

**The London School of Economics and
Political Science**

*A Post Financial Crisis Study of Compliance
Practices and Systems in Global Financial
Organizations: an Institutionalist Perspective*

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For my father Isaac (1934-2008) and my mother Madeleine

A thesis submitted to the Information Systems and Innovation Group of the Department of Management, London School of Economics and Political Science, for the degree of Doctor of Philosophy, London, June 2014.

Declaration

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I would like to acknowledge that sections of this thesis have been published in the following places. For each of these articles, I wrote the first draft and then amended future drafts based on feedback from co-authors and reviewers.

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A Post Financial Crisis Study of Compliance Practices and Systems in Global Financial Organizations: an Institutionalist Perspective

ABSTRACT

The financial crisis of 2007–2009 and the resultant pressures exerted on policymakers to prevent future crises have precipitated coordinated regulatory responses globally. As a result, large scale regulatory change is being enacted within this industry to protect investors and economic systems. Very little research exists, either prior to the crisis or since, on how compliance practices are managed through technology within financial organizations. The research objective of this study is to understand how institutional changes to the regulatory landscape may affect corresponding locally institutionalized operational practices within financial organizations. The study adopts an Investment Management System (IMS) as its case and investigates different implementations of this system within eight financial organizations, focused on investment activities within capital markets. This study makes a contribution by outlining a detailed review of this technology and identifying post-crisis practices for organizing compliance and the social forces influencing them through technology. Through symbolic systems, relational systems, routines and artefacts the IMS diffuses new compliance practices and further embeds existing ones. The study shows that this system is not objective and is currently in flux as this dynamic and complex environment evolves in the wake of the global financial crisis. Correspondingly, social, political and functional pressures are acting to deinstitutionalise related behaviours and practices. Yet compliance behaviours and practices are simultaneously being institutionalised through coercive, normative and mimetic mechanisms. However, the study also highlights the ability of some agents to exercise limited control on the impact of regulatory institutions. The research found evidence that some older practices persisted and so the study suggests that the institutionalization of technology-induced compliant behaviour is still uncertain. The research makes an additional

contribution to practitioners by distilling the findings into a model of IS capabilities for compliance and a model to measure the maturity of a firm's compliance capabilities.

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1. INTRODUCTION

Within global markets we are seeing the extensive adoption of technology, the globalization and consolidation of industries (Berger et al. 1999) as well as increasingly unpredictable and dynamic business environments (Crook et al. 1992; Grey 2005). These factors amplify the risks associated with doing business (Beck 2007). One feature of this environment is an increasing focus on rules and regulations (Glaeser and Shleifer 2001; Stiglitz 2001) designed to protect a firm's employees, customers and shareholders as well as the economic well-being of the state in which the organization resides (Benston 1998; Benston and Kaufman 1996; Goodhart 2002; Goodhart et al. 1998; Llewellyn 1999). This is especially true within the financial services sector which has been a heavily regulated industry for many years.

The financial crisis of 2007-2009 and the resultant Great Recession has highlighted how the failure of financial organizations may have dire economic and social consequences at a national and global level. Media and political scrutiny has focused on various topics. These have included capping bonuses, unethical behaviour, systemic risk, bailouts from the public purse of firm's deemed 'too-big-to-fail', greater regulation of derivatives and hedge funds, and the 'ring fencing' of investment banking activities from retail banking, to name just a few. While the scope of post-crisis regulations is wide reaching, the focus of this study is narrowed to those areas of post-crisis regulation which address financial positions and the systems and processes for ensuring that trades remain within limits stipulated by regulations. Our study adopts an Investment Management System (IMS) as its case. The IMS facilitates compliance with areas of regulation which place quantitative

restrictions on transactions undertaken by financial organizations on behalf of investors.

As a result of these and other issues, the G20 and regulatory bodies worldwide are enacting regulatory change focused on plugging the gaps in regulatory systems that have become apparent as a result of the crisis and also post-crisis organizational failures, such as the Libor or Foreign Exchange (FX) rate rigging scandals.

In 2009, the G20 met in Pittsburgh and defined new measures aimed at preventing another financial crisis. Through legislation, both the US and EU regulators aim to meet the G20 commitment to strengthen regulatory systems. The European Union's response to the 2007 crisis and G20 agreements has been fragmented into several European Directives¹. In contrast, the US has opted to develop a single sweeping piece of legislation known as the Dodd-Frank Wall Street Reform and Consumer Protection Act, passed in 2010. The EU and US regulatory responses to the crisis are not yet fully crystallized, as some areas of post-crisis regulation legislation are currently being redrafted and interpreted into rules enforced by Regulators. However, tight deadlines for meeting these new requirements require financial organizations to begin working on updating their operational practices before regulatory rules and the outcomes they influence have been fully determined. The financial services industry is currently facing a 'tsunami' of regulations (FT 2013). The scale of regulatory changes in the financial services industry has only previously occurred in the 1920s when very different

¹ Including the Alternative Investment Fund Managers Directive (AIFMD), Capital Adequacy Directive IV (CAD IV), European Market Infrastructure Regulation (EMIR), Markets Abuse Directive II (MAD II), Markets in Financial Instruments Directive II (MiFID II), Undertakings for Collective Investment in Transferable Securities Directive IV & V (UCITS III, IV & V), Packaged Retail Investment Products Regulation (PRIIPS) and Regulation on Short Selling and Credit Default Swaps.

technologies were available. Consequently, the post-crisis environment provides a unique opportunity to investigate how technologies support wide spread regulatory change.

The motivation of the research is not merely to ascertain how regulatory rules and conditions are met, but to consider the complex interaction between institutional pressures and mechanisms and responses by firms and agents. Consequently, the study adopts an institutionalist perspective and embraces an interpretivist approach, through qualitative interviews with users of the IMS, to understand how technology is implicated in post-crisis changes to compliance related practice. In summary, the study does not seek to present contrasting and comparative compliance practices adopted by different organizations for complying with specific regulatory rules. Instead, the study draws from collective interpretations of experiences across eight financial organizations to illustrate a rich tapestry of regulatory change and socio-technical issues being driven by shifts in the regulatory landscape occurring as a result of recent economic and organizational failures.

1.1. Thesis Structure and Presentation

Firstly, it is worth highlighting that within this study's quotes from primary and secondary data are presented in italics while quotes from scholarly academic literature are not. This is done in order to help the reader differentiate between these two distinct but important forms of evidence.

The following subsections, within this chapter, introduce the study's high-level research question and seek to break it down into more manageable sub-questions. I then introduce a summary of the study's contributions. The aim of

introducing the research questions and contributions early in the manuscript is to provide the reader a foundation from which to judge if the research has met its objectives.

The IMS under consideration was originally developed in the US and so has its genesis in the US regulatory environment. Furthermore, the participant financial organizations all have US and UK based operations and so is subject to both jurisdictions' regulators. Interpretive research requires critical reflection of the social and historical background of the research setting (Klein and Myers 1999) and so the following subsections of this chapter aim to provide the reader with a foundation of the complex and dynamic environments relevant to the study. Firstly, a brief history of US and UK regulators is outlined to provide the reader with a historical context in which to place this research and to also introduce the role of regulatory agencies. Following which, the current regulatory landscape is introduced. The Financial Crisis and resultant Great Recession have created global regulatory reform and so the crisis and related EU and US regulatory responses are discussed. In the following subsections, I provide the reader with a comparison of two distinct approaches to regulating firms, rules and principles, and discuss how the UK regulator, the primary regulator for the study's participant financial organizations, supervises firms under its jurisdiction. In summary, the remaining subsections in this chapter seek to familiarise the reader with relevant background information, and so provide a point of departure from which to understand the research.

In chapter two, I draw from some of the issues and events derived from the background analysis, in Chapter 1, in order to identify relevant strands of literature. I synthesise predominantly scholarly works as well as secondary data sources, such

as speeches and codes of governance, to build a review of key issues and challenges currently being faced by the financial services industry in relation to the crisis and regulatory change. I start by discussing prominent studies related to the social construction and technological constitution of markets. I then introduce related literature on technological affordances and constraints and discuss their relationship with internal controls and compliance. Building on perspectives of control and affordance, the relationship between corporate governance, transparency and asymmetric information is discussed. The penultimate section discusses gaps in IS related literature. Finally, the summary subsection positions this study within existing bodies of work and highlights the need to narrow the study's focus within the range of topics and issues discussed in the review.

Chapter three narrows the study's focus by identifying and discussing specific institutional concepts. The chapter initially builds on the previous reviews of scholarly literature and discusses studies that have adopted institutional theory to investigate institutionalization and deinstitutionalization. The chapter's subsections seek to evaluate regulatory institutions against twelve defining criteria derived from the work of Martin (2004) and so provide the reader with an understanding of underpinning institutional meta-theoretical concepts, and also a foundation to evaluate the application of institutionalism within this setting. The discussion highlights the tension between structural forces and agency. It concludes by identifying the institutional logics perspective as providing an important bridge between these two distinct theoretical positions.

Chapter four builds on these institutional concepts, and seeks to delineate the theoretical boundaries of the study by framing the research through the institutional logics perspective. In order to do so, the meta-theoretical foundations

of this perspective are further discussed in relation to the research context and Martin's (2004) defining criteria of institutions. Institutional studies have developed a wide range of theoretical constructs and so the theoretical boundaries of the study are further defined by identifying and discussing the key theoretical constructs which are utilised to guide the study's analysis. Specifically, theoretical constructs regarding how institutions are carried and diffused (Scott 2008), pressures for deinstitutionalization (Oliver 1992) and mechanisms of institutionalization (DiMaggio and Powell. 1983; Scott 2008) are introduced. These concepts are then distilled into a conceptual model of regulatory compliance.

The fifth chapter begins by discussing social constructionism which acts as the philosophical foundation of the study and so provides underlying ontological and epistemological perspectives. The next subsection outlines the research design and introduces the eight financial organizations which participated in the study, together with the criteria used to select them. The methods of data collection and data analysis employed are then discussed. Following Klein and Myers (1999) principle of contextualization, this chapter also seeks to contextualise the IMS case by providing a discussion focused on the marketplace for such systems. An overview of the IMS Vendor and the systems' functionality and architecture as well as services offered by the IMS Vendor is also provided. In this way, sub-research questions one to three are addressed.

Chapter six outlines the empirical findings of this study. The chapter draws heavily from primary data collected through interviews and seeks to synthesize selected quotes to construct a narrative outlining new interrelated organizing practices, derived from the data collection and analysis process, for arranging regulatory compliance. These themes encapsulate the changes in practice and

behaviours the general research question aims to uncover and were found to operate at both the organizational field and intra-organizational levels. However, the findings also show the existence of limiting factors which may hamper the effectiveness of new compliance practices. The first section of this chapter introduces the themes identified. The following section presents the empirical data against each of the themes at both the organizational field and intra-organizational levels. The final section summarizes the findings at the organizational field level diagrammatically. This subsection also summarizes the findings, at the intra-organizational level, including the factors which may limit new compliance practices.

The seventh chapter directly addresses the fourth research sub-question, regarding how the IMS diffuses regulatory institutions. Drawing from Scott's (2008) work on institutional carriers a conceptual model is outlined for addressing the fourth sub-question, which is further decomposed against four constituent theoretical elements, namely symbolic systems, relational systems artefacts and routines. Each of these constructs is considered against the research findings presented in Chapter six, to guide analysis regarding how technology is implicated in the transmission of regulations and compliance practices. The analysis shows that the IMS is not neutral and may privilege some institutions over others and obscure some hazards. Furthermore, while systems such as the IMS may act as carriers of institutions they may also act as agents of deinstitutionalization.

Chapter eight focuses on the fifth sub-research question and also draws from theoretical concepts derived from scholarly literature. Oliver's (1992) work is employed to understand how political, functional and social pressures may lead to the deinstitutionalization of compliance practices carried through the IMS. Thus,

the chapter draws from analyses detailed in previous chapters. The first section outlines a conceptual model for understanding the interplay between the IMS and pressures of deinstitutionalization. Each of Oliver's (1992) pressures is then considered in turn, within subsections. The chapter makes a contribution by outlining the specific compliance practices found to be eroded, the pressures acting on them, as well as empirical predictors of deinstitutionalization in financial services.

The ninth chapter addresses the sixth research sub-question and so focuses on understanding the mechanisms and sub mechanisms by which new compliance practices and behaviours are becoming institutionalized. However, the study also revealed important counter mechanisms which may act to limit institutionalization. This chapter draws from the work of DiMaggio and Powell (1983) and Scott (2008) to outline a conceptual model. The following subsections consider how the IMS encourages responsible trading through surveillance, monitoring, automation, standardization and consolidation, interpretation sharing and learning. I also find evidence that some older practices persisted and so this analysis suggests that the institutionalization of technology-induced compliant behaviour is still uncertain.

Chapter ten differs from the previous analysis chapters as it does not seek to discuss the findings in relation to the institutional concepts outlined in chapters three and four. Instead this chapter seeks to make a contribution to the practitioner community by distilling the finding into a guiding framework delineating IS capabilities for managing regulatory compliance. I identify eight key capabilities: Managing Internal Controls, Measuring, Monitoring and Reporting Transactions, IS Development and Procurement, Managing Third Parties, Sharing and Selecting Best Practice, IS Leadership, Data Management and Enabling Cultural Change. The

identified capabilities and research findings are further developed into a maturity model in Appendix 9.

Chapter eleven closes the research study by summarizing the findings and contributions explaining what has been found and why this matters to both academia and also the practitioner community. These subsections draw from the study's conclusions outlined in Chapters seven, eight, nine and ten. The limitations of the study are discussed and directions for future research are proposed. Finally, the chapter and thesis is drawn to a close through several concluding comments.

1.2. Research Questions

The research question and sub-questions were derived from analysis of the research setting and context, specifically, the pre and post-crisis environment as well as the organizational context within which the IMS is deployed and the capabilities of the system itself. As the research developed and the findings analysed through an institutional lens, the question and related sub-questions were continually refined. This study seeks to answer the following general research question:

- How does pre-embedded IMS technology influence behaviours and practices for post-crisis regulatory compliance within global financial organizations engaged in investment activities?

In order to address the high level research question, I have decomposed this question into sub-questions. The rationale for doing so is to make the research more manageable and to thereby assist in the operationalization of the main question

(Punch 2000). The following sub-questions are focused on understanding the IMS case and contextualising its uses through investigating its environment.

- How is the post-crisis regulatory landscape in which the IMS operates defined?
- How does the IMS functionality and architecture contribute to meeting regulatory obligations?
- What are the services offered around the IMS by the systems' Vendor for managing compliance?

The next four sub-questions are focused on how the IMS influences compliance practices and so guide the discussion chapters.

- How do regulations and compliance practices become inscribed and transmitted through IMS technology?
- How are outmoded compliance practices becoming deinstitutionalised through the IMS?
- How are new compliance practices and behaviours becoming institutionalised through the IMS and what factors may prohibit this?
- What are the IS governance and management capabilities which support compliance activities?

Within the following sections and chapters, these questions are further decomposed to incorporate key theoretical constructs, and thereby further operationalise the research question.

1.3. Key Contributions

The financial crisis has had a hugely detrimental impact on society across the globe. However, as the literature review shows, numerous studies have

investigated the implications of the crisis through researching financial models and products, macro-economic factors and legal implications of regulatory change yet, surprisingly perhaps, very little research exists, either prior to the crisis or since, on how compliance practices are managed within financial organizations. Studies which have considered how technologies may support arrangements for meeting regulatory obligations are even scarcer. I believe that this is an important gap as no matter how robust a new regulation is if it is implemented poorly through poor management of socio-technical factors then its potential to achieve its aims and thereby the protection of investors and the economic wellbeing of the state are diminished. This study makes a small step towards bridging this gap by identifying how technology is implicated in carrying and (de)institutionalizing regulations and associated compliance related practices within firms engaged in the ‘buy-side’ subdivision of the financial services industry. Through the application of institutional concepts to the study of technology induced practices and behaviours, for post-financial crisis compliance, the main research question previously outlined (see 1.2) is addressed and correspondingly a contribution to scholarly literature and practice is sought.

This study firstly makes a contribution by identifying practices for organizing compliance and the social forces which influence them through technology. At the time of writing, many of the compliance practices considered were newly designed and not universally embedded. Correspondingly, the EU and US regulatory responses to the crisis are not yet fully crystallised so a second contribution of this study is that it provides a glimpse of this transient environment.

The study takes an IMS as its case and, as no previous studies address this type of regulatory technology, a third contribution is made by unpacking this

technology's competitive environment, its functionality, architecture and the changing landscape of value added services its Vendor provides, in the post-crisis environment. Often socio-technical studies do not benefit from a sufficiently unpacking the black box of technology and so by providing a detailed understanding of the technical and operational aspects of the system the reader is provided with an enhanced understanding of the role the technology plays whilst also facilitating a richer analysis of the causality of social phenomena derived from the findings.

A third practitioner orientated contribution is made by distilling the findings into a model of IS capabilities for compliance and through the development of a model to measure the maturity of a firm's compliance capabilities.

This research draws from institutional theory to provide meta-theoretical concepts which assist with understanding and framing this complex and dynamic environment. As the literature review shows, studies using institutional theory to examine the impact of the crises have been surprisingly scarce given the level of institutional change occurring. Here, a fourth contribution is made by employing the institutional logics perspective to frame the post-crisis environment and to understand the nature of institutions within this context.

A fifth contribution is made by synthesising Scott's work on how institutions are carried and diffused (Scott 2008), pressures for deinstitutionalization (Oliver 1992) and mechanisms of institutionalization (DiMaggio and Powell. 1983; Scott 2008) and distilling them into a conceptual model of regulatory compliance (see Figure 5). In the analysis sections Figure 5 is decomposed into lower level conceptual models, Figures, 14, 15 and 16, addressing

each of the key sets of theoretical constructs employed so here, a further contribution is made.

A sixth contribution is made by applying and extending established institutional constructs derived from the work of Scott (2008), Oliver (1992), and DiMaggio and Powell (1983).

Finally, the study makes a small contribution through the development and successful application of a methodology, which allows a cross disciplinary approach to researching the impact of regulatory change on organizational practices.

1.4. A Brief History of UK and US financial regulation

This section outlines the regulatory history of the UK and US prior to the beginning of this research. By doing so, the reader is provided with a historical context within which to frame the research. The UK and US context were selected as each of the financial organizations participating had operations in at least these two countries and so had to comply with regulatory obligations in each jurisdiction. Furthermore, London and New York are often considered the two major financial capitals of this world.

1.4.1. US Regulators

Today the Office of the Comptroller of the Currency (OCC) is the oldest financial regulator in the USA and was established in 1863. The OCC's role is to administer federal laws which apply to national banks. The OCC concerns itself chiefly with commercial banking, however there is some crossover between

commercial and investment banking regulation, for example in monitoring capital adequacy. (Malloy 2003; OCC 2010).

In 1911, the state of Kansas passed the first Blue Sky Law (Columbia Law Review Association 1924). The Blue Sky laws refer to state regulation of securities and are so called after a judicial opinion in the case of Hall vs. Geiger-Jones Co. in 1917 to combat, ‘speculative schemes which have no more basis than so many feet of blue sky’ (Alvarez and Astarita 2010 p. 1). Though states laws vary considerably, they generally contain three aspects. The first prohibits fraud. The second address the registration of brokers and dealers. The third requires the registration or exemption of securities to be traded. (Hazen and Ratner 2005). Over the years state regulation has been altered by federal regulation. (Palmeter 2005).

The history of the US’s main federal regulator, the Securities and Exchange Commission, begins with the stock market crash of 1929. The crash occurred in October and from the following September until July 1932 the New York Stock Exchange lost 83% of its value. (Gabaldon 2008) This economic disaster created a downturn in the economy which was a determinate factor in the worldwide economic catastrophe known as the Great Depression (Friedman and Jacobson 1989). The great crash precipitated the Securities Act of 1933, its aim was to ensure that the public was given adequate knowledge regarding a security and its issuer. The act also aimed to prevent fraudulent offerings. (Palmeter 2005; SEC 2009b; US Congress 1933).

The Securities and Exchange Act of 1934 was also enacted as a result of the crash. This act’s focus was the regulation of exchanges. Consonant to this purpose was the creation of the Securities and Exchange Commission (SEC). The SEC

oversees participants in the US securities industry, ‘including securities exchanges, securities brokers and dealers, investment advisors, and mutual funds’ (SEC 2009a p.1). The Act necessitated various institutions registering with the Commission, including exchanges, brokers and dealers, transfer agents, and clearing agencies. Exchanges were designated self-regulatory organizations (SRO) SROs were authorised to design rules and measures outlining improper conduct, investor protection and market integrity. SRO’s rules supplement the SEC federal laws and can differ in specifics and emphasis. These rules were ultimately reviewed and approved by the SEC. (US Congresss 1934; Gabaldon 2008; Palmiter 2005; SEC 2009b).

The SROs regulated under the SEC include securities exchanges, clearing agencies, the Financial Industry Regulatory Authority (FINRA), and the Municipal Securities Rulemaking Board (MSRB) (SEC 2009a). However, the regulation of commodities in the USA begins with the Futures Trading act of 1921 which institutes the regulation of futures trading in grain and the exchanges that trade in them (CFTC 2009; Markham 1987). This legislation was closely followed by the Grain Futures Act of 1922 which facilitated the creation of the Grain Futures Administration (GFA) to administer the Act. The GFA was formed within the US Department of Agriculture (USDA). Also created has been the Grain Futures Commission which constitutes the Secretary of Agriculture, the Secretary of Commerce, and the Attorney General. The Grain Futures Commission was given the authority to suspend or revoke boards of trade or exchanges trading in commodities. (CFTC 2009).

The Commodity Futures Trading Commission Act of 1974 created the Commodity Futures Trading Commission which unlike its predecessor the

Commodity Exchange Authority, had jurisdiction over all commodities and futures trades. The CFTC is designed to be very much like the SEC. It is an independent federal regulatory body who issues rules to be observed by participants in the futures industry by, ‘encouraging competitiveness and efficiency, protecting market participants against fraud, manipulation, and abusive trading practices, and by ensuring the financial integrity of the clearing process’ (CFTC 2010 p. 1).

A major development in securities regulation occurred with the enactment of the Maloney Act of 1938. Its purpose was to bring the same standards and fair treatment afforded to users of the exchanges to those operating within the over-the-counter (OTC) arena (trades conducted outside of exchanges directly between counterparties). The Act encouraged the dissemination of appropriate ethics and responsibilities through the registration of broker dealer associations as SRO, which in turn would be monitored by the SEC. (Loss and Seligman 2004; Mathews 1939; The Yale Law Journal 1939). The legislation was touted as the forerunner for self-regulation in other industries. However, this expectation was not realised and in effect this created one self-regulating body, the National Association of Securities Dealers (NASD) (Hofmann-Hed 1964). In 2007, the NASD merged with the member regulation, enforcement and arbitration functions of the New York Stock Exchange (NYSE) to form the Financial Industry Regulatory Authority (FINRA) (FINRA 2009).

The Blue Sky Laws were altered by the Uniform State Laws of 1956. This aimed to provide a uniform blueprint for the Blue Sky Laws. The Act was amended in 1985 to strengthen powers of state securities administrators and also to reflect state and federal developments. By 2000, approximately forty states had embraced the Uniform Securities Act as a basis for individual states regulation of securities.

Although various states interpreted the Uniform Securities Act differently, it was deemed to provide a more rational and consistent pattern for securities regulation (Hazen and Ratner 2005; Loss and Seligman 2004).

However, in 1996 the National Securities Market Improvement Act (NSMIA), was enacted by Congress in order to reduce the burdens of state and federal legislation by eliminating duplicate and unnecessary regulation and reallocating responsibility in securities regulation in a less ad-hoc fashion whilst still maintaining investor protection. The Act effectively pre-empted state law and so transferred many responsibilities from state regulators to the federal SEC. (Securities Industry and Financial Markets Association 2010; Dorsch 1997; Rutledge 1997; US Congress 1996)

The last US regulator considered is the Municipal Securities Rulemaking Board (MSRB). The MSB was created by the Securities Act of 1975 and is different from other SRO's as it has no members or participants and has purely a rule making function (Loss and Seligman 2004). The rules established by the board apply to both bank and non-bank municipal dealers and brokers (Municipal Securities Rulemaking Board 2010). They concern themselves with professional qualification standards and testing, fair practice, recordkeeping, confirmation, clearance, and settlement of transactions, and the form and content of quotations and rules for the dissemination of information provided by issuers of securities (Loss and Seligman 2004).

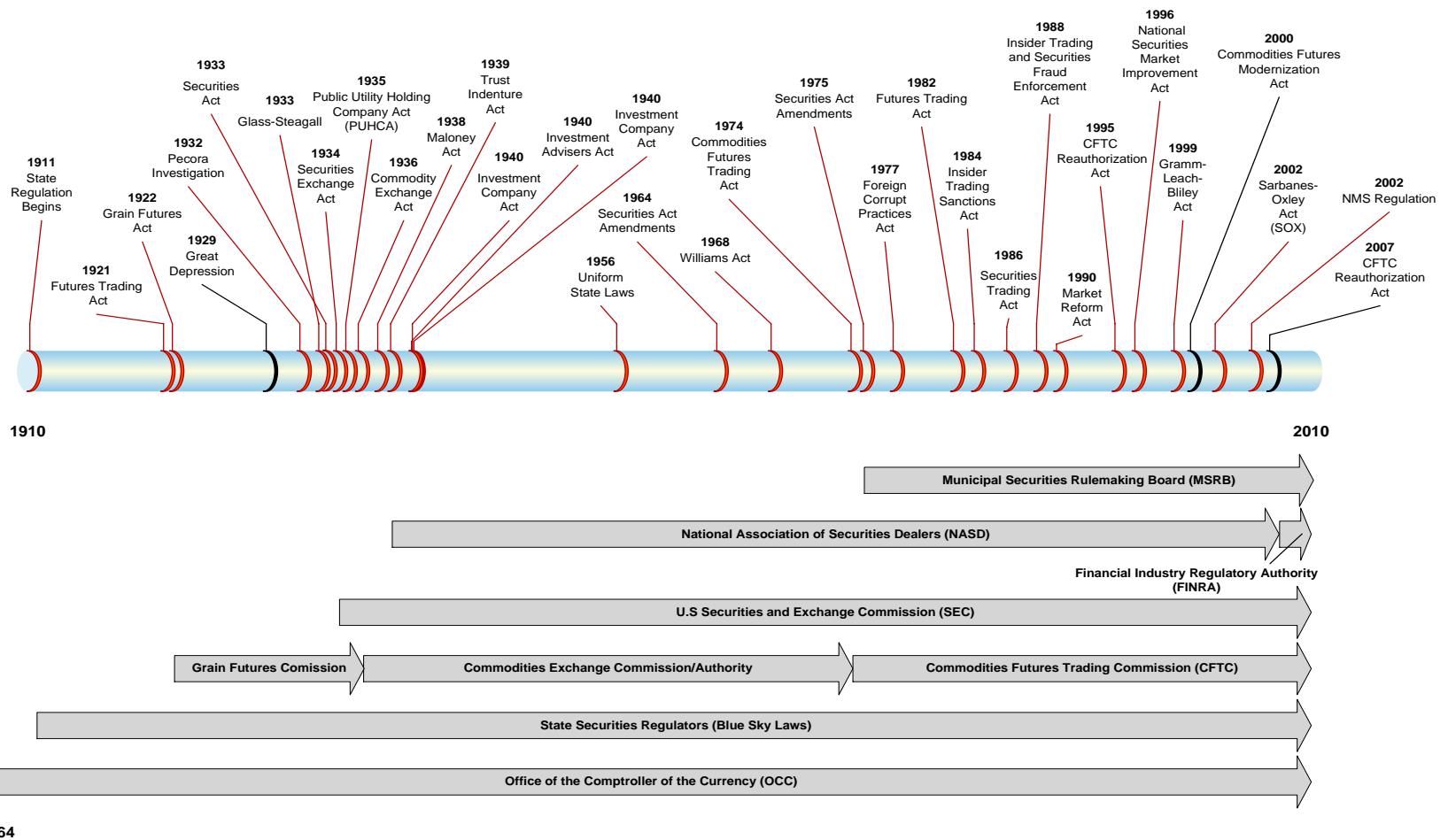


Figure 1: Timeline of US Regulation of Capital Markets Prior to 2010

The timeline in Figure 1 presents the history of capital markets regulation within the United States, prior to 2010. The US approach to regulation is tiered with the SEC enforcing federal securities laws and supervising the SROs who in turn have the first line of supervisory authority over firms. Note that the diagram excludes exchanges and clearing settlements systems which could be considered SRO's as they have memberships who must adhere to their rules, but these exchanges and systems are not primarily devoted to regulating the securities industry.

1.4.2. UK Regulators

In the USA the Glass Steagall Act of 1933 separated commercial and investment banking. Similarly, pre-1980's retail and investment banking activities were also separated. However, this separation was a result of the self-regulatory nature of the London Stock Exchange (LSE) with ownership of member firms by non-member firms, such as commercial banks, restricted by the LSE's rules (Stefanidis 2003). The LSE role as a regulatory influence for the capital markets industry goes back many years. As early as 1692, in places like Jonathan's Coffee House in Exchange Alley, individuals congregated to sell stocks. Defaulters were soon shunned and banned from entering Jonathans and so the self-regulatory nature of the LSE has its roots in its early inception, with members of the exchange ensuring desirable behaviour from other members. (Stringham 2002).

Other attempts to regulate the UK markets include the Preventions of Fraud (Investments) Act of 1939. The Act introduced licensing requirements for securities industry participants, issued by the Board of Trade, for entities and individuals engaged in securities dealing. However, the act exempted members of bodies such

as the LSE, and so the act exempted a large part of the industry and strengthened the LSEs position as a self-regulatory body. (Newton 1998; Robb 1997).

The Bank of England's (BOE) regulatory role has stemmed from the Bank of England Act of 1946 which provided the BOE with powers to request information from bankers and to provide them with recommendations. The BOE's focus was on the merchant banks and discount houses with which it had a counterparty relationship. By the 1970's two new review bodies were established with supervisory powers. The Joint Review Body was responsible for the general oversight of supervision for securities' markets. While, the Council for the Securities Industry was responsible for the supervision of the non-statutory aspects of securities markets not covered by the Stock Exchange (Robb 1997).

Capital markets regulation in the UK changed with the Big Bang which is shorthand for a number of measures taken to deregulate the UK Securities industry in order to allow the City of London to compete with other foreign financial centres, such as New York, Tokyo and Zurich (Pass and Lowes 1993). These changes aimed to end perceptions of the existence of an anachronistic 'old-boy network' that had dominated the City (Forston 2006). The Financial Services Act of 1986 received Royal Assent two weeks after the Big Bang. For the first time this act set out an extensive framework for the regulation of the UK's financial investment industry. The act provided a two-tier system. The first still depended on practitioner involvement through SROs. However, the SRO's were to be overseen by the Securities and Investments Board (SIB), the second tier. (UK Parliament 1986; Whittaker and Morse 1986).

The Financial Services Act made it an offence to conduct investment business without authorization. This authorization could be obtained directly through the board or through the membership of a SRO or professional body. SROs were required to meet specific criteria to gain approval to operate. The SIB had the power to establish and withdraw recognition from SROs and professional bodies, to alter the SROs rule book and define conduct of business rules. (Barnard 1987). The SROs were expected to perform day-to-day monitoring and authorisation of practitioners. The SIB eventually authorised five SROs, The Securities Association (TSA), the Association of Futures Brokers and Dealers (AFBD), the Financial Intermediaries and Brokers Association (FIMBRA), the Investment Management Regulatory Organization (IMRO) and the Life Assurance and Unit Trust Regulatory Association (LAUTRO).

The Companies Act of 1989 aimed to reduce the cumbersome legislation resulting from having five different SRO rulebooks and the resultant incoherence and uncertainty. The act allowed the SIB to define principles which applied to all authorised individuals (MacNeil 1999). The end result was that the SROs' and SIRs' rulebooks were structured at three levels, ten top level principles, forty core rules mandated by the SIR to be included in the SROs books and third-tier rules specific to the SROs' scope and derived from the rules and principles outlined in the first and second tiers (Miller 1988).

In 1991, the TSA and AFBD merged to become the Securities and Futures Authority (SFA). This was achieved by merging the memberships of the two SROs as well as their responsibilities. (Newton 1998; Rider et al. 1989)

Following the Labour Party's victory in the 1997 general election, the newly appointed Chancellor of the Exchequer announced the reform of financial services regulation in the UK and the creation of a new regulator. Banking supervision and investment services regulation would be merged into the SIB which formally changed its name to the Financial Services Authority (FSA) in October 1997 (FSA 2005). The Bank of England Act of 1998 established the independence of the BOE from government and political influence and allows the BOE autonomy over monetary policy and crucially transferred responsibility for banking supervision from the BOE to the FSA (Blair et al. 1998).

