Association for Information Systems
AIS Electronic Library (AISeL)

ICIS 2008 Proceedings

International Conference on Information Systems (ICIS)

2008

Institutionalization of IT Compliance: A Longitudinal Study

Wendy Currie
University of Warwick, wendy.currie@wbs.ac.uk

INSTITUTIONALIZATION OF IT COMPLIANCE: A LONGITUDINAL STUDY

L'institutionnalisation de la mise en conformité des TI : une étude longitudinale

Wendy L. Currie
Warwick Business School
University of Warwick
Coventry, CV4 7AL
Wendy.currie@wbs.ac.uk

Abstract

Against a backdrop of serious corporate and mutual fund scandals, governmental bodies, institutional and private investors have demanded more effective corporate governance structures procedures and systems. The compliance function is now an integral part of corporate policy and practice. This paper presents the findings from a longitudinal qualitative research study on the introduction of an IT-based investment management system at four client sites. Using institutional theory to analyze our data, we find the process of institutionalization follows a non-linear pathway where regulative, normative and cultural forces within the investment management industry produce conflicting organizational behaviours and outcomes.

Keywords: Corporate and IT governance, institutional theory, compliance, investment management

Résumé en français

Les autorités de tutelle ainsi que les investisseurs institutionnels ou privés demandent maintenant des structures, des procédures et des systèmes de gouvernance qui soient efficaces pour garantir la conformité au sein des firmes financières. Ce papier présente les résultats d'une étude qualitative longitudinale sur l'introduction d'un système informatisé de gestion des investissements sur quatre sites clients. Mobilisant la théorie institutionnelle pour analyser nos données, nous trouvons que le processus d'institutionnalisation suit un chemin non linéaire où les forces régulatrices, normatives et culturelles à l'intérieur du secteur de la gestion des investissements produisent des résultats et des comportements organisationnels conflictuels.

Introduction

Serious financial scandals in recent years have undermined the confidence of both institutional and individual investors and raised important questions about how enterprises can improve measures and place controls to protect their stakeholders. The Sarbanes-Oxley Act of 2002 (SOX) was developed to strengthen internal checks and balances to improve corporate governance and accountability. An important distinction is that senior management and business process owners are not only required to establish an adequate internal control structure, but also to assess its effectiveness on an annual basis (ITGI 2004). Since information systems, corporate databases and IT infrastructure components are essential for producing accurate, reliable and timely information for the internal control and reporting processes of firms, the role of IT in corporate governance is critical. The changing regulatory and legal framework governing the financial sector thus places further responsibility and accountability on senior executives and IT professionals to comply with the requirements of SOX (PCAOB 2004) and other systems.

Prior work has sought to investigate IT-enabled governance structures (Chin et al. 2004; Meyer 2004; Weill and Ross 2005), IT capabilities and network architectures (Sambamurthy and Zmud 1999) and financial evaluation procedures and processes (Bodnar 2003). Yet few studies have sought to develop a multi-level theoretical understanding of how regulative and legal pressures impose new challenges on firms to adopt IT as a compliance mechanism as part of their internal governance structures, and how groups and individuals come to accept or resist these pressures. Recognizing that most research on formal and informal IT-enabled governance structures adopts a single unit of analysis (e.g. society, organization, business function, or group/individual) this study was interested to observe how regulatory bodies and professional organizations impose new governance rules and procedures on firms, and on how this changes organizational and group behaviours. In particular, we were interested to track how increasing regulation brought about by financial scandals was changing governance structures where the compliance function was becoming an integral part of senior management responsibility.

In this study, we embraced institutional theory to analyse our data. We observe the institutionalization of the IT compliance function across four organizations in the investment management industry where automated compliance checks have become mission critical activities. We adopt a longitudinal research method that tracks these firms over a six-year period. Institutional theorists view organizations as governance structures by observing regulatory, normative and cultural-cognitive processes of institutionalization (Scott, 2008). While institutionalized organizational behaviours have been viewed as stable, repetitive and enduring activities (Zucker 1991) little attention has been given to the processes of institutional change or deinstitutionalization, which is the erosion or discontinuity of an institutionalized organizational activity or practice (Oliver 1992). Much research in institutional theory has measured the outcome 'effects' while assuming the 'process' (Mizruchi and Fein, 1999). The research presented in this paper, thus attempts to offer some insights on how the societal, organizational and behavioural factors influence the compliance function following the introduction of an investment management system. In particular, observing the processes of institutionalization and deinstitutionalization.

The remaining paper is divided into five sections. First, we introduce the relevant corporate and IT governance literature and suggest the need for more process-oriented studies. Second, we develop the theoretical framework that adopts three levels of analysis to study IT governance. This framework draws on concepts from institutional theory and focuses upon the IT compliance function. Third, we discuss the methods of data collection and introduce the case material. Fourth, we discuss the findings. Finally, we present our conclusions by suggesting new research directions.

The Compliance Function

The literature on corporate governance is multi-disciplinary and embraces societal, organizational and individual dimensions. At the societal level, governance focuses upon the legal and regulatory frameworks developed and imposed by regulatory bodies as well as on the societal impact. At the organizational field level, it encapsulates the organizational structures, processes and practices within and across individual firms. Societal, commercial and technical changes impact this level and may even transform an industry (Barrett and Walsham 1999). At the individual level, governance usually focuses on the ethical corporate behaviour of executives responsible for the creation of wealth for shareholders (Roussey, 2003). In this study, we consider each of these levels to be critical for gaining an understanding of how governance structures, processes and practices become institutionalized over time.

In the information systems literature, the concept of governance has gained popularity in recent years. It offers a range of studies on a variety of topics, yet few reveal optimal corporate and IT governance arrangements. A recent study offers six governance archetypes (business or IT monarchy, feudal, duopoly, federal, or anarchy) that support each of the five key IT decisions (IT principles, infrastructure, architecture, business application needs, and investment) (Weill and Ross 2005). This work provides a useful template for evaluating the contribution of IT towards overall business performance. Other studies have looked at how governance structures change as a consequence of mergers and acquisitions (Chin et al. 2004); the role of top management in designing IT governance procedures, policies and processes (Lainhart 2000; Meyer 2004; Peterson 2004); IT governance arrangements (Sambamurthy and Zmud 1999); hybrid IS governance solutions (Brown 1997); and IT and transformation (Hvalshagen 2004); and organizational readiness and stakeholder participation (Rau 2004). However, the majority of studies have not linked societal, organizational and individual dimensions to IT governance as they tend to look at unitary levels of analysis. This study augments this literature base by tracking how regulative and legal systems exert

pressures on firms and individuals to change IT governance systems. The organizational context is the compliance function, which is central to how firms address new rule-based regulatory and legal frameworks.

