaluation/ trial  4. Commitment  5. Limited deployment  6. General Deployment |

## INSTITUTIONAL THEORY AND ENVIRONMENTAL ISOMORPHIC MECHANISMS

Institutional theory has been applied to various dimensions of technology management paradigm (See for example, DiMaggio and Powell 1983; Greenwood 2008; Baptista 2009; Maheshwari *et al.* 2010). According to institutional theory, a fundamental consequence of institutional isomorphism is the acceptance of an organisation by its external environment or organisational legitimacy (DiMaggio and Powell 1983; Scott 2001). Legitimacy is a critical concept in institutional theory. For example, Deephouse (1996) argued that *"organisations that conform to the strategies used by other organisations are recognized by regulators and the general public as being more legitimate than those that deviate from normal behaviour."* (p. 1033). The interrelationship of an organisation within its institutional environment cause some set of organisations to become more similar over time through resemblance of a focal organisation to other organisations in its environment (DiMaggio and Powell 1983; Deephouse 1996). Environmental isomorphism is a process in which organisations aim to excel by aligning themselves with the environmental conditions through their social rules, ideals, and practices. DiMaggio and Powell (1983) introduced three sources of institutional pressures (i.e., coercive, normative, and mimetic) to explain how archetypes or forms among organisations become similar over time. The interpretation of intention to adopt technology and the prevailing context of the organisation is affected by its perception of these pressures (DiMaggio and Powell 1983; Greenwood 2008). Milstein *et al.* (2002) argued that *"researchers considering organisations and the natural environment have used these pressures to explain the convergence of attitudes regarding environmental strategies among or within firms."* (p. 151). The literature on environmental strategies have been emphasized the influence of coercive, normative and mimetic isomorphic pressures on organisational acceptance of environmental agendas and aim to study how isomorphic pressures may affect an organisation's ability to realize superior financial performance from environmental strategies (Jennings and Zandbergen 1995; Milstein *et al.* 2002; Baptista 2009). In general, coercive pressure usually occurs by organisational desire to conform to laws, rules, and sanctions established by institutional actors or sources, whereas normative mechanism mostly concerns the moral and pragmatic aspects of legitimacy by assessing whether the organisation plays its role correctly and in a desirable way. Finally, mimetic forces are a cause of organisational tendency to remain similar to its peers in order to get positive evaluation from the industrial environment (DiMaggio and Powell 1983).These pressures are elaborated with more details in the study done by Pishdad and Haider (2013a).

## RESEARCH METHODOLOGY

This research follows a qualitative interpretive approach with an explorative case study method. It is governed by the eight step framework proposed by Eisenhardt (1989). 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 distributer 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 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 (Eisenhardt 1989).

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.

## ORGANISATIONAL ISOMORPHISM

Elsbach (1994) introduced two major theoretical perspectives for describing management of organisational legitimacy, i.e., impression management theories and institutional theories. The main emphasis of institutional theorists is on how organisations achieve legitimacy by merely adopting and maintaining widely used and accepted practices, which takes a more passive organisation-level view (DiMaggio and Powell 1983; Rogers 2003). On the other hand, impression management theories have taken an active, individual view of the

management of legitimacy and mainly focus on how people manage their personal legitimacy by taking on active roles and displaying social affiliations (Tedeschi 1981; Elsbach 1994). Suchman (1995) believes that business organisations face both institutional constitutive pressures as well as strategic operational challenges. Therefore, they have to link the contributions of these two set of theories and provide larger picture that highlights both the ways in which legitimacy acts like a manipulable resource by individuals in response to legitimacy treats and the ways in which it acts like a taken-for-granted belief system. This research aims to fill gaps in institutional theory by linking institutional theories with other social and cultural perceptive of technology in organisation to help smoother technology implementation, assimilation and institutionalisation process.