The Financial Services and Markets Act (FSMA) of 2000 provided a framework of operations for a single regulator for the entire financial services industry, the FSA. Consequently, the act draws together the PIA, SFA, IMRO, the BOE Supervision and Surveillance department and the FSA (formally SIB). (HM Treasury 2000). The FSA then published a single handbook of rules and guidance for all firms authorised by the FSA (FSA 2008d). The act also created the Financial Services Practitioner Panel to oversee views and interests of regulated firms in the regulatory decision making process, and monitor the regulator's effectiveness. (FSPP 2004)

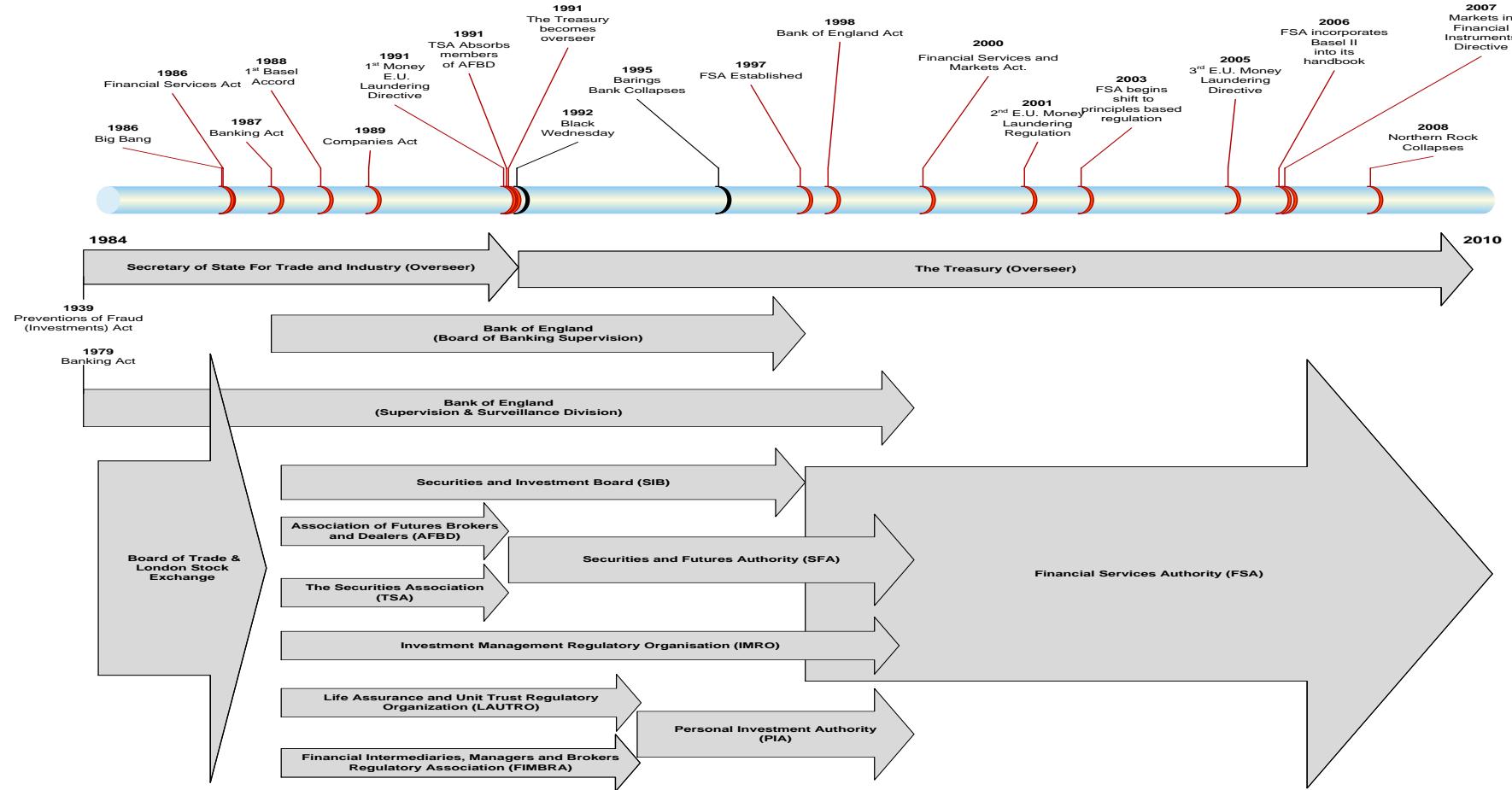


Figure 2: Timeline of UK Capital Markets Regulation Prior to 2010
Source:
author

The timeline in Figure 2 represents the history of capital markets regulation within the United Kingdom, prior to 2010 and is derived from the review outlined in the previous sections. This diagram shows how UK regulation was originally shared between a few entities performing disparate tasks. When the UK became more focused towards regulating its financial industry, we can see how initially the UK followed the US two-tier model of non-government SRO organizations being managed by a government regulator. However, Labour's rise to power in 1997 and the Bank of England's independence established a single national financial services regulator, the FSA. Exchanges and clearing and settlement systems have not been included for the same reasons as outlined in the US timeline.

1.5. The Current Regulatory Landscape

Within capital markets, the post-crisis environment is distinguished by reduced margins, higher operating costs, reduced bonus payments and crucially radical changes to the regulatory environment as new obligations are introduced (The Economist 2012b). These factors are causing changes in financial organizations' operational practices, as new logics for arranging compliance emerge. Consequently, organizations are reviewing and altering the practices and systems employed to deliver compliance and ensure new regulatory requirements are met within designated timeframes and managed on an on-going basis.

1.5.1. The Financial Crisis 2007-2009

Turner (2009a; 2009b) and the European Commission's Directorate-General for Economic and Financial Affairs (2009) suggest that key contributing factors to the crisis include the creation of 'field-economic imbalances'. They suggest that previous

to the crisis large current account surpluses accrued in oil exporting countries as well as China, Japan and some other East Asian developing countries. However, in the UK, USA, Ireland, Spain and some other countries, large deficits in current accounts were accumulated. This occurred not least due to high savings rates in countries like China, which have created savings in excess of their own domestic investment. Consequently, China and other countries had to invest beyond their borders. However, these countries have committed to fixed or managed exchange rates and so these investments have taken the form of risk-free or low-risk government bonds. This in turn caused a reduction in the interest rates of investments deemed ‘risk-free’. In addition, the integration of financial markets created large capital flows which were diverted towards real estate, causing prices to soar in several countries (European Commission Directorate-General for Economic and Financial Affairs 2009; Turner 2009a,b). Turner and the EC suggest that lower interest rates in the medium-to-long term have driven two effects. Firstly, the rapid growth of credit extension (typically in residential mortgages) fuelling property booms with an accompanied reduction in credit standards. Secondly, strong desires amongst investors to gain as much as possible above the risk-free interest rate in order to offset its decline. Both Turner and the EC highlight increasing financial innovation as a result of these phenomena. They suggest that the macro-imbalances previously described created demand for increasingly complex credit securities. Frequently, credit rating agencies misjudged the risks associated with credit derivatives and clear conflicts of interest existed where rating agencies helped develop new such products and rate them. All of these occurrences have sought to satisfy the increased demand for yields beyond the risk-free rate. Turner (2009a p.1) criticises the assumption: *‘...that by slicing and dicing, structuring and hedging, using sophisticated mathematical models to understand and manage risk, we can ‘create*

value' by offering investors combinations of risk and return which are more attractive than those available from direct purchase of the underlying credit exposures.'

Consequently, there followed what Turner defines as '*self-fulfilling cycles of falling risk aversion and rising irrational exuberance to which all liquid traded markets seem at times to be susceptible*' thereby creating a cycle of boom and bust (Turner 2009a p. 1). The regulatory response to this crisis, from the EU and US, has focused on tightening their respective regulative systems and in the case of the EU harmonizing regulative practices across member states. The breadth and depth of change has been considerable.

1.5.2. The EU and US Regulatory Response

In 2009, the G20 met in Pittsburgh and defined new measures aimed at preventing another financial crisis. At this meeting it was decided that the G20 would replace the Western-dominated G8 as the primary global economic forum. The Financial Stability Board (FSB) would coordinate and monitor tougher financial regulations and also provide insight into emerging risks. The G20 agreed that banks need to hold more capital as a buffer against loss, termed 'regulatory capital'. Furthermore, it was also agreed to change the way derivative transactions were conducted to ensure they took place on exchanges or electronic trading platforms and cleared through a centralized Clearing House. A deadline for the end of 2012 was set for the implementation of these new standards (The Economist 2009). These requirements necessitate a high level of process automation only available through IS. Unsurprisingly, Chartis Research (2010) forecast that the worldwide financial services' governance, risk and compliance technology market would reach \$2 billion by 2013 at a compound annual growth rate of 6.5%.

Table 1 highlights the various EU responses to the financial crises.

EU Directive	Focus
Alternative Investment Fund Managers Directive (AIFMD)	This directive focusses on regulating various forms of investment management, including hedge funds and private equity. Its purpose is to harmonize regulatory treatment of investment management across the EU. The Directive will increase the amount of disclosure required of funds to regulators and investors and will impose requirements on managers regarding organization, capital, depositaries and marketing of funds. (Europa 2009; HM Treasury 2011)
Capital Adequacy Directive IV (CAD IV)	This directive updates the requirements for organizations to hold capital consummate to the risks to which the organization exposes itself, regulatory capital. The key assumption is that organizations entered the crisis with insufficient capital of the necessary quantity and quality to safeguard against losses. Specifically, the directive requires: enhanced quality of capital, strengthening of capital requirements for counterparty credit risk, the introduction of a leverage ratio; new capital buffers and better disclosure. (Europa 2011a; FSA 2011b)
European Market Infrastructure Regulation (EMIR)	The regulation aims to implement the G20 agreements on regulatory oversight of over-the-counter (OTC) derivatives. Specifically, EMIR aims to increase transparency by requiring financial organization to report changes to any OTC derivative contracts, reduce counterparty risks and reduce operational risks through the use of electronic facilities for documenting and managing OTC trades. (FSA 2011a; Holman Fenwick Willan 2011a)
Markets Abuse Directive II (MAD II)	The original Market Abuse Directive focused on insider dealing and market manipulation practices. The update aims to fill gaps in coverage and modernize the directive; strengthen enforcement and the cost-effectiveness of the regulations as well as improving transparency and coordination between regulators. (Europa 2011b; Holman Fenwick Willan 2011b)
Markets in Financial Instruments Directive II (MiFID II)	This directive updates the original MiFID requirements aimed at fostering competition and a level playing field between trading venues and to ensure appropriate levels of protection for investors. Changes are focused on electronic trading, transparency and transaction reporting, investor protection, product intervention through setting position limits, transparency and increased organizational requirements relating to conflicts of interest and the structure of risk and compliance functions. (Deloitte 2011; Linklaters 2010; Linklaters 2012; Rennison 2011)
Regulation on Short Selling and Credit Default Swaps	In the aftermath of the financial crisis, EU member states adopted different approaches to the regulation of short-selling and credit default swaps. This regulation aims to address this fragmentation by establishing a coherent framework across member states. Specifically, the regulations aims to: increase transparency on short positions held by investors, ensure member states have clear powers to intervene in

	exceptional situations, ensure co-ordination between regulatory bodies, and reduce risks associated with Short Selling and Credit Default Swaps. (Europa 2011c)
Undertakings for Collective Investment in Transferable Securities Directives V (UCITS V)	The UCITS regulations aim to provide harmonized rules for mutual funds and other collective investments throughout the EU. UCITS V aims to alter the role of UCITS depositaries and the remuneration of UCITS managers. The aim is to create better protection for investors and to align UCITS funds with AIFMD. The UCITS depositaries must not only safeguard assets but also ensure that all transactions are in compliance with regulatory mandates and fund documentation. Under UCITS V, depositaries will have increased oversight responsibilities, increased liabilities and will have the burden of proof for negligence placed on them. UCITS V aims to more closely align the remuneration of financial services actors with the interests of investors. (PwC 2011)

Table 1: EU Responses to the 2008 Financial Crisis

In contrast, the US has opted to develop a single sweeping 2,319-page piece of legislation known as the Dodd-Frank Wall Street Reform and Consumer Protection Act, passed in 2010. Table 2 summarises this act.

Dodd-Frank Title	Focus
Title I—Financial Stability—Systemic Risk Regulation and Oversight	This title creates the Financial Stability Oversight Council (FSOC), and the Office of Financial Research to support the FSOC with data collection and analysis. The title subjects financial organizations classified as identified as providing a potential systemic risk to supervision by the Federal Reserve Authority (FED).
Title II—Orderly Liquidation Authority for Systemic Risk Companies	This title provides the Federal Deposit Insurance Corporation (FDIC) powers to liquidate systemically risky financial organizations without using tax payer's money.
Title III—Transfer of OTS Authority to OCC, FDIC, Federal Reserve	This title transfers powers away from the Office of Thrift (OTS) supervision. This regulatory body was wound up by the act and its powers transferred to the the Office of the Comptroller of the Currency (OCC), the FDIC, the Federal Reserve Board of Governors, and the Consumer Financial Protection Bureau (CFPB).
Title IV—Regulation of Advisors to Hedge Funds and Others	This title brings hedge fund and other private equity firms under regulatory jurisdiction. Such firms must now report to the Securities and Exchange Commission (SEC) under the Investment Advisors Act.

Title V—Insurance	Provides reform and streamlining of insurance regulation through national coordination.
Title VI—Improvements to Regulation of Bank and Savings Association Holding Companies and Depository Institutions	Provides the FED with the authority to examine subsidiaries of bank holding companies (BHC) and Savings and Loan Holdings Companies (SLHC) and ensure they are well capitalized. This title includes the controversial Volcker Rule. This rule prohibits proprietary trading by banks as well as owning or sponsoring hedge funds.
Title VII—Swaps and Derivatives Regulation (Wall Street Transparency and Accountability)	The title aims to meet the G20 commitment to improve the transparency of derivatives trading by introducing capital and margin regulatory obligations.
Title VIII—Payment, Clearing and Settlement Supervision	This title provides oversight and supervision of systemically important payments, clearing and settlements.
Title IX—Investor Protections and Improvements to the Regulation of Securities	This title aims to improve in investor protection through the creation of the Investor Advisory Committee within SEC, as well as increasing regulatory enforcement remedies and provisions to protect and incentivize whistle blowers. The title also reforms short selling activities. This title increases the regulation of credit rating agencies by requiring they adopt appropriate internal controls and provides penalties for misconduct. This title also enhances regulation of the securitization process. The title strengthens corporate governance measures, the oversight of municipal securities and the auditing requirements for broker-dealers.
Title X—Bureau of Consumer Financial Protection	Provides supervisory, examination and enforcement authority for banks over \$10 billion. Creates the Consumer Financial Protection Bureau.
Title XI—Federal Reserve System Provisions (Lending Authority, Reserve Bank Governance)	Provides provisions for Federal Reserve emergency lending and provides FDIC with the authority to create, during times of economic stress, emergency financial stabilization programs.
Title XII—Improving Access to Mainstream Financial Institutions	This title allows the US Treasury to create programs to facilitate low income individuals the ability to set up account at insured depositories and receive small loans.
Title XIII—Pay It Back Act	This title reduces authorization of the Troubled Asset Relief Program (TARP) created in the midst of the financial crisis in September 2008 and reduces the

	funding available under TARP.
Title XIV—Mortgage Reform and Anti-Predatory Lending Act	Requires mortgage firms to be qualified, registered and licensed and sets minimum standards for mortgages including affordability and resolution.
Title XV—Miscellaneous Provisions	Restricts use of US funds for foreign governments amongst other obligations.
Title XVI—Section 1256 Contracts	Updates how swaps contracts are treated.

Table 2: Overview of Dodd-Frank Act of 2010

(Clifford Chance 2010; Mayer Brown 2010; Morrison & Foerster 2010; Morrissey & Cox 2010; US Congress 2010)

Analysis into US and EU Directives reveals that post-crisis regulation focuses on transactions, assets, capital adequacy and associated limits, concentrations and exposures which organizations must remain within and which consequently require systems to impose structured rules on the financial organization's activities to ensure compliance. Requirements demand that organizations set quantitative limits on specific types of transactions, calculate exposures to certain instruments, calculate risk values, perform pre and post-trade analysis, have the ability to perform audits, quickly report executed trades to the market and facilitate the clearing and settlement of transactions. To ensure compliance, financial organizations may employ IMS which ensures that quantitative limits are not breeched, that correct workflows and processes are adhered to and that associated data is readily available and auditable. Crucially, the IMS allows the definition of automated rules which implement quantitative restrictions on trades, ensuring the adherence of regulative rules focused on limits, exposures and concentrations.

It is worth highlighting that those global organizations with operations in the EU and the USA will be subject to the regulatory requirements of both areas. For

example, a Global Asset Management House with operations in the UK and the US will be subject to the jurisdiction of EU and US regulations. In addition, public limited financial organizations may be subject to the regulatory requirements of the country and exchange where their stock is listed. An example is the US Sarbanes-Oxley Act of 2002, which requires that if an organization is listed on a US exchange then its foreign operations, such as those within Europe and Asia, must also comply with the regulations.

There is considerable cross-over between the EU and US post-crisis regulations. For example, the EMIR Directive and Title VII of the US Dodd-Frank Act will ensure that over-the-counter (OTC) derivatives, which have traditionally commanded strong margins, will be traded on regulated markets or electronic platforms instead of being privately negotiated. Through these areas of legislation, both the US and EU regulators aim to meet the G20 commitment to increase the transparency of such transactions and mitigate systemic risk. Within the UK the Vickers report, has advocated ring-fencing through the separation of retail and investment banking activities (BBC 2012). While the controversial US Volcker Rule prohibits financial organizations from proprietary trading and sponsorship of private funds, hedge funds and private-equity firms, financial organizations engaging in these activities must split their organizations. As a result of on-going regulatory changes the BBC's business editor succinctly notes, '...banks will in the coming five years be forced to undergo significant financial, cultural and managerial reconstruction.' (BBC 2012 p.1). However, although the EU and US regulations create similar obligations, their approach to regulation has differed.

1.5.3. Rules vs. Principles

From 1st April 2013, the FSA was abolished and replaced with the Prudential Regulation Authority (PRA) and The Financial Conduct Authority (FCA). The Financial Services and Markets Act (FSMA) of 2000 provided a framework of operations for a single regulator for the entire financial services industry, the FSA. The FSMA outlined four statutory objectives for the FSA, while the Financial Services Act 2012 (FSAA) amended the FSMA and defined three statutory objectives for the FCA.

The PRA has responsibility for prudential regulation of certain firms in order to minimize the disruption caused by any firms if they fail, termed ‘Systemic Risk’. In addition, the FCA assumed responsibilities currently undertaken by the FSA. The FSA handbook became the FCA Handbook although its contents remained unaltered at the point of change. Data for this study was collected predominantly while the FSA was functioning. Table 3 depicts the FSA and FCA’s statutory objectives. They are broadly similar.

FSA Statutory Objectives	FCA Statutory Objectives
Maintaining confidence in the UK financial system;	To secure an appropriate degree of protection for consumers.
Contributing to the protection and enhancement of stability of the UK financial system	To protect and enhance the integrity of the UK financial system.
Securing the appropriate degree of protection for consumers	To promote effective competition in the interests of consumers.
Reducing the extent to which it is possible for a regulated business to be used for a purpose connected with financial crime	

Table 3: FSA and FCA Statutory Objectives (FCA 2013d; FSA 2012b)

In meeting these statutory objectives, the FSA was obliged to adhere to six ‘Principles of Good Regulation.’ These principles include, (1) using resources efficiently and economically, (2) the need for [financial organizations] senior management to be responsible for its activities and to ensure compliance with regulatory requirements, (3) restrictions imposed on the finance industry must be proportionate to the expected benefits, (4) to facilitate innovation including launching new financial products and services, (5) to cooperate with international and overseas regulators while maintaining the UK’s competitiveness internationally and finally (6) to reduce the impacts of regulation on competitiveness and to correspondingly facilitate competition between firms. (FSA 2009).

In 2003, the FSA developed these principles of regulation into a wider ground breaking approach (McCarthy 2006). Traditionally the approach of US and UK regulators has been quite different. Prior to the financial crisis within the UK, The FSA adopted a principles based or ‘light-touch’ approach to regulation. This approach was contrary to a prescriptive or detailed rules driven approach to regulation and allowed firms to ‘*...have increased flexibility in how they deliver the outcomes [the Regulator] require*’ and focused on, ‘*...moving away from dictating through detailed, prescriptive rules and supervisory actions how firms should operate their business.*’ (FSA, 2007 p. 4 & p. 6).

The FSA repositioned itself to focus its activity towards setting desirable regulatory outcomes in principles and out-come focused rules. The principles set the high-level desired outcomes and were underpinned by fewer rules which were also outcome focused. The FSA cited a number of reasons for adopting this approach. The FSA argued that prescriptive rules had failed to prevent misconduct and ever-

expanding rule books increased the burden on industry resources. Furthermore, the FSA suggested that a focus on outcomes over prescription is better positioned to regulate the dynamic changing nature of financial markets and associated financial product innovation. They argued that prescriptive rules may be unable to address changing circumstances in market conditions as delays occur while appropriately detailed rules are defined. Furthermore, detailed rules, they argued, may restrict innovation. Ironically, Lord Turner later highlighted financial innovation as a contributory factor to the financial crisis, see 1.5.1.

The FSA also suggested that a highly complex rule book with many thousands of detailed rules was a barrier to smaller firms without legal or compliance expertise. However, the FSA did concede that no statutory scheme can be a pure-type and described its approach as being more principles based, while conceding that, '*detailed rules will remain a part of [their] regulatory toolkit*' (FSA 2009 p.10) particularly with respect to European Directives over which the FSA had no discretion. (FSA 2009).

Two key US regulators the SEC and CFTC, have always been predominately rules-focused. In the US, Acts of Congress provide the SEC with powers to '*...make, issue, amend, and rescind such rules and regulations and such orders as it may deem necessary or appropriate in the public interest or for the protection of investors to carry out the provisions...*' of each act (See for example: US Congress 1933; US Congress 1934; US Congress 1940a; US Congress 1940b; US Congress 1975; US Congress 1996; US Congress 2000; US Congress 2002). In summary, the SEC ensures the intent of Congress by engaging in rulemaking (SEC 2004). While another key US regulator, the CFTC is structured in a similar fashion to the SEC and so is an independent federal regulatory body which issues rules to be observed by participants

in the futures industry. Overall, the SEC and CFTC are often characterized as being rule oriented and prescriptive regulators (Ford 2008).

In 2009, the FSA's 'principles-based' approaches to regulation were replaced in the wake of the financial crisis. The Regulator's Chief Executive commented that: '*...the limitations of a pure principles-based regime have to be recognized. I continue to believe the majority of market participants are decent people; however, a principles-based approach does not work with individuals who have no principles*' - Speech at the Reuters Newsmakers 'event March 12th 2009 (Sants 2009).

In 2012, Lord Turner, Chairman of the FSA, observed that prior to the crisis: '*debates about regulation [were] more focused on fostering London's competitiveness through 'light touch' regulation, than on any concern that poor regulation might be creating the conditions for future crisis. In retrospect, it was a fool's paradise – the band playing on oblivious to the dangers ahead.*' – Speech at FSA City Banquet at the Mansion House, London, 11th Oct 2012, (Turner 2012b).

Turner highlighted the need to move towards a new approach of 'intense supervision' (Financial Services Research Forum (Financial Services Research Forum 2009; International Securities Association for Institutional Trade Communication 2009; Turner 2009a). The new approach required a far more proactive approach by the regulator, seeking to actively influence outcomes as opposed to merely reacting to events (Pain 2010). The financial crisis also caused the UK Regulator to reconsider its role within society as a result of wide spread criticism from the UK Parliament and general public. The Regulator accepted that it had failed to adequately protect investors and the wider society, suggesting that previously the principles based approach had been supported by 'the City and society' but that now society demanded a more

stringent supervisory system that would apply judgments on financial organizations businesses. In addition to introducing new rules and obligations the financial crisis also changed the regulatory landscape by altering the way in which the UK Regulator supervised firms (Sants 2009; Sants 2010b). In 2009, the Regulator's Chief Executive directly threatened the banking establishment, Hector Sants outlined '*...a fundamental change. It is moving from regulation based only on observable facts to regulation based on judgments about the future... This more 'intrusive' and 'direct' style of supervision we call 'the intensive Supervisory Model'... There is a view that people are not frightened of the [Regulator]. I can assure you that this is a view I am determined to correct. People should be very frightened of the [Regulator].*' - Speech at Reuters Newsmakers' event March 12th 2009 (Sants 2009).

However, the Regulator's Chairman also highlighted how the new supervisory approach would be unable to prevent all misconduct and malpractice in advance, without deploying an 'army' of regulators, the cost of which, would probably outweigh the losses it would prevent Lord Turner observed that: '*the crisis was not a bolt from the blue. It arose from poor supervision, from bad rules and structures, from dangerous cultures - and the errors were made by regulators, economists, central bankers and public policy makers, as well as bankers themselves.*' Furthermore, however, refined and enhanced regulatory obligations are and however intense supervisory practices are, regulatory structures '*cannot possibly prevent all malpractice in advance, without employing a hugely increased army of supervisors and probably not even then. And if [the regulator] did deploy that army, [the regulator] might well add more cost to the industry than the cost of customer detriment averted.*' – Speech at FSA City Banquet at the Mansion House, London, 11th Oct 2012, (Turner 2012b)

Rethinking the ‘principles based’ approach to regulation was partly driven by the perception that it did not protect investors against unethical individuals’ acting in self-interest (Turner 2012a). During the post-crisis period, the Regulator became more vocal on the importance of ethical and cultural factors to ensure stable financial markets. The Regulator recognized that a fundamental disconnect existed between the values which financial organizations ascribed to in ethical codes of practices and the alignment of such values with employee actions. Despite acknowledging that firms often did not ‘practice what they preach’, the Regulator refrained from specifying the type of culture a firm should have or the measures and metrics appropriate for assessing culture. Instead, the Regulator announced that it would focus on the outcomes that the culture delivers and whether the firm can demonstrate it has a framework for assessing and maintaining cultural aspects (Sants 2010a). The Regulator’s Chief Executive commented: *‘From the Regulators’ perspective it is probably the case that seeking to set ourselves up as a judge of ethics and culture would not be feasible or acceptable. More realistic would be to relate the consequences of culture to regulatory outcomes...’* - Speech at the Annual Lubbock Lecture in Management Studies, 12th March 2010, (Sants 2010a).

1.5.4. Regulators’ Supervisory Approach

As a general principle, the FSA adopted a risk based approach to the supervision of firms. The FSA supervised firms according to the risk the firm presented to the statutory objectives previously described. Risk was assessed in terms of the scale of impact on consumers and the market as well as the probability of the issue arising. Consequently, the day-to-day relationship the FSA maintained with firms depended on their utilization of the FSA’s framework for assessing risk: the Advanced Risk-

Responsive Operating framework (ARROW II) introduced in 2006. This framework utilised two main approaches, one for firms and one for themes. The first approach was used for assessing risk in individual firms. The themes approach was used for assessing risks across several firms or a market. Assigned to a firm (or group of firms) were probability and impact scores which determined the intensity of the regulator's supervision (FSA 2008c).

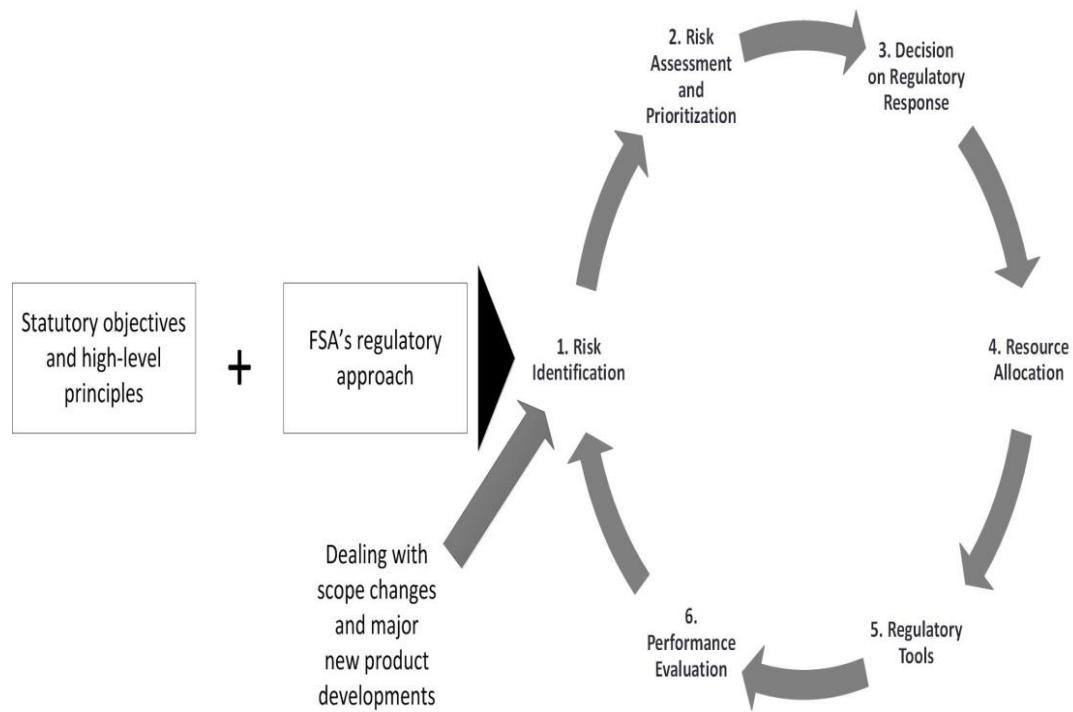


Figure 3: Arrow II (FSA, 2010)

Risk assessment was also essential to the FSA's response to new regulatory challenges. Figure 3 depicts the Arrow operating framework and shows how the FSA aimed to adopt a risk sensitive supervisory approach (FSA 2006). The FSA successor, the FCA, has also adopted a risk based approach using themes and firms as units of analysis. Furthermore, the FCA's operating model also focuses on risk, probability and impact. The FCA uses the calculation outlined in Figure 4 to assess if a risk to its statutory objectives exists.

Risk for the FCA = Impact of the problem if it occurs x Probability of the problem occurring

Figure 4: FCA Risk Calculations as a Product of Impact and Probability (FCA 2013c)

However, the FCA has signalled that as part of the move towards intense supervision it will adopt a new approach termed ‘Firm Systematic Framework’ in place of Arrow II (FCA 2012). This approach will also be risk based. Table 4 highlights the differences in the FSA’s ARROW II model and the FCA’s Firm Systematic Framework.

FSA: Arrow II	FCA: Firm Systematic Framework
Point-in-time assessment	Form of continuous assessment
Primarily issues-based – i.e. discovery work on issues considered to be higher risk	Assessment of key drivers of conduct risk (the risk derived from inappropriate execution of business activities) with work targeted by business model and strategy analysis
Assessment results in risk mitigation programme that frequently has many actions	Assessment results in risk mitigation programme focused on a few key areas to be addressed
Extensive follow-up work by supervisors	Follow-up work on less important points done by firm with greater use of skilled person’s reports, internal audit review and non-executive director reports.

Table 4: Differences in the FSA and FCA Operating Models (FCA 2012)

1.6. Summary

This chapter has sought to provide the reader with an introduction to the study and the historical and current environmental context in which it is set. The general research question and related sub-questions have been outlined and a broad overview of the study’s intended contribution discussed.

The analysis of the historical contexts of the USA and UK regulatory environments has provided a picture of two distinct regulatory landscapes. In comparison with the UK, the US environment consists of additional layers of complexity caused through the use of SRO and multiple regulators operating at the state and federal levels. However, both regions have sought to consolidate and harmonize regulatory practices through the refinement of their regulatory landscapes. For example, the USA has sought to standardise the Blue Sky regulations at the state level, while EU Directives have aimed to harmonize regulatory practices across member states. The UK has moved away from SRO towards the adoption of single regulator and then to two regulators operating from the same handbook. Furthermore, while the USA has always adopted a rules-based approach the UK regulator has abandoned its principles based approach and outlined a new approach whereby firms' will be subject to a more intensive regime of supervision. Regulators in both jurisdictions are now more focused on the systemic risk that large financial organizations create for economic well-being and have adopted measures to more intensively supervise firms based on the risks they create, such as an approach is reflected in both the US Dodd-Frank Act and EU post-crisis Directives.

The IMS researched was originally developed in the US and enables organizations to meet regulatory compliance through the applying quantitative restrictions on trades. This is achieved by writing pre-defined rules derived from each firm's regulatory obligations and, through an automated process, applying them to trading activities undertaken by financial organizations. Thus, the systems is most easily able to apply rules derived from prescriptive rules based regulations, such as the post-crisis regulations being introduced in the US and EU.

The review of the historical context and current regulatory landscape has allowed the identification of a number of factors and issues relevant to this research context. Specifically, the sociality of markets, the use of prescriptive rules and the affordances they aim to create, the role of governance and transparency, the use of information in financial markets and its role in creating regulatory outcomes, the erosion of trust in financial organizations as well as ethical and cultural factors contributing to organizational and economic failures. The next chapter introduces and critically discusses various strands of literature relevant to these areas and also highlights related gaps in information systems literature.

2. CRITICAL REVIEW OF LITERATURE

This chapter focuses on providing the reader with a critical review of the scholarly literature that relates to the research context. The concepts discussed draw from multi-disciplinary bodies of literature, including social studies of economics, finance and markets, organizational behaviour, management, IS, finance, accounting and law. The review is split into two distinct chapters. This chapter discusses relevant prior studies and seeks to identify gaps in IS literature. In addition, the chapter aims to draw out key areas of conceptual knowledge which contribute to a stronger understanding of the empirical context. Correspondingly, the second review in the next chapter draws out the theoretical concepts, related specifically to institutionalism, that provide the theoretical underpinnings of the study. In this way, both reviews complement each other through facilitating the identification of relevant theoretical and empirical derived concepts (Jesson 2011).

