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Literature Review of Enterprise Systems Research Using Institutional Theory: Towards a Conceptual Model

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Abstract. This paper sets out to examine the use of institutional theory as a conceptually rich lens to study social issues of enterprise systems (ES) research. More precisely, the purpose is to categorize current ES research using institutional theory to develop a conceptual model that advances ES research. Key institutional features are presented such as isomorphism, rationalized myths, bridging macro and micro structures, and institutional logics and their implications for ES research are discussed. Through a literature review of 180 articles, of which 18 papers are selected, we build a conceptual model which advocates for multi-level and multi-theory approaches, and applies newer institutional aspects such as institutional logics. The findings show that institutional theory in ES research is in its infancy and adopts mainly traditional institutional aspects like isomorphism, with the organization as the level of analysis, and in several cases complemented by structuration theory and other theories..

Keywords: Enterprise systems research, institutional theory, literature review, conceptual model, social theory, multi-level analysis.

1 Introduction

Much research on Enterprise Systems (ES) addresses implementation and use as well as alignment between organization and ES, but it is often homogeneous and monolithic, which largely simplifies the complex social settings of modern enterprises (Berente 2009; Boudreau and Robey 2005; Lamb and Kling 2003). The perception of ES has been dominated by a techno-rational and managerial understanding focusing on economic efficiency leading to improved financial performance, where social considerations are downplayed or even overlooked (Dillard and Yuthas 2006), and these under-socialized understandings may be problematic for ES implementation and use. Implementation of ES are often complex due to enterprise-wide integration and data standardization, adoption to "best practice" business models with re-engineering of business processes, compressed schedules, and finally participation of a large number of stakeholders (Soh et al. 2000: 47). The consequences of the under-socialized understandings are that implementation and integration problems are ignored or at best oversimplified, and instrumental solutions are considered superior and sufficient (Dillard and Yuthas 2006), which can result in failure-prone ES implementations and/or reduced value of ES implementations (Davenport 1998) due to users' resistance (Grabski et al. 2003), lack of social commitment (Summer 2003), misalignment between ES and organization (Sia and Soh 2007), and others.

However, institutional theory can be used to address these issues with its ability to "*develop a more structural and systemic understanding for how technologies [enterprise systems] are*

2

embedded in complex interdependent social, economic, and political networks, and how they are consequently shaped by such broader institutional influences" (Orlikowski and Barley 2001: 154), and with its ability to deal with the logics that ES imposes on organizations (Gosain 2004). Despite the advantages hinted by Orlikowski and Barley (2001), IS researchers do rarely adopt an institutional perspective (Berente 2009; Orlikowski and Barley 2001; Weerakkody et al. 2009), and when they do it is a narrow use not exploiting the potential of institutional theory (Currie 2009). The state of theory presents a gap related to "institutional theory in IS research", especially articulated by Orlikowski and Barley (2001), which encouraged us to take a closer look at research on ES using institutional theory, because it offers a conceptually rich lens for studying implementation and use of ES in complex social settings (adapted from Currie 2009). The research questions are thus: (1) How has institutional theory been used in ES research, and (2) what requirements and elements must a conceptual model address to advance use of institutional theory in ES research. The contribution of this paper lies in theorizing about ES using institutional theory, and this is a response to Weerakkody et al. (2009: 8) who states in a very recent paper "*…that very few conceptual/theoretical studies are published for advancing the use of [institutional theory] in IS research*".

ES research are considered a subset within IS research, and we define ES as large-scale organizational systems, built around packaged enterprise systems software, enabling an organization to automate and integrate a comprehensive part of their business processes, to share common data and practices, and to produce and access information in real time. The most important class of ES are enterprise resource planning systems (ERP systems) with other classes as Customer Relationship Management systems (CRM systems) and supply chain

management systems (SCM systems) (Seddon et al. 2003). ES are targeting private organizations, but also increasingly public organizations like hospitals (Sia and Soh 2007) and municipalities (Caccia and Steccolini 2006). Packaged ES software is generic "semi-finished products" from vendors like SAP and Oracle delivered to user organizations, that tailor the products to their own needs (Brehm and Markus 2000; Seddon et al. 2003). Davenport (1998: 122) expresses the consequences of ES in the much cited line: "*An enterprise system imposes its own logic on a company's strategy, culture and organization*", and it is unlikely that there is a perfect fit between the ES and the organization, and this may cause (severe) misalignment problems (Seddon et al. 2003).

The paper is organized as follows. In the following section, research methodology is presented with a focused and detailed literature review. We then explain institutional theory, focusing on four central institutional concepts and their implications for ES research. Next we analyze 18 selected papers with respect to how institutional theory has been used in ES research. We then develop a conceptual model to advance ES research using institutional theory. The paper concludes with a discussion of implications for theory and practice.

2 Research Methodology

In order to answer the research questions, we identified two essential "building blocks" for the research process consisting of (1) a focused literature review of institutional theory, and (2) a detailed literature review of ES research using institutional theory, as shown in figure 1 below (inspired by Jones and Karsten 2008):
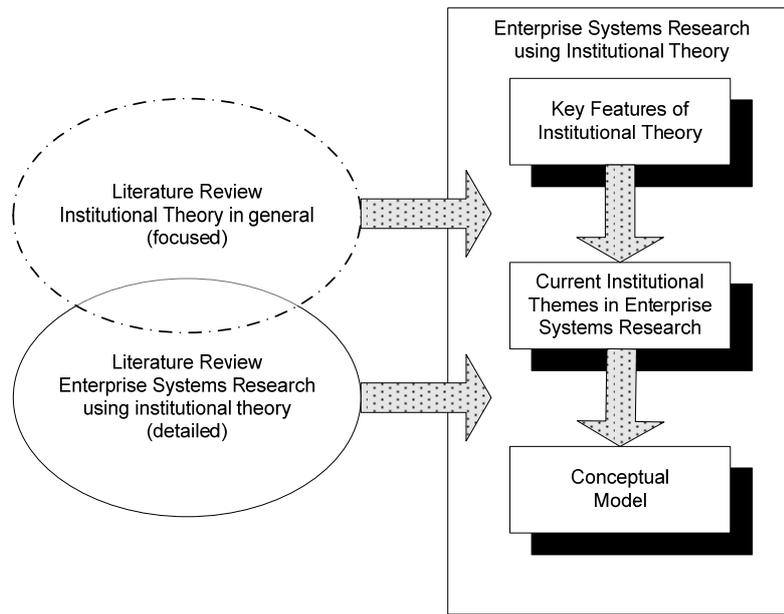
Figure 1: Research process

The two literature reviews are used to describe the key features of institutional theory relevant for ES research, to deduce current institutional themes of ES research, and finally to use key features and current themes to build a conceptual model.

The focused literature review of institutional theory is based upon two seminal books about institutional theory: "*The New Institutionalism in Organizational Analysis*" (Powell and Di-Maggio 1991) and the three editions of "*Institutions and Organizations*" (Scott 1995; Scott 2001; Scott 2008b). These seminal books are complemented by further references (articles, books) through analysis of bibliographies in these books by "going backward" and "going forward" (Webster and Watson 2002). This is *not* a comprehensive literature review about institutional theory, but instead a focused selection of institutional theory in general, being related to ES research.

The research process for the detailed literature review of ES research using institutional theory is presented in the following subsections.