Organisational isomorphic mechanisms aim to help organisations to understand how and why they exhibit similarity and variation in the use of organisational forms and managerial practices. This understanding is critical for tracing the relationship between organisations and the logic that constitutes their institutional context (Feldman and Pentland 2003; Bala and Venkatesh 2007; Meyer 2008; Martin and Frost 2011). This new set of isomorphic mechanisms offers explanation for social approval, organisational stability, legitimacy and cultural persistence within organisations (Avgerou 2000). It is a result of organisational desire to satisfy and comply with its learning capabilities, internal competencies, and cultural values. Perceptive, confirmative, and configurative are three isomorphic pressures influencing organisations in gaining legitimacy, efficiency, maturity, and economic fitness by continuously addressing internal as well as external challenges. These mechanisms are explained with more details in the rest of this section.

### Perceptive Pressure

Organisations aim to be responsive to internal and external changes to become competitive. They are, therefore, engaged in conscious effort to develop internal capabilities, so as to use the same to address external challenges and to look similar to other evolving institutions. It is important that the organisation continuously evaluates itself, to assess how it is going, what are the performance gaps (if any), how can it sustain its operations, and how should it grow both internally as well as externally. Perceptive pressure forces the organisation to treat technology as means of building information management and analyses capabilities to become responsive to changes in the internal and external business environment. Thus, each technology is considered as a piece in the bigger jigsaw puzzle of a coherent view of organisational information, thereby allowing the organisation to assess, learn, and grow (Robey and Boudreau 1999; Feldman and Pentland 2003; Bala and Venkatesh 2007; Vandaie 2008). Organisational learning is the core characteristic of responsiveness, which helps the organisation to learn from past experiences and grow accordingly (Sproull 2010). It considers organisations to be cognitive entities, capable of reflecting and modifying their own behaviour (Reardon and Davidson 2007; Parthasarathy and Ramachandran 2008). Organisations, therefore, are more inclined to implement information technologies, which support learning process and capture, transfer and manage knowledge around them (Bala and Venkatesh 2007; Vandaie 2008). This new form of organisational isomorphism is described with more details in Pishdad and haider (2013a) with different connotation i.e., organisational responsiveness mechanism.

### Confirmative Pressure

Culture has a strong influence on understanding and persuading intangible aspects of organisation and to identifying ways of building strong, cohesive environment for technology implementation (see for example, Avgerou 2000; Soh *et al.* 2000; Gosain 2004; Leidner and Kayworth 2006; Davidson and Chismar 2007; Ke and Wei 2008; Martin and Frost 2011; Papilloud and Hahn 2011). It signals areas of strong consensus wherein values, social ideals, assumptions, beliefs and behaviours are shaped over time and shared among organisational members. Organisational culture consists of various subcultures that assign different social meanings to organisational artefacts (Zilber 2002; Gosain 2004; Leidner and Kayworth 2006; Papilloud and Hahn 2011). For example, implementation and use of technology may produce positive social meanings like competitiveness, modernity and legitimacy, as well as negative social meanings such as the restriction of personal freedom (Robey and Boudreau 1999). Confirmative pressure forces the organisation to culturally compose use of technology to gain contextual sanction. Confirmative pressure exerts commanding influences on how employees perceive events and how they behave (Avgerou 2000; Zilber 2002; Davidson and Chismar 2007; Ke and Wei 2008; Martin and Frost 2011). It, thus, conforms to the strong organisational desire of looking similar to cultural values and assumptions embedded within the organisation as well as technology. A technology is also a cultural artefact, as it is developed on some defined assumptions, values, and beliefs (Soh *et al.* 2000; Gosain 2004). For example, an ERP system, owes its genesis to materials planning, is modular, and an integrated product. These characteristics represent a cohesive culture based on functional specialisation. Inconsistency between values of an organisational culture and assumptions embedded within the technology, however, are likely to come in conflict and cause problems, such as resisting the technology implementation and modifying underlying assumptions embedded in the technology to match existing organisational culture (Soh *et al.* 2000; Gosain 2004). Confirmative pressure, thus, forces the organisation to seek cultural homogeneity through technology implementation and assimilation, which leads to a higher degree of institutionalisation.