In this chapter, the studies reviewed are chiefly selected on the basis of their relevance to the research context. However, other criteria for selection included the quality of the journals being sourced. Correspondingly, the Association of Business School's Academic Journal Quality Guide (ABS 2010) and the frequency an article was cited in Google Scholar provided important guidance. Although the review did include a systematic review of relevant journals ultimately the work included reflects the author's own personal assessment and synthesis of relevant studies and so the review adopts a more traditional and critical approach than an overly technical, neutral and standardised one (Hart 1998; Jesson 2011; Webster and Watson 2002).

Within this chapter, literature addressing the social construction of financial markets is reviewed first. Secondly, IS related literature on compliance and affordances

are considered. The third stream of literature reviewed addresses governance transparency and asymmetric information. These streams of literature provide a solid point of departure for a social study of institutions, technology, behaviours and practices as outlined in the main research question. Fourthly, gaps in the literature are identified and discussed before some final conclusions are drawn.

2.1. Technology and the Social Construction of Markets

The first body of literature considered addresses the social and cultural study of finance often referred to as the ‘the sociology of financial markets’ or ‘new economic sociology’ (Knorr and Preda 2004; Preda 2007a). Such literature plays an important role in answering the research question and correspondingly making a contribution as the finance related practices and behaviours under consideration are essentially social phenomena. Related literature views markets not only as mechanistic systems of rational exchanges but as social relationships and structures characterised by routines and habits that intervene and contribute to market stability but crucially are also implicated in how uncertainties arising from transactions are handled (Callon 1998; Dobbin et al. 1993; Fligstein 1990; Granovetter 1985; Podolny 2001; White 1981). Uncertainty is a key issue within the complex process of regulatory compliance where, due to tight deadlines for final adherence, organizations often start planning their responses to requirements before the rules are finalised. Overall three interrelated theoretical strands have emerged in this body of literature (Fourcade 2007). The first views markets as a series of networks of relationships (Granovetter 1985; White 1981), the second as institutionalised fields (DiMaggio and Powell. 1983; Dobbin 1997; Fligstein 1990; Fligstein and McAdam 2012) and the third, performativity perspective, which supposes that economic models do not simply observe and represent economic

phenomena but may also intervene and create such phenomena (Callon 1998; MacKenzie and Millo 2003; MacKenzie 2006). For such scholars: ‘Economics does not describe an existing external ‘economy,’ but brings that economy into being: economics performs the economy, creating the phenomenon it describes (MacKenzie and Millo 2003 p. 108). For those adopting the performativity perspective economic concepts may become more than merely abstract models but, ‘a series of behavioural scripts put into practice by implementing theoretical models of market transactions.’ (Preda 2007a p. 522).

Notable studies in the social studies of finance have focused on the performativity of economic models (Callon 1998), the role of conversations and verbal interactions in shaping transaction outcomes (Preda 2001), a critique of Callon’s performativity perspective (Miller 2002), globally applied micro social practices in currency trading (Cetina and Bruegger 2002), the use of the ‘Black–Scholes–Merton’ economic model to legitimise derivative trading (MacKenzie and Millo 2003), the role of technology in influencing trading practices (Zaloom 2003), social and symbolic expressions on trading floors (Hassoun 2005), search and experimentation processes in trading floors (Beunza and Stark 2005) and the performativity of financial models (MacKenzie 2006). Post financial crisis, work has addressed the importance of politics in post-crisis financial development (Carruthers and Kim 2011), the financial crisis and related symbolism and political discourse (Jacobs 2012) and the globalization of the US mortgage crisis and its relationship with banks’ identities, strategies and tactics (Fligstein and Habinek 2014).

A seminal study in the sociology of financial markets is Granovetter’s (1985) work on the embeddedness of social relationships within transactions suggesting that

economic contracts are based upon tacit assumptions concerning reliability and trustworthiness. This view provides an important critique of Rousseau's (2006) ideas that purely rational contracts underpin social life and economic exchanges (Preda 2007a). This widening of social perspectives complements perspectives adopted by organizational sociology. Specifically, institutionalists have focused on emphasizing the role of institutions and associated belief systems in influencing organizational practices. Such perspectives reconsider the role of the rational actor and question the implicitness of economic rationality in shaping human behaviours. Specifically, Weber's (2002) perspectives on relentless rationalization and efficiency defining a bureaucratic 'iron cage' of control have been critiqued by scholars arguing that institutionalised rituals, symbols and belief systems provide organizations and associated networks with legitimacy and stability and thereby ensure the reproduction of such social elements (Berger and Luckman 1966; DiMaggio and Powell. 1983; Perrow et al. 1986). Thus, organizational practices are not a function of universally applied criteria of rationality, but instead are derived from shared meanings and symbols. As Preda (2007 p. 512) succinctly notes: 'Market transactions can be seen as embedded in complex organizational arrangements; therefore, transactions cannot be separated from rituals, symbols and belief systems.' Other scholars have contributed to these debates by highlighting the role of cultural factors and the integration of both social structural and cultural dimensions in shaping markets (Agnew 1988; Reddy 1987; Zelizer 1988). Sociological studies of markets have specifically used institutionalist concepts to explain the emergence and ongoing dynamics of markets for example Dobbin (1997) used institutional concepts to explain why nations adopt different policies for organizing industries. Whilst Fligstein's work on corporate interactions with governments and markets (1990), his work conceptualising markets

as institutions (2001) and his recent work on mortgage securitization (Fligstein and McAdam 2012) and the US mortgage crisis (Fligstein and Habinek 2013) all draw from institutional concepts in order to study the social construction of financial markets. Furthermore, Fligsteins' (1996 p.660) study directly brings together the sociology of finance, institutionalist concepts and regulatory fields of control, suggesting that, 'Property rights, governance structures, and rules of exchange are arenas in which modern states establish rules for economic actors. States provide stable and reliable conditions, under which firms organize, compete, cooperate, and exchange. The enforcement of these laws affects what conceptions of control can produce stable markets.' In summary, Fligstein conceptualises regulated markets as fields guided by formal and informal rules. By doing so, he views such fields as networks of relationships, and focuses on the local understandings, institutional forms and informal practices that emerge from and stabilise these relationships. Fligstein (1990) terms such constructs 'concepts of control' (Fourcade 2007).

Another seminal study in the sociology of economics is the work of White (1981) who suggested that markets are composite of inward social networks, which act as signalling systems providing information to confirm or disprove each firm's expectations regarding their offerings and trading partners. Consequently, signals emanating from such networks facilitate decision making regarding price, quality and products. Podolny (2001) built on Whites work and highlighted how information, in the form of signals, allows for the processing of uncertainties in Venture capital markets. Thus, information consists of signals analogous to electric impulses that trigger a reaction in firms (Mirowski 2002). Furthermore, common network pressures and corresponding information signals may result in financial organizations acting

within a ‘shared perception frame.’ Preda (2007b) provides examples of individuals who provide evaluations of securities to traders and investors and so act as ‘information intermediaries’. In order to evaluate and compare the performance of securities they must be classified and placed in sets (e.g. energy derivatives, technology stocks, manufacturing stocks etc.) such work creates a ‘perception framework’ within which traders and investors make decisions. However, securities which do not fit into one clear category or fit into several may lead to inconsistent classifications resulting in more volatile prices (Zuckerman 1999). Such perspectives resonate well with this study’s research context, financial organizations utilising IMS. Such systems seek to categorise trades and financial holdings in order to apply regulatory rules and guide investment decisions through the application of benchmarks and indices provided by third parties (information intermediaries). Thus, the IMS may be thought of a system which facilitates its own ‘perception framework’ influenced by institutional pressures arising partly from regulatory obligations.

An associated stream of literature within the social studies of markets, termed ‘the technological constitution of financial markets’, addresses how technological arrangements may define boundaries and delineate domains of activity thereby legitimizing and institutionalising them (Preda 2007b). Williams (2013 p. 545-546) provides a concise definition of this body of work, ‘this literature focuses on the role of various mechanisms, devices, and technologies not simply in representing the markets and finance, a form of passive recording, but rather in actively shaping and constituting the markets on an ongoing basis.’ Such scholars view complex technological arrangements as being ‘grafted’ onto financial markets and thereby structure and influence transactions and the rules and professional roles which govern them. Thus,

technologies may be seen as cultural tools which actually enact the markets (Barry and Slater 2002).

Technologies utilised by traders, such as the IMS, are not neutral in the data and information they provide and the responses they elicits (Zaloom 2003). Empirical studies focused on technologies which, facilitate trading activities, have examined market indices (De Goede 2005), the coordination of currency traders globally, off and online, to interpret pricing screens (Cetina and Bruegger 2002), the stock ticker as a recording technology (Preda 2006), visualization software to present complex market data (Pryke 2010) and technologies to facilitate both electronic trading and trading conducted in ‘open outcry pits’ (Zaloom 2003). Other studies have focused on the performativity of formulas and models enacted through technology to construct economic activity (MacKenzie and Millo 2003; MacKenzie 2006). All of these studies have highlighted the non-neutral nature of such systems. Technologies, such as the IMS, are seen to represent ‘the material and discursive assemblages that intervene in the construction of markets’ (Muniesa et al. 2007 p. 2). Consequently, such technologies may be viewed as having their own agency and ability to exert both constraining and constitutive effects, they co-exist with human actors and so are participants in socio-technical networks. Markets are viewed as technological arrangements composed of artefacts and formulae which project their own paths of action to create a ‘calculative agency’ (Callon and Muniesa 2005). Calculative agency may be defined as consisting of three elements. Firstly a framing to determine what is calculable and what is not. Secondly disentangling boundaries to determine what is relevant to the calculations and what is irrelevant. Thirdly, performativity indicating the use of technology and formulae in transactions (Callon 2004; Preda 2007b).

Consequently, studies addressing the technological constitution of financial markets are often seen as following the performative tradition (Fourcade 2007; Preda 2007a).

Concepts of performativity resemble sociological concepts of agency, here defined as the capacity of actors to rise above established rules and routines and to open up and follow paths of action which are not predetermined (Preda 2007a). Within institutionalism, scholars have long debated the primacy of field level structural forces arising from institutional factors and individual agency (Deeg 2010; Giddens 1984; Heugens and Lander 2009; Hirsch and Lounsbury 1997; Perrow et al. 1986; Seo and Creed 2002). Performative studies of financial technologies, however, may also be underpinned by institutionalist concepts regarding the structuration of fields through cultural, legal, political and economic factors. Fourcade (2007 p.1026) highlights how institutional field and performative analysis may not be as contradictory as they seem, ‘Indeed the ability of market technologies to perform the economy cannot be readily assumed outside of a whole set of social conditions, the incorporation of which many science studies scholars often resist. Still, the relevance of ‘contextual’ factors is particularly well displayed by MacKenzie’s (2006) demonstration that the construction of the financial derivatives market presupposed not only the mobilization of a whole network of people with interests in the implementation of the technology at hand, but also on specific cultural assumptions about ways to make money, as well as on enabling political, legal, and economic conditions.’ This study does not discount the performativity perspective, the IMS calculative agency, may well ‘perform’ both markets and new regulatory arrangements. However, the focus here is on how institutional arrangements are shaping social practices for compliance and not on how

such practices perform regulations and markets. Although, researching the performativity of the IMS is identified as a potential avenue for future research.

Institutionalist perspectives have addressed how rules, norms and logics in the form of intertwined material and symbolic elements may become encapsulated within IT artefacts (Orlikowski and Iacono 2001). Thus, institutional orders may become embedded within IT systems (Scott 2003). Financial markets may be shaped by coercive regulations and normative and cultural elements including networks of social relationships and social structures of power, dominance and status both across and within organizations (Granovetter 1985).

This study focuses specifically on institutional forces arising from the introduction of large volumes of regulatory mandates arising from the recent financial crisis and associated Great Recession within the field of asset management. Specifically, this study focuses on a type of regulatory technology, an IMS, which simultaneously provides a trading platform and applies automated rules derived from regulatory mandates. The IMS technology includes algorithms, visualization tools, and databases which facilitate transactions and interaction across social networks between market participants. To summarize, the IMS may be viewed as part of the ‘technological materiality’ of the market as it acts to frame markets for the purposes of regulatory consumption through the actions it affords and the controls it applies (Millo and MacKenzie 2009; Williams 2013). In summary, the IMS contributes to the ‘technological materiality’ of the markets by providing technological affordances and constraints and thereby aiming to facilitate regulatory compliance by influencing trading behaviours.

2.2. Compliance and Technological Affordances

In order to answer the research question and make a contribution by understanding how compliance related practices and behaviours have changed, it is important to understand how technology may afford or forbid actions and thereby influence and steer compliant practices. Financial regulations seek to govern the behaviours and actions of those individuals and organizations engaged in trading securities and so internal controls and oversight are a key component of compliance (Agrawal et al. 2006; Martinez-Moyano et al. 2013; Tuttle and Vandervelde 2007; Williams 2013). As Black (2001 p.138) noted over a decade ago: ‘The role of technology in regulating is not yet part of the mainstream regulatory literature, but I think it is something that needs to be explored more systematically in the study of any regulatory system. The point is that the ability to control is hampered or facilitated by technology, that is by extent to which we do or do not have technological capacity, and by the inherent characteristics of that technology.’

In the post-crisis period following 2008, a ‘tsunami of regulations’ (FT 2013) has imposed further requirements on financial firms. Whereas previous financial scandals were depicted as corporate failures with the emphasis on dishonest behaviour and accounting deficiencies (Benston 2006; McLean and Elkind 2004), the recent crisis’ impact extended beyond the collapse of a few financial corporate entities (Lehman Bros and Northern Rock) but instead created a systemic ‘shock transmission’ to the international financial industry (De Haas and Van Horen 2012) which has created global contagion (Aloui et al. 2011). However, the introduction of increasing regulatory controls as a response to organizational and economic failures is not new. The last decade has witnessed a significant increase in regulation of the financial

services industry. In response to the high profile corporate failures of Enron and Arthur Andersen, among others, regulators in European and US jurisdictions have sought to extend and improve controls and internal and external reporting of financial firms. The Sarbanes-Oxley (SOX) Act was introduced as a response to such failures. The most contentious part of SOX was Section 404 which requires that organizations assess their internal control structures for management and for external auditors to report on the adequacy of those controls. In order to meet these requirements the Committee of Sponsoring Organizations' (COSO) internal control framework is often utilized (Agrawal et al. 2006; Damianides 2005). Previous research has shown that there is a positive relation between IT related weaknesses in COSO components and firms which have reported material weaknesses in their internal controls under SOX (Klamm and Watson 2009). Data quality has also been found to impact internal controls (Fields et al. 1986). SOX obligations posed serious challenges for IT departments, as increased demands to document and test important manual and automated controls required extensive revisions to internal business processes (Li et al. 2012). Consequently, the role of IT in complying with regulations became more critical, requiring senior IT professionals to pay close attention to new regulatory obligations (Currie 2008).

Regulations and laws, however, are not objective but require social interpretation (Edelman and Suchman 1997). Information systems underpin internal controls and compliance efforts as interpretations of rules, norms and logics become encapsulated within IT artefacts (Orlikowski and Iacono 2001). Regulatory technologies, correspondingly, are also not objective (Bamberger 2010; Callon and Muniesa 2005; Itami and Numagami 1992; Muniesa et al. 2007; Preda 2007b; Zaloom 2003). They create their own world view which alters the perceptions of those decision

makers the system was designed to inform (Heidegger 1954). Indeed, various scholars have outlined the performativity of finance related technologies and correspondingly the technological constitution of financial markets, see 2.1. IT artefacts, ‘might authorize, allow, afford, encourage, permit, suggest influence, block, render possible, forbid...’ actions and thereby implement internal controls (Latour 2005 p.72). In this way, IS play a key role in underpinning compliance and control practices by affording and constraining actions (Gibson 1986; Majchrzak and Markus 2013; Zammuto et al. 2007). Such constraints and affordances are composite of intertwined human agency, ‘the ability to form and realise goals’, and material agency, ‘the capacity for non-human systems to act on their own apart from human intervention’ (Leonardi 2011 p.147 and 148). A key element of the IMS material agency is the ability of the system to evaluate current and potential financial holdings against automated compliance rules to determine if breaches have occurred.

In summary, regulatory technologies are constitutive of material elements which intervene in the construction of markets by applying controls derived from regulatory obligations (Muniesa et al. 2007). In this way, technology and the affordances it forbids and creates, contribute directly to the governance of regulated economic activity (MacKenzie 2006; Preda 2006).

2.3. Governance, Transparency and Asymmetric Information

A further stream of literature has been identified as providing insight into the main research question, vital to meeting regulatory obligations is the effective governance of financial organizations demonstrated through transparency and sharing of information. Correspondingly, technologies which collate structure and disseminate such information have an important role to play in ensuring compliant behaviours and

demonstrating robust and fair practices. Within capital markets a key focus of governance activities is to ensure transparency to stakeholders, such as Regulators and Shareholders. However, asymmetric information may hinder such transparency and so reduce the accountability sought by regulators (Solomon 2013). Financial transactions, however, are characterized by asymmetric information and understanding (Greenwald and Stiglitz 1994). The uses of incomplete or distorted information by senior managers to obfuscate, mislead, distort, or confuse regulators and investors have long been identified as an important issue (Solomon 2013). The UK Regulator's handbook states that firms must, ensure there is 'adequate transparency of and access to information in the UK financial markets.' (FCA 2013b). Transparency and the disclosure of information is a key element in an effective system of corporate governance. The Cadbury Report (1992 p.33) on the financial aspects of corporate governance suggests that the 'lifeblood of markets is information'. The code proposes that barriers which prevent the flow of relevant information will cause imperfections in the markets, conversely if a firm's activities are transparent then, the report argues; their securities will be valued with a greater degree of accuracy. A key role of corporate governance, therefore, is to oversee compliance and risk management functions and to ensure they are effective. Accounting scholars have long advocated that disclosure through financial reporting may lower the costs of capital which arise from asymmetric information (Leuz and Verrecchia 2000) and that reliable disclosure attracts institutional investors (Diamond and Verrecchia 1991; Kim and Verrecchia 1994) and correspondingly increases in ownership by institutional investors (Healy and Palepu 2001).

Yet, the objectives of financial reporting and regulation while overlapping do have important differences. The objective of financial regulation is to reduce risks to investors and systemic risks to economic systems and so, traditional accountancy driven financial reporting clearly has a role to play. However, regulators do not limit themselves to information contained in general purpose financial reports (Barth and Landsman 2010). Furthermore, regulatory disclosure may provide useful information for investors (Kothari 2001). IS plays an important role in facilitating financial reporting. Organizations which have material weaknesses in their financial reporting systems are likely to have less accurate management forecasts (Li et al. 2012). Conjointly, the Financial Reporting Council's (FRC 2012 p.21) combined code on corporate governance states that, 'The board should, at least annually, conduct a review of the effectiveness of the company's risk management and internal control systems and should report to shareholders that they have done so. The review should cover all material controls, including financial, operational and compliance controls.' This process relies heavily on the data and systems which facilitate controls, metrics and reporting (Bamberger 2010; Pryke 2010; Williams 2013).

Asymmetric information may result in the managers of financial organizations being much more aware of the company's activities and financial positions than its investors. Thus, inadequate information places them at a disadvantage. These disadvantages may lead to a 'moral hazard' whereby incomplete or inaccurate information is used to mislead a party as to the true nature of risk involved in a transaction (Solomon 2013). In a speech made in 2012, the Chairman of the UK Regulator provided examples of how asymmetric information can be exploited to create moral hazards and espoused the need for financial organizations to adopt an

ethical culture to prevent this issue: '*...if a fancy new product design will enable a corporate or a country to conceal from the market the scale of its indebtedness, or if a trading desk manages to offload a problematic position onto an unsuspecting customer, does the top management and the board say 'Congratulations, take a bonus' or does it say, 'That's not what we do?... If it is serious about values and culture, it has to do the latter'*' - *Speech at Bloomberg, London, 24th July 2012* (Turner 2012a).

The globalization of financial services has contributed to asymmetric information. Firms seeking to raise revenues through issuing corporate bonds or equities may never have opportunities to meet potential investors whom may be geographically located in other parts of the world and so both parties trust in organizations such as investment banks and asset management houses to act as intermediaries and ensure that deals are conducted properly and that each parties' interests are protected. Corporation executives may have difficulty in understanding if their initial public offerings are being appropriately structured and marketed. Often investors have little understanding of the securities they are buying, the firm issuing them and the financial intermediaries selling them. Corporate treasurers may often have difficulties dissecting the numerous technological solutions available and determining the solutions' level of effectiveness once deployed. Parties involved in acquisitions or mergers often also have incomplete information (Morrison et al. 2012). Consequently, in each of these contexts third parties are trusted and relied upon to provide sound guidance and unbiased advice. However, such trust may be misplaced. In 2010, Goldman Sachs was fined \$550 million by their regulator, at the time the largest fine of its kind, for misleading investors by failing to disclose they were also working with a hedge fund on the other side of the deal who was targeting debt

instruments which held strong ratings but nevertheless were likely to default (BBC 2010). Furthermore, it has been argued that a lack of transparency contributed to the financial crisis as information relating to asset securitizations and derivatives was insufficient for investors to adequately assess the values and risks of securities (Barth and Landsman 2010). In summary, capital markets rely on disclosure mechanisms to create transparency and accountability and thereby trust in financial transactions and organizations. However, following the financial crisis trust in financial organizations and regulatory agencies to ensure appropriate governance and transparency has weakened.

2.4. Gaps in IS Literature

The finance literature is primarily concerned with financial models for executing trades, rather than on the technologies used in this process. Conversely, the information systems literature focuses on cutting edge technologies in various organizational settings, with few studies linking regulation, finance and technology (Cleven and Winter 2009). However, an appreciation of how senior executives within financial services firms work together to meet current and emerging complex regulatory requirements using information technology (IT) offers an important area for academic enquiry, with a potential contribution to practitioners. Yet despite a burgeoning increase in infrastructure and applications implicated in the regulatory process, the role of ‘technology has not been subject to any kind of serious inquiry’ (Williams, 2013, p.545) either in the ‘mainstream regulatory literature’ (Black 2001 p.138) or in information systems (IS) research. Other scholars have also highlighted this gap (Cleven and Winter 2009; Currie 2008).

The IS community has provided little insight into the role of regulatory technologies which support new policies and regulations. Related work has focused on IT governance and internal controls (Brown and Grant 2005; Korac-Kakabadse and Kakabadse 2001; Ross and Weill 2005; Trites 2004), specific regulatory acts such as SOX (Braganza and Hackney 2008; Kim et al. 2008; Klamm and Watson 2009; Li et al. 2012; Mock et al. 2009; Panko 2006; Wagner and Dittmar 2006), IS security (Bulgurcu et al. 2010; Chen et al. 2011; Gupta and Zhdanov 2012; Spears and Barki 2010) and risk management (Ciborra 2006; Ciborra et al. 2000; Scott and Perry 2012). The systematic investigation of practices for regulatory compliance and the associated role of regulatory technology is also largely absent from the management and finance literature (Black 2001; Williams 2013). Previously, scholars have focused on surveillance and detection technologies utilized by regulatory bodies to identify improper trading in markets and data mining by regulatory agencies for suspicious or risky transactions (Williams 2013). Yet few studies have considered regulatory technologies embedded within financial organizations.

A stream of empirical IS literature which has touched on regulatory issues has focused on IT governance. Notable studies include organizational arrangements for IT governance (Sambamurthy and Zmud 1999; Weill and Ross 2005; Weill and Ross 2004); changes in IT governance structures 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); hybrid IS governance solutions (Brown 1997); IT and transformation (Hvalshagen 2004); and organizational readiness and stakeholder participation (Rau 2004). In summary, IS researchers have suggested a shift away from the traditional focus on

governance structures, with the accent on centralized, decentralized, or federal forms and sourcing arrangements toward more complex structures reflexive of contemporary practice (Ross and Weill 2005; Ross et al. 2006; Williams and Karahanna 2013). However, these studies are focused on the governance of IT. The role of IT in changing institutionalized governance structures for regulatory compliance is understudied.

Furthermore, previous studies which have focused on the interplay between technology and trust have focused on how institutional structures may impact effects of trust on online markets (Gefen and Pavlou 2012), implications of cognitive and emotional trust on web-based recommendation agents (Komiak and Benbasat 2004; Komiak and Benbasat 2006), e-commerce (Kim and Benbasat 2003; Liu and Goodhue 2012; McKnight et al. 2002) and interpersonal trust and virtual collaborative relationships (Jarvenpaa et al. 2004; McDaniel and McDaniel 2004). However, few studies have considered the implications of regulatory technology on institutional based trust arrangements.

The use of institutional theory to guide information systems research is relatively new and has taken broadly two approaches: those studies that conceptualize the effects of institutionalization on an entity and those that treat institutionalization as a process (Mignerat and Rivard 2009). IS studies which have explored institutional effects have investigated large scale IT implementations, how institutionalized technologies may be under exploited, organizational change, e-government, e-health and organizational integration (Avgerou 2002; Cordella and Barca 2006; Huigang et al. 2007; Mangan and Kelly 2009; Mekonnen and Sahay 2008). Studies which have concentrated on the process of institutionalization are more scarce (Barley and Tolbert 1997; Mignerat and Rivard 2009) and have focused on application service providers,

security standards, professional services automation and customer relationship management (Backhouse et al. 2006; Currie 2004). Overall, the literature is missing studies utilizing institutional theory to investigate technology and the process by which logics for compliance evolve and become embedded. Two studies conducting a review of the use of institutional theory within the IS field found no research focused on IS and regulatory compliance (Mignerat and Rivard 2009; Weerakkody et al. 2009). Furthermore, the application of institutional theory to explore the effects and processes of the 2008 financial crisis has also been surprisingly scarce (Munir 2011).

2.5. Summary and Further Critique

The review has highlighted how markets are socially constructed and how technologies can afford and constrain practices and that ethics and culture can be influenced through technology. The review has also highlighted how asymmetric information, between financial markets participants, has the potential to create ‘moral hazards’ and so regulations and correspondingly compliance practices should facilitate appropriate governance and transparency within financial organizations. Essential to this process are systems which facilitate and audit transactions, such as the IMS.

The body of literature addressed in 2.1, the ‘social construction of markets’ and the ‘technological constitution of financial markets’, highlights how finance related technologies are not neutral and may influence and perform markets. These are useful points of departure for social studies of finance and technology. However, these literatures, whether they emphasize fields, performativity or networks, often provide little insight into the technologies being considered and, in my opinion, do not adequately address how the performativity of such systems are influencing and

changing working practices. The technologies addressed are not well defined and ‘unpacked’ in sufficient detail to allow a deep understanding of how all elements of the technology, including its data structures, architectures and the vendors’ competitive environment are changing and shaping the systems, which in turn may be implicated in the social construction of markets. An example is Zaloom’s (2004) interesting work which, according to the tag line on the cover of her book focuses on, ‘Traders and Technology’. However, none of the chapters in her book unpack and discuss the technologies employed in any depth. This study seeks to overcome this shortcoming by unpacking the IMS and providing a deep analysis of its context.

A further critique of this body of work is that it has, to a large extent, neglected to address how issues such as calculative agency or shared perception frames have influenced or altered working practices within financial organizations. Often the analysis provided is purely at the field or network level and focused on how such phenomena influences or shapes markets while the impact of these social mechanisms on working practices are not well addressed. This body of literature is lacking a practice orientated perspective of the social construction of markets. In contrast, section 2.2 addresses how systems may influence working practices by considering the constraints and affordances they create. Such studies are useful in understanding the potential of technology in disciplining practices. However, it should be noted that often individuals seek to circumvent the controls embedded in systems and that when faced with coercive pressures conformity is often just one possible path available to individuals. In addition, systems may create unintended affordances and constraints and that related outcomes may also act to perform or influence the environments in which they operate. Thus, whilst many studies have shown how affordances and

constraints provide stability the adoption of practices of control may also shape unforeseen and unwanted paths in the system which in turn may also influence the social construction of markets, in unforeseen or unexpected ways.

The literature outlined in section 2.3 builds on ideas of control to outline studies in governance, transparency and asymmetric information. These studies emphasise the need for transparency and sound governance through robust controls. Yet the technologies which facilitate such controls and transparency are often not considered in depth. Again, the ways in which technical architectures and data structures, often developed over many years and subject to numerous technological iterations, may inhibit transparency and governance and thus amplify information asymmetries are rarely considered. Similarly, the incentives provided through systems' vendors' competitive markets and the subsequent choices vendors make in designing their systems and thereby privileging certain affordances may also act to prohibit governance and allow only specific transparencies. For example, it is often assumed that individuals inappropriately profiting through asymmetric information are doing so by deliberately withholding information. However, it is possible that the systems employed and underlying technical and social components may have prevented such information being available in a format and standard that could have been easily shared with the other party at the point in time when decisions were being made. Whilst, no excuse for unethical behaviour, the limiting nature of technology in facilitating governance and transparency, beyond those limits predetermined and pre-programmed into the system by its designers is often overlooked.

The previous subsections have highlighted many gaps and different streams of relevant scholarly work and so position this study at the intersection between two key

strands of interrelated literature, the social studies of IS through an institutionalist perspective and the social studies of financial markets. The study seeks to bridge a gap in existing literature by investigating an under researched phenomenon, regulatory technology, in a new and contemporary setting and by applying established institutional concepts to this empirical context. Thus, it is hoped to make a contribution to both practitioners engaged in this complex and dynamic environment and also those areas of academia focused on the application of institutional theory to understand the use of systems and the post-crisis environment.

The issues and topics outlined in the review and derived from the post-crisis environment in financial services are, however, too large in scope and depth to be adequately covered within this research, constrained as it is by the structure of a PhD and the researcher's own limited time and resources. Much useful work and effort could be applied investigating the role of technology in post-crisis regulatory compliance within financial organizations in relation to: corporate social responsibility and ethics or governance and transparency or (re)building trust in financial firms, regulators and markets. Consequently, the following chapter narrows the study's focus and concentrates on the concepts which specifically underpin this research focused as it is on how technologies are implicated within institutional arrangements, derived from post-crisis regulations, to influence compliance related working practices.

3. A CONCEPTUAL MODEL OF REGULATORY COMPLIANCE

The high-level general research question (Punch 2000) for this study focuses on addressing the question: *How does pre-embedded IMS technology influence behaviours and practices for post-crisis regulatory compliance within financial organizations engaged in investment activities?*

This chapter outlines the conceptual model used to address this question and provides a lens through which to interpret and analyse the research findings. Drawing from the last chapter's discussion, two levels of analysis are adopted. Firstly, the organizational field, governed by the regulations, and secondly the intra-organizational level, where compliance practices are deployed. Figure 5 depicts this model. The focus of the subsections within this chapter is to explain the components and relationships outlined in the model. The model draws from the concepts outlined in the previous chapter and is organized into two distinct sections. Firstly, having previously discussed how regulatory institutions are well defined as a type of social institution, the model draws from the institutional logics perspective to frame the research context. By doing so, it is hoped to articulate to the reader the theoretical boundaries of the study. The following subsections delineate the meta-theoretical concepts which underpin the institutional logics perspective and so provide the foundations for the model namely: social structure and action, material and symbolic elements, historical contingencies and multiple levels of analysis. Secondly, the chapter further narrows the focus of the study by identifying and discussing the key theoretical constructs which are utilised to guide the study's analysis. Specifically, theoretical constructs regarding how institutions are carried and diffused (Scott 2008), pressures for deinstitutionalization

(Oliver 1992) and mechanisms of institutionalization (DiMaggio and Powell. 1983; Scott 2008).