Defining the scope of the review

The literature review started with a broadly based improvised literature search (Gray 2004) in order to define the scope of this literature review. The outcome of this literature search showed that searching specific journals was a cumbersome process, and that the scoping of journals should be even very broad in order to embrace papers with ES research using institutional theory. Instead three scholarly databases with search engines were selected, which is "ProQuest LLC", "Business Source Complete (EBSCO)" and "Science Direct by Elsevier". This approach did also ensure that the search was beyond the IS discipline, which is highly relevant as ES research is an interdisciplinary field used in other disciplines like organizational theory, operations research, management accounting etc. (Elliot and Avison 2005; Webster and Watson 2002).

Searching scholarly databases and selecting papers

A focused search (Gray 2004) was performed using the search word string "Institutional Theory AND Enterprise System". The term *Enterprise System* (ES) is the super class with *ERP systems* as the most important sub class (Seddon et al. 2003), so we decided also to include "ERP" as search word, in order to embrace papers using this term instead of ES and capture more papers. The result of the search with the two keyword strings is shown in table 1 below:

Institutional Theory in Enterprise Systems Research*)				
Search words	**ProQuest**	**EBSCO**	**Science Direct**	**Total**
"Institutional Theory" AND "Enterprise System"	4	39	23	66
"Institutional Theory" AND "ERP"	8	55	52	115
Selected papers (doubles removed)	**3**	**5**	**10**	**18**

*) The result list from the key word searches has not been checked for doubles caused by more than one keyword match, but doubles are removed in the selected list of papers

Table 1: Literature review of ES research using institutional theory

Full text search was performed in all three databases in November 2008. Abstracts were read for all 181 entries and full papers were in some instances skimmed to support the selection process by searching for the keywords in the papers. Both institutional theory *and* Enterprise System (ERP) should be used as *main* theoretical/empirical perspective possibly juxtaposed with other theoretical perspectives in order for the paper to be selected. Editorial notes, personal profiles, bibliographies, book reviews etc. were excluded. 18 papers were selected as specified in table 1.

Classification of the selected papers

An author-centric matrix (Webster and Watson 2002) is used to classify the selected papers, and the complete list of selected papers is presented in the appendix.

3 Key Features of Institutional Theory

In discussing institutional theory in ES research it should be emphasized at the outset that it is a general theory spanning economics, political science and sociology (Scott 2008b) rather than a theory specific to enterprise systems or information systems. Our focus in this paper will be on organizational institutionalism (Greenwood et al. 2008b) used in organization theory and sociology.

Institutional theory attempts to describe the deeper and more resilient aspects of how institutions are created, maintained, changed and dissolved (Scott 2004; Scott 2008b), and deals with the pervasive influence of institutions on human behavior including the processes by which structures as e.g. rules, routines and norms guide social behavior. *Institutions* are multifaceted, durable, resilient social structures, made up of symbolic elements, social activities, and material resources (Currie 2009; Scott 2001: 48-50). Examples of institutions are human rights, societies, enterprise systems, families, handshakes and belief systems like Buddhism. North (1990: 4-5) presents an important, although simplified, distinction between organizations and institutions using a game analogy: Institutions are the rules of the game, and organizations are the players. We talk about *institutionalization* when actions are repeated and given shared meanings by actors (Berger and Luckmann 1966; Scott 2008b), whereby the institution becomes stable and durable (Currie 2009).

We will continue with an examination of four key features of institutional theory, which seems to be important in order to understand and interpret ES research using institutional the-

ory. The four key features are isomorphism, rationalized myths, bridging macro and micro structures, and institutional logics.

3.1 Institutional and Competitive Pressures Leading to Isomorphism

A new approach to institutional analysis was introduced in the 1970s with focus on culture and cognition, where taken-for-granted rules lead to isomorphism in the formal structures of the organization, and organizations had to conform to society for legitimacy (Meyer and Rowan 1977; Zucker 1977). DiMaggio and Powell (1983) "moved" the focus on isomorphism from the society level to the organizational field level with coercive, normative and cognitive institutional pressures leading to isomorphism, which is nowadays part of many institutional analyses. Isomorphism means "*a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions*" (ibid.: 149) or simply expressed as structural similarity. Liang et al. (2007) argue that cognitive, coercive and normative institutional pressures impact the assimilation of enterprise systems, for instance the normative pressure in an organizational field, where suppliers, customers, consultants, and professional associations collectively assess and endorse IS innovations (Swanson and Ramiller 1997), shaping the implementation and assimilation of enterprise systems by providing institutional norms that guide top managers (Liang et al. 2007).

Isomorphism is an important consequence of both competitive and institutional pressures (Scott 2008b), and one of the challenges using institutional theory is to distinguish between the two kinds of pressures. Competitive pressures assume a system rationality, often used in

ES research (Dillard and Yuthas 2006) that emphasizes market competition where organizations compete for resources and customers, and are closely related to the technical environment where product and services are expected to be produced in an effective and efficient way (Scott and Meyer 1991), but "*organizations compete not just for resources and customers, but for political power and institutional legitimacy, for social as well as economic fitness*" (DiMaggio and Powell 1983: 150). Competitive and institutional pressures "live side by side" and we shall avoid dichotomous explanations, where e.g. social explanations exclude techno-rational explanations (adapted from Greenwood et al. 2008a: 32), and instead acknowledge that social situations, as ES in organizations, are consisting of interdependent nonrational and rational elements (adapted from Scott 2008b). It is therefore difficult empirically to distinguish between these explanations, being reinforced by the fact that institutional explanations strive to appear technical in nature (Scott and Meyer 1991) as a disguise. Greenwood et al. (2008a) state that institutional theory is well suited to be juxtaposed with other theories, for instance competitive pressures "explained" by transaction cost theory and institutional pressures explained by institutional theory as presented by Vitharana and Dharwadkar in their paper about IS outsourcing (2007). This facilitates organizational analyses covering both rational and non-rational elements. The next section about rationalized myths elaborates on the "entangleness".

3.2 Rationalized Myths

A key theme related to institutional isomorphism is that organizations conform to rationalized myths in order to be a "proper" organization (Boxenbaum and Jonsson 2008). Institutionalized products, services, techniques, regulatory systems, public opinions, professional stan-

dards, etc. "act" as powerful myths exerting institutional pressures on organizations in multiple and complex ways. Rationalized myths may develop in organizations, where they *believe* that their responses to these multiple pressures are aimed at organizational efficiency, but they are in reality aimed more at achieving legitimacy for the organization (Meyer and Rowan 1977). Alvarez (2002) examined the role of myths in an ERP implementation. The old legacy system was deinstitutionalized by creating a story of "performance crisis", and a myth-making process took place "constructing the new ERP system as an integrated system*"*, which was aligned with the overall organizational goals of the organization, but the benefit of the integration was not supported by objectively testable facts. The rationalized myth thus legitimized the ERP implementation, "*and the story-making process served to align the technology with ideal organizational values*" (ibid.: 82). The case study by Alvarez does also show the deinstitutionalization process of the old legacy system followed by the re-institutionalization process of the new integrated ERP system (Greenwood et al. 2002; Scott 2008b; Tolbert and Zucker 1999), and that narratives can support the institutionalization process (see also Hedman and Borell 2004), which can be a relevant "technique" in practical ERP implementations.