**Configurative 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 (Pavlou and El Sawy 2006). 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 (Chatterjee *et al.* 2002; Zhu and Kraemer 2005; Hung and Low 2007). 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 (Karimi *et al.* 2007; Hung and Low 2007). The stability of the internal structure and the flow of information contribute to the economic fitness/legitimacy of the organisation on an ongoing basis. Moreover, 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.

## THE CASE OF ELECTRICITY UTILITY ORGANISATION

Since 1990s, the context of company A has changed from being a small service business to a large sized organisation that enjoys a dominant position in electricity retail industry. The organisation's technological infrastructure has matured along the continuum of several standalone disparate legacy systems to integrated solutions. Since early 2000s, company A has made significant moves towards renewing its infrastructure. Initially, it moved financial, asset management and related backend modules from legacy system to Oracle solution. Later organisation A integrated its billing system, customer relationship management and some important frontend processes within the SAP system. These two technologies along with some retained critical legacy systems have been integrated to enable critical business applications infrastructure. At present, the technological infrastructure of company A is centred around customer facing solutions, including a SAP R/3 ERP system and Oracle financials application that handle its critical backend and frontend processes.

Environmental pressures (such as coercive, normative, and mimetic) on technology implementation in this organisation have produced mixed results. Since deregulation of electricity market in Australia, company A has been subjected to continuous change. Australian electricity market works on a horizontally federated model, rather than the traditional vertical model as followed in the United States. In Australian market, supply between electricity generators and consumers is managed through a cash or spot market. In this arrangement output from all generators is aggregated and centrally coordinated to manage demand. Coercive pressures from environmental forces acting on this organisation, therefore, come predominantly from consumers and the Australian National Electricity Market. For example, due to governmental regulations, the electricity retailers are required to provide customers with smart meters, so that they can monitor their energy use. This requires real time integration of usage data with billing data. Company A has integrated its billing system with SAP system; therefore, it is able to provide customers with this information and in doing so is able to respond to the pressures on the organisation exerted by external forces. The effect of coercion forces has been further highlighted in the words of solution architect when he stated that,

> Our industry is very tightly regulated and controlled. We have a central governmental body named AEMO (Australian Energy Market Operator) through which different companies (such as retailer, data providers (meter readers), whole sellers, and distributers) are integrated to each other and exchanging information. Technically, AEMO determines the content of all messages we should send back and forward to different organisations, the format (like the number of characters, compliance with an XML schema) or the time frame within which we should respond to a message. AEMO, thus, force us to comply with some technical aspects while we are communicating with our partners, suppliers, and customers which we should consider in our SAP implementation.
>
> Solution Architect

The compliance with coercive pressures has resulted in positive sanctioning of company A within the industry and has strengthened its relationship with customers as well as regulators. However, this coercion and compliance could be used in change management strategies to help employees view ERP system as the enabler of the business. Such positive sanctioning facilitates with the process of technology becoming stabilized and routinized within company A. Normatively, this organisation is evolving through its interactions with suppliers and customers. Although it has invested in integration with both the buy-side as well as sell-side of supply chain, the use of ERP for the same is emergent. The organisation has maintained technical similarity of its peers in the industry. However, the deregulated electricity retail market in Australia operates at a low level of maturity. This lack of maturity is also reflected in the organisational technical infrastructure. In terms of technology implementation and assimilation, players in Australian electricity retail industry are in reactive mode rather than proactive mode. Technology implementation and usage in this industry is in response to what the industry regulators stipulate or what the customers demand. Generally, there has been no attempt made to use technology to cut cost and/or offer enhanced value to the customer. Since early 2000s, company A has mimicked technology infrastructure of structurally equivalent organisations that have similar goals, products, and economic network position. However, implementation of ERP system in this organisation has been aimed at maintaining the status quo, i.e. technology replacement for existing legacy systems. It has not used it to innovate and introduce new practices to elevate customer service levels. For example, the number and type of customers of this organisation has been increasing steadily. Responsiveness, therefore, is the key competency for company A. With billing and financial modules of an ERP system integrated with legacy systems, this organisation is able to manipulate information according to billing and electricity usage needs of customers. However, responsiveness is not just being able to process information about specific internal areas or aspects of the business; it is as much outwardly focused as it is inwardly focused. At the same time, it requires certain level of maturity of organisational processes, systems, as well as the organisational planning and management. In the current scenario, company A may become competent in responding to a few customer requirements, but it cannot pre-empt changes in industry or customer requirements that shape industry dynamics. The use of ERP in company A, therefore, is not evolving, which leaves a void in the process of technology institutionalisation. Perceptively, the organisation is far from using ERP technology for internal and external business responsiveness, as has been discussed by its project director,