In recent years, the introduction of government regulation, particularly the Sarbanes-Oxley Act of 2002 (SOX) has exerted significant pressure on firms to improve corporate responsibility and restore investor confidence in public markets. SOX and supporting regulations have revised the rules for accountability, disclosure and reporting, stressing that effective governance is synonymous with ethical business practice. One aim is to strengthen internal checks and balances and improve corporate accountability through effective governance measures. There are three relevant sections to IT in the SOX legislation: 1) - 404, which requires officers to attest to the effectiveness of internal controls for financial reporting; 2) - 302, which requires officers to sign statements verifying the completeness and accuracy of financial statements; and 3) - 409, which requires that 'material financial events' be reported in real time. In particular, CIOs must enhance their knowledge of internal control, understand and execute the SOX compliance plan, develop the compliance function to specifically address IT controls, and integrate this plan into the overall SOX compliance plan. These conditions pose significant challenges to the way IT services are deployed and governed. As IT is now an integral part of business processes within financial service firms, its role in meeting regulatory requirements is critical to the compliance function.

Theoretical Research Framework

Our research model (Figure 1) is developed using an institutionalist perspective. It contains key concepts used within institutionalism. The central theme of institutional theory is how social choices are shaped, mediated, and channelled by institutional arrangements (DiMaggio and Powell 1991). An institution is defined as '*recognised practices consisting of easily identifiable roles, coupled with collections of rules or conventions governing relations among the occupants of these roles*' (Young 1986, P.107). Institutionalism examines how *'social processes, obligations, or actualities come to take on a rule-like status in social thought and action'* (Meyer and Rowan 1991, p.42). It views organizational design and structure as a process of external and internal pressures. This leads organizations within an organizational field to resemble one another over time; a phenomenon known as institutional isomorphism (DiMaggio and Powell 1983; Meyer and Rowan 1977; Scott 1987; Tolbert 1988; Tolbert and Zucker 1983). How regulative, normative and cultural-cognitive processes construct, maintain and diffuse institutions is a main interest in institutional theory. Institutionalists' also observe the processes of change, where institutions become weaker and disappear. This is referred to as deinstitutionalization (Oliver 1992).

A perennial theme running through the literature on institutional theory is the notion that actors and their interests are institutionally constructed (Jepperson 1991). It emphasizes the rejection of rational-actor or functionalist models of organizational change (DiMaggio and Powell 1983; Zucker 1988). Institutionalization is viewed as a state-dependent process that makes organizations less instrumentally rational by limiting their options (North 1990). The emphasis is on the relationship between organizations and their environments, as well as the inconsistencies different organizations attach to their formal and informal accounts of reality. More recently, neo-institutionalism draws heavily on sociological theory within organizational analysis. It examines how and why action is structured and order made possible by shared systems of rules that both enable some groups and individuals to benefit from the prevailing rewards and sanctions, while others are constrained, as their interests are not served by the system. By rejecting rational-actor models, neo-institutionalism treats institutions as independent variables (Scott 2008). Cognitive and cultural explanations are important with less attention given to the consequences of individual behaviour or motives in shaping organizational environments. The unit of analysis is usually at the inter-organizational level since institutionalization occurs at the sectoral or societal levels. Organizational forms, structural components, and rules, rather than specific organizations become institutionalized. However, institutionalists' advocate a multi-level analysis, particularly as individual behaviour reflects institutional effects emanating from societal, field, inter-organizational and organizational levels (Greenwood et al. 2008).

A perennial theme running through the literature on institutional theory is the notion that actors and their interests are institutionally constructed (Jepperson 1991). It emphasizes the rejection of rational-actor or functionalist models of organizational change (DiMaggio and Powell 1983; Zucker 1988). Institutionalization is viewed as a state-dependent process that makes organizations less instrumentally rational by limiting their options (North 1990). The emphasis is on the relationship between organizations and their environments, as well as the inconsistencies different organizations attach to their formal and informal accounts of reality. More recently, neo-institutionalism draws

heavily on sociological theory within organizational analysis. It examines how and why action is structured and order made possible by shared systems of rules that both enable some groups and individuals to benefit from the prevailing rewards and sanctions, while others are constrained, as their interests are not served by the system. By rejecting rational-actor models, neo-institutionalism treats institutions as independent variables (Scott 2008). Cognitive and cultural explanations are important with less attention given to the consequences of individual behaviour or motives in shaping organizational environments. The unit of analysis is usually at the inter-organizational level since institutionalization occurs at the sectoral or societal levels. Organizational forms, structural components, and rules, rather than specific organizations become institutionalized. However, institutionalists' advocate a multi-level analysis, particularly as individual behaviour reflects institutional effects emanating from societal, field, inter-organizational and organizational levels (Greenwood et al. 2008).