3.3 Multiple Levels in Institutional Theory Bridging Macro and Micro Structures

Institutional and competitive pressures are often exerted from the society and the organizational field at the organization, where organizational field is defined as "*those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products*" (DiMaggio and Powell 1983: 148). Scott (2008b) argues that it

is beneficial to look at multiple levels in a given study in order to enrich the understanding in institutional analysis, and this is exactly one of the powerful features of institutional theory with its ability to operate at varying levels ranging from society, organizational field, organization to individual actor level (Scott 2008b: 85-90). What is likewise important is the reciprocal interaction between levels, where macro structures in society are bridged by organizational fields to micro structures in organizations or even "down" to the individual actor level. Institutional creation and diffusion thus happen, where top-down processes allow higher level structures to shape the structure and action of lower levels, while bottom-up processes shape, reproduce and change the context within, in which they operate (ibid.: 190-195). Scott's argument is mirrored by Currie (2009), who encourages IS researchers to work with multiple levels and multiple stakeholders as this is the mainstay of institutional theory. A study of ERP implementation in three hospitals in Singapore by Soh and Sia (2004) emphasizes the interplay between different levels. The selected ERP package was developed to the European and US markets, where the institutional context at society level for healthcare is marked by being either highly subsidized (European market) or paid by healthcare insurance (US market), and the ERP package was inscribed (Latour 1987) with this logic, which is contrary to the tradition in Singapore, where a complicated co-payment calculation depending on bed-class etc. is widely implemented with invoices to both the patient and the state for a stay in hospital. This is an example of a clash between the Western and Singaporean institutional contexts (macro level), shaping the implementation and use of the ERP package in the three hospitals (micro level). The next section will further advance how macro and micro levels can be combined by using institutional logics, which can be understood as a "social mechanism" (Hedström and Swedberg 1996) mediating the top-down and bottom-up processes.

3.4 Institutional Logics

There has been much focus on isomorphism within institutional theory (Greenwood et al. 2008a) which is reflected in ES research (cf. appendix), but this focus has changed nowadays and it is no longer so much on isomorphism, whether in society or within the organizational field, but more on the effects/processes of different, often conflicting, institutional logics on individuals and organizations. "*Institutional logics shape rational, mindful behavior, and individual and organizational actors have some hand in shaping and changing institutional logics*" (Thornton and Ocasio 2008: 100). Institutional logics link institution and action (see also Barley and Tolbert 1997) and provide a bridge between macro structural perspectives (DiMaggio and Powell 1983; Meyer and Rowan 1977) and micro process approaches (Zucker 1991). Multiple institutional logics are "available" for organizations and individuals (Scott 2008b), and the embedded agency in institutional logics presupposes partial autonomy for individuals and organizations (Thornton and Ocasio 2008), so actions, decisions and outcomes are a result of interaction between an individual agency and an institutional structure (Friedland and Alford 1991; Thornton and Ocasio 2008: 103-104). Some IS researchers have addressed institutional logics related to information systems or enterprise systems (Berente et al. 2007; Currie and Guah 2007; Gosain 2004). Gosain (2004) argues that mismatch between institutional logics in an enterprise system and the incumbent institutional logics in an organization can lead to institutional misalignment. Varying degrees of mismatch between institutional logics in enterprise systems and organizations can lead to varying degrees of institutional misalignment, which again can have problematic consequences like resistance against the new enterprise system (Gosain 2004). Other researchers discuss misalignment between enterprise

systems and organization, which is similar to Gosain's account, although they do not use the "institutional logic" concept directly (Sia and Soh 2007; Soh and Sia 2004).

The concept of institutional misalignments presented by Gosain can be used to emphasize several aspects of institutional logics. First, Fligstein (2001: 100) has criticized institutional theory for considering organizational actors to be passive recipients or "cultural dopes" , using readily available scripts provided by government, professionals, or other institutional carriers to structure their actions. However, applying institutional logics counters this critique, where an individual agency plays an important role in selecting and changing institutional logics in the working practices, since "*institutional logic is the way a particular social world works*" (Thornton and Ocasio 2008: 101), so users of an enterprise system might adopt the embedded institutional logics in ES, and then change the incumbent organizational institutional logics to fit "the ES logics", so institutional misalignment is reduced, whatever consequences this may have, but anyway implies an agency from the organizational actors, who are guided by interest, power and opportunism. Second, the changes in institutional logics are part of (or are) the institutional/organizational changes (see also perspectives on institutional change in Hargrave and Van De Ven 2006) taking place in an organization, for instance by implementing an enterprise system which could be designated a "precipitating technological jolt" starting a change (Greenwood et al. 2002: 60). We can thus analyze the process and stages of change using "institutional logics as a method of analysis" (Thornton and Ocasio 2008: 109-111). Finally, the institutional logics perspective provides an approach to bridging macro and micro perspectives, where e.g. the institutional logics "built into" enterprise systems from "the original U.S. / Western European development context" (macro perspective)

are then used to e-procurement by a purchaser in a Singaporean defense organization (micro perspective) (Sia and Soh 2007).

The move away from focusing on institutional pressures, leading to isomorphism, to the effects of institutional logics seems to be promising not least in enterprise systems research, because it is a way to "open" the enterprise system artifact (see also Orlikowski and Iacono 2001) and give it a prominent role.

3.5 Summary of Key Features of Institutional Theory and Implications for ES Research

As shown in the previous sections, institutional theory has a number of attractions to offer to enterprise systems research, especially as a way to look beyond the techno-rational perspective so often embraced in enterprise systems research, and it emphasizes social considerations to complement technical considerations. Below is a table with a summary of the key features of institutional theory presented in the previous sections augmented with their possible implications for ES research:

	Key features of institutional theory	Implications for enterprise systems research
Institutional and Competitive pressures leading to isomorphism	Organizations are facing both competitive and institutional pressures leading to isomorphism (structural similarity) Institutional pressures could be coercive, normative and cognitive. Social situations are consisting of interdependent nonrational and rational elements	Researchers should look beyond rational explanations to institutional explanations with regard to understanding management, implementation and use of ES Institutional pressures are shaping implementation, use and management of ES, for instance decisions to adopt a specific ES
Rationalized Myths	Rationalized myths related to technology are technical procedures, accounting, personnel selection or data processing. Such	We are surrounded by rationalized myths in enterprise systems research, whether it is the ES itself which is a rationalized myth

Key features of institutional theory	Implications for enterprise systems research
institutionalized techniques establish an organization as appropriate, rational and modern, quite apart from their possible efficiency (Meyer and Rowan 1977)	or "best practices" like BPR, TQM, BPM etc. embedded in ES or the implementation and use process of ES Rationalized myths can be used as techniques in ES implementations
Multiple levels of analysis bridging macro and micro structures Institutional theory can be applied at varying levels of analysis ranging from society, organizational field, organization to individual actor level Top-down processes allow higher level structures to shape the structure and action of lower levels, while the bottom-up processes shape, reproduce and change the context within, in which they operate	ES research can be done at different levels, for instance at the organizational field level examining the diffusion of specific enterprise systems, or at the organizational level understanding institutional misalignment between enterprise systems and organization ES research can also take advantage of combining micro and macro perspectives where the institutional macro context shapes the management, implementation and use of ES in an organization's micro practices executed by actors
Institutional Logics Institutional logics are a set of material practices and symbolic constructions linking institution and action, and they provide a bridge between macro structural perspectives and micro processes Institutional logic is the way a particular social world works	Enterprise systems embed institutional logics, which are inscribed during development and implementation. The institutional logics in the ES constrain the use process (Gosain 2004) Institutional logics "opens" the ES and thereby counteracts the tendency to black box the IT artefact in ES/IS research Institutional logics are a promising theoretical lens for understanding the interaction between enterprise systems and organization both statically (structures) and dynamically (processes)

Table 2: Key features of institutional theory and their implications for ES research

The table above highlights key features of institutional theory, which offers a distinctive perspective on organizations, enterprise systems and their interplay, which is highly relevant for enterprise systems research, and enables us to extend beyond the techno-rational and managerial perspective. However, this chapter does also illuminate the complexity, ambiguity and diversity associated with institutional theory, so it is both an opportunity and a challenge to

use institutional theory for instance to provide conceptual clarity (Currie 2009). The following chapter will use the features in table 2 to categorize ES research using institutional theory.