> The main reason for implementing ERP was to keep up with time. We believe that our legacy systems and their maintenance cause lots of overheads and costs for our organisation. The data integration and reporting issues, the competitive environment of our organisation, the fast growing of our business (its number of employees and customers), and the need for a more responsive type of IT infrastructure exert pressures on us to implement ERP system. However, implementing ERP system does not help us to create end to end information enabled, integrated and interoperable technology infrastructure which is responsive to external and internal changes.
>
> Project Director

Confirmatively, company A has been unable to evolve a unique overall culture, although, the organisation represents fragmentation of very strong subcultures. Due to this, certain functions appear to be more automated than others. This has translated into the productivity of the employees as well as assimilation of technology within the organisation. For example, employees in the more automated functions appear to be more technology savvy than the ones in less automated functions. Furthermore, ERP implementation in case A has been a tussle between planners, designers, facilitators, and users of technology. The four key parties involved in ERP implementation i.e., business managers, IT people, system users, and ERP vendors all have varied backgrounds and interests which made it difficult to arrive at a common ground. As a result, company A struggled with the fundamental question 'does it needs technology savvy business people or business savvy technology people to drive technology implementation and assimilation?' This organisation has a strong value of providing extensive training to its employees, involving them in the design of new processes, involving them in the choice and design of new technology, explaining them why these changes are necessary, and providing them with process maps to show how the proposed technology is going to work. However, even with these supports, company A has struggled to fully assimilate and institutionalise the technology. The underlying reason has been the hype created for the ERP solution that resulted in its overselling to its users. Much of this hype was geared at comparisons between legacy systems and the ERP solution, in terms of addressing business information requirements. However, the lack of congruence between the interests of the various parties involved in planning and implementation of ERP and inappropriate change management resulted in a predicament, where employees lost faith in legacy systems and at the same time the new technology was not delivering at the promised level. In the words of technology support officer,

> High user's expectation from the system was one of our difficulties. Culturally, we had about three years to get used to the idea that SAP system is coming. One of the main risks we face in this journey was overselling (the promise on what the SAP system can deliver). We continuously told people about how our legacy systems were and how much better and how wonderful everything going to be as soon as we go to SAP where the reality is different. At least, in the first year we go through the storm period and still we've got lots of difficulties.
>
> Technology Support Officer

Furthermore, company A suffers from 'process HEROs syndrome'. These process HEROs are employees who have mastered business processes using legacy systems and their knowledge is considered in high esteem within the organisation. However, they have resisted ERP and embedded and associated cultural and organisational change, and have designed their own innovations related to processes and routines to handle their routine job activities. These include a range of ad-hoc spreadsheets and databases to facilitate certain tasks, and in doing so further delaying acceptance, adaptability and routinization of ERP technology. In the words of IT manager,

> There are always some people called 'process HEROs' who think they know more about the business processes than the system introduces to them. Thus, they are not going to use the system in its proposed way, they start designing their own processes, routine and norms to handle their job, thus, making system's acceptance, adaptability and routinization to be delayed. This may be the result of knowledge gap which is one of the main cultural misfits in ERP implementation. Selecting vendors with significant industry knowledge and budgeting for vendors to spend time educating key users about the system are two strategies for filling this gap.
>
> <div align="right">IT Manager</div>