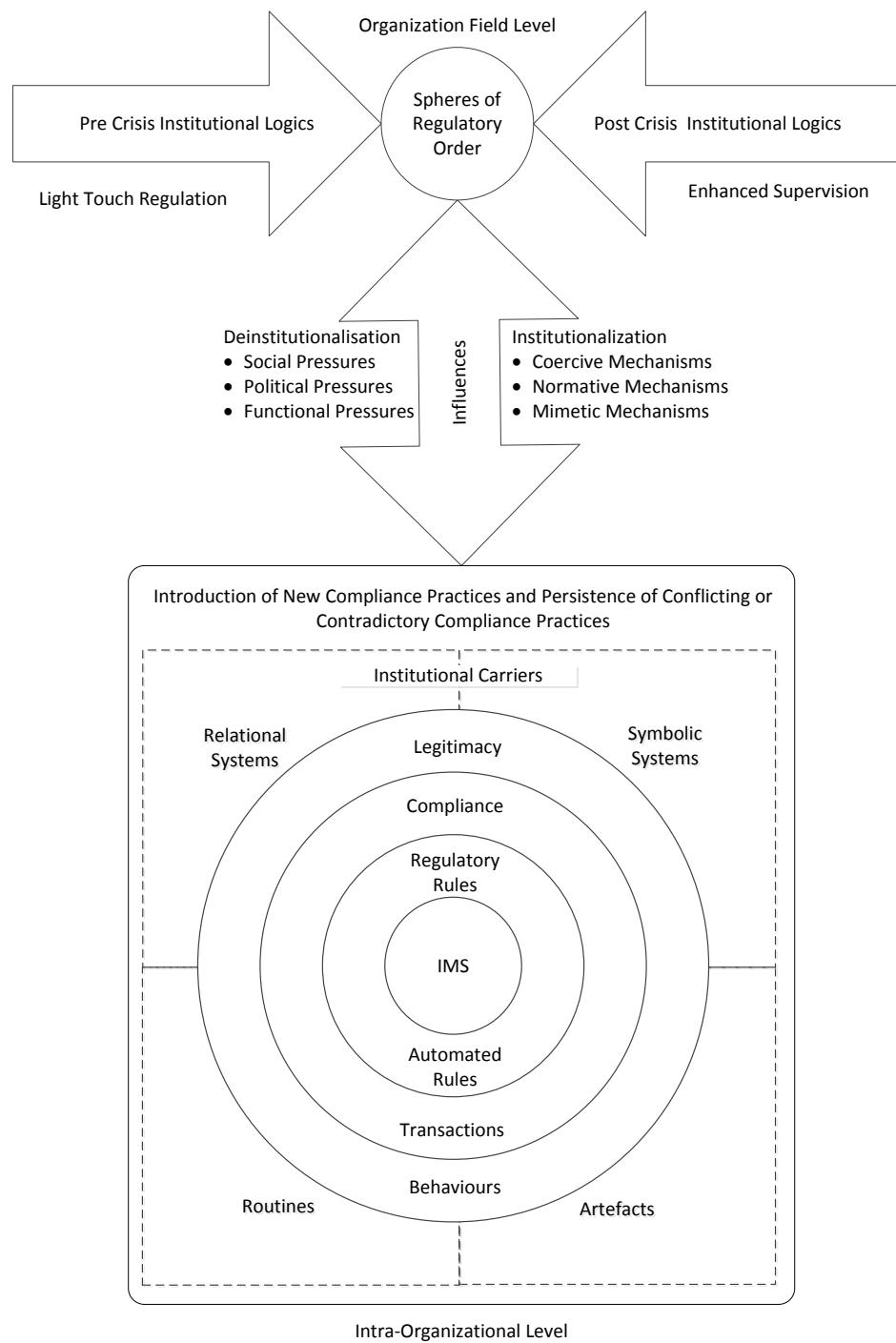


Figure 5: Conceptual Model of Regulatory Compliance Source: author

3.1. Defining Regulatory Institutions

This chapter delineates theoretical concepts which guide this study. Institutional theory provides the theoretical underpinnings for this research. This theoretical body of knowledge focuses on the causes of institutionalism and the process by which organizations affirm themselves and achieve legitimization as a consequence of their alignment and compliance with the institutional contexts of their environment (DiMaggio 1998; Meyer and Rowan 1977; Scott 2008). In the post-crisis environment, where financial organizations are under increased media and governmental scrutiny it is an increasing priority for such organizations to appear credible and legitimate in the eyes of regulators and other stakeholders, such as their shareholders and those investing in the financial services and products they offer.

Scott (2008 p. 48) provides a useful definition of institutions: ‘Institutions are comprised of regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life.’ A substantive theme focuses on how social choices are shaped, mediated and channelled by institutional arrangements. Jepperson (1991 p. 145 and 152) also provides a relevant definition. Institutions are: ‘a social order or pattern that has attained a certain state or property’, while institutionalization, ‘denotes the process of such attainment’. Jepperson’s definitions are relevant to the research context as regulatory mandates may be viewed as social orders which have attained a persistent state, when they come into force. In fact, Scott (2008 p.50) highlights regulative systems as a ‘vital ingredient for institutions’.

The use of institutional theory to investigate wide ranging organizational phenomena has facilitated greater understanding of social structures and has taken

broadly two approaches: those studies that conceptualize the effects of institutionalization on an entity and those that treat institutionalization as a process (Mignerat and Rivard 2009). The latter is the focus of this study. Haunschild and Chandler (2008 p.360) observe that: ‘the process of institutionalization is a cycle – institutions emerge, diffuse, change, die, and are replaced by new institutions’.

Oliver (1992) provides a seminal paper which offers a framework for deinstitutionalization and identifies related social, political and technical pressures. Empirical studies of deinstitutionalization are rare relative to studies of institutionalization (Ahmadjian and Robinson 2001; Dacin and Dacin 2008; Maguire and Hardy 2009). However, the empirical studies which have been conducted have concentrated on a variety of settings and phenomena. Fligstein (1990) showed how federal antitrust regulation ruled out horizontal mergers and Davis, Diekmann and Tinsley (1994) investigated how changing regulatory environments and shifts in power and resources, contributed to the breakup of US business conglomerates. Kraatz and Zajac (1996) highlighted how technical and economic pressures may cause organization to adopt practices which are contrary to embedded organizational values. Greve (1995) emphasized how the abandonment of standards, in this study a radio format, is driven jointly by behavioural contagion and competition from other organizations. Ahmadjian and Robinson (2001) examined the deinstitutionalization of permanent employment among publicly listed companies in Japan and found that economic pressures caused downsizing, with social and institutional pressures shaping the pace and process by which downsizing spread. David and Bitektine (2009) suggest that the expansion of institutional theory has peaked and that the use of the theory itself is becoming deinstitutionalised. Hiatt, Sine and Tolbert (2009) examined the

deinstitutionalization of breweries and the corresponding creation of entrepreneurial opportunities. Maquire and Hardy (2009) concentrated on the abandonment of widespread but taken for granted practices regarding the use of DDT and focused on ‘outsider-driven’ deinstitutionalization driven from actors outside the organizational field. Seal (2003) utilized Oliver’s (1992) pressures for deinstitutionalization to examine incremental budgeting in UK local government. Dacin and Dacin (2008) extended Oliver’s (1992) framework of deinstitutionalization by highlighting the roles played by custodians, collective memory and ritual in the lighting of traditional bonfires on university campus. Nicholson and Sahay (2009) provide a rare study which incorporates both concepts of deinstitutionalization and IS. They focus on the software export policy making in Costa Rica and the effects of subcultures in the generation of dissensus contributing to the deinstitutionalization process. Studies which empirically test Oliver’s framework are scarce and, in the author’s opinion, have not tested the specific pressures Oliver identifies at a sufficiently granular level. Furthermore, the literature is missing an empirical application of Oliver’s theory within multinationals operating in financial services. This research contributes to the discourse on deinstitutionalization by applying Oliver’s concepts of political, functional and social pressure to an empirical study of regulatory change within capital markets and thereby provides insight into the usefulness and application of related theoretical constructs within this setting.

Over time different strands of institutionalism have emerged with differing areas of comprehension and interpretation. Scott (2008) provides a useful framework for incorporating the strands of institutionalism he identifies, known as the ‘Three Pillars’. Scott suggests that each of these pillars provide a unique area of support for

resilient social structures or institutions and that ‘... together with associated activities and resources, provide stability and meaning to social life’ (Scott 2003 p.80). The first pillar is termed ‘regulative’ and focuses on the contribution of rule-setting, surveillance and monitoring as well as the setting of sanctions to influence behaviour. The second pillar is ‘normative’ and addresses the setting of expectations which provide a prescriptive, evaluative and obligatory element to social behaviour. The last pillar is known as ‘cultural-cognitive’ and involves the development of shared conceptions which collectively constitute the essence of social reality and frames through which meaning is derived. Table 5 describes the different aspects of each pillar.

	Regulative	Normative	Cultural Cognitive
Basis of Compliance	Expedience	Social obligation	Taken-for-grantedness, shared understanding
Basis of Order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certification, accreditation	Common beliefs, shared logics of action
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, recognizable, culturally supported

Table 5: Three Pillars of Institutions (Scott 2008)

While Scott is at pains to highlight the fact that most institutions are made up of a mixture of these diverse elements and that few ‘pure-cases’ exist, often institutional phenomena will vary with respect to the degree of dominance which each pillar holds.

However, an important critique of institutional theory comes through broad interpretations and applications of the term ‘institution’ which may be applied to a plethora of research contexts. As Martin (2004 p.1249) observes, ‘While rarely giving reasons for doing so, social scientists apply the term social institution to an amazing array of phenomena, including, for example, taxation and handshakes (Bellah et al. 1991), schools (Due et al. 2003), socialism (Parboteeah and Cullen 2003), mental hospitals (Goffman 1962), courtship (Clark 1997), community and property (Nisbet 1953), healing (Johnson 2000), sports (Andersen and Taylor 2007; Messner 1992), appellate courts (March and Olson 1989), religion and marriage (Waite and Lehrer 2003) universities (Benschop and Brouns 2003), heterosexuality (Rogers and Garrett 2002), and ‘proliferating going concerns’ (Gubrium and Holstein 2000).’ Correspondingly, within IS research the concept of ‘institutions’ has been applied to various contexts and research settings including: active service providers (Currie 2009), technical standards (Garud et al. 2002), the legitimation of IT innovation (Avgerou 2000), organizations influencing IT innovation (King et al. 1994), the UK NHS Program for IT (Currie and Guah 2007; Currie 2012), intranets (Baptista 2009), Amazon rainforest monitoring systems (Rajão and Hayes 2009), shifts in institutionalised patterns of radiological work through the introduction of CT Scanners (Barley and Tolbert 1997), the institutionalization of patterns of action associated with ERP systems (Lyytinen et al. 2009), healthcare (Jensen et al. 2009), software exports

(Nicholson and Sahay 2009) and supply chains and platforms (Gawer and Phillips 2013).

However, despite the ambiguity over what constitutes an institution and the numerous context and research settings explored, a reading of Martin (2004) provides some useful guiding criteria, which can be compared to financial regulations thereby conceptualising the elements which define them as social institutions - see Table 6.

Defining Social Institutions
1. Institutions are profoundly social; they are characteristic of groups
2. Institutions endure/persist across extensive time and geographic space.
3. Institutions entail distinct social practices that recur (Giddens 1984), recycle (Connell 1987) , or are repeated (over time) by group members.
4. Institutions both constrain and facilitate behaviour/actions by societal/group members.
5. Institutions have social positions and relations that are characterized by particular expectations, rules/norms, and procedures.
6. Institutions are constituted and reconstituted by embodied agents.
7. Institutions are internalized by group members as identities and selves and they are displayed as personalities.
8. Institutions have a legitimating ideology
9. Institutions are inconsistent, contradictory, and rife with conflict.
10. Institutions continuously change.
11. Institutions are organized in accord with and permeated by power.

12. Institutions and individuals mutually constitute each other; they are not separable into macro and micro phenomena.

Table 6: Criteria of Social Institutions (Martin 2004)

It is worth clarifying what is termed a ‘regulatory institution’ within this context in order to avoid confusion. While financial organizations and regulatory agencies are often referred to as institutions, within this study, regulatory mandates are conceptualised as the key institution under consideration. From regulatory institutions, organizational practices for meeting related obligations may also become embedded and institutionalised internally within organizations. Such compliance practices become established as ‘the way things are done round here’ (Deal and Kennedy 1982). While it is accepted that financial organisations and regulatory bodies may also be considered institutions in their own right, this work applies the term ‘institutions’ to describe legislation and regulations and related embedded practices.

Regulatory institutions in the form of legal mandates structure and govern capital markets by stipulating principles and rules by which financial organizations must abide. These regulatory institutions are enforced by sanctioning organizations, for example the Financial Services Authority in the UK (FSA) or the Securities and Exchange Commission in the US (SEC). Post crisis, new regulations have been introduced with considerable breadth spanning such diverse areas as market abuse, short selling, market transparency and collateralization. These changes have altered many existing regulations. For example, the new EU Markets in Financial Instruments Directive II (MiFID II) extends the scope of the original mandate to include additional asset types and markets.

3.2. Framing the Research Context through Institutional Logics

Institutional logics are defined as ‘the socially constructed, historical patterns of material practices, assumptions, values, beliefs and rules by which individuals produce and reproduce their material subsistence, organize time and space and provide meaning to their social reality’ (Thornton and Ocasio 1999 p.804). This perspective approaches the challenge of institutional analytics by exploring the demarcating content and meanings of institutions. A key assumption is that behaviours are located within specific institutional orders, which act to regularize actions while providing opportunities for agency and change. Such perspectives build on the work of Friedland and Alford (1991) who view institutions as being supra-organizational arrangements which are embedded in both material practices and symbolic systems. Furthermore, the relationship between institutional logics and systems is well established: ‘...systems institutionalize select managerial actions, beliefs, and rationalities in the form of institutional logics’ (Lyytinen et al. 2009 p. 287).

Changing public expectations has created pressure on the state to deinstitutionalise outmoded approaches to regulating financial organizations. Prior to the financial crisis the UK Regulator adopted a ‘principles based’ or ‘light-touch’ approach to regulation. However, this approach was abandoned in the wake of the financial crisis. Post-crisis, the Regulator announced a move towards ‘intense supervision’ (Financial Services Research Forum 2009; International Securities Association for Institutional Trade Communication 2011; Turner 2009b). As a consequence of reduced profit margins, industry restructuring regulations and enhanced supervision by regulatory bodies, we are observing, post-crisis, a change in the institutional logics which legitimise the practices and institutional arrangements for

compliance. As Ocasio (1998 p.196) notes, institutional logics ‘provide the formal and informal rules of action, interaction, and interpretation that guide and constrain decision makers in accomplishing the organization’s tasks and in obtaining social status, credits, penalties and rewards in the process.’ Previous studies which investigate institutional logics emanating from the field level have emphasised the existence of competing logics (Thornton and Ocasio 2008). Scholars have observed that, prior to the crisis; there was a move away from regulation towards self-regulation of free markets (Gillespie et al. 2012; Munir 2011; Thornton et al. 2012). This thesis supposes that, post-crisis, there has been a shift in institutional logics aimed at decreasing economic risk in global financial systems through strengthening regulatory frameworks. Consequently, reduced margins and heightened levels of regulation are causing pre-crisis institutional arrangements and associated logics of action for structuring compliance practices, to be questioned and reconfigured. Thornton and Ocasio (2008; 20012) delineate four meta-theoretical principles which underpin the institutional logics perspective. I now discuss each of these in order to further explore the relevance of this perspective to the research context.

3.2.1. Social Structure and Action

The first of these principles is termed Social Structure and Action. This refers to the premise that ‘identities, values and assumptions of individuals and organizations are embedded within prevailing institutional logics.’ and so distinguishes this perspective from the purely macro-structuralist approaches (Thornton, et al 2012 p.6). The institutional logics perspective does not ignore the role of structure, but is not limited by it. Instead it focuses on how practice is shaped by how organizations and individuals are influenced by different institutional spheres of order each espousing a

differing view of rationality. Within the context of this study, established institutional orders for conducting transactions and meeting regulatory obligations are being challenged by changes in the regulatory environment as new practices compete for dominance over historically embedded practices.

Financial organizations have agency over regulatory effects by being selective over the types of products and services they offer and the transactions in which they engage and thereby may avoid regulatory obligations which are perceived as overly onerous and expensive. By doing so, they are allowing new institutional logics, in the form of new regulation, to shape their business models and the practices which underpin these models. A global compliance manager in C.6, noted:

‘[The country Turkey is] forming some quite hard tricky rules that may mean that certain firms can’t operate in there because they don’t have a large enough profit share of the market [in certain instruments].’

The study reveals that financial organizations do have a limited degree of discretion when choosing how to respond to institutional pressures with respect to the types of markets they deal in and their corresponding regulatory exposure, as well as the types of systems and processes adopted. However, organizations may also find themselves subject to institutional pressures to operate in certain markets. It may be expected that organizations of a certain size and reputation are expected to be able to handle certain transactions.

Furthermore, new regulations are requiring financial organizations to hold more collateral, termed regulatory capital, to offset risky trading activities and ensure liquidity, which is reducing returns and requiring firms to reduce their balance sheets

and cut back on trading. UBS recently announced it would wind down its fixed income trading business and streamline other investment banking activities in part due to the increased demands of Swiss regulators to hold increased levels of regulatory capital (Keoun and Logutenkova 2012). Thus, new regulatory requirement for UBS to hold higher levels of collateral are causing existing institutional logics for operating in certain markets to be questioned and consequently business models to be adapted. UBS is not the only firm shrinking its trading activities, Nomura, Deutsche Bank and Barclays Capital all made their intentions to do so public (The Economist 2012b).

3.2.2. Institutions are Material and Symbolic

A key meta-theoretical principle focuses on how each institutional order comprises both cultural symbols and material elements which may be intertwined and mutually constitutive (Thornton et al., 2012). Material aspects refer to structures and practices, while symbolic elements relate to ideation and meanings drawn from culture. The institutional logics perspective acknowledges that institutions change and develop as a result of interplay between material and cultural elements and that such elements, while analytically separate, are intertwined and mutually constitutive. Cultural symbols may be embodied in structures and practices. Conversely, structures and practices may express and affect the ideation and meaning of cultural symbols (Zilber 2008). Within neo-institutionalism the use of the hyphenated label, cultural-cognitive signifies the relationship between internal interpretive processes shaped by external cultural frameworks (Scott 2008). In this case, symbolic representations of appropriate practices, in the form of new regulatory rules, are themselves being shaped by broader cultural changes. The debate over what levels of risk are appropriate within our financial systems has been precipitated as a result of the crisis. An outcome of this

dialogue is the reduction of society's appetite for risk in its economic systems, leading to enhanced regulatory frameworks which are interpreted collectively and individually and transcribed into material structures and practices, such as the IMS under consideration in this study.

Essential to this reconstruction of the regulatory landscape will be the effective utilization of technological infrastructures to support new organizational processes and routines (Cule and Robey 2004). Such a move will clearly also require cultural transformation. Previous studies have highlighted the role of technology in facilitating culture change, see **Error! Reference source not found.**, through structuring practices and so this study explores the potential for IMS to contribute to cultural change by both enabling and constraining trading behaviours (Doherty and Perry 2001; Doherty and Doig 2003; Leidner and Kayworth 2006),

Furthermore, technology has a key role to play in facilitating change by applying disciplinary effects to enable or constrain practices and thereby produce new patterns of action for meeting compliance (Labatut et al. 2012; Latour 2005; Leonardi 2011; Majchrzak and Markus 2013), see 2.2. This perspective complements Martin's (2004) view that institutions are recursive and allows specific affordances. The IMS which provides the subject of this study is an example of a system which embeds regulatory rules by transcribing them into automated rules. These automated rules govern transactions and thereby both constrain and enable trading practices and so facilitate demonstrable compliance with post crisis mandates associated with maintaining limits on risky transactions and concentrations of exposure. The system provides aggregated views of firm-wide positions held by the organization thereby affording specific risk management capabilities. The absence of such firm-wide

perspectives was a contributing factor to the collapse of Lehman Brothers (McDonald and Robinson 2009).

3.2.3. Historically Contingent Institutions

The third meta-theoretical principle suggests that organizations are historically contingent. Thornton and Ocasio (2012) highlight changing regulatory frameworks as an exemplary case. As regulations change and develop over time they alter organizational arrangements and logics for selecting such arrangements. Studies of organization and economic phenomena may be contingently valid only for that time period (Freidland and Alford 1991). This is an important distinction. At the time of writing many of the EU's regulatory responses to the financial crisis are still being crystallized and implemented. Furthermore, institutional orders may vary in importance over time and that the increasing influence of one institutional order may not necessarily act to replace another. This perspective aligns with Martin's (2004) observation that institutions are dynamic, persistent and contradictory. While new institutional arrangements may prescribe a dominate logic these may cohabit with other arrangements which may have been created at different points in time under different historical contingencies (Streeck and Thelen 2005; Thornton et al. 2012).

Technology may play a role in introducing new practices, derived from institutional logics which may clash with existing embedded practices, for example, 'ERP systems institutionalize select managerial actions, beliefs, and rationalities in the form of institutional logics (Berente 2008; Berente et al. 2007; Gosain 2004; Pollock and Williams 2008; Tolbert and Zucker 1983; Zucker 1977) that clash with local institutions and face major implementation and use problems (Berente et al. 2007; Davenport 1998; Markus and Tanis 2000; Nandhakumar et al. 2005; Ward et al. 2005)'.

(Lyytinen et al. 2009 p.287). Displacement as a mode of institutional change refers to the removal of existing rules and practices and the introduction of new ones (Mahoney and Thelen 2010; Streeck and Thelen 2005). Systems such as the IMS aim to enable such displacement through transcribing and encoding post-crisis regulatory rules and thereby constraining and structuring behaviours to ensure appropriate outcomes. However, various scholars have shown that there remains a distinct possibility that such displacement may be hampered or rendered incomplete by persistent conflicting institutions (Berente et al. 2007; Davenport 1998; Lyytinen et al. 2009; Markus and Tanis 2000; Martin 2004; Nandhakumar et al. 2005; Streeck and Thelen 2005; Thornton and Ocasio 2008; Thornton et al. 2012; Ward et al. 2005).

Post-financial crisis, we are observing a strengthening of regulatory institutions, which are competing with historically dominate logics for conducting business and structuring operations. Previous to the crisis such logics were primarily influenced by market forces with regulatory logics being secondary and termed ‘light touch’. Within the context of this study, I observe in the post-crisis environment, an increase in the influence of regulatory driven logics which compete with market influenced logics embedded prior to the crisis. While, market forces may still be primary, the influence of regulatory focused logics has certainly increased.

3.2.4. Multiple Levels of Analysis

The last meta-theoretical principle adopts the view that ‘institutions operate at multiple levels of analysis and that actors are nested in higher order levels – individual, organizational, field and societal.’ (Thornton et al. 2012 p.13). Correspondingly, institutional logics may evolve at different levels such as markets, industries or geographic communities. Thus it is necessary to specify the level of analysis being

considered in order to effectively explore theoretical mechanisms, operating at different levels from the main phenomenon being considered (Freidland and Alford 1991). By exploring mechanisms operating across different levels of analysis, theory generation increases in generalizability and precision (Stinchcombe 1991).

This study investigates changes in regulatory institutions occurring at the organizational field level of capital markets, which impacts internal working practices for maintaining compliance and conducting transactions enacted at the intra-organizational level. Thus, the levels of analysis considered by my study are at the field level and at the intra-organizational level. Previous studies which investigate institutional logics emanating from the field level have emphasized the existence of competing logics (Thornton and Ocasio, 2008). As noted previously, institutions may conflict with one another while also providing constraints and opportunities for actors. However, the variance of levels considered and the associated breadth of analysis may encourage imprecision as it might be inferred that interpretive schemas or logics, cultivated at any level may be considered institutional logics. Institutional logics are demarcated as being beyond mere strategies or logics but in addition provide legitimacy and a sense of order and so typically function at numerous levels. Thus, I conceptualize compliance as a form of institutional logic derived from financial regulation. Furthermore, the change in the macro regulatory landscape, following the financial crisis, has clearly created new logics at the intra-organizational level, which focus on legitimatizing organizations through compliance with the newly created regulatory order.

In summary, Oliver (1992) discusses how institutional change may occur at the environmental level as well as at the intra-organizational level and that pressure for

change may occur at either levels of analysis. Similarly, post-crisis institutional change can be observed at two levels, organizational and environmental. At the environmental level, the introduction of large scale regulatory change has altered many regulatory institutions. Correspondingly, changes in the regulatory environment and the creation of new regulatory institutions will naturally cause changes in local, possibly also institutionalised, operational practices, which may succeed or fail to create desired behavioural changes. These new organizational practices may also become institutionalised within organizations.

3.3. Key Theoretical Constructs

In order to answer the general research question I now draw down the focus to more specific research questions (Punch 2000). The following sections specifically outline the theoretical constructs used to analyse the findings and address the more specific research questions. The first of these: *How do regulations and compliance practices become inscribed and transmitted through IMS technology?* This question is addressed by considering concepts of institutional carriers (Scott 2003). The second specific research question considers: *How are outmoded compliance practices becoming deinstitutionalised through the IMS?* This question focuses on how pre-crisis compliance practices are being discontinued and so focuses on concepts of pressures of deinstitutionalization (Oliver 1992). The third specific research question considers: *How are new compliance practices and behaviours becoming institutionalised through the IMS and what factors may prohibit this?* The last question focuses on understanding the new compliance practices being introduced post-crisis, by considering concepts of institutional mechanisms (DiMaggio and Powell 1983; Scott 2008).

The three theories employed regarding how institutions are carried and diffused (Scott 2008), pressures for deinstitutionalization (Oliver 1992) and mechanisms of institutionalization (DiMaggio and Powell. 1983; Scott 2008) were selected as being useful in addressing the research questions and also compatible with one another. These perspectives are thought to complement one another by together providing insight how regulations and compliance practices are diffused, institutionalized and deinstituted and so collectively provide a useful lens to understand how technology is implicated in influencing behaviours and practices for meeting post-crisis regulatory obligations. Secondly, each theory is compatible with Martin's (2004) guiding criteria for defining institutions and Thornton and Ocasio's (1999; 2008; 2012) institutional logics perspective drawing as they do from concepts such as historical contingency, social structures and affordances, values and norms, sociality, persistence, legitimacy, power, isomorphism, recurring practice and the material and symbolic nature of institutions. Crucially, each theory embraces the concept of entanglement as they include constructs which function across the field and intra-organizational levels so are relevant to the view that institutional logics operate at multiple levels of analysis. In summary, the key constructs employed are viewed as being both complementary and compatible. They are collectively useful in addressing the research questions and are also underpinned by similar meta-theoretical concepts and so are theoretically harmonious with one another.

3.3.1. Institutional Carriers

All institutions regardless of whether they are cognitive-cultural, normative or regulative are conveyed through carriers (Jepperson 1991). Scott (2008) identifies four broad classes of institutional carriers and advises that the distinctions between carriers

are largely orthogonal to the three pillars outlined in Table 5. Table 7 describes the ways in which the different classes of institutional carriers are manifest and cross-classify them against Scott's pillars.

Carriers	Regulative	Normative	Cultural-cognitive
Symbolic systems	Rules, laws	Values, expectations, standards	Categories, typifications, schema
Relational systems	Governance systems, power systems	Regimes, authority systems	Structural isomorphism, identities
Routines	Protocols, standard operating procedures	Jobs, roles, obedience to duty	Scripts
Artefacts	Objects complying with mandated specifications	Objects meeting conventions, standards	Objects possessing specific symbolic value

Table 7: Institutional Pillars and Carriers (Scott 2003; 2008)

The first are termed 'symbolic systems' (Scott , 2008 p. 80) and these refer to the 'full range of rules, values and norms, classifications, representations, frames, schemas , prototypes and scripts' which are used to influence and guide behaviours. Scott highlights the fact that modern developments in information and communication technologies such as television or the web have enabled the increase of markets, increased the length of supply chains and created a far more integrated global economy.

Scott (2008 p. 81) terms the second carrier 'relational systems' and refers to those systems which 'rely on patterned interactions connected to networks of social positions: role systems'. Many of these systems transcend and intersect organizational boundaries, as in the case of communities of practice and professional connections. Rules and belief systems may become encoded into roles and so incorporate and instantiate institutional elements. As with symbolic systems, relational arrangements

may be shared across numerous organizations and so create similar forms or relations amongst forms.

The third carriers of institutions identified by Scott (2008) are ‘routines.’ This category relates to structural activities within which institutional elements have become embedded in the form of habitualized behaviour. Routines are reliant on patterns of actions which reflect the tacit knowledge of actors. They may range broadly from activities encoded into technologies to procedures for assembling fast food. These routines all require a level of acting and problem solving which goes beyond a mere system of rules.

The final carriers identified by Scott are ‘artefacts’, created by humans to act as tools to be used in various activities and so includes hardware and software related technologies. Scott (2008) supports his perspective by highlighting Suchman’s (2003) view that artefacts contain both technical and symbolic elements.

3.3.2. Pressures for Deinstitutionalization

Oliver (1992 p. 564) describes deinstitutionalization as: ‘the process by which the legitimacy of an established or institutionalised organizational practice erodes or discontinues’. Figure 6 depicts Oliver’s (1992) framework for understanding the process of deinstitutionalization and highlights how the dissipation or rejection of institutions due to various pressures are integral to the process.

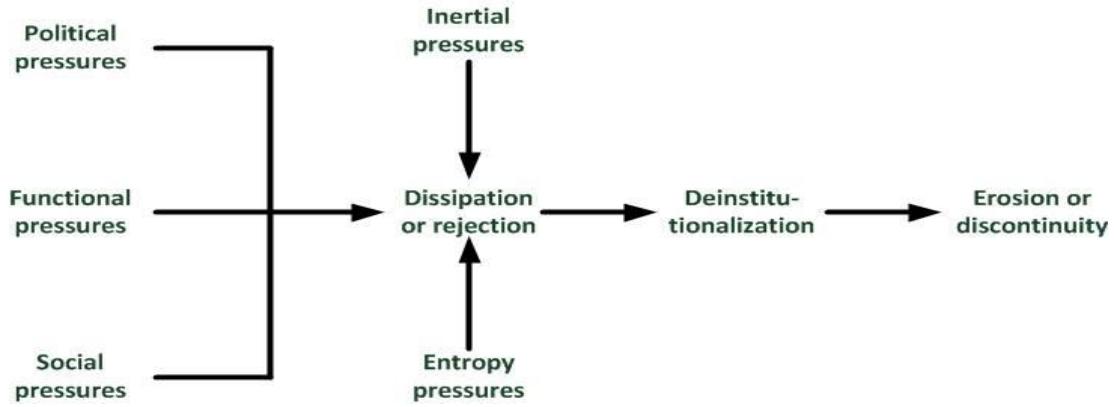


Figure 6: Process of deinstitutionalization (Oliver 1992)

The financial crisis of 2007 has caused considerable change in regulatory institutions with the aim of removing embedded working practices which create unwanted outcomes: for example, the controversial Volcker Rule within the US Dodd-Frank Act. This rule restricts financial organizations from proprietary trading (that is, trades made on their own account for their own benefit as opposed to those of their clients) and sponsorship of private funds, hedge funds and private-equity firms. Thus, previously established working practices facilitating proprietary trading and sponsorship of funds are to be discontinued. Another example is the EU's European Markets Infrastructure Regulation (EMIR) which requires that where possible, derivative contracts should be traded on exchanges or electronic trading platforms as opposed to directly traded between the buyer and seller thereby, discontinuing practices for trading certain derivative contracts outside electronic venues.

Level of Analysis	Political Pressure	Functional Pressure	Social Pressure
Organization	Mounting performance crisis	Changing economic utility	Increasing social fragmentation
	Conflicting internal	Increasing technical	Decreasing historical

	interests	specificity	continuity
Environment	Increasing innovation pressures	Increasing competition for resources	Changing institutional rules and values
	Changing external dependencies	Emerging events and data	Increasing structural disaggregation

Table 8: Pressures for deinstitutionalization (Oliver 1992)

Oliver identifies the existence of three main pressures for deinstitutionalization. These are political, functional and social. Table 8 outlines the types of pressures explored by Oliver (1992). These pressures guide the analysis of the study's findings. Oliver's analysis surmises that these pressures operate at both the environmental or field level and the intra-organisational level. Consequently, in order to empirically test Oliver's theories the study adopts both the intra-organisational and field levels as appropriate areas of analysis.

The study investigates the ways in which compliance practices are becoming eroded or discontinued as a result of large scale changes in regulatory institutions at the field level. Thus, we see institutional change at two levels at the field environmental level where legislative mandates are changing the rules enforced by regulatory bodies and at the intra-organizational level where these changes are deinstitutionalizing established working practices. Correspondingly, Oliver (1992) suggests that political, functional and social pressures to deinstitutionalise may occur at both intra-organisational and field levels.

Political pressures to change practices may result from shifts in interests or power distributions which support existing institutions. Functional pressures to deinstitutionalise practices may arise from changes to the perceived utility or the technical instrumentality of existing institutions. The third pressure identified by Oliver

is termed social pressure and relates to ‘normative fragmentation’ or a loss of cultural consensus or agreement as to meanings and interpretations attached to organizational tasks and activities. In contrast to the previous two political and functional pressures, where organizational members consciously acknowledge the need to discontinue working practices and so emphasize agency, social pressures refers to conditions under which organizations are not pro-active agents intent on abandoning an institutionalised practice and so social pressure, as a theoretical construct, is closer aligned with the ‘structuralist’ perspective.

3.3.3. Mechanisms of Institutionalization

Scott (2008) identifies regulative, normative and cultural cognitive systems as being ‘vital ingredients’ of institutions. Table 9 highlights Scott’s three ‘institutional pillars’ and relevant component elements.

	Regulative	Normative	Cultural-Cognitive
Basis of Compliance	Expedience	Social Obligation	Shared Understanding
Mechanisms	Coercive	Normative	Mimetic
Indicators	Rules Laws Sanctions	Certification Accreditation	Common beliefs Shared logics of action Isomorphism

Table 9: Mechanisms of Institutionalization (Scott 2008)

These three systems are both interdependent and also mutually reinforcing and act as pillars to support and ensure the resilience of social structures. Each of the three pillars incorporates various component elements; not least the mechanism by which each pillar supports institutional behaviours. Dimaggio and Powell’s (1983) seminal paper focuses on the mechanisms which enable institutional isomorphic change, the

process by which one unit in a population is constrained to resemble other units in the population which face the same set of environmental conditions. They identify three mechanisms which Scott includes in his typology: coercive, normative and mimetic. This perspective aligns well with Martin's (2004) view of institutions being constituent of rules, norms and cultural values.

Coercive mechanisms refer to formal and informal pressures which are applied to organizations by organizations upon which they are dependent, in this case regulatory bodies. Normative mechanisms may act to shape and remove practices through institutional configurations shaped by professional backgrounds and the expectations of key industry participants, such as clients, to adopt prescriptive practices. Mimetic mechanisms may influence practices as standard responses to uncertainty are sought, in this case through informal networks and forums for creating and sharing responses to regulatory challenges (DiMaggio and Powell 1983). Uncertainty is a key issue within post crisis regulatory compliance. Due to tight deadlines for remediation, organizations must start planning their responses to requirements before the rules are finalised by policy makers.