4 Analyzing the Use of Institutional Theory in Enterprise Systems Research

This chapter presents, based on 18 selected papers, the result of the detailed literature review of ES research using institutional theory. An author-centric matrix (Webster and Watson 2002) is shown in the appendix, while this chapter "extracts" important aspects from the matrix.

The use of institutional theory in ES research is recent as all selected papers are distributed in the period from 2003 to 2008. Institutional theory applied within organizational theory dates back to the late 1940s (e.g. Selznik 1949), while new institutional theory was established in the 1970s (e.g. Meyer and Rowan 1977), and has now reached adulthood as a mature social theory (Scott 2008a). One of the early uses of institutional theory in IS research was Barley's seminal paper about CT scanners (1986), while the use in ES research is recent and still in its infancy. But a consequence of this infancy is that there are many unexplored research avenues available, where we can widen ES research to embrace complex social situations. An appropriate starting point is to understand "how institutional theory has been used in ES research", which is shown in the table below:

Key features of institutional theory[1]	Number of papers[2]	Examples of using institutional theory in ES research
Institutional and Competitive Pressures (including legitimation in organizations)	13	The paper addresses how organizations respond to RFID mandates under uncertainty and with what consequences. Especially varying degrees of uncertainty are discussed as well as the corresponding rate of isomorphic change (Barratt and Choi 2007)
		Institutional pressures play a critical role in implementation of Sarbanes Oxley Act particularly coercive pressures, but also normative pressures to act as a socially acceptable public company (Braganza and Desouza 2006)
		Institutional pressures get reflected in enterprise systems configurations that exert control over organizational actors. This is a powerful control often difficult to resist (Gosain 2004: 160-165)
		Mimetic, coercive and normative institutional pressures impact the assimilation of enterprise systems by guiding top managers in their decisions (Liang et al. 2007)
		Organizational learning interplays with institutional environment (consisting of institutional pressures), where e.g. government authorities request a successful public organization, which has implemented an enterprise system to share its experience with other public organizations (Phang et al. 2008: 113)
Rationalized Myths (including ceremonies, rituals etc.)	4	Innovations in financial and accounting techniques [implemented in ES] can *shape the vision* of reality that organisational actors have, spreading concepts like value for money, accountability, efficiency, effectiveness, turning them into new shared meanings and values (Caccia and Steccolini 2006: 155 our emphasis)
		"*Narratives are used to persuade, convince and make people act and believe in certain ways*" (Hedman and Borell 2004: 286). Narratives or stories are powerful rationalized myths that can be used in ERP systems evaluation (i.e. learning and understanding) (ibid.)
		Evaluation and selection of enterprise systems are said to be rational and deterministic, but ceremonial aspects seem to play an important role in order to legitimize the organization (Tingling and Parent 2004)
Multiple Levels of analysis	6	US fixed by law the Sarbanes Oxley Act as a federal law to address effectiveness of internal controls of public companies as a response to company scandals, which impose society requirements on organizations (Braganza and Desouza 2006)
		The ERP package was developed to the European and US markets, where the institutional context at society level for healthcare is marked by being either highly subsidized (European market) or paid by healthcare insurance (US market), and the ERP package was inscribed with this logic, which is contrary to the tradition in Singapore, where a complicated co-payment calculation depending on bed-class etc. is widely implemented and impact the target organization (Soh and Sia 2004)
		B2B E-commerce adoption in Taiwan's electronics industry is highly impacted by government policies and subsidies (Thatcher et al. 2006: 96)

Key features of institutional theory[1]	Number of papers[2]	Examples of using institutional theory in ES research
Institutional logics (including misalignment)	4	Radical changes in accounting systems are justified by external events, often by law requirements (coercive pressure), but they have hardly an impact on routines (decoupling) especially if the change is not consistent with traditional shared values. This is institutional misalignment (Caccia and Steccolini 2006)
		Package-organization misalignment due to a institutional context, which can be divided into an imposed context being country specific or industry specific, or a voluntarily acquired context due to organizational differences (Sia and Soh 2007; Soh and Sia 2004)
Other features of institutional theory	7	Institutional Entrepreneurship Enterprise systems, as IT innovation, are likely to be launched successfully if institutional entrepreneurs perform legitimation activities like "spreading definitive success stories from users and vendors" (Wang and Swanson 2007)
		Process of Institutionalization The process of institutionalization for resource planning systems is investigated through a historical analysis covering the MRP period, the MRPII period and the ERP period. The key mechanism to embed these systems in organizations' business practice (institutionalize) are role specialization, production of discourse, and boundary spanning activities (Scarbrough et al. 2008)
		Technology as Institutions (ES/ERP as Institutions) Technology can assume properties of an institution (structure) where regulative, normative and cultural-cognitive pillars are applicable to the institutional entity (Cadili and Whitley 2005)

1) The categories are based on table 2 in the previous chapter with an additional category "Other" to capture other uses of institutional theory
2) See the appendix for further information

Table 3: Examples of how institutional theory is used in ES research

ES research makes use of different key features of institutional theory although a majority of papers are applying the foundational themes of new institutional theory (Powell and DiMaggio 1991) like institutional pressures (DiMaggio and Powell 1983), rationalized myths, and legitimacy in organizations (Meyer and Rowan 1977), while later topics like institutional entrepreneurs (DiMaggio 1988; Fligstein 2001), institutional processes (Greenwood et al. 2002; Hargrave and Van De Ven 2006) and institutional logics (Friedland and Alford 1991; Thornton and Ocasio 2008) are only touched by few papers. Organizational institutionalism in gen-

eral has advanced considerably from the foundational themes of new institutional theory (see for instance Greenwood et al. 2008b), and thereby it provides several opportunities for ES research to advance in using institutional theory, especially by focusing on process approaches instead of variance approaches (Currie 2009).