Configuratively, company A is going through re-organisation by engaging in re-engineering of its business processes to achieve consistency of service from the use of ERP technology. Besides, there are new technology trends towards moving ERP on cloud, however, company A believes that it needs to have higher levels of IS maturity in order to be able to use such this structure. The business development manager stated that,

> Once an organisation outsources a capability, it does not tend to grow the maturity, and is kept where it is outsourced. In fact, I believe we stick to the level of IS maturity on our outsourced modules. The main issue is that, what we outsourced initially was immature internal capability, and sticking to that level of maturity brings us lots of troubles. We outsourced so early, before we first get maturity in the outsourced processes.
>
> <div align="right">Business Development Manager</div>

In summary, company A exhibits a mixed response to ERP implementation, assimilation, and institutionalisation, For example, there are some parts of this organisation which have fully implemented ERP and at the same time the technology has also been integrated with critical legacy systems. Company A has integrated most of its back-end as well as front-end processes. However, it has been unable to get the same level of efficiency throughout the organisation. The major reason is the inability of the ERP implementation stakeholders to find the synergy between technology and other organisational institutions for organisational maturity. Narrow organisational objectives, like cost minimization, legacy technology replacement, and process automation, have further hampered complete assimilation and institutionalisation of technology within the organisation. The forces of resistance acting on ERP implementation and assimilation are significant and the organisation is faced with tougher political, organisational, economic, cultural, and technical challenges to overcome them.

Assuming that a certain capability is not required by company A may be a cost effective option in the short term, but in the long term it is leaving a gap that may be important for the growth of other organisational sub institutions. The resultant lack of alignment between technology and organisational evolution has contributed to lack of routinization of ERP in some areas of the business. Management terms this approach as their version of adhocracy to by cutting across normal bureaucratic lines to capture opportunities, solve problems, and get results. However, the view that 'takes for granted' that the outsourced capability is not critical for the organisation has led to the institutionalisation of ad-hoc view of ERP.

## DISCUSSION AND CONCLUSION

While adopting a major technology platform like ERP, organisations seek to align themselves with their peers as well as industry, gain cultural affinity and maturity of their organisational infrastructure, standardisation of their business processes as well as their enabling technological infrastructure. ERP implementation, thus, should not be viewed as simple installation of technology; instead the organisation engages in an ongoing process of evolving ERP use by matching its capabilities with information requirements of the organisation, and in the process helping the organisation gain internal as well as external affinity, technical conformity, and economic fitness on an ongoing basis (Meyer 2008; Ugrin 2009; Maheshwari *et al.* 2010).

This paper has demonstrated that institutionalisation of ERP technology cannot be achieved by solely considering environmental isomorphic mechanisms (i.e., coercive, normative and mimetic). It concludes that technology institutionalisation is achieved through mutual interaction of these pressure along with other organisational isomorphic pressures (i.e., perceptive, confirmative and configurative). A thorough review of information-based theories and IS literature lead the authors to find some gaps in existing literature on institutional theory such as,

- Legitimacy has various angles and is not only defined in achieving environmental legitimacy. For example, Suchman (1995) believes that organisations seek for legitimacy to enhance the stability and persistence (continuity) of organisational activities. Standardisation of technology throughout the organisation and standardisation of the processes enabled by technology helps the organisation to achieve technological and organisational legitimacy.

- Literature and information-based theories mainly describe the process of learning by drawing inference from behaviour of others and mimesis behaviour. However, other forms of organisational learning occur as more detailed information emerges from the experience of early movers, and as organisations evaluate their own experience (Lieberman and Asaba 2006). This learning result in legitimacy and achieving tacit and explicit knowledge which is more based on what an organisation knows internally. The experience gained in this way is more costly and time consuming than imitation.