The previous section has highlighted how the process of deinstitutionalization often takes place around the institutionalization of a new practice. Where old institutional orders are denigrated, it does not necessarily follow that practices associated with the outmoded institutions are completely eroded or discontinued (Dacin and Dacin 2008). These theoretical perspectives raise important questions regarding the extent to which post crisis regulations will be able to completely embed appropriate new behaviours. In order to evaluate the extent to which unwanted

practices have become displaced, it is necessary to consider the mechanisms which support institutions and will be instrumental in the institutionalization process.

3.4. Summary

Figure 5 outlines the conceptual model which guides this study and utilises constructs discussed in this chapter and the previous two. Changes in the regulatory environment and the creation of new legislative institutions cause changes in compliance practices, which may succeed or fail to create desired behavioural changes. For example, the second Markets in Financial Instrument Directive (MiFID II), in its current draft form requires that organizations report trades to the market as close to real-time as is technically feasible.

Within this study, I conceptualise two types of inter-related institutions. The first type of institution, termed regulatory institutions, occurs at the organizational field level and includes the legislation and regulations which stipulate the rules enforced by regulatory bodies as well as the techniques by which they supervise financial organizations. The second type of institution identified occurs at the local intra-organizational level and refers to embedded working practices which implement regulatory institutions, termed compliance practices.

In summary, the study investigates ways in which the IMS technology inscribes and transmits regulatory institutions into compliance practices and how such systems contribute to the deinstitutionalization of pre-crisis practices and the institutionalization of post-crisis practices. The following chapter discusses how this model will be operationalised through outlining the research methodology and by describing the IMS case.

4. RESEARCH METHODOLOGY AND CASE DESCRIPTION

This chapter seeks to outline the research methodology employed and also to contextualise the IMS in order to provide the reader with an understanding of how the research study was conducted and also the IMS functionality and the environment in which it is used. Firstly, the philosophical perspective which underpins the research method and its relation to the institutionalist theoretical constructs previously reviewed are discussed. Next the research design is defined, following which data collection and analysis approaches are described. The following sections then seek to outline the IMS case and so provide an overview of the Vendor, the IMS functionality, its architecture and the complimentary services the Vendor provides. Finally, key points are summarised.

4.1. Philosophical Underpinnings

The philosophical perspective adopted, regarding the nature of knowledge, meaning and reality, acts as a foundation to support the theoretical lens and research methods which have been selected. Ontologically, this research adopts a social constructionist perspective. Correspondingly, Astley (1985) argues that studies of administrative science are socially constructed bodies of knowledge. The Oxford Dictionary of Sociology defines Social Constructivist approaches as emphasizing ‘the socially created nature of social life’ and ‘the idea that society is actively and creatively produced by human beings. They portray the world as made or invented – rather than merely given or taken for granted. Social worlds are interpretive nets woven by individuals and groups.’ (Scott and Marshall 2005 p.698). Such perspectives build on Max Weber’s view that social sciences are concerned with *Verstehen* or understanding (Crotty 1998; Weber 2009). Another strong influence on social constructionists is the

work of Alfred Schutz (1967). Schutz was interested in the ways common meanings are constructed through social interaction. He advocated the view that sociological analysis should focus on the way individuals subjectively view their environment. A further influential scholar was Husserl (1982) who argued that through a process of consciousness, which utilises concepts, ideas and images, the individual constructs meaning related to objects or phenomena. Thus, the emphasis is on the first person perspective and related experiences of the world.

Berger and Luckman (1966) provide a critical link between these works and organizational scholars (Scott 2008). They argued that, although the social world may seem to be objective, it is actually constructed through human action and interaction. Human beings are continually constructing the social world, which becomes a reality to which they must respond and interact. Individuals are born into a world already constructed by their ancestors and so it is this pre-constructed world which is taken for objective reality. Berger and Luckman termed this process institutionalization. Fundamental to their construct of institutionalization is the human ability to create symbols which can carry meaning beyond the immediate. Human beings are viewed as symbol-manipulating animals who can transmit their culture and history via semiotics and language. Through language we can externalise personal experience and make it accessible or available to others. In this way, interpretive frames are built and meanings become shared and embedded. As Berger and Kellner (1981 p.31) observe: 'Every human institution is, as it were, a sedimentation of meaning or, to vary the image, a crystallization of meanings in objective form.' Correspondingly, Berger and Luckman (1966) describe a second order of meaning belonging to institutions, namely legitimacy. This view corresponds with Martin's (2004) defining criteria of institutions

providing legitimacy. Berger and Luckman (1966 p.111) suggest that: ‘Legitimation ‘explains’ the institutional order by ascribing cognitive validity to its objectified meanings. Legitimation justifies the institutional order by giving a normative dignity to its practical imperatives.’ Such perspectives have important epistemological implications for studies investigating the management of regulation and technology, which is fundamentally about institutions, organizations, individuals, and technological artefacts.

Correspondingly, this study is guided by interpretivist approaches to social research whereby it is accepted that knowledge cannot be obtained outside of personal judgement and social construction (Daft 1983). Consequently, ‘value-free’ data cannot be obtained as the researcher may employ preconceptions to guide the process of study and interacts with the human subjects of the research altering perceptions of both parties (Walsham 1995). IS research may be considered interpretive ‘if it’s assumed that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools, and other artefacts. Interpretive research does not predefine dependent and independent variables, but focuses on the complexity of human sense making as the situation emerges (Kaplan and Maxwell 2005); it attempts to understand phenomena through the meanings that people assign to them (Boland 1985; Boland 1991; Deetz 1996; Orlikowski and Baroudi 1991).’ (Klein and Myers 1999 p.69). Furthermore, Walsham (1995) suggests that interpretive studies of IS are focused on creating an understanding of the context and process whereby information systems are both influenced by the context and also influence the context, in this study IMS and regulatory compliance for asset management firms.

4.2. Research Design

Guided by an interpretivist epistemology, a case study approach was selected as an appropriate research method given that the operating context of the organizations considered is a key factor in investigating the behaviours of the research participants. As Yin (2009 p. 4 and p. 23) notes, a case study approach is appropriate where researchers wish to ‘retain the holistic and meaningful characteristics of real-life events,’ and where ‘the boundaries between phenomenon and context are not clearly evident.’ The study has important regulatory-related contextual conditions which are specifically pertinent to the phenomena of compliance-related systems in financial organizations. Consequently, context and phenomena cannot easily be divorced from one another.

The study adopts ‘purposive sampling’, which allows researchers to ‘seek out groups, settings and individuals where... the processes being studied are most likely to occur.’ (Denzin and Lincoln 2000 p. 370). The IMS Vendor, henceforth referred to as the Vendor, was selected under the criterion of being one of the market leading providers of IMS, whose customer base included small to large firms operating globally. Data collection was conducted within the participant organizations over three phases. C.6 ceased to be a client of the IMS Vendor between phases two and three. Table 10 outlines the financial organizations selected.

Selected Financial Organizations								
	C.1	C.2	C.3	C.4	C.5	C.6	C.7	C.8
Year IMS Implemented	2000	2001	2003	2003	2002	2004	2002	2001
Asset Under Management (\$bn)	250	70	40	450	240	15	200	150
Rules	16,000	3000	1500	10,000	5,000	800	3,000	8,000
% of rules that are non-automated by the IMS	15%	6%	15%	10%	15%	unknown	20%	20%
Investor Accounts	1000+	250+	100 +	1000+	500+	80+	1000+	1000+
IMS Compliance Team Size (for Vendor's System only)	UK (8) + Global (5) CCO - Lawyer	9 globally CCO – Lawyer 3 staff near traders.	10 globally 3 staff Positioned on trading area to manage day to day issues	UK (7) + US (13) CCO - Lawyer	UK (5) + Asia (4) + US (3)	UK (2) + US (3)	UK (8) + US (4) + AP (3)	UK (10) + US (6) + AP (6)
Phase 1 2009-2010	X	X	X					
Phase 2 2010-2011	X	X	X	X	X	X	X	X
Phase 3 2012-2013	X	X	X	X	X		X	X

Table 10: Participant Financial Organizations (Data supplied by participant organizations and IMS Vendor)

Adoption of a typical case purposive sampling strategy required a search for information-rich cases which were illustrative of IMS usage in financial organizations (Patton 1990). As Symon and Cassell (2012 p.42) note: ‘Typical case purposive samples are chosen to provide an illustrative profile that is considered representative, albeit not statistically.’ Sampling criteria for selecting the Vendor’s clients focused on identifying replicable cases of IMS use (Stake 2013; Yin 2009). Thus, a multiple case (Yin 2009) or collective case (Stake 2013) method was adopted. Such an approach allows for inductive building of theory through the selection of cases which provide rich empirical descriptions of the phenomena under consideration (Eisenhardt 1989; Eisenhardt and Graebner 2007). Indeed, each of the client sites selected offered rich examples of how the IMS was implicated in complying with regulatory policy. Organizations were selected on the basis that they were using the IMS to manage comparable financial products and services and thus had a similar level of regulatory exposure, and had global operations across the UK and the USA, at the least. Specifically, the financial organizations participating used the IMS for trading equities, derivatives, fixed income and currency securities. Participating organizations were also long term adopters of the system, utilizing it for a minimum of six years at the beginning of the study. Long term adoption of the system was a necessary sampling criterion to ensure that IMS related practices were institutionalised within each organization and thereby potentially provide insight into how, post-crisis, such practices were becoming deinstitutionalized.

The combination of comparable levels of regulatory exposure, global operations and long-term IMS adoption was felt to ensure the necessary criteria to provide replicable instances of IMS use not least as the data collected addressed

similar topics of regulatory change and so allowed for cross-case comparisons (Miles and Huberman 1994). However, the study does not explicitly seek to present contrasting and comparative compliance practices adopted by different organizations for complying with specific regulatory rules. Instead the study draws from collective interpretations of experiences across the eight financial organizations to illustrate a rich tapestry of regulatory change and socio-technical issues being driven by shifts in the regulatory landscape occurring as a result of economic and organizational failures (Patton 1990). The number of cases of IMS usage (eight organizations) was deemed an appropriate number (Eisenhardt 1989). As Stake (2013p. 22) observes: ‘The benefits of a multi-case study will be limited if fewer than say, four cases are chosen, or more than ten.’ Too few cases and the ‘interactivity’ between phenomenon and context would be lost while too many cases, over ten, may create more ‘uniqueness of interactivity’ than may be manageable for one researcher, particularly one operating within the confines of a PhD.

A multi-case research design allows for both external and internal validity (Leonard-Barton 1990). External validity was achieved by adopting a multiple or collective case study approach allowing ‘literal replication’ through ‘typical case’ sampling (Patton 1990; Stake 2013; Yin 2009). This approach allowed for internal validity by allowing close inspection of the context and causes of changes in compliance practices. Internal validity was achieved by considering different empirical data sources. Scope, depth and consistency was enabled by discussing key concepts, constructs and terminology with each of the informants and triangulating the findings across primary and secondary data sources (Flick 1998;

Seale 1999). For example, interviewee references to particular areas of regulatory change were triangulated with the original regulations and industry commentary to ensure key points were fully understood and consistent across sources.

4.3. Data Collection and Analysis

A case study approach to data collection allowed for a combination of different data sources to be utilised (Yin 2009). Table 11 summarises the sources of data utilised in this research.

Overview of Data Sources		
	Data Source	Purpose
Primary Data		
Interviews with key individuals engaged in compliance practices	Representatives from: <ul style="list-style-type: none"> • IMS Vendor • UK based Financial Organizations Firms • 3rd Party Consultancies 	To provide rich interpretations of the impact of regulatory change on the socio-technical compliance environment within participant financial organizations over time.
Secondary Data		
White Papers, press releases and speeches	<ul style="list-style-type: none"> • Regulator's white papers and press releases • Speeches from key policy makers/influencers 	To provide insight into policy changes and associated motivations for changing regulatory structures.
News articles	<ul style="list-style-type: none"> • BBC • Economist • Financial Times 	To provide overview of key economic events and failures
Regulatory mandates	<ul style="list-style-type: none"> • EU Directives • US Acts of Congress • UK Regulator's Handbook 	To provide understanding of specific areas of regulatory change and associated rules
Commentary from Legal and Accounting Firms	<ul style="list-style-type: none"> • White papers • Websites 	To support understanding of the interpretation of regulatory mandates and the associated impact on organizations
Marketing Materials	<ul style="list-style-type: none"> • IMS website and marketing pamphlets • Financial organization websites and annual reports 	To provide insight into the products and services being offered by financial organizations To provide insight into the infrastructure, outsourcing and consulting services offered by the IMS Vendor
Technical manuals	<ul style="list-style-type: none"> • IMS user manuals 	To provide insight into IMS functionality and capabilities

Table 11: Data Sources

Across the participant organizations, the strategy for data collection involved interviewing a diverse range of stakeholders (Miles and Huberman 1994; Silverman 2001). Table 12 outlines the interview sources and the purpose of conducting those interviews. Individuals had many different titles and so in this table they are grouped against broad categories describing the focus of their role.

Interview Sources					
	Total No. of Interviews	Purpose Date: 2009-2013	Phase 1	Phase 2	Phase 3
IMS Vendor					
IMS Consultants (2)	5	To provide insight into different implementations and upgrades of the IMS undertaken over time	X	X	X
IMS Relationship Manager (1)	6	To provide insight into the changing business requirements of the Vendor's clients	X	X	X
Financial Organizations					
Compliance Professionals (9)	15	To provide user insight into the impacts of regulatory change on financial organizations over time	X	X	X
Trading Professionals (4)	6	To provide user insight into the impact of regulatory change on investment strategies, trading practices and supporting technologies	X	X	X
IT and Project Managers (8)	9	To provide technical insight into the impacts of regulatory change on financial organizations projects, processes, technical architectures and strategies	X	X	X
3 rd Party Consultants (2)	2	To provide insight into the management structures and practices which may enhance remediation efforts in financial organizations		X	X

Table 12: Summary of interviews

In total, forty three interviews were conducted. The majority of interviews were conducted face-to-face with seven interviews conducted over the phone.

Interviews lasted between approximately thirty minutes and two hours. Follow up questions were typically conducted over the phone. Initially, the interviews were transcribed by myself within a week of the interview in order prevent loss of depth and meaning. However, later interviews were transcribed by a third party due to time constraints imposed by full-time work. To ensure ethical practice, this person was required to sign a non-disclosure agreement. I also ensured that I received permission to record each interviewee and described how the data was to be used in this study. In total, seven hundred and twenty four pages of transcribed data was produced, see Appendix 4. Notes were also taken during the interviews to assist with the transcription process, see Appendix 6. On occasion these notes were sent to the interviewee, on request, and so had to be professionally presented.

Primary data collection was achieved through semi-structured interviews at both Vendor and Client sites. The Vendor provided rich material about the origins of the IMS and how it was changing as a result of shifts in the regulatory environment. The eight client sites gave detailed examples of how the IMS was implemented in relation to complying with regulatory changes and compliance policy. At the IMS Vendor site, senior systems consultants and the client relationship manager were interviewed. This was especially insightful as collectively they had much experience of implementing IMS and dealing with clients, post and pre crisis. Within the financial organizations, trading, compliance and systems professionals were interviewed all of whose responsibilities were intertwined with the IMS. Two third party consultants who were working on restructuring compliance practices were also interviewed.

Over the data collection period, responses to the financial crisis became more developed and demarcated as further drafts of upcoming regulations were released. As the regulations became more defined, the reactions of the system vendor and financial organizations to these changes also became more granular, particularly in phases two and three of the data collection. A semi-structured approach to data collection allows the flexibility to explore new and contemporary issues whilst ensuring important topics were covered (Kvale and Brinkmann 2009). Emphasis, however, remained on the researcher to frame what was important in understanding the behaviours, events and patterns related to the research topic (Bryman 2008). The interviews I conducted were often discursive in nature and allowed both researcher and interviewee to play a role in framing and constructing meaning. Consequently, I must acknowledge that the data obtained is not ‘value free’ as my own preconceptions guided the process of study and interaction with the research participants. However, I took care in the interview process not too try to elicit specific responses (Walsham 1995). Furthermore, semi-structured interviews have previously proved successful in providing the necessary depth to explore complex and dynamic regulatory phenomena (Tsatsou et al. 2009). The semi-structured approach allowed the flexibility to pursue new topics as the discussion evolved, and also as responses to the crisis emerged and became better defined (Kvale and Brinkmann 2009; Punch 2005). This approach also allowed the interviewees the opportunity to discuss the issues they felt to be important and meaningful. Typically, interviewees were re-contacted during transcription and analysis in order to provide clarification on key issues.

An interview guide (see Appendix 3) was designed and then refined throughout the data collection period. Interviewees were provided with a copy of the guide prior to the interviews being conducted. This was a prerequisite stipulated by the IMS Vendor, if I was to have access to their clients, and so it was important the guide looked professional and included the University logo. Questions in the guide were formulated around key theoretical constructs identified early in the study, such as the work of Scott (2008) and Oliver (1992), while other constructs were added later on as the depth of my reading increased and my familiarity with institutional concepts deepened for example, the possibility that institutions may be conflicting or contradictory was not considered initially. Other questions were formulated in relation to developments in the post-crisis regulatory landscape established through reading industry reports and materials distributed by the Regulator. I was also careful to ask respondents what were the key issues they were currently facing in relation to the IMS. In this way, the semi-structured approach allowed me to identify key, yet contemporary, issues and develop future questions around those findings, and to also triangulate interview findings against secondary data emerging from sources such as the Regulator. This approach also allowed me to reduce my own bias by allowing concepts and ideas to also come from the participants and not only through my own preconceived questions (Kvale and Brinkmann 2009). Where interviews were being conducted with numerous individuals within the same organization, questions were also derived from previous findings relating to the IMS and its use within that firm. At the end of each interview, time was allocated to reflect on the answers and refine the interview

guide where necessary. These updates were based not only on interview responses but also on developments relating to emerging regulatory responses to the crisis.

Although the interview questions were partly developed from theoretical constructs relating to institutional carriers, pressures of deinstitutionalization and mechanisms of institutionalization, as well as analysis of the post crisis regulatory landscape, it was imperative that interviewees were not confused by terms they were unfamiliar with, such as isomorphism. Use of such terms early on in the study created a level of frustration in the research participants. Examples of the types of question presented in plain English include: '*What measures, if any, has your organization taken to coordinate implementing new compliance practices globally?*' This question evoked responses which provided insight into how organizations, responding to common regulatory themes derived from the G20 agreements, are centralizing approaches and thereby creating isomorphic compliance practices across the enterprise.

The identification of changes in environmental factors, such as the introduction of new regulations were derived through analysis of secondary data such as regulations, speeches, press releases and white papers from regulatory bodies as well as industry commentary by the business press, accounting and legal professions. Secondary data was also collected from IMS manuals, financial organization's annual reports, websites, and sales and marketing literature aimed at the Vendor's clients or investors with the financial organizations. Table 12 summarises the primary and secondary data sources employed.

Data analysis was conducted through long established interpretive techniques for analysing data through the recursive identification of patterns, first through categorization and then abstraction (Gibbs 2007; Guest et al. 2012; Miles and Huberman 1994; Saldana 2009; Silverman 2001; Spiggle 1994; Symon and Cassell 2012). During the process of data analysis, primary and secondary data were closely reviewed to determine points of importance and interest. Common themes were identified and categories assigned. Thus, long interviews were simplified through the adoption of simple categories (Punch 2005). The analysis adopted a two cycle approach to coding. The first cycle adopted a ‘Descriptive Coding’ approach for summarizing segments of data. This method is appropriate for inductive studies utilizing semi-structured protocols (Saldana 2009). This approach requires the application of a content phrase to a segment of data representing a topic of inquiry, for example ‘Use of Spreadsheets, ‘Use of Templates’ and ‘Increased Compliance Costs’. The second cycle adopted a ‘Pattern Coding’ approach to identify major themes by searching for causes and explanations from the data. Such an approach builds on the first cycle of analysis and are, ‘explanatory or inferential codes, ones that identify an emergent theme, configuration or explanation. They pull together a lot of material into more meaningful and parsimonious unit of analysis’ (Miles & Huberman, 1994 p.69). Examples of such codes include ‘Standardization’, ‘Consolidation’ and ‘Harmonization’. Furthermore, Pattern coding was also guided by the theoretical constructs related to institutional carriers, pressures of deinstitutionalization and mechanism of institutionalization. Examples of coding built from theoretical constructs include ‘Coercive Mechanisms’ or ‘Mimetic Mechanisms.’ Appendix 5

outlines examples of how the data was analysed. The table provides examples of scheduled and non-scheduled interview questions, the interviewees' responses and how the responses were analysed and categorized.

The interviews conducted can be delineated into three distinct phases from 2009-2013. The first phase, from Dec 2009 - May 2010 focused on understanding the IMS and how the system was used to organize compliance practices. In this phase, pilot interviews were held with the Vendor as well as three financial organizations to aid understanding of how the system functioned and to formulate pertinent questions. The second phase from Aug 2010 - Oct 2011 and the third phase Feb 2012 – Dec 2013 built on the previous phases' findings to develop understanding of how compliance practices were being changed to meet post-crisis regulatory requirements, and to incorporate changing environmental factors such as the introduction of increased levels of regulatory supervision, and as further details of new regulations emerged. The second and third phases were predominantly conducted with the eight financial organizations with a few interviews conducted with the Vendor to understand developments in the system and related services being offered. However, as the length of data collection was extended as a result of unforeseen personal events and as other aspects of the study were unplanned, I should acknowledge that an *a posteriori* justification and rationalization contributes to my account of the research methods employed, which is often the case in such studies (Weick 1999; Weick 2002). Furthermore, in order to make the research process as transparent as possible, it is important to acknowledge that some decisions regarding the research design, data collection and analysis were consciously made prior to the first phase of data collection and others resulted from

changes in factors outside of my control as well as the emergence of new opportunities and my own judgement at the time regarding the best way to proceed. For example, the decision to use a multiple case based approach with semi-structured interviews was made early on. However, decisions regarding the number of cases to be used and who to interview were made as the research progressed. As I built trust with the Vendor and specifically their Senior Relationship Manager, who became increasingly comfortable with introducing me to his clients, further access was facilitated. Often, when asking questions in interviews the interviewee would refer me to a colleague whom they thought would be better able to answer the question. I would then subsequently contact and arrange to interview them if they were willing, which was not always. On one occasion, having sent the interview guide prior to the meeting the interviewee unexpectedly decided to bring along a colleague whom they thought better placed to answer some of the questions outlined in the guide. Thus, the number of interviews conducted and access to some of the respondents were not predefined at the outset. Furthermore, it was initially planned to conduct the interviews over a condensed period of time in two phases. However, this was not possible as the availability of participants varied and people were not able to give large chunks of their time in a short time-frame. Furthermore, my own personal circumstances changed as I moved to full-time employment and continued the PhD part-time. In addition, family sickness also delayed opportunities to carry out data collection activities. Consequently, the data collection period was extended into a third phase.

Although not initially intentional or pre-planned, a longitudinal approach allowed me to overcome common shortcomings in retrospective research designs

limited to snapshot time-series data, which may result in accidental or purposeful misrepresentation and fail to capture immediate and distant experiences (Golden 1992; Pettigrew 1990). In addition, this approach allowed time for policy makers' responses to the crises to become clearer and better defined.

Another decision made prior to the start of the data collection was the use of NVivo software, see Appendix 2. The system was adopted in the third phase of data collection. The system was used as the volume of data being produced became difficult to manage. However, while NVivo provides much useful functionality ultimately this technology was used, in this study, chiefly as a document repository and management tool. The use of NVivo's functionality for quantifying qualitative evidence through the frequency of a particular answer was not employed, as the study does not seek to equate statistical frequency with significance. During data analysis the tool was employed to manage and group sections of transcripts which belonged to codes derived during the data analysis process. However, in order to avoid striping out the context in which the data was provided, which I have since found is an established criticism of NVivo (Welsh 2002), I often ended up attaching large chunks of data to each code/node. As a consequence, I often still had the challenge of managing large documents of qualitative data anyway. Overall, the use of NVivo made the data marginally more manageable.

4.4. Methodological Reflections and Lessons Learnt

Research into the impact of regulatory change in a complex and dynamic environment posed many challenges. Firstly, it became clear from early on in the project that the Regulator would not permit me to conduct any interviews directly

with their staff. Their legal team prevent such interviews. The Regulator is concerned that any published comments on regulations and supervisory practices by their staff might be taken as guidance on how to meet compliance obligations and consequently be cited as a defence for non-compliance, by firms looking to justify inappropriate approaches. This obstacle, I found, was common not just for academic researchers but established journalists as well. When I spoke with an editor of the FT (Financial Times), who often writes on regulatory issues, he commented on having the same problem and could only get regulators to comment off the record to him. He advised that they were only willing to do so as he had developed these contacts over many years. So, for researchers who did not have such contacts or may feel that having people comment off the record is unethical (they may face disciplinary proceedings if found out) understanding the regulator's perspective, which often changes over time, can be quite challenging. This was overcome by drawing together secondary data provided by the regulator including transcripts of speeches, white papers and the FCA handbook as well as the regulations themselves.

Another challenge I faced, was to understand the regulations themselves as well as the complexities of capital markets coming, as I do, not from a legal or finance academic background. Furthermore, understanding the FCA handbook also proved quite challenging as much of the Regulator's rules and guidance are communicated in legalese. To overcome the important hurdle of making one has correctly understood and interpreted the rules and regulations and their impact on complex financial operations and products, I recommend any future researchers to take the time to explore the historical context of the why the regulations are being

introduced and to also triangulate their own understanding of rules, practices and events with comments derived from interviewing practitioners as well as documents from the Regulator (transcripts of speeches, white papers and press releases) and knowledgeable third parties such as legal and accounting firms. Thus, the need to collate and analyse secondary data and triangulate such data with primary data should not be overlooked. Legal and accounting organizations often provide their own white papers and ‘micro web sites’ dedicated to specific areas of upcoming regulatory change. In addition, the regulator as well as legal and accounting firms will often host free special events with panels and guest speakers discussing current issues. I often found that such organizations would often, but not always, be happy to have a researcher attend at little or no cost.

Finally, where complex technologies such as the IMS are being used in dynamic yet also complex operational environments, I found it very useful to understand as much about the technology as possible including its technical architecture and the business model of the vendor as well as any ‘value added’ or consulting services provided. By doing so, it becomes much clearer to understand how the technology supports the research environment and why specific changes to practice have occurred. This is the focus of following sub-sections within this chapter.

4.5. The Case Description: Contextualising the IMS

The Klein and Myers (1999 p.73) criteria for evaluating interpretive research in IS includes the ‘Principle of Contextualization which requires critical reflection of the social and historical background of the research setting, so that the

intended audience can see how the current situation under investigation emerged.'

Our introduction included a brief history of regulation in the UK and US and introduced the current regulatory landscape - see 1.4 and 1.5. However, the following section seeks to contextualise the IMS by providing a thorough background of the system and its social and technical settings. The following sections focus on providing the reader with a solid foundation to understand the complex use of the IMS and the post-crisis regulatory environment in which it functions. By drawing upon upcoming regulations and commentary on these regulations, Vendor marketing materials, interviews with IMS users and Vendor employees as well as the UK regulators' websites, a rich picture of the context under which they IMS operates is synthesised. The chapter outlines key aspects of IMS use which are drawn upon in future chapters. Consequently, the following sections are guided by the following questions:

- What is the post-crisis regulatory landscape in which the IMS operates?
- How does the IMS functionality and architecture contribute to meeting regulatory obligations?
- What are the services offered by the Vendor for managing compliance practices?

4.6. The IMS Market

In addition to the Vendor, there are essentially three categories of participants within the financial markets where the IMS operates. The first type of market participants are Investors. This category includes individuals who directly own securities, as well as financial organizations that own securities for the firm's

benefit or hold securities on behalf of others. The second category is Issuers, including corporations issuing shares in their company and corporate bonds, governments and local governments issuing bonds. The process of securitization, essentially selling future cash flows from revenue streams as bonds, means that an increasing number of firms have become Issuers. These firms' offerings are controlled through the rules or principles of a regulatory body. This control may take the form of authorising and registering offerings, as well as defining information disclosure requirements to both markets (Investors) or regulators (Hazen and Ratner 2005; Loss and Seligman 2004; Moloney 2002; Palmeter 2005).

Financial Intermediaries are the third type of market participant, and act in one form or another as intermediaries between issuers and investors. Financial Intermediaries such as investment banks will often assist companies wishing to raise capital through share offerings or corporate bonds. Financial Intermediaries offer a variety of services and financial products. This category of participants includes broker-dealers who buy and sell securities for their clients, investment advisors and investment firms such as asset management houses. Often the line between these three broad categories may become blurred; for example a Financial intermediary investing money for its own benefit or an Investment Bank which also issues shares in the bank, such as Goldman Sachs (Hazen and Ratner 2005; Loss and Seligman 2004; Moloney 2002; Palmeter 2005).

Financial Intermediaries engage in two completely distinct sub-sets of activities. The first is termed the 'Buy-side' of the business and refers to the buying and selling of securities for investment purposes (to make a profit) on the behalf of clients. Examples of such organizations are Hedge Funds, Asset Management

Houses, or Mutual Funds. The term Buy-side is used to distinguish between the other ‘sub-set’ of activities termed the ‘Sell-side.’ This area of business activity focuses on creating and servicing securities, and so includes structuring new securities’ offerings, marketing them, analysing securities performance and providing a market for them by acting as Broker-Dealers. (Jellis et al. 2009).

The Vendor’s clients include small hedge funds to large asset management houses and so may be considered under the umbrella term ‘Financial Intermediaries.’ The IMS focuses exclusively on facilitating practices around the ‘buy-side’ of the investment banking industry. However, many of the Vendor’s clients, the larger financial organizations, may engage in both buy and sell side activities. The Vendor’s clients operate in the institutional asset and fund management, hedge funds, wealth management, insurance, banking and pension markets. Organizations operating in these markets are focused on purchasing securities for investment purposes and accruing revenues through making shrewd investments, often on behalf of clients. For example, Asset Management Houses may attract clients looking to invest capital from a charity or pension fund in order to meet specific returns required by that organization (Brindley et al. 2008).

The process of investment firstly involves the creation and fulfilment of orders. These orders relate to either the buying or selling of assets, also termed securities. Thus, a Fund Manager may create orders on the behalf of Investors which are then fulfilled in the markets by Traders, often through Broker/Dealers or through direct access to the markets. Once the Trader places the order, it becomes ‘Executed’ and the process of order fulfilment or Post-trade processing begins. This process focuses on completing the underlying transaction whereby both of the

transaction's counterparties receive their respective securities or funds. Consequently, orders enter the process termed 'Clearing and Settlement'. This is often achieved through a third party or Clearing House. The 'Clearing' process requires matching the buyer's and seller's records and checking that there are no discrepancies in the trades attributes, for example in the price. Many trades are conducted manually over the phone directly between counterparties, as opposed to being conducted electronically through IT networks. Where this trading practice is utilised, the opportunity for human errors and mistakes is increased. If there are discrepancies, they are resolved between the traders and broker/dealers. The Clearing House also confirms that both counterparties are finally willing to conduct the transaction. The Settlement process involves changing records of ownership and facilitating the transfer of securities and cash. The cash is transferred to a depository. The securities are transferred to a Custodian who holds and administers the securities on behalf of their clients, for example by assisting with the collection of dividends or interest payments or calculating tax liabilities. (Hazen and Ratner 2005; Loss and Seligman 2004; Moloney 2002; Palmiter 2005).

4.7. Overview of the Investment Management System

The system's functionality allows individuals in various roles to collaborate on the purchase or selling of securities. Senior Traders/Fund Managers define orders for the selling or purchase of assets. These orders are then fulfilled by Traders in line with the parameters and tolerances stipulated within the order. Each transaction is checked against automated compliance rules. The IMS generates warnings and alerts where these rules are breached. Compliance executives monitor

rule breaches and sign off trades to ensure on-going compliance. The system also provides auditable records of transactions and how associated compliance breaches were managed.

The IMS is designed to be central to investment management operations within financial organizations. The Vendor describes the system as a, ‘control centre and information hub.’ The systems act to connect internal departments within financial organizations to external trading destinations, such as broker/dealers or directly with markets and to post trade venues to facilitate clearing and settlement. Automation of the investment process facilitates best execution², as well as integrating with accounting systems and trading counterparties to reduce errors, mitigates risk, and decrease inefficiencies’. Figure 7 highlights these connections.

² The EU’s 2004 Markets in Financial Instruments Directive (MiFID) Best Execution requirement states that: ‘*A firm must take all reasonable steps to obtain, when executing orders, the best possible result for its clients taking into account the execution factors.*’ *Execution factors are defined as, ‘price, costs, speed, likelihood of execution and settlement, size, nature or any other consideration relevant to the execution of an order.*’ FCA. 2013a. “Cobs 11.2 Best Execution.” Retrieved 26th June 2013, from <http://www.fshandbook.info/FS/html/FCA/COBS/11/2>.