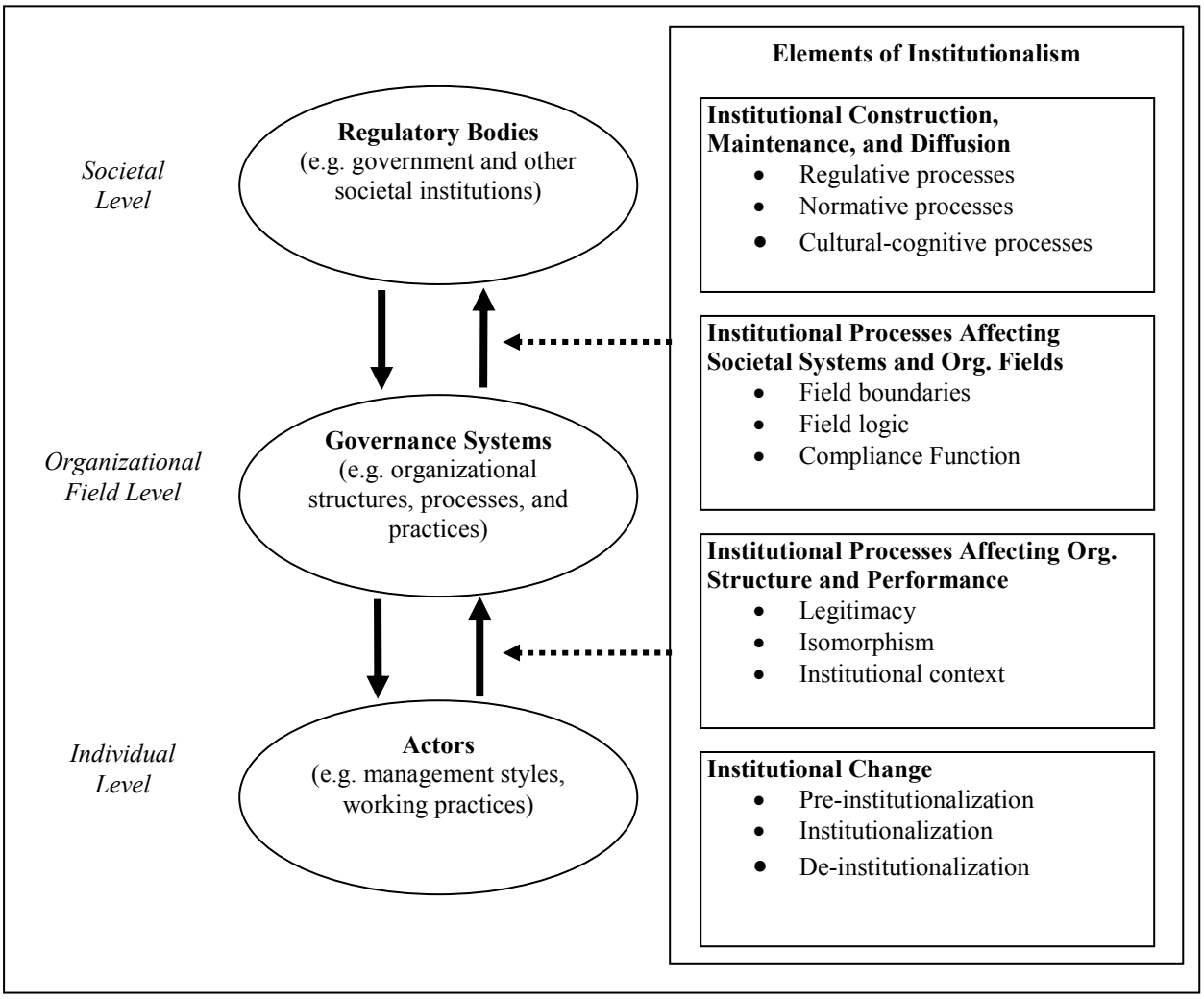

Figure 1: Theoretical Research Framework

Whereas early work on institutionalism viewed organizations as organic wholes, neo- institutionalism perceives them as *'loosely coupled arrays of standardized elements'* (DiMaggio and Powell 1991, p.14) and emphasises the homogeneity of organizations and the relative stability of institutionalized components (Zucker 1991). Institutionalization is viewed as both a *phenomenological process* where social relationships and actions come to be taken for granted, and a *state of affairs* in which shared cognitions determine what actions are possible and what has meaning (Zucker 1983). Neo institutionalism confines irrationality to the formal structure rather than the level of the organization or individual. Thus, it attributes the *'diffusion of departments and operating procedures to inter-organizational influences, conformity, and the persuasiveness of cultural accounts, rather than to the functions they are intended to perform'* (DiMaggio and Powell 1991, p.13). These institutional theories provide the foundation for

our theoretical research framework (Figure 1). This framework is used to analyse our data on the IT compliance function.

Research in institutional theory considers either the 'effects' or 'processes' of institutionalization. The former often uses a variance approach which views institutions as entities by examining their characteristics, which are delineated as abstract dependent or independent variables (Mohr 1982). Researchers attempt to determine the causal relationships between the variables. This approach identifies the factors associated with the observed characteristics, yet places less attention on the time ordering between the precursor and outcome variables (Scott 2008). Conversely, a process approach looks at *'a series of occurrences of events rather than a set of relations among variables'* (Mohr 1982, p.54). The time ordering of important and relevant events, often reported as occurring sequentially in real time, is critical to process oriented research (Langlois 1986, p.7). For this study, we use a process-oriented approach, as we are interested to observe the implementation of a compliance system over an extended period of time. The 'how' and 'why' questions in relation to a contemporary phenomenon within a complex organization suggests that a longitudinal case-based method is more appropriate (Teo et al. 2003). While this study generated voluminous data sets, this short paper reports the findings from the following research question: 1) How do regulatory and legal pressures on the compliance function in investment management firms change institutionalized practices?

Research Methodology

A qualitative research methodology was developed to investigate the implementation of a compliance system from a single independent software vendor (ISV) at four independent client sites. The primary reason for introducing the technology was to comply with stringent compliance regulations governing the financial services industry. Table 1 shows the demographics and study relevant contextual information about the four client sites. The ISV is a market-leading provider of software and services to investment managers in the global mutual fund, banking, pension, hedge fund, wealth management and insurance sectors. It also offers software consulting and application engineering. By combining state-of-the-art and industry-standard technologies, the firm delivers applications that are open, flexible, scalable, rich in functionality, and easy-to-use. Founded in the early 1980s and privately held, the firm serves some 145 clients worldwide representing over US$10 trillion in assets. The extensive methodology, relational database and applications development experience acquired in the company's early years became the foundation for the design and development of firm's current product line. Currently, the firm dedicates its resources solely to the development and support of its investment management and products and services, specifically the Investment Management System (IMS).

The IMS is a comprehensive front- and middle-office software suite for all security types. From advanced 'what if' analysis and order creation to electronic execution and settlement connectivity, the IMS streamlines workflow to shorten trade cycles and increase operational efficiencies. Each of the suite's three components is available as a standalone application. The first offers sophisticated tools for portfolio management including 'what if' analysis, modelling, portfolio rebalancing, and order generation. The second provides order management, electronic trading, and liquidity access. The third offers global, real-time, pre-trade, post execution and portfolio-level compliance monitoring. The IMS supports 24x7 operations and facilitates downstream trade processing via embedded links to VMUs, custodians, and settlement facilities. Message-based APIs and exposed Web services allow for rapid systems integration.

Table 1: Participant Client Firms

	Firm C.1	**Firm C.2**	**Firm C.3**	**Firm C.4**
Age	Established	Established	New (13 yrs old)	New (6 yrs old)
Employees	160		100	100
Traders	8		0	8
Fund Managers	120		5	
Accounts under Management	£14bn		£8bn	£12bn
Debt	Yes – 10%	Yes – 15%	Yes – 50%	Yes – 60%
Derivative	No	No	Yes – 20%	Yes – 15%
Currency	Yes – 5%	Yes – 10%	Yes – 30%	Yes – 25%

Money Mkt	Yes – 10%	Yes – 15%	No	No
Equity	Yes – 75%	Yes – 60%	No	No
Use FIX	Yes	Yes	No	No
Compliance	Yes	Yes	Yes	Yes
No of Funds	12,000	9,000	50	20
Imp. Team Size	9	20	2	9
Existing System	Separate systems for FM and Traders that were not easily integrated	Existing OMS that was to be replaced	Excel spread sheets and paper based deal tickets	Excel spread sheets and paper based deal tickets
Market	Corporate pension plans, private clients and wealthy individuals	Corporate pension plans, private clients and wealthy individuals	Hedge Trading	Hedge Trading
Accounting System	Quasar	SimCorp	SimCorp	Decalog but will become Invest1
Infrastructure	Windows 2000, Citrix used for connection. All Oracle and SQLServer database systems in US	Windows NT, LAN and WAN. *SQL*	Windows XP, LAN and WAN. SQLServer database	Windows XP, LAN and WAN. SQLServer database. MSMQ
In-house skills	Expert DBA, network teams, 24hr help desk, in-house training	Expert DBA, network teams, 24hr help desk, in-house training	All outsourced	In-house IT skills

Data Collection

Data was collected from 2001-2008. Primary data was obtained mainly through the interviews using open-ended and semi-structured questionnaire at both client and vendor sites. Additionally, we observed participants at the vendor site during the implementation phases. Secondary data included internal sources such as project plans, notes from meetings between vendor and client, annual reports, internal documents on technology strategy, newsletters, press releases, company websites, brochures, and emails; and external sources such as investment industry reports, government publications (e.g. SOX act), trade journals, business and technology web sites, financial press reports, and trade fairs. Since the software project implementations were phased across several years, each of the client sites were visited at different periods, with some interviewing schedules lasting longer than others. What was important was to visit all sites at the beginning and end of the software implementation cycle, although it is recognized that regulatory and legal requirements would vary across each firm. Table 2 shows the data collection phases.