Applying institutional theory as a theoretical lens is often only one side of the coin, while the other side of the coin might imply juxtaposing with other theoretical lenses. The table below shows which of the selected 18 papers take a single-theory or a multi-theory approach, respectively:

Theoretical perspective	Paper number																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Organizational change			X															
Stakeholder theory			X															
Contingency theory			X															
Complementary approach			X															
Structuration theory					X								X			X		
Organizational sensemaking						X												
Organizational learning							X		X									
Evaluation and measurement							X											
Technology assimilation								X										
Innovation diffusion								X										
Culture (organization and nation wide)									X					X				
Organizational politics									X									
Ontology model of IS												X						
Decision theory															X			
Resource based view																		X

1) Grey bars indicate papers where institutional theory is used as the only explicitly applied theory
2) See the appendix for further information

Table 4: Multiple theoretical perspectives used together with institutional theory

Table 4 enforces Greenwood et al.'s (2008a: 28) account that "*institutional theory has gained enormously for many years from its combination with, or incorporation of, other theories*" as 12 out of 18 papers are used in a multi-theory approach. Structuration theory, organizational learning and culture are the preferred choices to combine with institutional theory, but the multiplicity of theories in the table emphasizes the many alternatives for ES researchers to gain from when combining institutional theory with other theories. Currie (2009) argues that some of the shortcomings of institutional theory might be overcome by using a multi-theory approach to stimulate empirical investigations to create rich insights. One of the stated short-comings in institutional theory is the "lack of agency", i.e. we are cultural dopes (Fligstein 2001). This is taken up by Cadili and Whitley (2005) as they use a "structuration theory" to theorize about agency (and structure in an interdependent duality) and "institutional theory" to theorize about the wider environmental structural properties (society, organizational field etc.), thereby combining the two theoretical perspectives.

One of the strong features of institutional theory, as presented in the previous chapter, is its ability to operate at multiple levels and bridge macro and micro structures. The majority of the papers in the literature review (16 out of 18 cf. appendix) are using the organization as level of analysis while the remaining are operating at the organizational field level, and only four papers are applying multiple levels bridging micro and macro structures. There seems to be a potential for ES research to shift the level of analysis to the organizational field, society or down to the individual level and then furthermore utilize the bridging of micro and macro structures, for instance by institutional logics. Currie draws the same result from her examination of institutional theory in IS research in general, and she points out that "*IT-related constructs, such as adoption intention, assimilation and implementation, without considering*

wider environmental and inter-organizational levels" are problematic, because important tenets of institutional theory are based on multi-level and multi-stakeholder analyses (2009: 66).

The analysis in short shows that institutional theory in ES research is in its infancy, and adopts mainly "traditional" institutional aspects like isomorphism, with the organization as level of analysis, and is in several cases complemented by structuration theory and other theories.

The analysis in this chapter together with the key features of institutional theory from previous chapters will be used to develop a conceptual model.

5 Developing a Conceptual Model

This chapter synthesizes the use of institutional theory in ES research from previous chapters into a coherent conceptual model. The purpose of the model is to provide an analytical model to advance both theoretical and empirical ES research using institutional theory.

Existing models do not seem to be able to fulfill the purpose specified above or at least only partially. Scott's (2008b) seminal analytical framework for organizational analysis is very comprehensive, but also very general, and does lack the focus on ES research we are aiming at in this paper. Currie (2008) presents a constructive theoretical research framework to study IT compliance, which has some of the features fulfilling the purpose above, but one of the shortcomings is the missing specificity of the ES artifact, which is important as argued and

discussed later in this chapter. Several other models have been consulted, but they do mainly address focused research issues and are not even intended as more generic models to ES research (e.g. Cadili and Whitley 2005; Gosain 2004; Liang et al. 2007). The existing models have anyway served as inspiration to the conceptual model presented in this chapter.

Four requirements for the conceptual model

The "requirements" for the model are mainly derived from previous chapters and make up the following:

1. It must include **core features** of institutional theory like institutional and competitive isomorphism and rationalized myths, but also **newer features** as institutional logics and institutional processes.

2. It should support **multi-level analysis** bridging macro and micro structures, and thereby implicitly address a **multi-stakeholder** approach**,** all being strong features of institutional theory.

3. It must contain **multi-theory** elements to gain from juxtaposing institutional theories with other theories.

The three requirements above are noticeably derived from previous chapters, but there is "a missing link" best expressed by Orlikowski and Iacono (2001: 121), who strongly and provocatively argue that the IT artifact in IS research is desperately needed. There is a tendency in the IS research using social theories to give theoretical and empirical significance to the context and leave technology unspecified (ibid.). IS researchers have "*difficulties in grasping the inner structure of the technology artifact*" (Czarniawska 2009: 50), and it is important to be

specific about the technology (Monteiro and Hanseth 1996), as there is much difference between custom built software neatly aligned to specific requirements in a specific organization, and ES designed by vendor organizations as "semi-finished products" delivered to customer organizations for configuration and implementation. ES itself is furthermore a comprehensive and broad category with very diverse systems like payables applications, which are highly transaction-oriented with structural similarity to "a Fordist assembly line" (Czarniawska 2009: 57), and advanced supply chain planning and optimization applications used for tactical and strategic decision making (e.g. SAP 2008). All this sums up in the fourth and final requirement for the conceptual model:

4. It must incorporate the **ES artifact** in order to be specific about the technology.

The conceptual model is presented in the figure below in quest of fulfilling the four requirements:
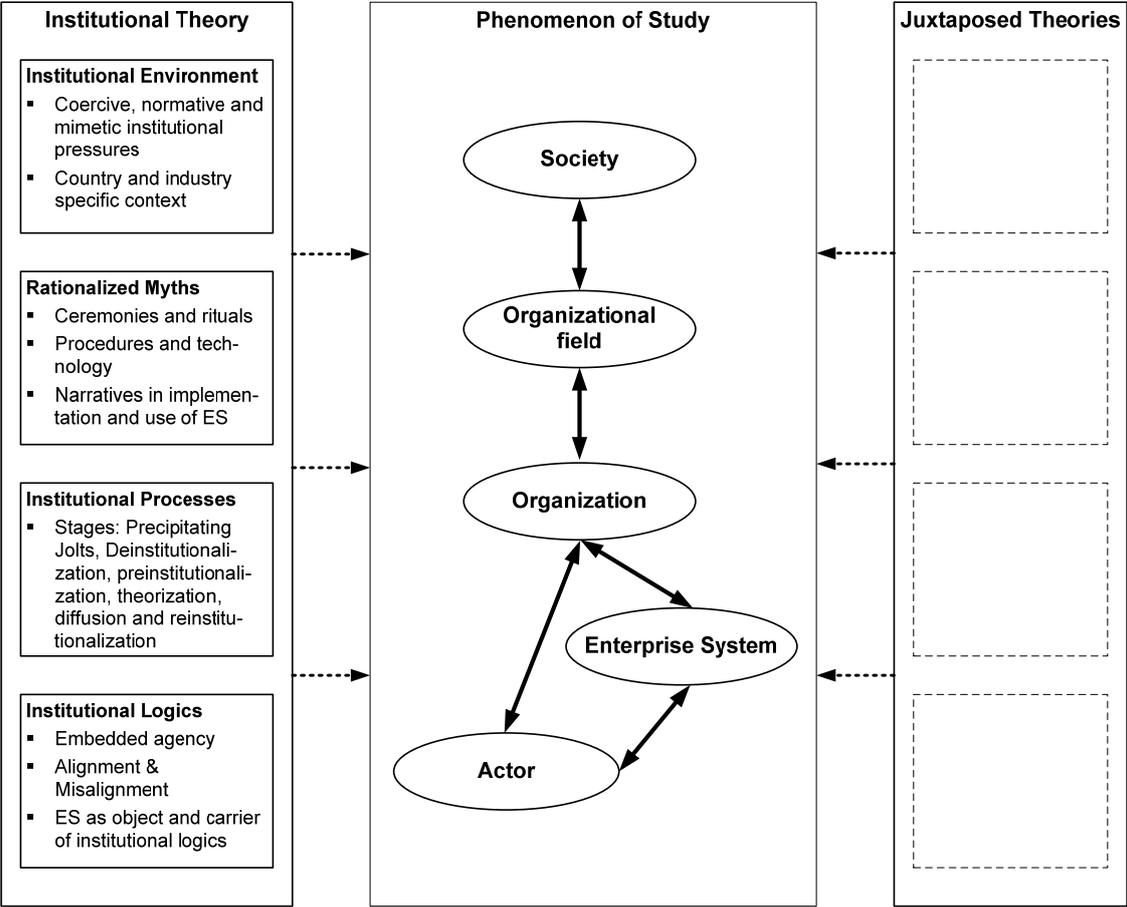