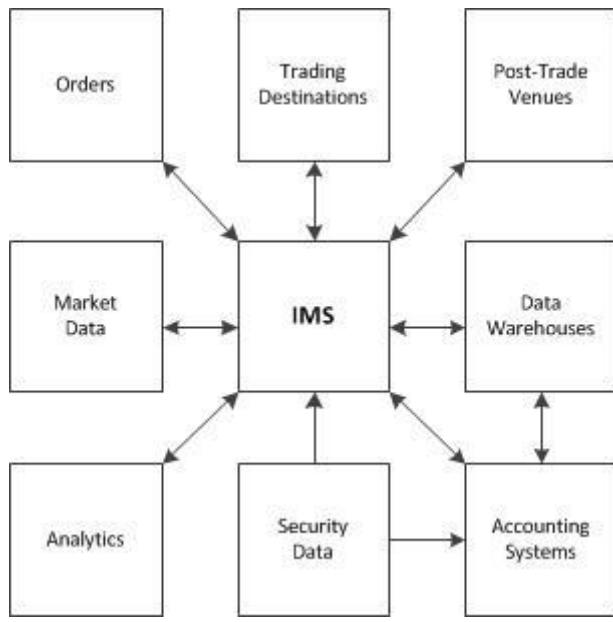


Figure 7: IMS as Control and Information Hub (developed from Vendor materials)

The IMS is modular based and is offered individually or as part of an integrated suite. These modules offer functionality around portfolio management, dealing and trading, compliance and post trade processing. The Vendor offers various additional services to compliment these modules.

4.7.1. The Vendor

The system's Vendor, which provides the case study for the research, is a well-established compliance systems solutions provider in business since the early 1980's. The Vendor provides Investment Management Systems (IMS) which can handle numerous securities and currency types to facilitate trading activities. The IMS functions across the front and middle office. The organization began as a software application and consulting firm and has developed its software and services over time. The organization is privately held and owned entirely by the firm's management. The IMS was initially developed and marketed within the US

as a system for compliance with US mandates but is now used to manage compliance in numerous geographical regions. The Vendor's headquarters are based in the USA. The firm has over three hundred and twenty clients across the globe, with a significant presence in America, Europe and Asia. Over the years the functionality of the IMS has grown from facilitating trading of equities to trading, fixed income securities, derivatives and currencies. The firm provides various services around the IMS including: implementation and consulting services, data management, connectivity to broker/dealers and electronic trading venues, application management and hosting, technical support and educational courses around the IMS.

4.7.2. The IMS Competitive Environment

The number of vendors competing with the IMS Vendor is quite limited with only a dozen or so such systems on the market. Each system has particular capabilities and associated strengths and weaknesses. The IMS Senior Relationship Manager compared the strengths and weaknesses of the IMS with its competitors:

'Our core strength, in terms of product, is equity. We're superb at equity. We're catching up on fixed income and derivatives and OTCs [derivatives], but we're not there yet. And other competitors, like [IMS Competitor 2], are better than we are on fixed income. We're better than they are in equity, but vice versa, but they have very good fixed income driven rules and processes and workflows. It gets far more complex when you're looking at bringing in price curbs for market prices and you're looking to extrapolate what the future price is going to be for an OTC [derivative], to get the fair value. It just goes to a, devilish, depth of complexity and

we can do a lot of this stuff, but not as well as say [IMS Competitor 1]. You've got the Greek's the Alphas, and different measurements which are used for derivatives, to work out yields and exposures and fund managers want all this to try and help them make their decisions. And we can't generate those at the moment. We can bring them in, but at real-time, we are still a year away from providing that. So what a fixed income house would say is, 'Yes, [IMS Vendor's] very good, but actually I need to have [IMS Competitor 1], because it's cheaper or [IMS Competitor 2], because they provide a better outsourced software as a solution service.' And don't get me wrong, [IMS Competitor 2], they charge millions a year for their product. You can look on the Internet and you can find out the pricing for [IMS Competitor 1]. They're extremely open on how much they charge per user, full stop and it's a lot cheaper than [IMS Vendor] is. Except [IMS Competitor 1] have 20 people in the company. [IMS Vendor] has got 500. And so, in terms of a system that is used by a company that's located in one city, it works. If it's going to be a global for example [C.3] or [C.5], there's no way that you can have [IMS Competitor 1] to be used as an enterprise solution, because it just hasn't had the development. It hasn't had the involvement. It hasn't had the investment. I mean [IMS Vendor] invests about \$50 million a year in product development, which is about as much [IMS Competitor 1], gets in a year. The problem is, [IMS Competitor 1] is good to look at, a great look. It's, dare I say it, a pleasure to work with and the problem with [IMS Vendor] is the big clients are using older versions and for them to upgrade to a new version, it's effectively a big project. And it can cost, you know hundreds of thousands of pounds, which they confuse with the price of a system like [IMS Competitor 1], which costs that for a license. And the

implementation is seen to be cheaper, because they don't utilise their own internal professional services, they bring people off the street to do it.'

The Vendor's Senior Relationship Manager also highlighted how important it was that the IMS system is able to integrate with the adopting organization's existing systems. Key to this is the adoption of widely applied technological standards and third party technologies such as databases:

'What wins business isn't just can-do compliance, it's also how it integrates, how the workflow would impact and influence existing workflows, and how it will integrate with other database systems, and so on and so forth. So you've got just compliance systems out there which have sold and are being replaced by [IMS Vendor], not because they are poor systems; it's because they don't integrate with the workflow and data'

An IMS Consultant commented on how the amount of resources the Vendor spends on research and development has, in his opinion, provided the Vendor with an advantage:

'All of these products have a limited shelf life unless they're constantly changing. R and D, it kind of comes out of not only knowing what your clients want, but also what you need as a business to be able to survive in a very competitive market. [IMS Competitor 3], is finished. Their investment into R and D is just fractional. I mean [IMS Vendor] is like £30 million a year into R and D which is as much as some companies make. That's a huge amount there just isn't matched at all by [IMS Competitor 3]. So whilst in the beginning [IMS Competitor 3], would bring a

new version out we would trump them and they would bring out another and trump us in particular areas, but now they've just not got the critical mass.'

4.7.3. Portfolio Management

The portfolio management component of the IMS is chiefly used by managers in charge of investment portfolios. These managers will define the investment strategy for the portfolio to meet the investment criteria of their clients. Such individuals include pension fund, hedge fund and asset managers. The IMS enables managers to create and implement investment strategies and maintain control over their holdings. This is chiefly achieved through the system's central work space termed the 'Workbench'. The Workbench provides investment managers with tools to assist with formulating investment strategies. The graphical user interface of the Workbench is designed to be similar to an Excel spread sheet and allows users to 'drill-down' to further levels of detail as required. The module brings all the current holdings within a portfolio and current orders into a single workspace, thereby allowing investment managers to manage groups of portfolios and also to track orders being fulfilled by the trading desk.

An integral part of the Workbench's functionality is its ability to allow managers to perform 'What-if' analysis. This aspect of the system allows managers to analyse their funds or positions, pre-trade, and asses the implications of possible future scenarios. In addition, the Workbench allows managers to bring in numbers relating to risk calculations and the financial performance of assets held and to rebase the portfolio against a particular index, model or benchmark. The IMS can

then calculate what to buy, what to sell and what the compliance implications of these potential trades are.

A key element of ‘What-if’ analysis is the ability to benchmark the existing portfolio against models constructed internally or provided by the Vendor. A senior trader in C.4 described using a benchmark provided by the Vendor:

‘Okay, you’ve got your benchmark, something against which you want to model a fund. So you’ve got say for example, a FTSE 100 benchmark, which contains all the securities within the FTSE 100 and there are yields and values associated with that information. So what [the Vendor] provides is a complete FTSE 100 benchmark as a single source file, that then opens out all the securities within the FTSE 100. So rather than us having to try piece together what’s in the FTSE 100, the [Vendor] would do it for you’

Once the investment manager has performed the analysis required and is confident that the strategy adopted is correct, the IMS will generate orders and communicate them to the trading desk. These orders will then be worked on by traders. The Workbench also crucially allows the investment manager to understand the implications of benchmarking on the portfolio’s compliance position. The IMS Senior Relationship Manager described how the Workbench functionality provides the Investment Manager, with the comfort that their adjustments to the portfolio will not cause compliance breaches:

‘...when you’re doing the modelling, when you’re in Workbench, you say, ‘Here’s my portfolio, here is the benchmark against which I want to model, firstly does the benchmark break any concentration tests?’ In other words the benchmark says

'own 4% of something' and the compliance rules says 'don't,' So before even thinking about sending the orders to the trading desk and saying work these orders,' the fund manager can run compliance on the proposed changes to the portfolios, the new orders. They can then tweak and tune it and then push something through which as of half past seven in the morning [for example] works. It's basically a way of giving a degree of confidence to the fund manager that what he's looking at, at that moment in time, can be tuned and tweaked so that none of the orders will breach any compliance criteria.'

This type of compliance checking is known as pre-trade, as it occurs before the orders have been fulfilled by the traders, and so is hypothetical. It is also worth noting that when the investment manager performs the pre-trade compliance check, the proposed changes may be compliant at that point in time but that by the time the orders are fulfilled, movements in the markets, such as the value of an equity increasing or decreasing, may cause that order to be non-compliant by the time it comes to be executed. Thus, orders may have to be further '*tuned and tweaked*' at the time of execution and so pre-trade compliance testing can only provide investment managers with a broad sense of comfort that their alterations are compliant.

In contrast, post-trade compliance testing refers to checking compliance limits against current holdings. As the name suggests, this type of trade occurs after the order has been conducted and thus tests against existing holdings. Post-trade compliance testing provides the organization with its actual compliance position, so post-trade compliance checking is not hypothetical.

Once the potential orders have been checked against appropriate benchmarks and the pre-trade analysis is complete, the orders are sent to the trader's to be fulfilled. An IMS consultant summarized this process:

'So in the Workbench you are able to basically look at, for example, your funds or your positions, your value with the concentrations, whatever you want to see in here, you can always bring in the performance measurement numbers and the risk numbers. And so this is predominantly the 'What-If management tool. So if I have my portfolio and I want to rebase it against a particular model or a particular benchmark you can do that in there, it will then calculate what you have to buy, what you have to sell if you want particular bonds to stay neutral, your exposure to durations or whatever it is. It can work out where you sit and you can then say, you know what? I don't want to do this and you can cancel it and nothing's been saved, it's all lost in the memory. You could even run compliance against it and check at this moment in time, does it all fit and meet compliance? and say, 'Well, this will fail compliance, therefore I can reduce or change that particular stock,' and so the tool allows you to model, to look at and to make a decision on what you want to buy and then having convinced yourself you're there you press a button, you say, 'Buy.' It will then either, depending how you've configured [the Workflows], send those orders to the [Traders] blotter where you then still see each of those orders and monitor them. Then the trader can go away, take the orders and progress the transaction. The trader will work with the price parameters you stipulated, with the broker that you may have selected, the trader will push it through and complete the transaction, the whole lot. Or, if you are one of the smaller companies, you can be

both fund manager and trader. You've got your different hat on and so you can create orders and fulfil them.'

The process of order fulfilment may take many days, or even weeks if the security is particularly illiquid. Furthermore, orders may be conducted over extended periods of time to prevent disclosing to the markets who the transaction's counterparties are and what their investment strategy might be. The number of securities involved may also be high. A systems manager observed that he had seen orders which took several weeks and involved half a million different equities.

4.7.4. Trading

The next significant element of the IMS is the component which facilitates dealing and trading. This element of the IMS consists of two component systems: an Order Management System (OMS) and an Execution Management System (EMS). OMS, '...supports the investment management and trading process and ties together the portfolio manager, trader, back office and compliance department through a common solution.'(Kanter 2009 p.1) and is defined as: 'An electronic system developed to execute securities orders in an efficient and cost-effective manner. Brokers and dealers use OMS when filling orders for various types of securities and are able to track the progress of each order throughout the system.' (Investopedia 2013 p.1). The OMS incorporated into the IMS facilitates configurable workflows for trading and customizable interfaces which allow different traders and compliance executives to collaborate on order fulfilment. A key selling point of the IMS is its ability to support different asset classes such as equities, fixed income, derivatives, options, futures and currencies. The Vendor's

Senior Relationship Manager described how developing the OMS is a key focus of their research and development function:

'Out of 85 development teams, there are 20 teams working on nothing other than the OMS. So the focus is trying to make sure what we're doing for workflows are relevant and that new asset types, mainly derivatives, can be integrated.'

The EMS provides 'functionality such as smart order routing, connectivity to multiple and a large array of trading venues, market data and real-time pricing, pre-trade transaction cost analysis and algorithms' (Kanter 2009 p.1). EMS are often broker owned, although not in this case as the IMS consists of both OMS and EMS. The IMS Senior Relationship Manager described how the Vendor's strategy is to provide a complete solution to compete with its competitors:

' You've got [Vendor CEO] who will say, if the product was just to be this OMS then there's a shelf life, because people want more and more products and you get more and more products such as [Vendor Competitor 2], who are a broker providing EMS and OMS. You've got the integration between [Vendor Competitor 3], (OMS) and [Vendor Competitor 4], (EMS) and clearly where does [IMS Vendor] sit? And so what we have done is said, right, we've gone from being an onion, where you have layers upon layers, you have your compliance, then your equity, then your derivatives and so on, to being a quiche or a pizza, where you've got your OMS, your EMS, your compliance, your performance measurement, your risk, your analytics and it's different pieces, different sizes of bowl.'

The central work space of this component is known as the 'Blotter' which is a real time and configurable application that consolidates all dealing activity and

allows traders to manage and execute incoming orders from multiple investment managers. The Blotter allows traders to merge, split, cancel, replace and clone orders, as well as calculating the trade execution and settlements amounts in multiple currencies. An IMS consultant described the interaction between the OMS, EMS, Blotter and the Workbench:

'What you are looking at there is the blotter that is the OMS piece. It's basically where you say I want to do the following transaction for these accounts. I want to buy or sell, in this case it's Vodafone, across six accounts and so that happens in the OMS. The EMS piece actually sits inside this so you can, from the same single stream, look at different aspects of a market in the Blotter, but you've also got bits that the EMS brought through which is your prices.'

The workflow functionality allows the creation of personal trading environments whereby multiple customised Blotters can be set up displaying preferred columns, sorting and grouping columns by user's preference and mapping personal icons to access data or systems in a single click. Analytics can be customised by traders, as can real-time reports and graphs. The real-time aspect of the system is enabled by third party data feeds which provide information on changing markets from organizations such as Bloomberg or Reuters. Traders may incorporate elements of real-time market data to perform custom calculations within the Blotter, to provide visual representations of market changes and also to provide analytics on existing orders and current positions. For example, customised fields may display the order's size as a percentage of the current market volume or the percentage change of an assets price throughout the day. Table 13 summarizes the wide spectrum of data types utilised by the IMS.

Data Type	User	Purpose
Indexing and Benchmarking	Investment Managers Traders Investment Performance Analyst Compliance Executives	Portfolio Modelling and Rebalancing Portfolio Performance Measuring Ensure Portfolios Comply with Benchmarks
Referencing Data for Different Securities (e.g. Ratings and Classifications)	Investment Managers Traders Investment Performance Analyst Compliance Executives	Trading Accuracy Access to New Financial Securities Current Securities Ratings and Classifications
Pricing (Both real-time and snapshot)	Investment Managers Investment Performance Analyst Compliance Executives	Portfolio Modelling and Rebalancing End-of-day Compliance Testing (Batch) Portfolio Valuation Asses Liquidity and Volatility
Issuer Details	Compliance Executives	Managed Risk and Exposure
Operational Data (e.g. logs on systems and network performance)	IT and Operations Managers	Systems Administration

Table 13: Types of Data Required by the IMS (developed from Vendor Materials)

In order to support the MiFID ‘Best Execution’ requirement and to enable analysis of trading costs, the OMS can automatically take a snapshot of market price and trading costs to further support the ‘Best Execution’ requirement. The OMS allows traders to route orders to preferred trading destinations through embedded access to key brokers and the Vendor’s proprietary trading network. Traders may also route multiple, orders and ‘drop’ them into preferred execution

venues. The OMS facilitates the solicitation, calculation, selection and tracking of brokerage fees and commissions. Furthermore, the system allows Traders to ‘slice’ orders and send each part to a different trading venue. The OMS allows traders to assign ‘broker reason codes’ to orders. These codes map to common reasons for selecting specific brokerages and so facilitate the future demonstration of meeting ‘best execution’ requirements.

The OMS further facilitates the order execution process through algorithmic trading which allows brokers to embed specific algorithms into the system. An IMS consultant outlined how algorithmic trading functions:

Interviewer:

‘Okay. And how does the system facilitate algorithmic trading?’

Respondent:

Well, we provide a hook and so different brokers will provide the algorithms that they want to run on trades, and ... there’s a logic within how you want to try and go to the market, so you don’t disclose who you are or what you’re doing and those algorithms are written by the broker and they then get linked in to the [IMS]. And so you can press a particular button and it will then process an order based upon an algorithm that’s written by Bank of New York or whomever.

Interviewer:

So effectively, instead of having the trader monitoring the markets for that quantity and price, you can set it to do it automatically?

Respondent:

Yes. This is what has caused problems in the exchanges, whereby the algorithm is looking for volatility and when the process of trading is automatic. With high-frequency-trading, what it's going to do is then say, 'Right, here are some trades. I will sell them.' And it gets into a recursive loop, because what it then does is it sees the volume changing, based upon what it's done, and it continues selling, selling, selling and you know, this is what has caused all sorts of crashes in the Indian market and the US market.

Interviewer:

I see. Okay. So when you were saying about how the [IMS] functions, it's not high frequency trades then?

Respondent:

No, it's not, but it still runs algorithms in a similar way, but it's not a black box, which is just being allowed to run amok. It's a target quantity going through a particular algorithm and that algorithm will complete. So if the algorithm messes up, it's only going to mess up on, you know, half a million pounds or twenty thousand units of a particular stock'.

The ‘Workflow Monitor’ application within the OMS allows system events to be tracked or queried. The ‘Workflow Monitor’ triggers user defined alerts to assist senior compliance managers with overseeing the Trading process. A senior compliance manager, in C. 2, described how this application functions,

'Well, it's was implemented a few years ago, but Workflow Monitor is something the system does and if certain criteria are met, it enables you to then flag, to a screen, and provides a live pop-up on your screen when these alerts get deleted if they are resolved. So, if a trader receives a trade onto their blotter but doesn't do anything, as in its fallen off the list or it's forgotten about or their away from their desk and... If it stays there and is untouched for more than an hour then we've potentially got issues with the timely execution of our clients' orders. And so there's a pop-up... on my screen saying, there are however many orders that haven't been touched for an hour and I can click on a link and say, oh right, well okay the reason that hasn't been touched, is because they are US equity trade... it's ten o'clock in the morning, the US wouldn't open until two, don't worry about it. Or, I could say, it's a UK equity trade that was sent through at half nine, it's now quarter to eleven, why hasn't anyone done anything with it? And make a phone call to the dealer room to say, 'What's going on? Why haven't you picked up this order? What's happening is there a valid reason?' Our old way of looking at that was basically getting order histories from [IMS] and then looking at the timing and saying, there's that and that. Oh yeah and that one took more than an hour. So it' was kind of an old audit process and now we've got a system that tells us when anything gets delayed. It's moving from sample based testing to exception based testing.'

The Blotter also integrates with the compliance monitoring component of the IMS. This functionality allows traders to run compliance checks from the Blotter before executing orders and thereby reducing costs associated with managing compliance breaches. Traders can drill down to view the variables effecting compliance calculations such as details of the asset, rules stipulated by the

client and current positions being held. This is termed ‘pre-execution’ compliance testing.

4.7.5. Compliance

The third component of the IMS is the compliance function which is integral to the system’s ability to meet compliance requirements. Its purpose is to provide a real-time centralised view of the organization’s investment operations. At the heart of the IMS are the automated compliance rules. These rules are derived from regulations and legal mandates. Figure 8 highlights the relationship between regulatory legislation, regulatory rules and automated rules within the IMS.

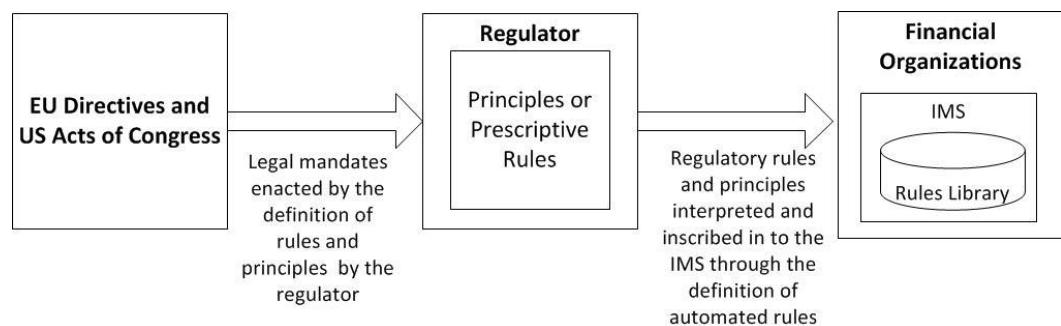


Figure 8: Legislation, Regulatory Rules and Automated Rules: Source: author

Once the EU Directives or Acts of US Congress have been passed, they are interpreted by the home state’s regulatory body. In the UK, this is currently the FCA, whilst the US has numerous regulatory bodies including the SEC and the CFTC. Based on legislation, these regulatory bodies define and publish specific rules and principles to which an organization operating under the jurisdiction of that regulatory body must adhere. Within the UK, these regulatory rules were collated within the FSA’s Handbook which outlines all the requirements for firms over

which it has jurisdiction. These rules are now held within the FCA Handbook. The EU Directives or Acts of Congress provide the regulators with the powers to define and enforce rules. It is these regulatory rules which are interpreted and inscribed in the IMS as automated rules. The regulations are interpreted, translated and codified by compliance executives and systems experts into ‘automated compliance rules’, which are then inscribed into the IMS and applied on a transaction-by-transaction basis. That is, each transaction must be compliant with the relevant regulatory requirements and therefore, the corresponding automated rules are run against each transaction. This occurs prior to the order being fulfilled and after the transaction to see if changing market positions have altered compliance positions.

The types of regulations which are encoded in the IMS automated rules are quantitative in nature. As a senior compliance professional, in C.2, noted: *‘we’re very much, sort of coders of quantitative restrictions for investment compliance’*. Typically these ‘quantitative restrictions’ or calculations put limits on the numbers of securities traders may buy or sell.

A compliance manager, in C.3, gave an example of how the IMS applies regulatory rules to financial holdings and how the system provides an aggregated view of compliance positions:

‘So there may be many different issuers for a single security. When you’re applying regulations... and for example a compliance rule has got to say no more than five percent in a particular issuer, but you need to know, not just who is the issuer for that security. But when you have a unit trust or a collective fund where that then contains other securities, you want to look through and discover in the unit trust,

which securities there are and who are the issuers for those securities. And then you can say, 'Well, if I've got Coca Cola in my unit trust and I also own Coca Cola as a stock, then what's my combined exposure to this issuer in Coca Cola and is it more than five percent?'

Both US and EU Regulators require organizations to set quantitative limits on specific types of transactions, calculate exposures to certain securities, calculate risk values, and perform pre and post-trade analysis on compliance positions and leveraging limits. The IMS Senior Relationship Manager provided an example of a specific regulation which may be inscribed within the IMS:

'And we now need to be compliant with UCITS which are these regulatory compliance rules which were meant to allow you to very quickly and easily look at buying Swaps or particular variations and make sure you that comply and firms can say that you are UCITS III or UCITS IV compliant and for that you have to have all these regulatory rules wrapped into your compliance checks.'

From a systems perspective, the ability to accurately access, monitor and structure transaction related information is essential to meet regulatory requirements. The post-crisis regulations focus on transactions, asset types, levels of capital buffers and associated limits, concentrations and exposures which organizations must observe - see 1.5.2. These mandates require systems to impose structured rules on the financial organization's activities to ensure compliance. For example, the post-crisis EU Alternative Investment Fund Managers Directive of 2011 (AIFMD) requires that a private equity or hedge fund which holds controlling or voting shares in a company must make public the identity of the fund manager,

as well as its policies for managing communications and conflicts between the fund and the company. In order to comply with these requirements it is essential that the Fund has appropriate systems in place, such as the IMS, to monitor the number of voting shares held against the number required to exercise ‘control’ over the firm.

As well as regulatory rules, the system also allows rules based on requirements set by the Investor. For example, The Church of England as a charity may wish to invest in the markets in order to generate capital flows to maintain its estates. However, the Church may stipulate that for religious reasons they do not want to invest in companies which are engaged in the defence/arms industry or in the tobacco industry. Consequently, automated rules would be defined for that portfolio to ensure that if a trader attempted to buy shares in British Aerospace the IMS would prevent it. An IMS consultant highlighted the difference between regulatory and client rules:

‘So regulatory [rules], for example, you can’t own more than 50% of a particular bond without having disclosure to the [Regulator], the client mandate is we are a green company and we therefore do not want to buy anything from Shell’.

In addition, automated rules may be created to enforce compliance with internal policies. For example, a senior manager may wish to prevent the purchase of assets which are deemed too risky. An IMS consultant gave the following example:

‘You’ve also got, again with [automated] rules; you can say I don’t want to buy any of the following. So you can block - you may say, looking at the underlying security, it’s too risky. If I am holding an option on a particular bond and that option happens to be the Maxwell Mirror Newspaper Group then if I’m buying some of

this, which is actually underlined by that security then management may want to block that, because they have no faith in where the Maxwell Brothers are going to push their particular bonds through.'

However, although the IMS can also provide compliance with internal policies and individual client requirements, the focus of this study is on automated rules derived from regulations.

The IMS allows financial organizations to define who is notified when alerts and warnings are generated and compliance breaches occur. Compliance managers are provided with a 'Dashboard' which contains relevant information relating to a compliance breach or warnings and drill down to provide further details on the holding. A trader, in C.1, described how the system provides alerts and warnings if automated rules are breached and how they may be dealt with:

[A Regulation may]... say if I can't have a concentration of IBM more than 3% of my total portfolio market value. So the automated rules state that, if I am at 2.5% then let me know. The Compliance Team may not block the order from going through but they have to be told and may decide no, I want someone to authorise that I can buy the additional or may say no, no it's just a warning. So you've got the hard and the soft warnings for those types of things.

As a result of checks against the compliance rules, the system generates alerts and warnings which are forwarded to the trader and, if necessary, the compliance team. Traders can then acknowledge the alert or warning, notify others upon correction of the problem, request higher-level approval, or override the alert or warning as appropriate. Breaches are often dealt with by selling securities to

ensure limits and concentrations return to acceptable levels. The IMS also creates alerts if trades are not conducted or corrected in a reasonable time frame. A senior systems manager, in C.1, described the process, by which breaches may be handled:

'So, the compliance officer, he will then be contacted and the trader may say, 'You know, the system's wrong, pass it. There is money coming in that I can confirm.' Or the compliance officer sees the report each day of all the alerts and warnings, and then he tells the Fund Manager or he himself talks to the traders and says, 'This is in breach, you must correct it and this is what you've got to do.''

The IMS allows both compliance executives and traders to drill down to view the compliance rules, trade information, security details, positions, and trades contributing to the compliance breach.

The quantity of automated rules may be vast. One financial organization participating in this study had upwards of sixteen thousand rules. The Senior Relationship Manager for the IMS vendor suggested:

'Someone like [Financial Organization C.1] has got up to 10,000 compliance rules which run every single day and these rules can run at the point at which the fund manager says 'I want to buy' which are the pre-trade compliance rules. It can run once the trader has bought something so you can also have additional checks made to make sure, which are the post-trade. You've also got the overnight, the batch process, which starts off all over again and recalculates all the numbers to make sure that what you've got is compliant and does fall within the parameters and tolerances that you've got.'

The number of checks required makes it impossible for such a system to operate manually. An overnight batch process is required to check that the current holdings do not breach compliance based on the closing market prices. This is termed ‘end-of-day compliance testing’. Furthermore, as orders may take long periods of time it is possible that by the time orders are fulfilled the conditions under which the trade was deemed compliant in pre-trade checking have changed. This may be through market movements in price or due to other orders being fulfilled, meaning that the total number held of a specific asset has increased. As result of these changes and the order being fulfilled, it is now possible that the positions being held create breaches in compliance requirements. Consequently, end-of-day compliance checking is essential to ensure the firm meets regulatory requirements on an on-going basis.

A compliance manager in C.5 described the impracticality of using a manual system to check all rules and how before the IMS was introduced, only random checks were conducted:

'The way it was done before, it was one bloke would check the odd rule to make sure that it was within breach but there was absolutely no way you could check each and every compliance condition against transactions, unless you've got teams of hundreds of people because quite simply the volumes are massive to calculate the numbers, look at the concentrations or... the easy ones are to say you cannot buy tobacco. The hard ones are to work out the concentrations or to look at and incorporate any user-defined dynamic denominator in looking at what a number should be. I mean you just can't do that unless you've got a lot of gap between end of day, close of business at 4.30 and half past seven kick-off the next day.'

The automated rules are stored in a database known as the ‘rules library’.

The IMS provides an interface for designing and building rules in-house. In addition, the IMS Vendor provides example standard rule libraries to assist with rule creation. These pre-written ‘automated compliance rules are based on key requirements for compliance with regulatory bodies in different geographies, such as the UK. In addition, the Vendor may release rule templates for complying with new regulatory directives. However, due to the different ways financial organizations may classify assets and customise the IMS, the application of these pre-written rules may be problematic. An IMS consultant described the issue:

‘We provide out of the box hundreds upon hundreds of compliance rules. The problem is the system has to be mapped to make use of those rules, so you may say right I want to trade a particular bond and the system comes out and says here’s a corporate bond, here’s a government bond. You may have created your own bond type for whatever reason you’ve got and therefore our standard rules do not map to yours. You’ve therefore got to go and add to the list of section criteria in the compliance statement bits which you’ve done or bits which you’ve changed. So yes, rules come out of the box, regulatory rule, UCITS rules, the standard rules or examples of how to do concentration tests, examples of how to do an exclusion rule, an example of how to do a look-through rule. What we’ve now actually got in Version [X] is you can write your own rules, you can do whatever it is you want and bed and map it into the product. You own it, you maintain it, you manage it but yes, the system does have those templates or does have that flexibility to allow you to utilise what comes out of the box.

The Vendor currently provides over one thousand seven hundred pre-written compliance rules across thirty-five regulatory bodies in twenty countries.

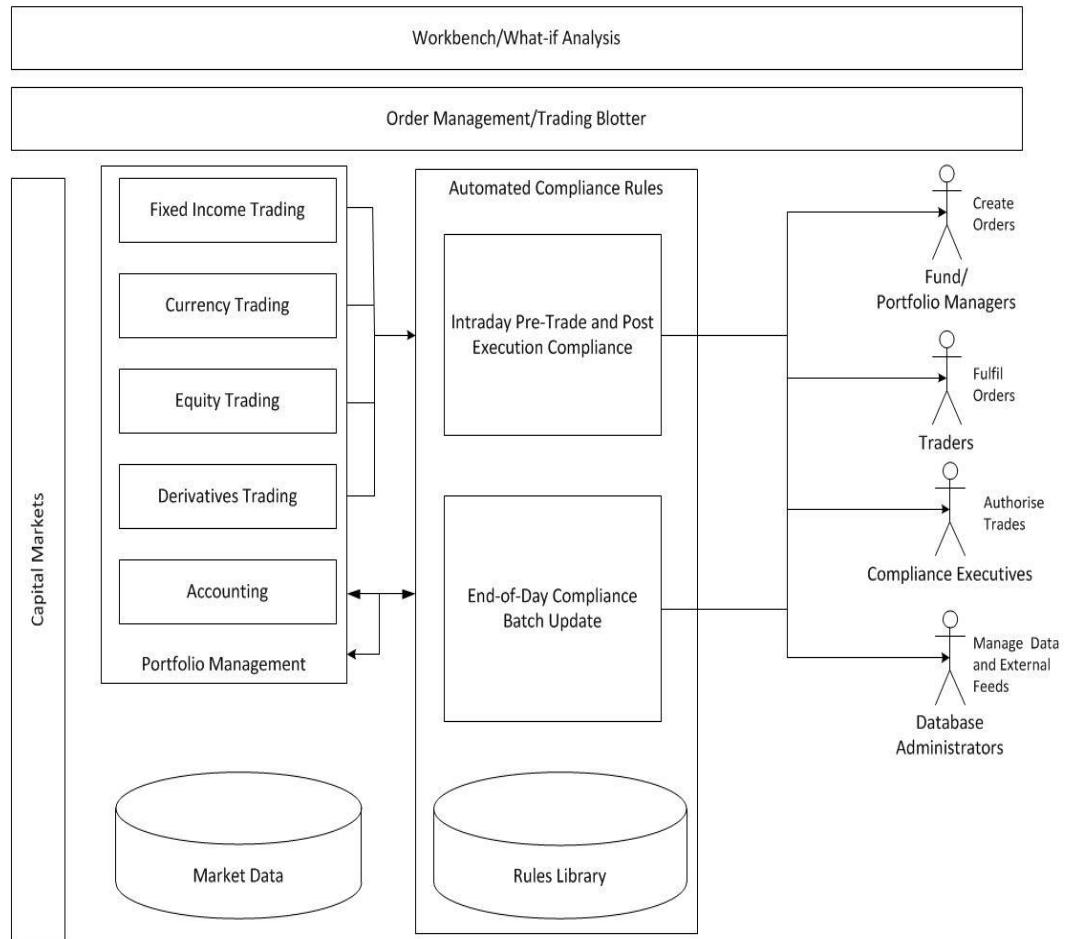


Figure 9: Overview of IMS Users and Functionality (developed from Vendor Materials)

Figure 9 provides an overview of the IMS and the interaction between the IMS users and functionality.

4.7.6. Post Trade Processing

The IMS Post-trade processing component is a hub connecting dealers, brokers, operations departments and custodians to facilitate the clearing and settlement process. This component ensures that for each transaction portfolio managers, traders, compliance and operations personal have the same real-time

view of post-trade processing activities, thus, enabling the reduction of errors and ‘fast forwarding’ the settlement process. Figure 10 outlines a typical Post-trade Processing workflow.