Table 2: Data Collection Phases

Site	Interview Schedule	Informants	No of Interviews
Firm C.1	Phase 1: January 2001-February 2002 Phase 2: October 2002-December 2003 Phase 3: June 2004-August 2004 Phase 4: December 2005-Jan 2006 Phase 5: Feb 2007-May 2007	Chief Information Officer Finance Director IT Project Managers (3) Implementation Manager Head of Compliance Compliance Officers (3) Relationship Manager	12 persons interviewed x 5
Firm C.2	Phase 1: January 2002-October 2003 Phase 2: June 2004-August 2004 Phase 3: May 2005-August 2005 Phase 4: Jan 2006-March 2006 Phase 5: October 2007-December 2007	Chief Information Officer Finance Director IT Project Managers (3) Implementation Managers (2) Head of Compliance Compliance Officers (3)	10 persons interviewed x 5

Firm C.3	Phase 1: March 2004-December 2004	Chief Information Officer	8 persons
	Phase 2: February 2005-April 2005	IT Project Manager	interviewed x 5
	Phase 3: June 2006-July 2006	Business Analyst (2)	
	Phase 4: March 2007-May 2007	Implementation Managers (2)	
	Phase 5: December 2007-Jan 2008	Compliance Officers (2)	
Firm C.4	Phase 1: September 2004-January 2005	Chief Information Officer	6 persons
	Phase 2: February 2005-April 2005	IT Project Manager	interviewed
	Phase 3: April 2006-June 2006	Business Analyst	
	Phase 4: September 2007-October 2007	Implementation Manager	
	Phase 5: January 2008-February 2008	Compliance Officers (2)	

Interviews were carried out at the beginning of the software implementation cycle, during the mid-cycle, and at the end, where the project was at the 'go-live' stage. This research design and data collection and analysis approach enabled the close tracking of each of the four client site implementations of the IMS. The lengthy period of data collection also coincided with the Sarbanes-Oxley Act of 2002, which posed further software challenges to the introduction of the compliance system. Further regulation was introduced in the form of Markets and Financial Instruments Directive (MiFiD), which posed additional constraints on firms to alter their business processes and practices to comply with new financial services rules and regulations.

Data was collected from multiple informants. An IMS implementation consultant from the vendor organization worked across the four client sites. This proved particularly valuable as this individual was able to compare and contrast the different IMS project approaches in terms of management style, culture of the organization, governance of IT, resource allocation of staff and other resources (hardware, software, external technical support) to the project, staff attitudes to government regulation and sanctions, and managerial roles in initiating changes to existing working practices. At the client sites, a number of individuals were interviewed: senior executives (CEO, Head of Compliance Management, Finance Directors), IS professionals (permanent and contract staff) and non-IS staff (i.e. business analysts and marketing managers). Construct validity was therefore obtained by discussing key concepts, constructs and terminology with each of the informants and triangulating the findings. Interviews typically lasted between one and three hours, and all informants were interviewed at least twice. The interviews were tape-recorded and the tapes transcribed. The informants were given the transcript of the interview to enable them to validate the data.

Following the initial phase of data collection at the four client sites in conjunction with an extensive literature review on social and organization theory, institutional theory was adopted as a rich theoretical lens for analysing the data. Part of the rationale for selecting institutional theory was to address calls made in the literature for more longitudinal, process-oriented studies where data is collected over different time-spans to observe how existing organizational structures, processes and practices undergo change (Oliver 1992; Swanson and Ramiller 1997). Such changes were not adequately explained through individual rational choice, but reflected wider societal and institutional pressures on the investment management industry. Institutional theory therefore offered a conceptual framework for analysing and understanding the processes of institutionalization of governance structures within a segment of the financial sector. Another reason was to utilise institutional theory in response to concerns that coercive forces equate to regulatory change in the not-for-profit (public) sector, which is highlighted as a common misunderstanding about institutional theory, particularly as coercive, mimetic and normative pressures also exert change in the private sector (Hayward and Boeker 1998; Fiss, 2008).

Analysis and Discussion

In this section, we analyse the four IMS implementations drawing using institutional theory as a lens to understand the processes of how IT-enabled governance structures become institutionalized. The value of this exercise is to elucidate some of the key concepts drawn from our theoretical research framework (Figure 1) and to illustrate the value of institutional theory to our understanding of large-scale IT implementations initiated from governmental, institutional and individual calls for legal and regulatory change.

The Institutionalization of the compliance Function

Institutionalization is described as both a property variable and a process (Scott 2008). On one hand, an institution is perceived as an entity with a cultural or social system characterised by a single or multiple set of features or properties. Alternatively, institutionalization is a process observed over time. Institutionalists' have therefore observed the growth or decline of regulative (Jepperson and Meyer 1991; Tolbert and Zucker 1983), normative (DiMaggio 1991), and cultural-cognitive norms (Zucker 1987), and their varying influences on providing meaning and stability to social behaviour (Zucker 1977). Opinions vary according to the degree of rational choice exercised by actors in designing institutional arrangements (Meyer 1983). Some emphasise the role of actors in pursuing their individual interests, having carefully evaluated all the options, while others focus more on the constraints on individual freedom and choice to pursue their goals. Within the compliance function, societal factors, the organizational field, groups and individuals all played a part in influencing institutional effects and processes, although their specific strengths and weaknesses of varied over time.

As a highly regulated sector, firms were constantly challenged by the changes in the industry through increased global competition, the regulatory requirements and technological imperatives, such as the need to keep pace with IT to satisfy government, institutional and individual investors. The automation of compliance has evolved over the past twenty years. The replacement of calculators with T+1 software systems that maintained electronic connections with other internal systems was initially slow. But as adoption increased, investor awareness about the importance of compliance increased. Across the four client sites, enhanced awareness about compliance issues was a mixed blessing. Although investment management firms realised the benefits of automating the compliance process, increased automation would change many of the institutionalized practices within the industry. For example, prior to the IMS implementation, fund managers could instruct traders to buy or sell a stock without properly evaluating the conditions (if any) set out by the client. A trader may therefore purchase stock in an industry (i.e. tobacco) even though the client may not wish to hold stock in this sector. Whether the error was deliberate or genuine, the example reflects a less formalised governance structure, which was institutionalized within the investment management industry prior to compliance automation. The IMS project manager at C.2, reflected on the changes in the industry,

> *"Although technology has always been part of this industry, a lot of the business has been done through face-to-face meetings. But the scandals of Barings Bank, and more recently, Worldcom and Enron, have put compliance at the top of the management agenda. The IMS implementation will certainly improve our compliance processes, but it will also increase our responsibility and accountability to some extent. Some fund managers and traders have criticised the system because they think it forces them to change the way they do things…and nobody likes to change what they are used to".*

Across all client sites, informants talked about the *'need for change'* arising from past corporate scandals and the intensity of global competition within the industry. As a leading financial services center, London was seen as highly successful with excellent institutions and highly competent people. Yet the advent of Internet-enabled software infrastructure and applications meant that trading, particularly in hedge funds, had almost become a round-the-clock activity. Technological innovation played a leading part in transforming existing cultural practices within the industry.