Figure 2: Conceptual Model

The model is divided into three frames "institutional theory", "phenomenon of study" and "juxtaposed theories". First, the "institutional theory frame" catches many of the institutional elements considered in this paper, but the shown elements should not be taken as "fixed and complete", but on the contrary as a menu to choose from, and with a possibility to add other dishes (i.e. an open model). The different elements can be used at different levels, and there is no direct correspondence between the location of elements and the levels of analysis pre-

sented in the "phenomenon of study" frame. Second, the "juxtaposed theories" frame is a placeholder to visualize the possibility to juxtapose other theories with institutional theory, where these theories could "attach" at different levels of analysis in the "phenomenon of study" frame. Finally, the "phenomenon of study" frame presents the multi-level approach often used in institutional theory (Scott 2008b). The three elements "organization", "enterprise system" and "actor" have similarities to Orlikowski's *structural model of technology* (1992) and seek to give the ES artifact a salient role in the organization. The arrows are conceptual links between the elements in the frame, and they are not meant to be causal, but instead descriptive and exploratory relationships to aid theoretical discussions and empirical analyses (adapted from Fligstein 2001: 115).

Here are some closing remarks about using the conceptual model: First, the model can be used as a complete model with all levels in the "phenomenon of study" frame etc., but it is also possible to work on a single element in the model e.g. the enterprise system, which can produce insights into other elements, i.e. an eclectic approach. Second, the model is applicable to both process and variance studies (see Newman and Robey 1992: 251-252). An institution can be perceived as a *state/result* of an existing order (e.g. a society, a legal system, or an organization) or as a *process* of institutionalization, deinstitutionalization, preinstitutionalization and reinstitutionalization (Greenwood et al. 2002) through either incremental or radical changes (Scott 2008b: 50). The conceptual model thus supports both process and variance studies. Finally, research using the model can apply different paradigmatic stances (e.g. Burrell and Morgan 1979) possibly spanning from social realism to social constructivism, embracing quantitatively and qualitatively research (Scott 2008b: 62-66) (cf. also appendix).

26

6 Discussion

Implementation and use of ES in modern enterprises are very complex, and both researchers and practitioners need to understand the multifaceted connections between technical and social domains embedded in wider institutional contexts. Current research on ES has been dominated by monolithic and techno-rational understandings where social considerations are downplayed or even overlooked (Berente 2009; Dillard and Yuthas 2006), and the wider institutional context has played a limited role (adapted from Currie 2009). We have developed a conceptual model to theorize about ES using institutional theory to address these issues as urged by Weerakkody et al. (2009), and this have several implications for theory and practice.

6.1 Implications for Theory

Reviewing the landscape of research on ES using institutional theory shows its infancy and supports the claim about lack of institutional theory in IS research (Orlikowski and Barley 2001; Weerakkody et al. 2009). This opens for quite a few unexplored research avenues that this paper has briefly addressed. King et al. (1994: 141) argues that "*Institutional factors are ubiquitous and essential components to understand and explore IT innovations that cross organizational and firm boundaries*", and this is very right for implementation and use of ES (see also Currie 2009) and underlines the motivation for using institutional theory in ES research. We give an overview of what institutional theory is and how it can be used in ES research. Despite the few numbers of papers and the claimed infancy, the literature review provides a foundation for researchers to use institutional theory in ES research, and to some ex-

tent identify possible gaps for future research, although the latter part is fairly coarse and limited.

In terms of theory development, the conceptual model presented in this paper suggests a rich contextualized lens to study social considerations in ES research, which can be adapted to specific research issues, to support theoretical and empirical research. One underutilized example is to apply the actor or organizational field as the level of analysis instead of the organization, which seems to be the "default" level of analysis in ES research (see also Weerakkody et al. 2009).

Previous conceptual models using institutional theory has either been very general (e.g. Scott 2008b) that is not sufficiently related to ES research, or addressing very specific research purposes (e.g. Liang et al. 2007). With these problems in mind we claim to have developed a model, inspired by previous models, with a reasonable balance between generality and specificity applicable to diverse ES research issues covering multi-levels, multi-stakeholders, multi-theory etc.

Another important aspect of the model is the inclusion of the ES software in the model, which appears very obvious, but is fairly infrequent in ES research using institutional theory. This might be reasoned by the fact that organizational studies tend to black box technology (Orlikowski and Barley 2001; Orlikowski and Iacono 2001), and that IS researchers adopt this "black boxing" when they use institutional theory coming from organizational studies. The inclusion is anyway important because the inner structure of the ES software play a signifi-

cant role, for instance with its inscribed institutional logics impacting the alignment process between organization and ES (Berente 2009; Gosain 2004).

6.2 Implications for Practice

Currie (2009) argues that institutional theory offers conceptual tools and techniques for practitioners to understand complex change management scenarios involving information systems. We follow her line of thought and elaborate possible implications for practice.

The conceptual model can be used as a rich analytical tool to describe and analyze wider social issues, but has also the potential to be used normatively. The wider social issues and institutional structures are inevitably ingredients of complex project management and change management scenarios involving ES, but at the same time we have to retain the focus on technology (ES software), actors and organization(s), which are obvious parts of the practical implementation and use of ES. The model enforces thus a more holistic view of the environment in which the ES implementation and use take place. This could be illustrated with an example: Organizations which are implementing ES are strongly recommended to adopt the best practices inscribed in ES and to avoid customizations (e.g. Hildebrand 2009; Parr and Shanks 2003; Seddon et al. 2003). This is however not always the best approach, because it can lead to severe misalignment problems (Sia and Soh 2007) and lock the organization into an inappropriate structure preventing future optimizations (Lindley et al. 2008). This recommendation has anyway become a strong rationalized myth as *the* legitimized way of implementing ES. Here the model can be used to understand the observed phenomenon in a more informed

way and to inspire approaches to deviate knowingly and willingly from this strong rationalized myth arising from the organizational field as an institutional pressure.

Working with ES projects could be challenging, and practitioners do often embed a techno-rational understanding (Dillard and Yuthas 2006) where they search for rational solutions to organizational and technical issues. This mindset could lead to frustrations among project personnel, when they experience problematic unintended situations or apparent obscure management decisions deviating from "the rational path". Institutional theory might in these cases offer complementary understandings and explanations, motivating to alternative solutions or "just" reducing the frustrations among project personnel, which in itself can be beneficial for the organization.

The conceptual model has even the potential to be stretched to more normative purposes, which are shown with an illustrative example: The institutional logics with a given ES and the institutional logics in a given department are analyzed during the design phase of an ES project, and the obtained knowledge is used to reduce the anticipated misalignment by carrying out identified technical and organizational activities in order to adapt ES and department to each other.