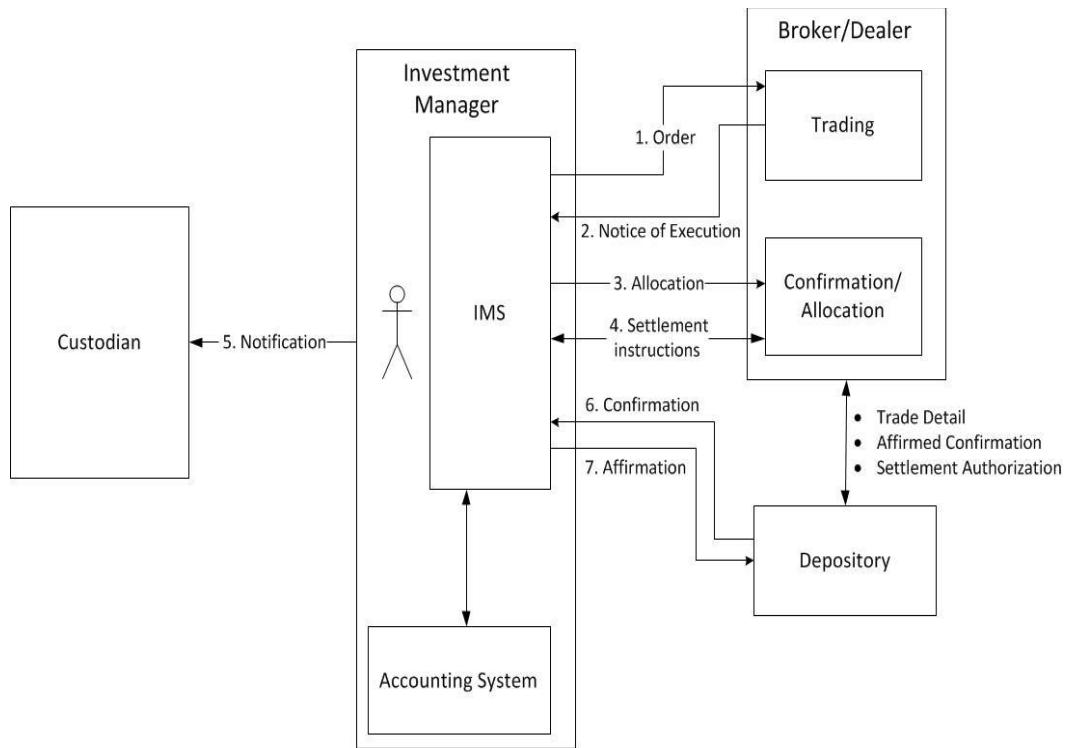


Figure 10: Post-Trade Processing (developed from Vendor Materials)

After the order (1) is placed through the IMS with the Broker/Dealer a ‘Notice of Execution’ (2) is sent back to the system. Frequently, Investment Managers will block large trades across several portfolios which may then have to be allocated (3) to numerous Broker/Dealers, following which the IMS and Dealer/Broker will exchange settlement instructions (4). At this point the trade attributes such as price and quantity for the buyer and seller are matched and any exceptions are raised. The Depository holding the funds is provided the details of the trade, affirmation that the trades have been confirmed and authorization for the

settlement of the transaction. The next stage of the process is to communicate the change of ownership to the Custodian (5). The IMS then receives confirmation from the Depository of the trade's details. Finally, the IMS provides affirmation (6) of the trade to the Depository.

The IMS routes orders and order allocations to the required counterparties and automates the trade attribute matching process. By allowing portfolio managers, traders, and compliance personnel access to the Blotter, matching exceptions to trade attributes can be centrally managed. A key innovation is the IMS ability to communicate automatically with the Brokers/Dealers, Depositories, and Custodians, thus providing 'straight through processing' (STP) which ideally achieves completion of the Clearing and Settlement process within the day. From a regulatory perspective, the IMS ability to automatically route trades to preferred Broker/Dealers facilitates the implementation of the Best Execution requirement.

4.7.7. Proprietary Network

The Vendor provides a proprietary network for connecting to the '*global institutional investment community*'. This network effectively connects IMS users electronically with Broker/Dealers or direct to Stock Exchanges and other electronic trading venues. The integration of this network allows the IMS to route orders to various different trading venues, for equity, fixed income and foreign exchange securities. Due to the dynamic nature of capital markets, a key requirement for systems which facilitate trading activities is that delays in receiving market updates and processing orders should be minimized, termed low-latency. The Vendor describes its proprietary network as, '*reliable, secure and scalable*

providing low-latency connectivity'. The proprietary network architecture uses the Financial Information Exchange (FIX) Protocol which stipulates a specification for electronic trading messages.

4.7.8. Technological Architecture

The IMS adopts a 3 tier service-orientated architecture. This architecture was selected by the Vendor as providing a number of key benefits. Firstly, an architecture derived from different service components provides the scalability required to keep the system current with changing complex financial products and shifts in the regulatory landscape. In addition, the architecture supports organizations operating multi-site global operations. The Vendor's strategy is to incorporate established technologies and industry standards within the system.

Table 14 summarises the technologies and standards utilised by the Vendor. However, the Senior Relationship Manager gave an example of how the Vendor was selective about continuing to support certain standards stating that: '*We no longer support[s] Sybase as Sybase has stopped developing but now Sequel Servers and Oracle are the two main tools that we support.*'

Technology/Standard	Function
Microsoft.NET using C#	Front End Graphical User Interface (Presentation Tier)
Java 2 Platform Enterprise Edition (J2EE)	Server Side Processing (Service Tier)
JDBC	Database connectivity
SQL	Database Access

Oracle, Microsoft SQL Server, Sybase	Databases (Database Tier)
Intra-organizational soft Windows, Sun Solaris (Unix), Red Hat Linux	Operating Platforms
.XML, .CSV	File Formats
Simple Object Access Protocol (SOAP)	Protocol for communicating across Presentation and Service Tier
Business Object's Crystal Reports	Third Party Embedded Report Writer
IBM WebSphere, MQ TIBCO Rendezvous, Microsoft Messaging Queuing, SonicMQ, Open JMS. Java Messaging Services	Web Services
ISO 15022	Messaging standard for trade settlement and payments
Financial Information eXchange (FIX) Protocol	Messaging standard for trades
Omgeo OASYS, Omgeo CTM	Interfaces to Post-trade Confirmation/Affirmation Venues

Table 14: Technologies and Data Standards Utilised by the Vendor (developed from Vendor Materials)

The architecture adopted by the IMS is a 3 Tier system incorporating a Presentation Tier, a Service Tier and a Database Tier. However, the Vendor terms this architecture ‘Multi-tier’ as systems adopters may deploy any number of servers for individual services and also to achieve scalability and load balancing. Furthermore, smaller organizations may choose to situate the database and service tier on a single back end server. Figure 11 summarizes the IMS architecture.

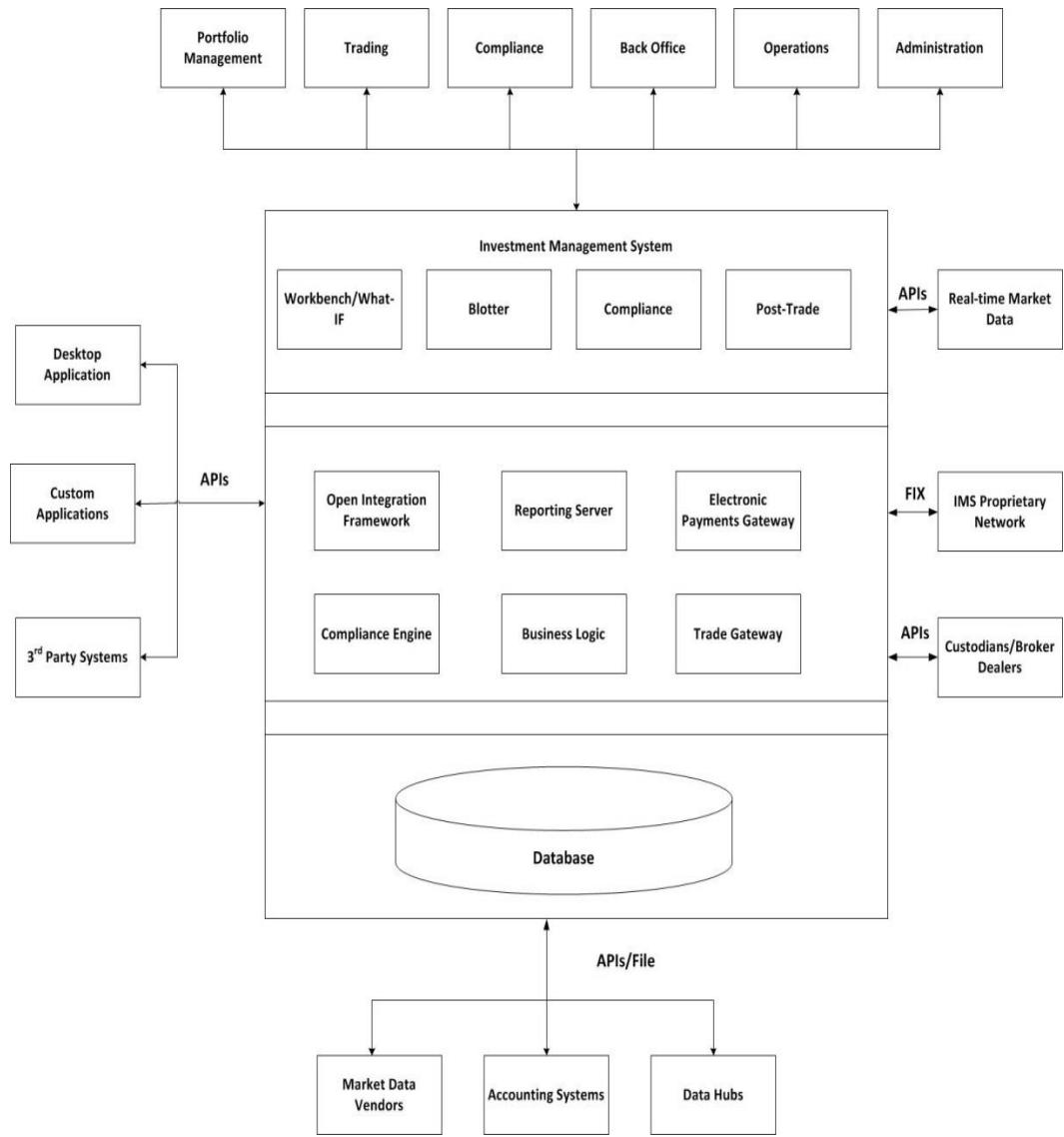


Figure 11: IMS 3 Multi-Tier Service Orientated Architecture (developed from Vendor Materials)

The Presentation tier consists of the user interfaces for the Service tier. This presentation tier is responsible for all user-system interactions and for the presentation of data. The key technology utilising or delivering the Interface is the Microsoft.net framework. The IMS Relationship Manager commented on this tier and how it can provide users with different media presented in different ways:

'Basically, you can bring into this tier whatever you want. You can have Excel, you can have TV, you can interface with absolutely everything and you are not limited'

by the size of your screen because of course with now Dot Net it means you can have six screens horizontally and detach windows and put it into any of those screens but all still linked in together. It's all one distributed system.'

The second or service tier contains the business logic associated with the IMS and also the database connectivity. This tier is written in Java and so provides platform independence across Windows, Unix and Linux. In addition, the use of Application Programming Interfaces (API) provides easy interfaces with other systems and data feeds. The use of Web services within this tier means that trading and compliance functionality can be accessed across the entire organization. A key service provided at this tier is the Compliance Engine, also written in Java, which provides pre-trade, post-execution and end-of-day compliance. This service can be accessed through a number of technologies including XML, which allows this service to be easily integrated with other systems.

The third tier is the database tier. An IMS consultant, described how data from different databases will be viewed through the IMS presentation tier:

'... the whole benefit is that all this information can be viewed from one single screen so you may have three different databases, one for the transaction processing, one for your [benchmarking calculations], one for 'as of compliance', you are still viewing it from one system it's just, under the covers, the databases do what they have to.'

Accurate data was seen as crucial for effective compliance and meeting new requirements. A compliance manager, in C1, noted:

'That's right, the data really is key. I always say to the guys at work... you can code the perfect compliance test and if it's not supported by the data its useless.'

Furthermore, data availability and accuracy were highlighted as key issues when creating new automated rules to meet regulatory requirements. An IMS consultant stated that:

'The biggest chore of being able to implement a rule... is the availability of data. You know that's what we have found, particularly when new regulations come along as well. If there's any changes to requirements, in terms of what we need to have available. There's certain data you need for trading and then beyond that you might have other requirements for compliance and that data may not be readily available.'

The automated compliance rules are underpinned by SQL statements to query the databases. An IMS consultant describes how the rules use a syntax which is more palatable for compliance managers, who may not be technically proficient with SQL:

'The rules themselves are pseudo SQL statement and they're not SQL because that would be far too limiting for the users, who may not have deep technical know-how. To create rules, the user is given a wizard and can either build [the rule] in real word syntax or can use the hard core coding bit to define the rules and you can swap between the two... '

4.7.9. Professional and Managed Services

The Vendor provides what it terms ‘professional services’ in order to help financial organizations and its clients to implement and administer the IMS. The Vendor provides an implementation team who asses the financial organization’s current situation. Each member of the Vendor’s implementation team undertakes a series of training courses to achieve ‘certification’ in the IMS. The implementation team utilise the Vendor’s own proprietary methodologies. Factors considered include ‘*technology, hardware, geographical distribution, workflow and key constraints.*’ Key variables which differ across organizations include workflow requirements, data requirements and how each financial organization classifies securities.

An IMS consultant commented on how defining the Workflows for new implementations worked:

'The IMS can provide the appropriate authorization for those who are the back office which is the data, those which are the fund managers who put in orders, those which are traders who will execute that order be it through [Vendor's Proprietary Network] or not, those users which are compliant can create and authorize rules which have been defined and then make sure that if a rule is broken by a particular transaction then that's authorized and can go through or not. This is all about what that individual can see, so we haven't got 'oh, here is a compliance user, this is what he can do', it's the reverse. We want to make a compliance user who can look at the following screens, the following parts of the system and therefore you will define a user or a group of users who are compliant

and then say from those ‘this is what they can do, these are the actions that they can perform, they select, update, delete on a particular screen and so on every single screen you can say what a person can do. There are two options, one is you can give the person the right to the entire system and then just take away from screens what you do not want them to do or take everyone’s rights away completely and say for these compliance people these are the only screens, they can see every screen they want, but these are the only screens that they can do any edit or do any select or do any update upon...The way I would always drive it, is remove everyone’s rights and then define the users you need and then associate them with the user group, the screens that they should be using and then from there associate users through those groups to then create workflows.’

As a result of implementing the IMS, financial organizations are often required to create new teams. The Vendor’s Senior Relationship Manager commented:

‘Clients often realise that they have to extend their teams to have the coverage. You know someone who knows how to write rules and test rules. Someone who knows how to analyse breaches maybe have a data exception team, someone to follow up on security data and compliance data.’

The IMS consultants and IT Professionals interviewed considered data to be the biggest challenge when implementing or upgrading the IMS. An IMS implementation consultant commented:

'And the biggest problem with each and every single client is data. Low and behold people still do not, have not, got their data right and this is the biggest problem everywhere.'

This issue was found to be compounded in smaller organizations. An IMS consultant commented:

'I'm not sure. I think it depends on the organisation. Some organisations are small, some of them are large. I mean it depends on the resource you have available to deal with the data issues and set up the rules. If you're a larger organisation you'd probably have better access to the data you need. We have had smaller clients that have been frustrated, because the business won't buy the data. You know if they don't buy the data then they have to find other ways of monitoring their exposure.'

In addition to services around new implementations, the IMS Vendor also provides consulting services around upgrades. The Vendor prefers its clients not to customize the IMS beyond the configurable permutations within the system. However, the Vendor will try to accommodate request from its clients in future upgrades. The Vendor's senior relationship manager commented on how feedback is collected from clients and how the Vendor will try to accommodate them:

'Our implementation people get information from their clients, what they like, what they don't like. And that may result in requests for changes to the existing product. So effectively, we are responsive to what the clients want and we have to prioritise those issues. Sometimes the client wants something that... they'll actually pay for it. Maybe it's unique to them themselves. Okay, they want a specific report or they want some functionality that we don't currently have in the product and we don't

see all the clients asking for that functionality. But what we try to do, you know... the minimum we try to cover is the regulatory rules'.

The IMS Senior Relationship Manager commented on how future releases of systems may incorporate changes previously developed for a specific customer:

Interviewer:

'Sure, that makes sense. So essentially you try and avoid bespoke development as much as possible?'

Respondent:

'Absolutely at all cost. And we have done bespoke development in the sense that a client wants an interface and there is no way we can with the version that they're on give them a specific interface, but what you say is this interface, if you tell us exactly what the configurations are, what the criteria are for your testing, then we'll do the same thing and we'll certify it, for that particular piece. However in a later release we will then have a fully interfaced version so that everyone can use it, it's not just tied down to [that client's] particular workflows.'

However, the IMS Senior Relationship Manager described how customizing the IMS caused issues when upgrading the product:

'... this goes back to my earlier comment why the US [head office] hate us customising [the IMS], is massively, massively configurable and the problem with anything that is configurable is that when you get given another release, another version, it's not like buying Word where you get what you're given, this has 400+ system parameters which work out your permutation and combinations, how many

different types of variation there are. No two customers use the same system in the same way at all and that is our strength and our weakness, and its our strength as you can trade however you want, wherever you want with whatever workflow you want. The problem is when it's time for an upgrade the clients that's moved that field to here... we end up shaking our heads as it wasn't tested by us and oh dear it's caused a problem...'

An IMS consultant commented on challenges in completing upgrades where Financial Organizations have customised automated rules:

[Clients]... may have worked on the rules and tried to alter the [IMS] and we go to do an upgrade and they realise there's a lot of new functionality and their rules may not have been working the way they had thought. For example, they may not have had in place a good procedure to test pre-trade rules and batch rules for example.'

Furthermore, the Vendor also provides consulting services focused around improving efficiency and productivity. Typically, this area of consulting may focus on reviewing workflows and incorporating best practice, tuning databases, analysing hardware and the integration with other systems, as well as trading platforms and settlement venues. A senior IMS consultant commented on the need for improving the efficiency and productivity of data related processes:

'I think you want to ensure that you have robust processes for creating the data, validating the data, updating... yeah, maintenance of the data and I suppose closure, termination of the data. I think making those processes more robust, is

important cause there's no point making a big push to correct the current set of data if it will not be maintained.'

The IMS Vendor also provides Technical Support. However, the IMS Senior Relationship Manager highlighted that many of the Vendor's larger clients have their own IMS support team in-house:

'The bigger companies, they have all got very good teams of in-house individuals who receive all of the issues as a first point of call. We've got a help desk here but before I went to visit [C.1] and [C.4] I had a chat with our support guy who says 'well, they've never raised an issue here in my life, I've no knowledge at all of what is happening' because what they do, not only have they got their own in-house team which look at the problems and try and resolve them, if there are problems because they are domiciled in US they send their issues back to their US counterparties who then send it to the US partial help desk. So even though these issues will go on the system, if they get raised we have never been told or informed about them because the bigger companies understand that the time it will take to resolve a problem going through [Vendor support] is going to be slower than doing it themselves. And why? Because we've got 9 people, we've got here 90 companies, they want to trade right here and now and therefore they want their in-house people to get there. So yes, every big company has its own help desk. The smaller companies, the hedge funds, those without any real IT savvy are the ones who use us as their crutch and will happily exhaust all of the support time allocated to them and more because it is cheaper for them to do that than to hire.'

In addition to services focused around implementations, upgrades and support the IMS provides consulting services focused on optimizing financial organization's use of the IMS. This service focuses on reviewing workflows and incorporating best practice, database tuning and analysis of hardware as well as analysing the IMS integration with the financial organizations' in-house systems, trading destinations and settlement venues. The Vendor may provide consultants to help financial organizations develop interfaces to integrate the IMS with both in-house and external systems, such as clearing houses or stock exchanges. The IMS also provides services around setting up and optimising compliance rules. Such work may focus on migrating rules from previous versions of the IMS or competitors' systems, analysing rules libraries and optimising rules as a result of changes in the financial organization's business focus to incorporate new products and services and correspondingly new asset classes. For example, an Asset Management House previously focused on equities and now providing new products utilising fixed income securities would have to incorporate new regulatory rules for trading fixed income products into the IMS.

4.7.10. Move to an Outsourcing Business Model

The IMS Vendor also provides 'Managed Services' to its clients. These services allow financial organizations to outsource maintenance and administration of the IMS. The Vendor offers two models. The first is termed 'Remote Application Management'. This model involves the financial organization keeping its hardware and software on-site. However, the Vendor will administer the IMS by remote monitoring through a secure network. Daily monitoring reviews data imports and

exports, end-of-day batch processes, interfaces, logs and performance. In addition, the Vendor remotely applies software patches and upgrades.

The second model is termed ‘Hosted Application Management’. This model of outsourcing is more comprehensive and involves the Vendor deploying and managing the entire IMS for the financial organization. Consequently, the Vendor manages hardware, software network connectivity, systems and data administration, disasters recovery, support and hosting.

In the third phase of the research, the interviews revealed that the IMS Vendor was changing strategy regarding the services offered in order to move to an outsourcing business model. This change was described by the IMS senior management as being driven by competition. Two of the Vendor’s key competitors had already moved towards an outsourcing business model. An IMS consultant gave an example of why competitive pressures are causing the Vendor to introduce new services and move to an outsourced model:

[IMS Competitor 5] is a different solution. [IMS Competitor 5] is similar to [IMS Competitor 2], in that they will host the database for you and what you see is basically software as a service. It's information that is sent to you by [IMS Competitor 5], by [IMS Competitor 2], that you get what you're given. You can't configure and tweak and change and have the flexibility that [Vendor] gives you. But that's the problem with the [Vendor], is it's allowed every single company to do whatever they want. And by giving them the chance to do whatever they want, it means that when they come to upgrade, because it's non-standard, it becomes lengthy, costly and then clients [financial organizations] then switch to the other

side. [C.7] in Holland, have gone to [IMS Competitor 5]. And they're phasing out [Vendor] and they're phasing out [Vendor], because they [C.7], could not manage the data. They couldn't manage the workflows and the system was being managed by way too many firms. And you had [the IMS] being managed by [C.7]. [The IMS] was also being managed by [Vendor] and [also] being managed by [IT Consultancy A] and all the projects failed. And they failed, because they couldn't deliver. They couldn't provide something extra, something which works that's kept them all happy, because they are... the Dutch are quite chaotic. [Laughs]. You know they go home at half past two on a Friday. They work hardly any hours all the week and what they wanted was a solution, which took care of everything. Literally from the accounting system, to the data feed, to the order management, execution management, through to the position keeping, to settlement. That's all done by [IMS Competitor 5].'

The IMS Senior Relationship Manager described the broader rationale for the change and how it was being driven by senior management:

'More and more clients want us to take care, to host it, and in fact, this is our strategy. We want to host it and this comes down from the guy at the top, and his view is clients can't manage it. They don't know what the data is. They don't know what the right way to structure and look after all things [Vendor] therefore, we should do it and this is interesting, cause what we're doing is now moving away from... moving away from [Vendor] being given to the client as a software and they run away and do what they want. Too, we host it, we manage it, we run it, we maintain it, we provide the data, we provide the compliance, we provide the review process. We do all the things that [IMS Competitor 5], do, that [IMS Competitor 2],

do. The only difference is that we are more flexible in what the system looks like. We're more flexible in the way the workflows have been structured. However, what some clients want, they're saying, 'Just give us the standard workflow, tell us what we can use and we'll use it. And if that's not quite how we currently trade, we'll trade the workflows. We want the simplest workflow process, because it means when you come to upgrade, you've tested it, you know it works, you roll it out, we're going to be happy.'

As a result of the changing competitive environment, the Vendor has begun developing two new services which, along with the managed and remote hosting services, allows financial organizations to outsource the management of the IMS. One new service focuses around data outsourcing and management while the other focuses on delivering and monitoring compliance rules. The new data service provided by the Vendor aims to coordinate with external data vendors on behalf of financial organizations to manage data feeds, interfaces with data feeds and new data requirements. Figure 12 summarizes the Vendor's Data Management Service.

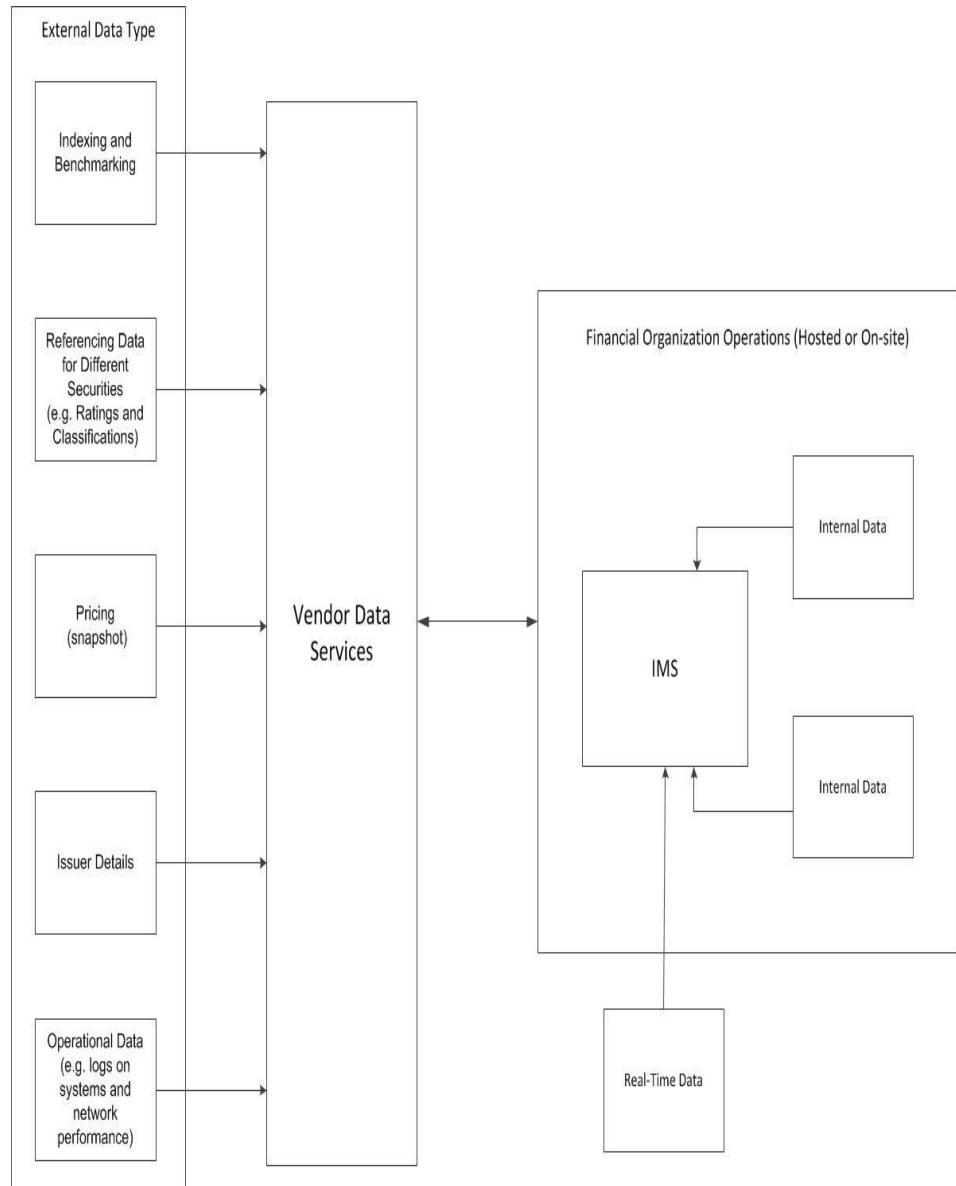


Figure 12: Vendor Data Management Service (reproduced from Vendor materials)

Actions performed by the Vendor include aggregating data from multiple sources into a single feed, data validation and auditing and monitoring of data feeds. Table 15 outlines the benefits advocated by the Vendor of the new Data Management Service.

Proposed Benefits of Outsourcing Data Management

Increase data quality by receiving 'scrubbed' data

Reduce data management costs and the IMS total cost of ownership
Reduce operational risk associated with data validation, auditing and monitoring of data feeds
Deploy new security types and benchmarks quickly
Eliminate managing multiple data vendors
Decommission redundant applications and spreaders
Ensure Data Availability and Disaster Recovery

Table 15: Proposed Benefits of Outsourcing Data Management (developed from Vendor materials)

The second new service offered by the IMS Vendor is focused around delivering the automated compliance rules. The IMS Relationship Manager outlined the new service:

'We're looking to provide a service where [Vendor] will come and, not just evaluate your rules and give them a testing, and make sure that you've not coded them badly, but actually write your rules, roll the rules out into production and then even manage the alerts and warnings that get raised each day or each night in the batch process. So we're providing is, we will review the compliance rules exceptions, the alerts, the warnings that are happening on a daily basis and then provide recommendations, written reports, instructions on potential problems with rules, whatever it is, and try and help and guide the client. So overalls, with rules, you've got, for example, two services. The first is, we will come in and we will give you a review of the rules that you've got and every year we believe that 20 percent of the rules each year go out of sync, do not look at or reflect what they should be. And also, write the rules and the rules themselves aren't a proper interpretation of the required syntax that they need, the required conditioning that they have got to have for the logic to work as it should. So it's just, you know getting your SQL or your rule syntax written correctly and people... people make mistakes, simple

mistakes. And so [Vendor's Consultants] come in and they will review them and they will give you a bucket of hours where, having reviewed them, they'll spend some time working with [the Financial Organization] on correcting and amending some of these. We've also got another new service where we will completely write all the rules for you. We will take away the expectations, requirements for you to have pockets of knowledge. Now this is an important point, because another client has outsourced every single process in their company, apart from one. And that one is [IMS], and they want to outsource [IMS]. They want [IMS] to be as a service. They want to literally have no in-house expertise. They don't want to have to employ people on the day-to-day maintenance. Employ people on the management and the creation of rules. I mean day-to-day maintenance is basically, you know changing the blotters or adding things to particular individual screens that they can, you know look at different types of data. They want none of this. They want to have a [IMS Competitor 2], model. They want us to completely take care, to host, to support and again, more importantly, upgrade the software for them. They don't want to do it.

4.8. Summary

The first section of the chapter outlines the study's philosophical underpinnings and the research design and methods of data collection and analysis which complements the epistemological and ontological perspectives discussed. This chapter has also focused on contextualising the IMS and specifically, the competitive, operational and technical environment in which the IMS operates its functionality and the products and services offered by the Vendor around the IMS.

The Vendor operates in a highly competitive environment and distinguishes itself by spending a considerable portion of its income on R and D and by providing a hugely configurable system. However, the highly configurable nature of the system has caused problems for its clients when the IMS is upgraded.

The system focuses on allowing ‘buy-side’ activities by facilitating portfolio and trading management and post trade processing. Trading is either facilitated through electronic networks or over the telephone. If the trade is conducted over the telephone then the trade details are manually inputted into the system. Key to ensuring that this process is compliant to regulatory rules is the application of automated rules (inscribed into the system as quantitative restrictions on financial holdings), on transactions. Such systems are becoming increasingly important as governments respond to the financial crisis by introducing new regulatory obligations which require quantitative rules to be applied to trading activities. Across the EU and US there is considerable overlap in the new regulatory requirements, not least as many post-crisis regulations emanate from G20 agreements. In the wake of the financial crisis, the UK regulator has moved away from a principles based towards more intensive supervision of firms, while post-crisis, EU Directives have defined prescriptive rules-based regulations. The IMS provides firms with an established and legitimised process for managing prescriptive quantitative rules and for providing a complete auditing process for regulators. The IMS does so partly by utilising established technological standards in its architecture. A key challenge in implementing such systems is the quality of the underlying data sourced from external sources which underpins the system. Furthermore, the Vendor has responded to an increasingly competitive environment

by imitating the services of other IMS providers and moving towards provisioning the IMS as an outsourced service.

5. FINDINGS: IMS USE POST CRISIS

This chapter outlines the research findings. The findings were derived by collecting and analysing primary and secondary data. By drawing upon upcoming regulations and commentary on these regulations, Vendor marketing materials, interviews with IMS users and Vendor employees as well as the UK regulators' websites, a rich picture of how the IMS is facilitating changes in practice was derived. The previous chapter focused on describing the context of post-crisis IMS use. The detailed findings are drawn upon throughout the analysis in Chapters 7, 8, 9 and 10. Drawing on the theoretical concepts previously outlined in Chapters 3 and 4, the analysis of data focuses on two levels, the organizational field and the intra-organizational level. At each level, the findings also highlight factors which may negatively impact or limit the changes identified.

Thematic analysis of the data collected revealed common themes which are here presented as new interrelated practices for organizing regulation and compliance, operating at both the organizational field and intra-organizational levels. These findings encapsulate the changes in practice and behaviours the general research question aims to uncover. Table 16 summarises these logics.