- Individual "moral entrepreneurs" play an important role in disrupting old institutions and in initiating new ones. In fact, the charisma of individual organisational leaders may lead to personal legitimacy (Suchman 1995), which is a factor other than coercive, normative and mimetic intentions and can transcend and reorder established.

- Imitating complex and major technological platforms may bring additional uncertainty (i.e., causal ambiguity) about methods used by leading organisations in achieving superior results. In fact, environmental uncertainty promotes "uncertain imitability" which further amplifies the likelihood of undesirable outcomes. Therefore, current views to institutional theory underestimate the effects of internal organisational and technological capabilities on achieving technical and economic legitimacy.

This paper aims to fill these gaps and provides a roadmap for information systems planners and managers by explaining organisational and institutional isomorphic pressures that shape technology institutionalisation in contemporary business organisations. This paper illustrates how perceptive, confirmative, and configurative pressures influence organisations in gaining legitimacy, efficiency, maturity, and economic fitness by continuously addressing internal as well as external challenges. These mechanisms shape as a result of organisational desire to satisfy and comply with its learning capabilities and future organisational goals, cultural values and assumptions, and internal organisational competencies and information systems maturity. The theory developed in this research was applied to a large electricity provider organisation in Australia, which highlighted that organisational isomorphism is indeed congruous with other known institutional isomorphism. The within case analysis lead authors to believe that, technology is not just implemented to seek institutional isomorphism to align with competitors and peers in the industry; there are other isomorphic pressures and motives that need to be consciously taken into account. Institutionalisation of ERP technology in the case organisation is imperfect. Technology assimilation lacked proper understanding of the congruous nature of organisational, cultural, and competitive environment of the organisation that socially composes and physically endorsees it. The case organisation has a myopic view of ERP, where it has failed to realise that ERP assimilation and institutionalisation is a continuous process aimed at organisational evolution through alignment between the organisation's information requirements and application of the technology within the organisation, where the use of technology is shaped by the organisation's internal and external context and maturity of its technological infrastructure, and guided by the improvisation of the value profile that the stakeholders attach to technology implementation.

## REFERENCES

Alter, S. (2008). 'Defining information systems as work systems: implications for the IS field'. *European Journal of Information Systems*, 17(5), 448-469

Avgerou, C. (2000). IT and Organisational Change: An institutionalist perspective, *Information Technology & People*, 13(4), 234–262.

Bala, H. and Venkatesh, V. (2007). Assimilation of Inter Organisational Business Process Standards, *Information Systems Research*, 18(3), 340–362.

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.

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.

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.

Cooper, R. B. and R. W. Zmud (1990) Information technology implementation research: a technological diffusion approach, *Management science*, 36, 2, 123-139.

Davidson, E.J. and Chismar, W.G. (2007). The Interaction of Institutionally Triggered and Technology-Triggered Social Structure Change: An investigation of computerized physician order entry, *MIS Quarterly*, 31(4), 739–758.

Deephouse, D. L. (1996). Does isomorphism legitimate?. *Academy of management journal*, 39(4), 1024-1039.

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.

Eisenhardt, K. M. (1989). Building theories from case study research, *Academy of management review*, 14(4), 532-550.

Elsbach, K. D. (1994). Managing organizational legitimacy in the California cattle industry: The construction and effectiveness of verbal accounts. *Administrative science quarterly*, 39 (1), 57-88

Feldman, M. S., B. T. Pentland. (2003). Reconceptualizing organisational routines as a source of flexibility and change. *Administrative Science Quarterly*, 48(1), 94-118.

Fichman, R. G., and Kemerer, C. F. (1997) The assimilation of software process innovations: An organisational learning perspective, *Management Science*, 43, 10, 1345-1363.

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.

Gosain, S. (2004). Enterprise information systems as objects and carriers of institutional forces: the new iron cage?. *Journal of the Association for Information Systems*, 5(4), 151-182.