An organizational field is refers to, *'those organizations that, in the aggregate, constitute a recognised area of institutional life; key suppliers, resource and product consumers, regulatory agencies and other organizations that product similar services or products'* (DiMaggio and Powell 1983, p. 153). Organizational fields are often treated as independent variables, as a collection of contextual factors or conditions affecting organization structures or processes. Rather than perceiving an organizational field as a random collection of resources and schemas, or constructs defined by disembodied dimensions like complexity and munificence, they are instead highly organized (Scott 2008). Organizational fields are bounded by the presence of a common regulatory system or shared normative or cultural-cognitive frameworks that comprise a recognised area of institutional life. Further, the notion of field connotes the existence of a community of organizations that partakes of a common meaning system where actors interact more 'frequently and fatefully' with one another than with actors outside of the field (Scott 1994, p.207). An example of an organizational field is the IS user community comprising a range of IS functions or departments (e.g. focal population) and related organizations, such as membership organizations (Swanson and Ramiller 1997). Social institutions, organizational fields and organizations may be viewed as governance structures. While governments exercise authority over organizations (Lindblom 1977), organizations further impose governance structures over individuals. Governance structures therefore encompass all those arrangements by which field-level power and

authority are exercised including formal and informal systems, public and private organizations, regulative, normative and cultural mechanisms (Scott 2008).

The investment management industry is an organizational field comprising large and small firms, membership organizations, government agencies and other related bodies. Like the financial services industry more generally, investment management embodies institutional processes in various stages of institutionalization and de-institutionalization. Observing institutional processes throughout the duration of the IMS implementation suggested that individual organizations perceive governmental legal and regulatory pressure from their own *'distinctive history, the people who have been in it, the groups it embodies and the vested interests they have created, and the way it has adapted to its environment'* (Selznick 1949, p.256). The mandatory rules governing compliance invariably produced a disruptive influence on existing institutionalized processes. For example, the SOX act applied extensive pressures on firms to demonstrate not only that they possessed business processes for auditing and reporting, but also that such processes were robust and reliable. The imposition of SOX, coupled with institutional and individual demands for regulatory changes in the investment management industry suggested that compliance had become an institutionalized process within this organizational field. Compliance was not simply a technical requirement at the client sites, but was a normative and cultural imperative. It had become inextricably linked with effective governance structures and best practice. In recent years, the institutionalization of the compliance function can be viewed alongside Selzick's famous quote, since it had become infused *'with value beyond the technical requirements of the task at hand'* (Selznick 1949, p.257). A compliance expert as C.4, claimed,

> *"We recently won £200 million new business because we had introduced the IMS. Our clients, particularly the large institutional investors, are very savvy about IT systems. They are investing millions of dollars in pension funds so they don't want to see another corporate financial scandal. So yes, my role as a compliance manager is a very important part of winning new business".*

An important observation by institutional theorists is that organizations operating within the same environment become similar over time. This is known as isomorphism (Hawley 1968). The concept of institutional isomorphism was extended by Dimaggio and Powell (1983) into coercive, normative and mimetic mechanisms that, '*make organizations more similar without necessarily making them more efficient*' (p. 135). They observed that the models and mechanisms including isomorphism among structural features are strongest within delimited organizational fields rather than at more diffuse societal levels. Within contemporary organizations, two observations are apparent. First, there is a similarity in the structural features of organizational forms within the same organizational field. For example, a large corporate IS department may resemble another one. Second, organizations seek to develop structural features that enable them to conform to regulative and normative requirements. For example, large corporations are keen to demonstrate their conformity with the SOX, to show they possess effective corporate governance policies, procedures and practices. So despite issues of productive or technical efficiency, organizations, which exist in highly elaborated institutional environments that are isomorphic, are more likely to acquire the legitimacy and resources needed to survive. Such conformance explains why regulatory and normative pressures result in similarities among organizations. Yet organizational structure comprises both formal and informal features. Whereas the former may reflect, for example, regulatory and normative pressures imposed by government; the latter encapsulates unregulated and, sometimes, disruptive behaviour within the workplace. A tension therefore exists between formal and informal structures (Scott 2008), and disentangling the two remains a empirically difficult to verify.

The implementation of the IMS was a response to the growing need to enhance governance structures to comply with mandatory requirements to improve monitoring and reporting of business and trading activities. The investment management industry has a long history of introducing technical change, both as a consequence of compliance regulations and as a means of enhancing competition against rival firms. Across the four client sites, compliance automation was perceived as a major factor influencing the growth and direction of the financial services industry. Yet while the regulatory requirements applied to investment management firms in general, the normative and cultural-cognitive values varied among firms. In the larger firms (C.1 and C.2), institutionalized structures and practices tended to restrict individual actors from pursuing their goals and interests. The larger firms possessed multi-layered, administrative structures, where decisions on IT implementation had to be authorized by many stakeholders. In the case of C.1, or example, formalised project management procedures, as part of the IT governance structure, served to restrict IT professionals in managing the IMS implementation. One project manager said,

> *"I keep telling senior managers that we need to hire more staff to enable us to complete this phase of the implementation cycle. But all they can see is that I must stick to the budget. The result is that the project will continue to slip. But I don't think this really matters to them, as they are more interested in keeping to the budget, even though the overall implementation will fall behind."*

Institutionalized procedures and practices were less apparent at the hedge fund firms. For example, C.3, which had no IT department, had a less formalised IT governance structure, with only two individuals checking compliance rules on a monthly basis. This firm had outsourced all its IT to third party vendors. The IMS was purchased to comply with regulatory requirements, yet the lack of dedicated IT staff to introduce IT-enabled change suggested poor judgement on the part of senior managers. The IT consultant in charge of the implementation commented,

> *"The guy that owns this firm doesn't even acknowledge me – he seems to think that technology matters are beneath him. Throughout the implementation, I told him that he needed to invest in better hardware or the database would become full and this would result in downtime. Six months later, he called my firm (the suppler) to complain why he couldn't run the compliance system…the database was full! They should realise that IT is critical to their business and not something they can do on the cheap".*

This contrasted widely with firm C.4. Here the CEO took an active part in championing the IMS implementation. IT at this firm was considered mission-critical. As the CEO explained,

> *"As the needs of our clients grow more complex and the demand for information increases, we are continually using IT to enhance our products and services. The IMS enables us to offer a value-added risk management service to our clients. I think we are further ahead in the game than some of our competitors, particularly the larger firms which tend to be slow off the mark when it comes to IT".*

Despite the criticality of IT in the investment management industry, the IT compliance function varied. Institutionalized methods and procedures for governing IT projects tended to be more fully articulated and practiced in the large investment management firms. Conversely, in the smaller firms, the value placed upon IT by senior executives was more significant in shaping the overall IT governance structure, whether this was well-articulated or poorly defined. Social action was not context-free, but was also constrained, the outcomes therefore being shaped by the setting in which they occur. Regulatory and normative pressures suggested that institutional isomorphism would increase, as the four client sites formalized their compliance processes using the IMS as a means of monitoring and controlling trading activities. Despite the less formalised governance structures within firms C.3 and C.4, pressure to conform to mandatory regulations using the state-of-the-art compliance automation would inevitably reduce opportunities for individual autonomy, and increase bureaucratic controls to emulate the larger investment management firms. Equally, firms C.1 and C.2 would also have to change existing processes as a consequence of compliance legislation.