7 Conclusion

In this paper we have examined the use of institutional theory in ES research. Institutional theory has been advocated as highly relevant for IS research (Orlikowski and Barley 2001),

and promoted as distinctive well-suited to ES research (Berente et al. 2007; Gosain 2004). Institutional theory offers a conceptually rich lens to study social considerations in ES research, which has often been downplayed or even overlooked in extant studies. The paper sets out to review current ES research using institutional theory and to develop a conceptual model to provide a foundation for further ES research applying institutional theory. We identified 18 selected papers, which were analyzed and used to identify key features of institutional theory and to develop a conceptual model. In the process we found that institutional theory in ES research is in its infancy and adopts mainly "traditional" institutional aspects like isomorphism, with the organization as the level of analysis, and in several cases complemented by structuration theory and other theoretical lenses. We present a conceptual model from the analysis of the literature, which advocates for multi-level and multi-theory approaches, and applies newer institutional aspects as institutional logics. The model offers a conceptually rich lens for analyzing implementation and use of ES in organizations for both researchers and practitioners.

There are some limitations of this paper. Institutional theory is a highly complex and diverse theory (Currie 2009), so even the selective presentation in this paper has the danger of being "everything about everything", while others might claim the opposite that important institutional elements are absent. Both positions are valid critiques, and it is a difficult tradeoff with constraints, and the response may be that the conceptual model is flexible so institutional elements may be included and excluded depending on specific research issues. Another limitation is the small number of 18 papers in the detailed literature review, which warrant our claim of infancy of institutional theory in ES research. It might be possible to increase the number of papers by enhancing the keyword searches to include "isomorphism", "rationalized

myths", "institutional", "CRM", "Enterprise Information Systems" etc., which would possibly give a more embracing study. Much ES research takes a life cycle approach (Esteves and Bohorquez 2007), and this perspective is lacking in the analysis of the current themes and the conceptual model, which is a significant drawback calling for future research, e.g. to enhance the conceptual model with life cycle elements (see also Gosain 2004) or other ways to address this issue. Finally, the focus in this paper is deliberately on ES research and not IS research in general, because ES is a special class of information systems as argued in previous chapters. However this is a limitation, but also an opportunity for generalization (Seddon and Scheepers 2006) in future studies.

Appendix

Id	Alphabetic listing of papers	Title	Journal	Type of Organization	Application category	Research Approach	Level of Analysis	Key features of Institutional Theory ① Institutional and Competitive Pressures ② Rationalized Myths ③ Multiple Levels of Analysis ④ Institutional Logics ⑤ Other	Multi-theory approach
1	Barratt and Choi (2007)	Mandated RFID and Institutional Responses: Cases of Decentralized Business Units	Production and Operations Management	Large defence contractor in US	RFID Technology used in supply chain management	Empirical, Positivistic	Organization	• ① Institutional pressures within varying degrees of uncertainty (DiMaggio and Powell 1983; Meyer and Rowan 1977; Scott 1995; Zucker 1987) • ③ Department of Defence at organizational field level impacting the specific organization	No
2	Braganza and Desouza (2006)	Implementing section 404 of the Sarbanes Oxley Act: Recommendations for Information Systems Organizations	Communications of Association of Information Systems	Three global organizations (one financial services and two professional services)	Implementation of Sarbanes Oxley Act (SOX)	Empirical, explorative, descriptive (interpretive)	Organization	• ① Institutional pressures to implement SOX (DiMaggio and Powell 1983) • ③ US fixed by law the SOX as a federal law to address effectiveness of internal controls of public companies (from society to organization) • ⑤ Institutional interventions in IT innovations (King et al. 1994)	No
3	Brignall and Ballantine (2004)	Strategic Enterprise Management Systems: new directions for research	Management Accounting Research	Public and private organizations in general	Strategic Enterprise Management (SEM) software "on top" of operationally ES	Conceptual, Mixed	Organization	• ① Institutional theory is used to gain insight into internal and external contexts in which SEM software is designed, implemented and used, especially the relative bargaining power determining what aspects of performance will be measured (DiMaggio and Powell 1983). • ② SEM software constitutes some form of instrumental rationalism (Meyer and Rowan 1977; Scott 1987)	• Organizational change with context, content and process (Pettigrew 1985) • Stakeholder theory (Atkinson et al. 1997) • Contingency theory (Gordon and Miller 1976) • Complementarities approach (Milgrom and Roberts 1995)
4	Caccia and Steccolini	Accounting change in Italian local governments: What's	Critical Perspectives on	Local governments in Italy	Accounting System	Empirical, positivistic	Organization	• ① Institutional pressures (isomorphism), and institutional rules	

Id	Alphabetic listing of papers	Title	Journal	Type of Organiza-tion	Application category	Research Approach	Level of Analysis	Key features of Institutional Theory ① Institutional and Competitive Pressures ② Rationalized Myths ③ Multiple Levels of Analysis ④ Institutional Logics ⑤ Other	Multi-theory approach
	(2006)	beyond managerial fashion?	Accounting		(SAP/R3)			(Powell and DiMaggio 1991; Scott 1987; Scott 2001) • ② Innovations in financial and accounting techniques [imple-mented in ES] can shape the vision of reality that organisa-tional actors have, spreading concepts like value for money, accountability, efficiency, effectiveness, turning them into new shared meanings and values. • ④ An accounting system is designed technically perfect and formally consistent with the most advanced managerial ideas and fashion (managerialist fashion), but lacks to take the or-ganizational context into consideration	
5	Cadili and Whitley (2005)	On the interpretative flexi-bility of hosted ERP systems	Journal of Strategic In-formation Systems	Central accounting department in UK of a large multina-tional petrol com-pany	Hosted ERP Systems (SAP/R3)	Empirical, interpretive	Organi-zation	• ⑤ Technology (enterprise systems) as institutions, i.e. systems as an infrastructure has similarities to institutions (Scott 2001; Zucker 1977) and they are "infused with values"	• Structuration Theory (Giddens 1984; Orlikowski 1992)
6	Gosain (2004)	Enterprise Information Sys-tems as Objects and Carriers of Institutional Forces: The New Iron Cage	Journal of Association for Informa-tion Systems	Public and private organizations in general	Enterprise Infor-mation Systems	Conceptual, Positivistic	Organi-zation	• ① Institutional pressures (DiMaggio and Powell 1983) get reflected in the ES configurations that exert control over organ-izational actors – control that is powerful, sometimes not ap-parent, and often difficult to resist (Gosain 2004: 160) • ④ Institutional logic (DiMaggio 1997) and Institutional mis-alignment	Organizational sensemaking (Weick 1990)
7	Hedman and Borell (2004)	Narratives in ERP systems evaluation	Journal of Enterprise Information Management	Public and private organizations in general	ERP Systems	Conceptual, interpretive	Organi-zation	• ② "Narratives are used to persuade, convince and make people act and believe in certain ways" (Hedman and Borell 2004: 286). Narratives or stories are powerful rationalized myths that can be used in ERP systems evaluation (i.e. learning and un-derstanding) (ibid.) (Meyer and Rowan 1977)	• Theory of action and learning (Argyris and Schön 1974) • Evaluation and measurements (Hoebeke 1990)
8	Liang et al. (2007)	Assimilation of Enterprise Systems: The Effect of Institutional Pressures and the Mediating Role of Top Management	MIS Quarterly	Chinese organiza-tions (77 organiza-tions representing a wide range of geo-graphical and cul-	Enterprise Sys-tems	Empirical, Positivistic	Organi-zation	• ① Mimetic, coercive and normative institutional pressures (DiMaggio and Powell 1983) impacts the assimilation of en-terprise systems by guiding top managers in their decisions	• Technology assimilation (Purvis et al. 2001) • Innovation diffusion theory (Jones and Beatty 1998)