Greenwood, R. (2008). The SAGE handbook of organisational institutionalism. Los Angeles: Sage.

Hung, P., and Low, G. C. (2007). Factors affecting the buy vs build decision in large Australian organisations. *Journal of Information Technology*, 23(2), 118-131.

Jennings, P. D., and Zandbergen, P. A. (1995). Ecologically sustainable organizations: an institutional approach. *Academy of Management Review*, 20(4), 1015-1052.

Karimi, J., Somers, T. M., and Bhattacherjee, 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.

Ke, W., and Wei, K. K. (2008). Organisational culture and leadership in ERP implementation, *Decision Support Systems*, 45(2), 208-218.

Laudon, K. C., and Laudon, J. P. (2012). Management information systems: managing the digital firm (Vol. 12). Pearson

Leidner, D. E., and Kayworth, T. (2006). Review: A review of culture in information systems research: Toward a theory of information technology culture conflict, MIS quarterly, 30(2), 357-399.

Lieberman, M. B., and Asaba, S. (2006). Why do firms imitate each other?. *Academy of Management Review*, 31(2), 366-385.

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.

Martin, J., and Frost, P. (2011). The Organisational Culture War Games. Sociology of Organisations: Structures and Relationships. Thousand Oaks, CA: Sage. 315.

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.

Milstein, M. B., Hart, S. L., and York, A. S. (2002). Coercion breeds variation: the differential impact of isomorphic pressures on environmental strategies (pp. 151-172). Stanford University Press: Stanford.

Papilloud, C., and Hahn, K. (Eds.). (2011). Cultural Technologies Within a Technological Culture: On the Hybrid Construction of Social Life. LIT Verlag Münster.

Parthasarathy, S., and Ramachandran, M. (2008). Requirements engineering method and maturity model for ERP projects. *International Journal of Enterprise Information Systems*, 4(4), 1-14.

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.

Pishdad, A., Haider A. (2013a), 'Responding to External and Internal Changes: Organizational Responsiveness Pressures in Institutionalising ERP Systems', Portland International Centre for Management of Engineering and Technology (PICMET 13), July 28 - August 2, San Jose, USA.

Pishdad, A. and Haider, A. (2013b). ERP Institutionalisation: Exploring the Influential Factors. Journal of Enterprise Information Management, 26(6), 642-660.

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

Reardon, J. L., and Davidson, E. (2007). An organisational learning perspective on the assimilation of electronic medical records among small physician practices. *European Journal of Information Systems*, 16(6), 681-694.

Robey, D. and Boudreau, M.C. (1999). Accounting for the Contradictory Organisational Consequences of Information Technology: Theoretical directions and methodological implications, *Information Systems Research*, 10(2), 167–185.

Rogers, E. M. (2003). Diffusion of Innovations, 5th ed. Free Press, New York.

Scott, W. R. (2001), Institutions and organisations (2nd ed.), Thousand Oaks, CA: Sage.

Soh, C., Kien, S. S., and Tay-Yap, J. (2000). Enterprise resource planning: cultural fits and misfits: is ERP a universal solution?. *Communications of the ACM*, 43(4), 47-51.

Sproull, L. (2010). Chapter 4 Organisational learning, in Claudia Bird Schoonhoven, Frank Dobbin (ed.) Stanford's Organisation Theory Renaissance, 1970–2000 (Research in the Sociology of Organisations, Volume 28), Emerald Group Publishing Limited, pp.59-69.

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of management review*, 20(3), 571-610.

Tedeschi, J. T. (1981). Impression management theory and social psychological research. Academic Pr.

Tolbert, P. S., and Zucker, L. G. (1999). The institutionalization of institutional theory. Studying Organization. Theory & Method. London, Thousand Oaks, New Delhi, 169-184.

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.

Vandaie, R. (2008). The role of organisational knowledge management in successful ERP implementation projects, *Knowledge-based Systems*, 21, 920–926.

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,

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.

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.

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