While much of the prior work by institutional theorists has viewed institutionalism as a source of stability and order, recent work has considered how institutions undergo change (Greenwood et al. 2008). Within the IS field, researchers have examined management of change by observing the impact or implementation of innovation and change programmes such as total quality management, business process reengineering, and more recently, knowledge management and e-business. Much of this work has looked at the development of new initiatives and their implementation across organizations. While institutionalists are keen to observe institutional construction and convergent changes processes, it is also important to recognise that institutions that exert specific effects are also subject to change.

While there are few empirical studies on the processes of de-institutionalization (Oliver 1992), our study recognized that institutionalized processes were likely to change through regulative, normative and cultural pressures. Research across the four client sites suggested a tension between existing institutionalized processes and efforts to change them (de-institutionalization) by revising governance structures, laws and sanctions. Technology was a major player in the change process, although embedding rules and regulations within an information system served to remove some of the accountability and responsibility from individuals. As the IMS implementation manager pointed out,

> *"The compliance system is introduced to stop human error. But some fund managers complained recently that the 'buy' and 'sell' buttons were too close together, and they could easily therefore press the wrong*

> *one. There was also an incident recently where a fund manager keyed in to purchase some shares and then an hour later decided to buy more of the same share. When the transaction was sent to the accounting department, the system had only sent the second request. This was because the fund manager had not sent the first request to accounts. The fund manager then blamed the system, but the mistake was in fact his….Computers are very logical and cannot predict what you are thinking!"*

Despite potential criticisms of the IMS, senior executives recognised the need to use technology as an integral part of their IT governance structure. The IMS would create a single integrative platform for handling investment funds. Some traders resisted attempts to de-institutionalize existing processes. As one Project Manager (C.1) explained,

> *"We have about 400 large institutional accounts (i.e. pension funds) and about 10,000 individual accounts (i.e. PEPs/ISAs). The IMS will be used for all of them, although there is only an 80% fit with our current business processes. People therefore have to change how they do things. They are reluctant to change, but forced to do so because of regulation and rules."*

Pressure to de-institutionalize specific institutionalized practices had led to managerial conflict in some cases. In C.1, a senior manager responsible for several large client accounts was dismissed as the IMS exposed various incidents where compliance rules had been broken. A senior executive explained,

> *"Prior to the compliance system (IMS) being installed, senior managers had much more freedom to execute decisions about buying and selling stock. We recently had to dismiss one of our senior managers because he had broken several rules and this led to us compensating the client. Over time, people will just have to get used to the fact that their decisions are being recorded, monitored and scrutinised. This will lead to further changes in the culture of investment banking"*

Our data from the four client sites showed that the implementation of the IMS was differentiated by factors including the size of the firm, the management and administrative structure, the project management methods and techniques and senior management attitudes towards IT (see Table 3). Larger firms (C.1. and C.2) had adopted standard project management methods and techniques, which they saw as critical for managing large-scale IT projects. The smaller firms adopted a less formal attitude to IT, with C.3 outsourcing all its IT function. In the pre-SOX environment, prior to the IMS implementation, firms C.1. and C.2 saw compliance technology as a necessary part of their IT expenditure. But as the SOX legislation was introduced senior executives increasingly discussed compliance as a priority. This was partly to demonstrate that new compliance regulations were being met, and also to avoid costly human errors on the trading floor. In the post-SOX environment, all firms recognized that individual and institutional investors perceived compliance as a major element in their selection of IMS vendors. The IMS enabled firms to monitor and control individual performance, and this had led to dismissal in some cases, as traders had been found to be negligent. One identifiable change in working practices was that traders were obliged to comply with the rules embedded into the IMS. This had led to a reduction in their autonomy and freedom to execute trades, which sometimes caused resentment among staff. A by-product of introducing the IMS was that some traders absolved themselves from responsibility if compliance rules were broken, occasionally blaming the technology as the cause of the problem. A common theme running through the interviews at all the client sites was that compliance technology was leading to a 'surveillance culture' as the capture, storage and auditing of trading data was much more sophisticated than in the past. This was fuelled by changing institutional logics that encouraged adoption and diffusion of IT to closely scrutinize firm and individual performance, thereby replacing past logics which valued individual freedom and autonomy. All firms had appointed additional compliance officers to observe trader performance, which had created a 'them' and 'us' culture. Working practices were becoming deinstitutionalized as staff experienced the erosion of less formal and autonomous conditions.

Table 3. The Emerging Role of the Compliance Function in the Pre and Post IMS Implementation

	C.1.	C.2.	C.3.	C.4.
Phase 1	Pre-IMS Implementation			

	- Pre-SOX - Managers and Traders operate in less formalised governance structure - Traders performance seen as a team effort - IT project management methods increase bureaucracy and reporting	- Pre-SOX - Managers and Traders operate in less formalised governance structure - New regulatory pressure to improve financial performance and accountability	- Post-SOX - Senior executives perceive IT as support function. Large-scale IT outsourcing - Distinction between the Business and Technology - No formal governance structure	- Post-SOX - Senior executives look to distinguish firm from larger rivals - Flat management structure and informal decision-making structure - Senior executive support for IT
Phase 2		Post-IMS Implementation (1)		
	- Post-SOX - Demands of SOX increase costs - Individual assessment of Trader performance based upon audit trail results from IMS - IMS enhances management control - Some staff resistance to changing working practices - Concerns that SOX becomes another 'box ticking' activity	- Post-SOX - Demands of SOX increase costs - Higher levels of formalisation in governance structure - Complying with SOX forces managers to 'take their eye off the ball' with their corporate clients - Compliance technology critical for improving the image of the financial services industry	- The IMS reduces freedom and autonomy of traders and fuels a perception of increased surveillance - Senior executives place additional responsibility on IMS vendor - IMS imposes new compliance controls on fund managers and traders	- IMS perceived to enhance firm reputation as dynamic, agile, with robust compliance technology - Customer requirement for IMS - IMS vendor involved in correcting trading errors
Phase 3		Post-IMS Implementation (2)		
	- IT project manager voices concerns about vendor 'lock-in' with IMS - Senior Management are concerned about cost-control as compliance function expands	- Regulatory measures impose greater demands on compliance function - Senior managers fear 'loss of autonomy' with IMS	- Concerns that vendor remains in control of business and IT functionality of IMS - IMS used as 'selling device' to win new business	- Realization that clients demand evidence of effective governance/compliance - Technical glitches seen as vendor responsibility only
Phase 4		Post-IMS Implementation (3)		
	- IMS system changes working practices and reduces human involvement - IMS increases 'data transparency'	- Compliance high on senior management agenda as financial services realise the costs of e-crime and fraud	- Recognition that without IMS, serious trading errors could occur - Cost of compliance increases	- Compliance seen as part of process improvement - IMS seen as 'best in class' technology
Phase 5		Post-IMS Implementation (4)		
	- role of Compliance Officer becomes integral to corporate governance - Fears that compliance has become 'New cost pit' - New Compliance Rules imposed	- Compliance staff increase - Managers quantify the 'high cost of regulatory compliance' - Need for better systems integration between compliance and governance systems	- Managers aware of 'power of supplier' in developing IMS - IMS is part of total IT outsourcing strategy - IMS becomes one of the top IT systems in compliance	- Governance and compliance linked with reputation of firm - IMS imposes uniformity of trading practices