Id	Alphabetic listing of papers	Title	Journal	Type of Organization	Application category	Research Approach	Level of Analysis	Key features of Institutional Theory ① Institutional and Competitive Pressures ② Rationalized Myths ③ Multiple Levels of Analysis ④ Institutional Logics ⑤ Other	Multi-theory approach
					tural diversity)				
9	Phang (2008)	Investigating organizational learning in eGovernment projects: A multi-theoretic approach	Journal of Strategic Information Systems	National Library Board in Singapore	Enterprise-wide IS to support HR, finance and administrative functions	Empirical, Positivistic	Organization	• ① Institutional pressures (isomorphism) (DiMaggio and Powell 1983). Increase legitimacy and survival prospects (Meyer and Rowan 1977) • ⑤ Organizations seek to actively shape the institutional environment surrounding organizations (Oliver 1991)	• Organizational learning (Argyris and Schön 1978; Levitt and March 1988) • Organizational culture (Schein 1985) • Organizational politics (Jasperson et al. 2002; Silva and Backhouse 2003)
10	Reimers (2003)	Developing Sustainable B2B E-Commerce Scenarios in the Chinese Context: A Research Proposal	Electronic Markets	Chinese organizations in general	Interorganizational Supply Chain Management	Conceptual, positivistic	• Organizational field	• ① Institutional legitimacy (Meyer and Rowan 1977) • ③ Organizational field with institutional pressures (DiMaggio and Powell 1983). Structures of domination and patterns of coalition emerge from • ⑤ Rationing transactions from institutional economics (Commons and Rutherford 1990)	
11	Scarbrough (2008)	Developing the processual analysis of institutionalization: The case of resource planning systems	Academy of Management Proceedings	Public and private organizations in general	MRP, MRPII & ERP	Conceptual (historical analysis)	• Organization • Organizational field	• ③ Interaction between organizational field and organization • ⑤ Process of institutionalization (Barley and Tolbert 1997): The analysis [of MRP, MRPII & ERP] highlights the way in which RP systems have become institutionalized in business practice through a cycle of disembedding knowledge which links local and field-level actions. The analysis indicates, at some points, that this cycle was complemented and reinforced by the operation of the institutionalizing mechanisms identified (role specializations, production of discourse and boundary spanning activities)	
12	Sia and Soh (2007)	An assessment of package-organisation misalignment: institutional and ontological structures	European Journal of Information Systems	Defense industry and healthcare industry	Enterprise systems	Empirical, Positivistic	• Organization	• ① Enterprise systems are subject to institutional forces / pressures (Gosain 2004) • ④ Institutional context is embedded in software (Soh and Sia 2004)	• Ontology model of information system (Wand and Weber 1990)
13	Soh and Sia	An institutional perspective	Journal of	Three hospitals	ERP Package	Empirical,	• Organi	• ③ The selected ERP package was developed to the European	• Structuration theory (DeSanctis

Id	Alphabetic listing of papers	Title	Journal	Type of Organiza-tion	Application category	Research Approach	Level of Analysis	Key features of Institutional Theory ① Institutional and Competitive Pressures ② Rationalized Myths ③ Multiple Levels of Analysis ④ Institutional Logics ⑤ Other	Multi-theory approach
	(2004)	on sources of ERP package-organisation misalignments	Strategic Information Systems	implementing the same package		Positivistic	gani-zation	and US markets, where the institutional context at society level for healthcare is marked by being either highly subsidized (European market) or paid by healthcare insurance (US market), and the ERP package was inscribed with this logic. This is contrary to the tradition in Singapore, where a complicated co-payment calculation depending on bed-class etc. is widely implemented with invoices to both the patient and the state for a stay in hospital. • ④ Package-Organization Misalignments arise when the package and the implementing organization's embedded structures differ, which can lead to "package customization" and/or "organizational adaptation"	and Poole 1994; Orlikowski 1992)
14	Thatcher (2006)	B2B e-commerce adoption decisions in Taiwan: The interaction of cultural and other institutional factors	Electronic Commerce Research and Applications	Electronic and textile manufacturing industry in Taiwan	B2B e-commerce linked to ERP, SCM	Empirical, positivistic	• Organi-gani-zation	• ① & ③ Institutional pressures exerted from industries, governments and national cultures (DiMaggio and Powell 1983). Institutional factors influencing IT adoption decisions (King et al. 1994)	• National cultures (Hofstede 1984)
15	Tingling and Parent (2004)	An exploration of enterprise technology selection and evaluation	Journal of Strategic Information Systems	A large Canadian financial institution	Email system	Empirical, interpretive	Organi-zation	• ① & ② Evaluation and selection of enterprise systems are said to be rational and deterministic, but ceremonial aspects seem to play an important role in order to legitimize the organization (DiMaggio and Powell 1983; Meyer and Rowan 1977)	• Decision theory (Simon 1960)
16	Tsamenyi et al. (2006)	Changes in accounting and financial information system in a Spanish electricity company: A new institutional theory analysis	Management Accounting Research	A large Spanish electricity company	Accounting and financial system	Empirical, interpretive	Organi-zation	• ① Changes in accounting and financial IS (ERP) due to institutional forces (DiMaggio and Powell 1983). Interplay between institutional and market forces (Oliver 1992), i.e. institutional and competitive pressures • ⑤ Interplay between institutional forces and intra-organizational power relations (Oliver 1991)	• Giddens articulation of power (2006)

Id	Alphabetic listing of papers	Title	Journal	Type of Organization	Application category	Research Approach	Level of Analysis	Key features of Institutional Theory ① Institutional and Competitive Pressures ② Rationalized Myths ③ Multiple Levels of Analysis ④ Institutional Logics ⑤ Other	Multi-theory approach
17	Wang and Swanson (2007)	Launching professional services automation: Institutional entrepreneurship for information technology innovations	Information and Organization	Multiple industries involved in launching professional services automation (PSA): IT research firms and analysts, IT professional services organization, consultants, PSA vendor etc.	Professional services automation (PSA) that is ERP to service organizations (Burns 2008)	Empirical, positivistic	Organizational field	• ⑤ Institutional entrepreneurship research (DiMaggio 1988; Maguire et al. 2004) falls short of explaining the working of the launch process, which could be explained by "collective actions" (mobilization and legitimation) (Wang and Swanson 2007: 65) as an institutionalization process (Zucker 1988) of IT innovations	
18	Zhang and Dhaliwal (2008)	An investigation of resource-based and institutional theoretic factors in technology adoption for operations and supply chain management	International Journal of Production Economics	Chinese firms (101 firms in multiple industry segments public or privately owned)	IT-enabled operations and supply chain management	Empirical, positivistic	Organization	• ① Coercive, imitative and normative legitimization processes in relation to innovation diffusion (DiMaggio and Powell 1983)	• Resource based view (Barney 1991; Melville et al. 2004)

Table 5: Author-centric categorization of ES research using institutional theory

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