At a more macro level of analysis, our empirical research suggests that societal pressures including the legal and regulatory requirements of SOX played a large part in changing governance practices and practices. For example, the smaller firms (C.3 and C.4) were keen to demonstrate to clients that conformance with regulatory pressures demonstrated 'best practice'. All firms claimed that non-conformance with regulatory pressures was an indication of poor management practice and 'deviant' behaviour. Overseas competitors were often described as, not having the same standards' as North American or European financial institutions. Prior work suggests the threat and magnitude of government sanctions for failing to comply with mandatory change acts as a catalyst for organizations to abandon existing practices and procedures (DiMaggio and Powell 1983; Oliver 1992). Within investment management, the high profile financial disasters of World.com and Enron had created a perceived crisis in corporate governance. This, in turn, engendered rapidly devised legislation, which was imposed across the investment management industry and beyond. Politically based societal pressures of this kind amounted to powerful inducements on the industry to devise best practice policies and procedures to comply with these changes. Coupled with this, economic imperatives such as changes in global competition and increased outsourcing further exerted pressures for deinstitutionalization. The developing financial markets of Asia were exerting new economic pressures on investment management firms to look for economies of scale, with offshore outsourcing as one option. Social pressures about the conduct and behavior of corporate executives further emerged at the societal level, as topics such as corporate and social responsibility were increasingly discussed in the media. Technological change was also a key factor, as it was inextricably linked with culturally-embedded notions of progress and prosperity. Improvements in the functionality of compliance automation had fuelled global pressures to adopt state-of-the-art technology as an indicator of good governance and best practice.

Our findings suggest that the construction, maintenance and diffusion of institutions, like the development of compliance automation, occurred over an extended period. Yet a major shock to the industry in the form of large-scale financial scandals, acted as a catalyst for government and other regulatory bodies to impose stringent new rules to tighten up governance structures. Institutional boundaries and logics underpinning governance were not confined to the organizational field, but was influenced and shaped at the societal level. In contrast, organizational and individual scope for defining governance procedures and practices was further limited, as regulatory and normative pressures leading to isomorphism, were eroded by new pressures to conform to changing government regulations. But while our data identifies institutional isomorphic characteristics attributed to coercive, normative and mimetic mechanisms (Dimaggio and Powell 1983), we concur that empirical measures pertaining to each one are difficult to isolate (Mizruchi and Fein 1999) and this remains a challenge for institutional theory.

Conclusion

This research has focused upon the introduction of an IMS in the compliance function of four financial services firms. Our interest was to observe how institutionalized processes undergo institutional change over time by societal, organizational and individual pressures. Developing a conceptual framework using various contributions from institutional theory, our case-based research shows that regulative bodies in the form of government agencies and professional organizations imposed stringent rules to improve corporate and IT governance. These pressures were technologically enabled through the implementation of an IMS to closely monitor and control pre- and post-trade compliance activities. Yet the process of institutionalization of the compliance function followed a non-linear path, as firms within the organizational field introduced policies and practices on an ad-hoc basis. Our findings reinforce prior work which suggests that, among various external pressures, government regulations are highly influential in de-institutionalizing past practices, as a result of the level of coercion that underpins the legal enforcement of government mandates (DiMaggio and Powell 1983).

Such coercive forces were also found to be important in shaping the IT compliance function, as the failure to comply with legal and regulatory change would result in punitive sanctions for firms. These sanctions were directed at firms and individuals, through heavy fines and dismissal of staff. As client sites embraced these changes, past informal working practices were being eroded and de-legitimized, as organizational members began to conform to new rules, procedures and practices. The IMS played a significant part in creating institutional isomorphism as firms were keen to demonstrate to potential clients that investment in compliance automation demonstrated effective IT governance. Such conformance helped to explain how and why regulatory and normative pressures result in similarities among investment management firms and institutional isomorphism across an organizational field (Scott 2008). Our research suggests that compliance had become an institutionalized activity at the four firms. It was not merely a technical requirement, but had become imbued with cultural and normative values. Investment management firms

were keen to demonstrate that conformance extended to all individuals, including senior executives. Past working practices that were part of the 'informal' organization were being replaced with technology-enabled practices, and there was some evidence to suggest that managers and staff resisted the more formalised working environment.

This paper makes a contribution to institutional theory by examining some of the antecedents that relate to institutional conformity and change in the compliance function. It further enhances our understanding of IT-enabled change within the organizational field of the investment management industry. Rather than focusing upon individual case-based examples, our discussion has pointed to wider societal influences that exert pressures upon organizations to undergo change. In this regard, the introduction of compliance automation is set within the wider context of examining individual strategic choice, but one that recognises that governmental influences play a key role in how organizations adopt and diffuse technology. This research contributes to existing studies that examine the broader social and cultural implications of technology change (Barrett and Walsham 1999; Currie 2004; Swanson and Ramiller 1997).

References

Barrett, M., and Walsham, G. "Electronic Trading and Work Transformation in the London Insurance Market," *Information Systems Research* (10: 1), March 1999, pp. 1-22.

Bodnar, G.H. "It Governance," *Internal Auditing* (18: 3), 2003, p. 27.

Brown, C.V. "Examining the Emergence of Hybrid Is Governance Solutions: Evidence from a Single Case Site," *Information Systems Research* (8: 1), 1997, pp. 69-94.

Chin, P.O., Brown, G.A., and Hu, Q. "The Impact of Mergers & Acquisitions on It Governance Structures: A Case Study," *Journal of Global Information Management* (12: 4), 2004, pp. 50-74.

Currie, W.L. "The Organizing Vision of Application Service Provision: A Process-Oriented Analysis," *Information and Organization* (14: 4), 2004, pp. 237-267.

DiMaggio, P.J. "Constructing an Organizational Field as a Professional Project: U.S. Art Museums, 1920-1940," in *The New Institutionalism in Organizational Analysis,* W.W. Powell and P.J. DiMaggio (eds.), University of Chicago Press, Chicago, 1991, pp. 267-292.

DiMaggio, P.J., and Powell, W.W. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review* (48: 2), April 1983, pp. 147-160.

DiMaggio, P.J., and Powell, W.W. "Introduction," in *The New Institutionalism in Organizational Analysis,* W.W. Powell and P.J. DiMaggio (eds.), University of Chicago Press, Chicago, 1991.

Fiss, P.C., "Institutions and Corporate Governance". R. Greenwood., C. Oliver., K. Sahlin., R. Suddaby (eds) the SAGE Handbook of Organizational Institutionalism, SAGE, USA, 2008, pp. 389-410.

Greenwood, R., Oliver. C., Sahlin, K., Suddaby.R. (eds). "Introduction". R. Greenwood., C. Oliver., K. Sahlin., R. Suddaby (eds) the SAGE Handbook of Organizational Institutionalism, SAGE, USA, 2008, pp.1-46.

Hawley, A. *Human Ecology*, Ronald Press, New York, 1968.

Hayward, M.L.A. and Boeker, W. "Power and Conflicts of Interest in Professional Firms: Evidence From Investment Banking". Administrative Science Quarterly, 43 (1): 1-22.

Hvalshagen, M. "Transforming the It Organization for the State of Virginia," *Information Systems Management* (21: 4), 2004, pp. 52-61.

ITGI "It Control Objectives for Sarbanes-Oxley," IT Governance Institute. http://www.itgi.org

Jepperson, R.L. "Institutions, Institutional Effects, and Institutionalism," in *The New Institutionalism in Organizational Analysis,* W.W. Powell and P.J. DiMaggio (eds.), University of Chicago Press, Chicago, 1991, pp. 143-163.

Jepperson, R.L., and Meyer, J.W. "The Public Order and the Construction of Formal Organizations," in *The New Institutionalism in Organizational Analysis,* W.W. Powell and P.J. DiMaggio (eds.), University of Chicago Press, Chicago, 1991.

Lainhart, J.W., IV "Why It Governance Is a Top Management Issue," *The Journal of Corporate Accounting & Finance* (11: 5), 2000, pp. 33-40.

Langlois, R.N. "The New Institutional Economics: An Introductory Essay," in *Economics as a Process: Essays in the New Institutional Economics,* R.N. Langlois (ed.), Cambridge University Press, New York, 1986.

Lindblom, C.E. *Politics and Markets: The World of Political–Economic Systems*, Basic Books, New York, 1977.

Meyer, J.W. "Conclusion: Institutionalization and the Rationality of Formal Organizational Structure," in *Organizational Environments: Ritual and Rationality,* J.W. Meyer and W.R. Scott (eds.), Sage, Newbury Park, CA, 1983, pp. 261-282.

Meyer, J.W., and Rowan, B. "Institutionalized Organizations: Formal Structure as Myth and Ceremony," *American Journal of Sociology* (83: 2), 1977, pp. 340-363.
Meyer, J.W., and Rowan, B. "Institutionalized Organizations: Formal Structure as Myth and Ceremony," in *The New Institutionalism in Organizational Analysis,* W.W. Powell and P.J. DiMaggio (eds.), University of Chicago Press, Chicago, 1991, pp. 41-62.
Meyer, N.D. "Systemic Is Governance: An Introduction," *Information Systems Management* (21: 4), 2004, pp. 23-34.
Mizruchi, M. S., and Fein, L.C. "The Social Construction of Organizational Knowledge: A Study of the uses of Coercive, Mimetic and Normative Isomorphism". Administrative Science Quarterly, 44 (4): 653-683.
Mohr, L.B. *Explaining Organizational Behavior*, Jossey-Bass, San Francisco, 1982.
North, D.C. *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, New York, 1990.
Oliver, C. "The Antecedents of Deinstitutionalization," *Organization Studies* (13: 4), 1992, pp. 563-588.
PCAOB "Form 19b-4: Proposed Rules by Public Company Accounting Oversight Board," Security Exchange Commission, 2004, p. 1877.
Peterson, R.R. "Crafting Information Technology Governance," *Information Systems Management* (21: 4), 2004, pp. 7-22.
Rau, K.G. "Effective Governance of It: Design Objectives, Roles, and Relationships," *Information Systems Management* (21: 4), 2004, pp. 35-42.
Roussey, R.S. "Buoying Investor Confidence," *Marshall Magazine* (Spring), 2003, pp. 42-49.
Sambamurthy, V., and Zmud, R.W. "Arrangements for Information Technology Governance: A Theory of Multiple Contingencies," *MIS Quarterly* (23: 2), 1999, pp. 261-290.
Sarbanes-Oxley Act (2002) Financial Services Authority, London.
Scott, W.R. "The Adolescence of Institutional Theory," *Administrative Science Quarterly* (32: 4), December 1987, pp. 493-511.
Scott, W.R. "Conceptualizing Organizational Fields: Linking Organizations and Societal Systems," in *Systems, Rationality and Partial Interests,* H.-U. Derlien, U. Gerhardt and F.W. Scharpf (eds.), Nomos Verlagsesellschaft, Baden, Germany, 1994, pp. 203-221.
Scott, W.R. *Institutions and Organizations*, Sage Publications, Inc., Thousand Oaks, CA, 2008.
Selznick, P. *Tva and the Grass Roots*, University of California Press, Berkeley, CA, 1949.
Swanson, E.B., and Ramiller, N.C. "The Organizing Vision in Information Systems Innovation," *Organization Science* (8: 5), Sept/Oct 1997, pp. 458-474.
Teo, H.H., Wei, K.K., and Benbasat, I. "Predicting Intention to Adopt Interorganizational Linkages: An Institutional Perspective," *MIS Quarterly* (27: 1), March 2003, pp. 19-50.
Tolbert, P.S. "Institutional Sources of Organizational Culture in Major Law Firms," in *Institutional Patterns and Organizations: Culture and Environment,* L.G. Zucker (ed.), Ballinger Publishing Co., Cambridge, MA, 1988.
Tolbert, P.S., and Zucker, L.G. "Institutional Sources of Change in the Formal Structure of Organizations: The Diffusion of Civil Service Reform, 1880-1935," *Administrative Science Quarterly* (28: 1), March 1983, pp. 22-39.
Weill, P., and Ross, J. "A Matrixed Approach to Designing It Governance," *Sloan Management Review* (46: 2), Winter 2005, pp. 26-34.
Zucker, L.G. "The Role of Institutionalization in Cultural Persistence," *American Sociological Review* (42: 5), October 1977, pp. 726-743.
Zucker, L.G. "Organizations as Institutions," in *Research in the Sociology of Organizations,* S.B. Bacharach (ed.), JAI Press, Greenwich, CT, 1983, pp. 1-42.
Zucker, L.G. "Institutional Theories of Organizations," *Annual Review of Sociology* (13), 1987, pp. 443-464.
Zucker, L.G. "Where Do Institutional Patterns Come From? Organizations as Actors in Social Systems," in *Institutional Patterns and Organizations: Culture and Environment,* L.G. Zucker (ed.), Ballinger Publishing Co., Cambridge, 1988, pp. 23-49.
Zucker, L.G. "The Role of Institutionalization in Cultural Persistence," in *The New Institutionalism in Organizational Analysis,* W.W. Powell and P.J. DiMaggio (eds.), University of Chicago Press, Chicago, 1991, pp. 83-107.