Post-crisis Organizing Practices for Regulation and Compliance	
Organizational Field	Intra-Organizational
Heightened Regulatory Supervision	Enhancing Governance Practices
Empowerment of the Compliance Function	Structuring Around Global Teams and Common Compliance Themes
Resource Austerity	Rationalising Compliance Systems
Tight Deadlines for Remediation	Internal Compliance Committees

Investor Focus on Compliance	Aggregating Compliance Data
Rejection of Generic Templates	Defining and Sharing Best Practice
Competing Organizations Sharing Compliance Practices	Retiring Manual Processes

Table 16: Organizing Practices of Regulation and Compliance. Source: author

The chapter is structured as follows: First, logics related to the organizational field are outlined. Secondly I review the logics found at the intra-organizational level. Lastly, I summarize the findings at the field and intra-organizational levels.

5.1. Organizational Field Level Change

The organizational field ‘connotes the existence of a community of organizations which partake of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field’ (Scott 1994 p.207-208), and, ‘focuses on the degree to which a field of actors is characterised by a single predominant or by multiple, potentially competing institutional orders or logics.’ (Meyer 2008 p. 525). Within this context, the ‘order or ‘common meaning system’ relate to regulatory compliance within the ‘buy-side’ of capital markets. Specifically within this study, findings at the organizational field level relates to changes in practice occurring between the Regulator, the Vendor, its clients, the financial organisations, and their clients, the investors.

5.1.1. Heightened Regulatory Supervision

The results show that post-crisis, the regulator moved away from a principles-based approach to regulatory supervision towards a new approach

termed ‘intense supervision’. Correspondingly, the views of the participants changed over time regarding the degree to which the Regulator became more prescriptive in its dealings with the financial organizations participating in this study.

In 2010 a compliance executive in C.6 predicted that the regulator would not completely abandon the principles-based approach:

‘I think what there’ll be is a balance between the two. I think they’ll move to rule and principles. So, I’m not saying they’ll get rid of the principles, but I think there’ll be a move to slightly more rules based with increased scrutiny on oversight.’

Another compliance manager, in C.7, went further suggesting that the crisis would result in a further move towards principles based regulation:

‘I think you’ll see the principles-based approach remaining even though the [UK Regulator] is now moving away from principles to outcomes, which I have always struggled with as a legislative process. The [US Regulator] I think will move away from very prescriptive and more towards principles and outcomes based. Away from this very prescriptive stuff. I think it’ll be more as a principle you need to do this. There’ll still be the rules there, but as a principle you’ll need to do this, this or this. You need to make sure that you’re doing this in the best interests of your underlying client and that’s the way I think regulators will be moving.’

An IMS consultant, discussed how ambiguity caused by the principles-based regulations had caused uncertainty amongst his clients, the financial organizations:

'I think the [Regulator] needs to go not only to a principle-based approach, but has also to advance in more of a rule-based approach for the community so we have more guidance, because what I kept hearing from our clients is, 'We're not sure how to implement these rules. We've talked to other clients to find out how they have done this.'

However, by the second and third phases of the data collection process the Regulator's reaction to the financial crisis was more crystallised. A compliance manager, in C.1 commented on this change:

'As the politicians go, 'well we want to make sure that [financial organizations] do only that, that and that.' And then the regulators are going to work out how they're going to have to do all the things the politicians said. But..., there's a view that the [Regulator] was trying to go down a more principles-based approach and that didn't particularly seem to work with the credit crisis happening so... let's get back to our lovely old rules.'

Another compliance manager in, C.4, commented on how, in his view, the Regulator had become more focused on enforcement:

'I think the regulator is enforcing its will more strongly. Different banks used to listen to the regulator... I mean they've always had to adhere, but there's complying to the letter of the law and complying to the spirit of the law. And I think

there are certain banks that used to bend the rules a little bit, perhaps a bit more than others. And others would stick a bit more. But I think now, across the board, there is much more sticking to the letter and the spirit of the law, of what the Regulator says. There's much more enforcement and acceptance of enforcement. So it's affected all areas and the approach for managing compliance.'

In 2010, the Managing Director of Supervision for the UK Regulator outlined the change in the Regulator's supervisory approach. In a speech he explained that the new regime would be '*...delivered through intensive supervision. This approach is centered on intervening in a proactive way. To do this we needed to operate entirely differently, changing both our philosophy of 'what supervision means' and our approach to and the use of resources. We now:*

- *undertake more extensive business model analysis, to understand the key drivers of risk and sustainability of your business;*
- *make judgments, on the judgments of senior management;*
- *act quickly and decisively;*
- *proactively look to influence outcomes, not merely react to events;*
- *apply a greater depth of analytical rigour – for example, through embedding severe stress tests into our assessment, of how much capital a firm should hold; and*
- *we back up our intensive supervision with credible deterrence when standards are not met – as evidenced by fines of over £33m for last year.*

This intensive approach is not just a battle hungry [Regulator] looking for confrontation for its own sake. Our message to firms is clear – where necessary we

will intervene and we will not be pressurized to back off. Firms will be well advised to engage with us in a proactive and open-minded manner rather than believe they can bulldoze the regulator at the last minute. To successfully deliver better outcomes we will of course need to deliver intensive supervision through more effective engagement and understanding of firms business. – Speech at the Financial Intensive Supervision Conference 18th May 2010 (Pain 2010).

The new ‘intense supervision’ approach adopted by the regulator was deemed by the research participants to be far more prescriptive than the principles based approach. A senior compliance executive, in C.5, observed:

The [Regulator] is coming up with more and more rules-based stuff now, in that they basically thought, oh principles based, we’ve used that for a couple of years it certainly doesn’t seem to be working... let’s have a load more rules and details.’

Another compliance manager, in C.1, who had previously worked as trader concurred:

I mean there’s definitely a perception about the fact that we’re moving away from light touch and onto rules-based. I mean personally I was a trader during light touch and it was wonderful but those days are gone now.’

The [Regulator’s] abandonment of principles based regulation and the move intense supervision has made systems such as the IMS more relevant, as the IMS deals with absolute quantitative measures for compliance. A compliance manager interviewed in C. 3 observed:

'The [Regulator]... has in the past adopted a principle based approach to regulation, which is no good to [IMS], cause [the system] can't cope with it. You know, [the system] deals in absolutes.

The Regulator suggested that their new approach of ‘intense supervision’ would be outcome focused. However, as the Regulator noted the majority of post-crisis EU regulations are rules based.

'Historically, the [Regulator] characterised its approach as evidence-based, risk-based and principles-based. We remain, and must remain, evidence- and risk-based but the phrase 'principles-based' has, I think, been misunderstood. To suggest that we can operate on principles alone is illusory particularly because the policy-making framework does not allow it. Europe, in particular, has a particular penchant for rules... What principles-based regulation does mean and should mean, is moving away from prescriptive rules to a higher level articulation of what the [Regulator] expects firms to do. In other words, it helps emphasise that what really matters is not that any particular box has been ticked but rather that when making decisions, executives know they will be judged on the consequences - the results of those actions. Similarly, the [Regulator], when it supervises, needs to supervise to a philosophy that says 'It will judge firms on the outcomes and consequences of their actions not on the compliance with any given individual rule'. Given this philosophy, a better strapline is 'outcomes-focused regulation'. - Speech at the Reuters Newsmakers 'event March 12th 2009 (Sants 2009).

Consequently, a contradiction developed between the Regulator’s articulations of an outcome based approach, representing a refinement of the

principles based approach, when in fact the majority of rules being introduced were done so through EU Directives and so were prescriptive and rules based. Ultimately the fact that the majority of Regulations being introduced were EU Directives led to a perception that a more prescriptive approach was being adopted.

In the first phase of the research, the IMS Senior Relationship Manager observed how senior management in financial organizations were becoming more compliance focused:

'We've seen it come from the top down now a couple of our clients, where the Chairmen, they don't want breaches, they don't want violations. They don't want bad publicity. They're putting an emphasis on compliance and I think that they are going to have to continue to do so in the future.'

A compliance manager, in C.1, also commented on the changes in the Regulator's approach and how, as a result, his organization was being more closely monitored:

'I think the regulators have more power and more resource and more oversight So, previously they may have said they'll be more principles based, but I think that what they'll do now is they'll give the regulator so much power and prerogative to do whatever they want and not have to worry about their resources. The previous approach was principles based, was risk based. So, before the crisis the regulator said, 'Who's got the risky business model and we'll go and look at them.' Now it doesn't matter, cause they'll look at everyone, cause they have the resource and the capability to do it.'

By the second and third phase of the data collection, it had become increasingly clear to some of the participants what the new regime would mean to their organizations. Several of the research participants observed the regulator taking a heightened interest in the types of systems adopted by financial organizations for compliance purposes. One compliance manager, C.2, summarised how he perceived the regulator's perspective had changed:

'We're in a situation where the regulator is leaning towards preferred systems providers. So you're likely to get less heat if you're using a system that they're happy with'.

The study revealed that in the post-crisis environment senior management within financial organizations are responding to both the Regulator's and investors' expectations. A senior trader, in C.5, noted:

'The adoption of a well-known compliance system clearly demonstrates to both the regulator and our clients that we are committed to achieving on-going compliance and meeting our obligations consistently'

In summary, the study revealed that over time the research participants perceived the Regulators response to the financial crisis as changing by increasing the level of supervision of firms and also by being more prescriptive in the approaches deemed acceptable. This included requiring firms to adopt specific systems and move away from manual approaches through adopting electronic order systems, such as the IMS. Furthermore, the regulator was felt to be requiring financial organizations to adopt 'core systems' to ensure organizations have a firm-

wide perspective of compliance positions across all the trading desks it operates globally.

5.1.2. Empowerment of the Compliance Function

The findings also show that as a result of the financial crisis many of the respondents felt that the compliance function's authority had been increased. A senior trader, in C.5, noted:

'It's across the board. The crisis has empowered compliance. They've all got more teeth as a result of the crisis and I think the sales functions recognise that there was some excess and pushing the limits before, and they recognise the need for constraint.'

Another trader, in C.4, concurred and suggested that the power of compliance executives had increased:

'I think their role [previous to the crisis] was as a check and balance. They certainly did not have as much power as they have today. I mean before theoretically they're able to say no; on occasion they would be overridden. Whereas now, when they say no, they have much more power. They can force that through now and control the sales and those trading functions in a much stronger way'.

A trader in, C.7 also agreed and gave an example as to how this increase in power has impacted the sales function:

'So, you find that a lot of the things [compliance] did [previous to the crisis] were similar. It's just they wouldn't have had so much power. Take an example.

Important customer is near his credit limits or its credit limits. I'm thinking of companies here. A corporate near its credit limits. Wants to have another loan or another trade or whatever that doesn't really fit in with the risk appetite that the bank has as defined by the credit risk department and compliance. What would historically happen is that compliance will say, 'No, you can't really do that. Can you change it in some way? Can you take some more collateral?' And the salesman will go back and say, 'Hmm, no, they can't do that, but it's an important customer. We don't want to annoy the customer, but we really want to do it.' And there'll be a negotiation and maybe the compliance officer will give in. Maybe he'd stand his grounds. If he stands his grounds, it may get escalated to the next level and they'll say, 'Oh, it's an important customer, and so forth.' Again, compliance may give in or they may stand their ground and it just escalates up. And sometimes compliance would win. Sometimes the sales force would win and do more than what the firm had a risk appetite for. Whereas I think now, that's a simple example where if compliance said no, that would be a no.'

5.1.3. Resource Austerity and Tight Deadlines for Remediation

The costs of regulating the financial industry must be tempered with the results achieved. Furthermore, however, refined and enhanced regulatory obligations are and however intense supervisory practices are, regulatory structures '*cannot possibly prevent all malpractice in advance, without employing a hugely increased army of supervisors and probably not even then. And if [the regulator] did deploy that army, [the regulator] might well add more cost to the industry than*

the cost of customer detriment averted.' – Speech at FSA City Banquet at the Mansion House, London, 11th Oct 2012, (Turner 2012b).

The study revealed that across the financial services industry the overall resources available to financial organizations has been reduced at a time when the costs associated with meeting post-crisis regulations has soared due to the scale of financial reform being introduced (The Economist 2012b). New regulations are requiring financial organizations to hold more collateral, termed regulatory capital, to offset risky trading activities and ensure liquidity, which is reducing returns and requiring firms to reduce their balance sheets and cut back on trading. In 2012, UBS announced it would wind down its fixed income trading business and streamline other investment banking activities in part due to the new demands of Swiss regulators to hold increased levels of regulatory capital to offset the risks of operating in these areas (Keoun and Logutenkova 2012). As the scale of regulatory change became more demarcated the scale and scope of change being enacted caused organizations to add additional resources to their compliance function. An IT manager, in C.5, noted:

'Well I was going to say, there's a bit of a contradiction there as well, because file volumes are decreasing, because trading volumes are decreasing, the cost of all the back office functions have to be cut as well. So you see all sorts of news, less jobs, we will be at the lowest headcount in the business since 2003, I saw in an article the other day. So there are costs being slashed across the board, headcount being cut. So when you say there's more money being spent on compliance, okay, it's the allocations of costs. So a greater percentage of the spend is on this regulatory

adherence. The total amount spent is probably less than it used to be, as we're spending much less on everything else.'

One of the study's participants included a global compliance manager, in C.1, who had recently changed roles. Previously, he was a senior trader and had recently decided to join one of the financial organization's global compliance team. He commented on how his firm was investing in the compliance function in his organization while other departments were facing cuts:

'We've got cuts coming, every bank's got cuts coming. So there's a fair amount of people looking over their shoulders at the moment, especially on the [Investment Banking (sell-side)], which is where most of our cuts will happen. The compliance department is feeling rather self-satisfied at the moment because we're pumping money into it but that's mainly because of Basel III and a whole bunch more regulations coming down the road. We're very aware of the fact that we have a great deal of work to do on the compliance and general counsel side of the business. And we've been supported in that viewpoint from, senior management. So we're getting the funding and we're getting the personnel which one of the reasons I was hired was part of our huge push to improve the industry's knowledge within the compliance department rather than just having a compliance professional, they were trying to get people in who've done it on the other side of the fence, as it were.'

However, a major finding of this study is that tight deadlines for remediation and a lack of available resources within financial organizations are

causing ‘non-strategic compliance architectures’ to be developed. A third party consultant, in C.4, commented:

‘We are seeing non-strategic solutions built on non-strategic solutions.’ He elaborated: *‘The Dodd Frank dates for adhering to various things are fairly tight, they’re very tight. And the requirements are still being clarified and the approach being taken by the US regulator is one of, well we’re gonna evolve the regulations. You better start building against draft sets of regulations and we’re gonna keep on evolving and evolving them and then go live. And their point is, from where the draft regulations appear to when the go-live is maybe a fair amount of time. However, the time from when the final regulations appear to go-live will be a very short time. So you’re forced to just do things on an evolutionary basis, not taking the long-term strategic view of how you’re gonna meet this need, just to meet these aggressive timelines and be flexible enough to cope with the factors as these regulations evolve.’*

A compliance manager in, C.7, commented on how a lack of resources was preventing the optimization of compliance practices:

‘Resources are a massive issue. There’s always an opportunity cost with everything we do. If you’re reading and dissecting one regulation, you’re committing your resource to that, you can’t optimise, you can’t do both. So we either get more staff or we choose our projects carefully.’

Another compliance manager, in C.2, commented:

'There's always a fight to say, 'Let's get something that's required for compliance in, which will have to be at the expense of something that they want out there.' Cause there's only finite resources. If it's something you have to absolutely have, it will be done. If it's something that's a nice to have, it'll just make things easier or something like that, then there'll be a, 'Well do you have to have it this time, could you have it next time?'

Another compliance manager, in C.8, concurred and suggested that:

'If you had the time, the resource and the consultants and the money, you would increase efficiency for everything [compliance related] but we don't have that luxury.'

A senior compliance executive, in C.7, also commented on how resources to optimize projects were scarce and not a priority:

'The problem is that [compliance] costs a lot of money and so in this very, very competitive world, you do what you need to do so that you can tick the box for the regulator. The stuff you do, the added value stuff, almost is a second thought. If there's money at the end of the year we'll schedule this project for us to be able to do that [optimise compliance practices], unless the Regulator or someone says to you, 'Why aren't you doing this? You need to be doing this as well. In that case, that resource will get sucked up elsewhere'

The respondents also highlighted how the tight deadlines for remediation set by the regulator were also preventing organizations from adopting strategic approaches. A compliance manager, in C.4, commented:

'I mean a simple example is, the Dodd-Frank regulations. We'll get draft regulations, then draft regulations and then they'll say set the final version. But [the Regulator] expects you to have been building off the draft regulations and then they can give you time between the final regulations and the date it goes live. So you have to be someone that's very flexible on changing, so you don't have a chance to think strategically. You've just a short aggressive timescale. You've just gotta plough it on any way you can get it right. You have to tidy it up later. Any of the US regulations are like that. Other European [regulations], where you know for your particular [IS] infrastructure it's more complicated to meet a regulation, I think some aspects of Basel III are proving that way and so we've gone with hacker solutions first, strategic afterwards. So a simple example there is around the liquidity aspects of Basel III. This bank went for a tactical solution first, because even though the liquidity aspects don't go live until perhaps 2015 or some perhaps even 2018, but interim numbers need to be produced from nowish. Actually, they've already been producing some numbers, as we needed to provide interim numbers up to that date and we didn't have the infrastructure in time, so we've had to build something that's much more tactical not strategic.'

Another compliance manager, in C.8, also highlighted how tight timeframes and the scale of regulatory change being required was preventing his organization from refining compliance practices. He commented:

'So you know, if Barclay's has a massive fine against them, everyone's panicking, asking questions, can it happen here? So in a lot of ways, it's very reactionary and the regulations don't really help that because they're not giving us, they're not

giving a chance for us to actually review the business, and operate in a maintainable way, when they change all the rules every day. ‘

5.1.4. Investor Focus on Compliance

The study revealed that post-crisis the clients of financial organizations, investors, were becoming increasingly focused on the ability of organizations to meet regulatory requirements. A senior compliance manager, in C.5, in charge of several clients' portfolios commented:

'I think that the last two to three years, has changed the climate quite significantly. When investors put money into funds, when you're looking to win a mandate etc., I think there's a huge, huge emphasis on compliance, you know. What's the track of the fund, have they breached, have they not breached? Many due diligence tests have been done with prospects and they've asked us, 'You know have you ever been criticized by the [Regulator]? Have you ever been investigated by the [Regulator]? Have you been subjected to this investigation or that investigation?' Well, they're not asking that because they don't care, they're asking that because at the current point in time in the markets I think there's a huge emphasis on culture. You know is this going to be another one that blows up? Things are volatile right now and people wanna know that you're in a good safe place and it all starts in compliance and that culture then resonates through the rest of the firm.'"

The research revealed that clients of the IMS now perceive demonstration of robust practices through the adoption of automated compliance systems, such as the IMS, as critical. In the post-crisis world, investors see the use of such systems as a legitimate means to ensure regulatory compliance. The IMS acts as a standard to

help assure investors that their financial interests will be safeguarded through compliant behaviours. A trader, in C.4, observed how the IMS may increase investors' trust in his firm:

'When we talk about trust, for the investors, they must feel that all of the processes and procedures that are required to guarantee that their investments are being managed within the regulations are in fact being managed by a process that allows that.'

As a result of the financial crisis and the consequential introduction of large scale regulatory change, the findings show that the study's participants felt that investors are becoming increasingly focused on the ability of financial intermediaries to demonstrate robust compliance practices. A senior compliance manager, in C.2, commented on how the IMS assists in winning new business and also in reassuring existing investors:

'My standard pack of slides has got four slides on [IMS Vendor] and I give that to all clients. Now I either present them as the clients comes in regularly to do due diligence or in the marketing and sales process. Any client that wants to see me in the investment process, they get a half hour chat on [IMS Vendor].'

A compliance manager, in C.3, also suggested that adoption of the IMS was integral in winning new business:

'Many clients want to make sure that you've got a proper system that would confirm that you don't start going beyond the breaches, beyond the warnings. In fact it can be used as a sales pitch, to say, you know, 'We are compliant. We trade

properly. Here are the systems we have to make sure your money's managed properly.'

Another compliance manager, in C.6, also commented on how demonstrating robust compliance practices were necessary to reassure investors:

'The next stage for any client is, 'Okay, so you can provide the returns, how do I know you are going to do it with a minimum amount of risk and issues and pain for me as a client?'

The IMS Relationship Manager also commented on how the IMS provides confidence to potential investors:

'Our clients [financial organizations] have sold their portfolios on saying 'we use [Vendor] which does the compliance checks', 'we use [Vendor] because it helps best execution'. It is something which allows confidence to a [investor] that the firm are not just doing compliance on the back of an envelope. The tool is for a particular purpose which is to guarantee that obligations are met. For example, when I was at one client and a manager walked in and said to the trader 'sell two million IBM, it's gotta happen now, it's gotta happen, sell two million'. The trader says 'well, this is a buy sheet, oh [expletive]' he goes, and walks away. Had the manager literally just left it on the desk and walked away the trader would have bought two million IBM for a particular account that they just didn't want. The cost of that would have been massive because clearly then they would have to sell it and the price may have moved.'

The participants also felt that Investors were becoming increasingly knowledgeable about compliance issues and required more regular updates regarding breaches. An IMS consultant commented on how pre-trade compliance testing, had been introduced in his organization as a result of changes in investors' expectations:

[Investors] want, I think because of the regulatory issues that have occurred, they want information sooner in the lifecycle than in the past. That's why we've implemented the compliance tests early on in the trade lifecycle. Now I think there is much more interest [from investors] in knowing up front if the financial organization is going to potentially violate, the client wants it, the Fund Manager wants it. Ultimately the system prevents breaches. You know the breaching here and the breaching there and costing our clients a lot of money.'

5.1.5. Rejection of Generic Templates

The study revealed that the Vendor provides pre-written templates of automated rules for implementing specific areas of regulation. The Vendor provides example standard rule libraries covering key regulatory rules in various jurisdictions including UK, USA, Australia, Canada, Germany, Japan, Singapore, South Africa, Japan and Hong Kong. The key value of such templates was described by an IMS Consultant:

'They've got a very good sales value, because you can say, 'Well the IMS ships with these rules, you don't need to worry about them.'

In total the IMS has over one thousand seven hundred pre-written regulatory rule templates across thirty-five regulatory bodies in twenty countries. An IMS Consultant explained:

'If there is a new regulatory condition that can be coded into a generic rule template, the measuring of types of stock for example, then we will create a template for that rule and then the clients can tweak the template to fit into their environment.'

The Vendor provides predefined schema, for organizing the Templates based on the regulations themselves and the regulatory jurisdiction in which they apply, see Appendix 7. The IMS manual states:

'[IMS] Compliance uses templates and category codes to support, and conform to, all US and international regulatory rules that govern the securities industry.'

In the post-crisis environment the study revealed that the Vendor sought to partner with its clients to help define generic rule templates. An IMS Consultant noted:

'We might work with some very strong clients to build the templates and then the clients will use them and they may modify them'.

An IMS consultant also commented on how templates are developed with clients:

'If it's an important new requirement of our client base, some things may not be important to our client base, but if they are then the Product Manager and Advisory Committee will try to take a stab at understanding that regulation and try to write a template set of rules based on their understanding. The Product Manager would

want to look and try to find some clients that would be interested in this an advance group which will work together on defining the rules. We can provide some guidance as to the regulations, but we always feel that the client has to give their own due diligence.'

The need for clients to perform their own due diligence is an important point as the Regulator does not allow financial organizations to outsource their compliance responsibilities. Ultimately the responsibility for compliance remains within the financial organization. According to the FCA Handbook:

'If a firm outsources critical or important operational functions or any relevant services and activities, it remains fully responsible for discharging all of its obligations under the regulatory system and must comply, in particular, with the following conditions:

- (1) The outsourcing must not result in the delegation by senior personnel of their responsibility;*
- (2) The relationship and obligations of the firm towards its clients under the regulatory system must not be altered;*
- (3) The conditions with which the firm must comply in order to be authorised, and to remain so, must not be undermined;*
- (4) None of the other conditions subject to which the firm's authorisation was granted must be removed or modified.'* (FCA 2013h)

The IMS senior relationship manager commented on why the Vendor perceived the need for such generic templates and the difficulties in developing them in conjunction with its clients:

'We develop templates for Dodd-Frank, those types of regulatory rules. The requirement [for templates come from the need for us to], give advice and direction to the clients, because what is quite staggering is the lack of information, the lack of knowledge that the compliance officers truly have about what's happening or what's coming up. And they always rely on [IMS Vendor] to guide them, to direct them to almost do their job for them. So the expectation from our customers is that we will be the source of knowledge. The driver, the director, in defining what the rule is. Its interpretation, and how they can best apply it to their own environment, which sounds absolutely wacky, but there are few clients, hardly any client, who will say, 'Oh, I would like to become more involved with [IMS Vendor] writing the rules, developing the Dodd-Frank rule templates, cause, you know I see this as important and I don't quite see how the derivatives work or I don't understand, x, y and z.' The problem is though, you've got to really push and cajole [financial organizations] to say, 'Yes, okay, I'll try and be a partner with you.'

The IMS Relationship Manager also suggested that the templates may still need to be modified by systems adopters, but if changes are made they may be moderate. He commented:

'These [rules] are out the box and what clients will do is look at the rules and then say, 'No we don't quite do it that way because for example out asset classifications are slightly different.' But the concept is there'.

As an example of how the generic templates were being used the IMS Senior Relationship Manager commented on how the post-crisis UCITS rules were being incorporated into the IMS:

'And [the] compliance [module] also now has UCITS article inbuilt which are these regulatory compliance rules which allow you to very quickly and easily look at buying SWAPS or particular variations and make sure you that comply and you can say that you are UCITS III or UCITS IV compliant and for that you have to have all these regulatory rules wrapped into your compliance checks to be able to trade UCIT funds'.

However, a senior compliance manager, in C.2, noted that although the UCITS regulations were highly relevant to his organization they did not utilize the Vendor's templates:

'We run a lot of UCITS funds. We have actually got seven libraries coded in [IMS] for UCITS. UCITS is supposed to harmonise regulation across Europe across the fund industry but we didn't use the templates'.

This view was typical. In contrast to the views of the IMS Relationship Manager, the research revealed that the respondents did not value these templates specifically due to nuances in their own environment which rendered the templates irrelevant. One IT Manager, in C.7, highlighted data as the key issue:

'I would say that software providers, which supply a template, you find that in fact the structure of the data differs from one house to another. So therefore I haven't seen a supplied template being actually applied.'

Another IT manager, in C.5, concurred:

[The IMS] does certain aspects of MiFID relating to trade execution, but it tends to be around the compliance guidelines, so it would look at UCITS III or COLL rules, the collective investment rules and so [IMS Vendor] will say they've got a templates for all of these rules. But for these templates you can't get access to the underlying data, each firm would use a different data provider and so we don't use any of the template rules relating to that. Because our data doesn't make the use of those rules possible, so that's what it comes down to.'

While a senior compliance executive, in C.2, suggested that a key issue preventing the adoption of templates was nuances in the organization's taxonomy, the way the firm defined assets and products:

There are vendor-supplied templates especially for things like regulatory rules. Even for non-regulatory rules, the [IMS Vendor] supplies templates, but we don't use them. Because, although their templates are based upon generic security types and investment classes which are broader asset classes than ours. So. we define our own. So that means that we effectively can't and wouldn't want to use their vendor-supplied templates.'

An IT Manager in, C1, highlighted how he found the templates over simplified:

The [Templates] that I have looked at, well let's say... we in the past have built very complex rules codes and the templates that I have seen in the past have been very simple code.'

An IT Manager, in C.6, whose organization were thinking about replacing the IMS with a competing system, commented that the flexible rule language allowed them to easily build and evolve their own rules and so was more valuable to them than templates:

'So we could build our own rules within [IMS]. But rather than have [IMS Vendor] create another template to cover another scenario, we could build our own custom scenarios using quite a flexible rule language. We prefer that mostly because of the speeds with which we can put something in. One of the vendors who presented last week... we were saying, well what if we want to change the scenario and instead of having this many minutes between trades, we'll have this many minutes. And they were talking about a two month turnaround time. [IMS Vendor], were saying sure, just change that from whatever number you want to the next number and you're done. So the ability to adapt our rules ourselves on the fly as soon as we want is a very powerful'

5.1.6. Competing Organizations Sharing Compliance Practices

The study revealed that, post-crisis, competing financial organizations are meeting on a regular basis to share approaches for managing regulatory change. A compliance manager described how views on collaborating have changed since the crisis:

'We as an industry, as an area of the industry, now our number one focus is ensuring that we are meeting the requirements that are laid on us by the regulators. I guess it's evolved and it's now understood that one of the best and most effective ways of doing that is to find out what everyone else in the market is doing.'

The IMS Senior Relationship Manager commented on how his clients, financial organizations, shared compliance practices:

'The regulations can be very specific or they can be very vague. And we find the [financial organizations] will adopt [shared practices] if they feel it's a best practice themselves. We find that clients will actually work together on regulatory rules. Where regulations are vague, if they find a common solution among themselves they feel that they're at least making an effort to find the best solution collectively.'

Another compliance manager, in C.3, noted how executives collaborated to interpret upcoming regulations:

'Everyone will have slightly different interpretations on what [the regulations] actually means a lot of it is discussion groups and forums When we have worked with a company called [management consultancy], and they had a working group for the UCITS regulation, which involved, all your Project Managers and the people who are involved in UCITS projects, meeting up and saying to your peers, to all of these different fund management companies and saying, 'How are you doing this? Are you using [Vendor] 'Yeah, we're looking... we've focused on that and we're going to do this.' 'Oh, that's not a bad idea. We don't really trade that instrument, but we trade these instead, which are very similar, so we're going to do this for this instrument and this for...' And twenty clients sitting round a table talking about how they're all going to approach it'

The willingness to share compliance practices suggests that the ability to meet regulatory requirements is not a source of competitive advantage. A senior trader in C.5, commented on this suggestion:

'Bearing in mind that area you're looking at, compliance is not an area normally of competitive advantage. It can be an area of competitive disadvantage if you mess it up...but for most of it, running a good compliance shop, I believe, is a benefit for the industry as a whole.'

A compliance manager, in C.2, also commented on how interaction between competing firms to discuss regulatory issues did not impact on the firm's competitive advantage:

'You don't hand over a copy of your entire final page compliance manual, cause you're not silly, but what you do do is happily discuss how people are approaching certain legislative changes or implementing certain rules.'

A senior compliance manager, C.7, shared his opinion that financial organisations compete on their ability to provide sound returns on investments only. He provided an anecdote of an interaction he had with the Regulator:

In a recent [Regulator] meeting, when I said to the [Regulator], rather naively I said to the [Regulator]... they'd just spent three hours with me and the COO, the head of operations, talking about something very technical and I said to them, at the end of it... Written loads of notes, loads of papers being referred to, piles of paper everywhere and I said, 'So, have you now got an understanding of how we do things?' And they said, 'Yeah, but we've still got some follow up questions, we'll want to come back to you.' And I said, 'Okay.' And just as the meeting was winding down I said, rather jovially, 'How did we do?' And the girl looked at me like I was a lunatic, because the [Regulator] would never ever tell you how you did. You're either in compliance or you're not. And it's no good for a business or an industry

to be not in compliance, because all that does, especially with financial services, as we found with the recent crash, is that if one business goes down then everyone sort of follows it's a domino effect. So if the industry as a whole is not in compliance, the industry as a whole is screwed. So if everyone's in compliance, everyone is therefore in a better position and then you're competitive side is on the investment process, not the compliance side.'

Another compliance manger, in C.3, commented that as demonstrating robust compliance practices to investors was becoming increasingly important his firm were only willing to share compliance knowledge at the application level:

'I think the level at which I am working is probably a good sharing environment. I think higher up you might find a slightly different viewpoint. What you're talking about is not best practice or best methodology but more the [IS] application to deliver it. So in the increasing regulatory environment that we're facing and with the odd blow up that happens from the [IS] application point you have an advantage if you can say, I have a tight compliance department. That's more recent. In previous years, I think it's been a situation of being able to say to new clients, well don't worry too much about the compliance side cause we'll get it through anyway. I think nowadays, not too many clients in recent years buy that approach. So we have less risk appetite for that sort of problem than we've had in the past. Our reputational risk, especially in this current environment, is a huge thing we think about it.'

Interviews revealed that users of the IMS, in competing financial organizations, had set up regular group meetings to discuss ways in which the IMS

was being utilized to tackle new regulations. A compliance executive, in C.2, and regular attendee commented on IMS related forums:

'You know we have one [forum] for [Vendor] compliance where we meet every few months with other firms in the City who use [Vendor]. We talk about different sorts of issues and implementations, including testing and configuration.'

A compliance manager, C.2, also commented on forums created by the Vendor to discuss specific regulations:

'There's a lot of quarterly groups and quarterly you sit round the table, discuss things, you know and occasionally, and I've experienced this first hand, this, the [Vendor], will call a round table and they'd say for example to the compliance guys and all these firms to come along to a meeting where we'll discuss for example, how they're finding, interpreting, understanding this legislation and what we can do... this is proactive, this is before it's come in, what we can do to facilitate that. You know and that happens now and it's something that's increasing more and more.'

However, the study revealed that several compliance executives felt that the usefulness of these fora was limited by the Vendor's presence as the Vendor has used these forums to promote the system. Consequently, the Vendor was deliberately excluded from some of these fora. A compliance manager in C.3, commented:

'And in fact, what happened with that is that [the Vendor], started attending these meetings and then they started taking them over and they became less useful'

because they ended up becoming a [Vendor] forum for sales and marketing. And it wasn't meant for them. It was meant for us.'

Another compliance manager, in C.4, also commented on the Vendor's contribution to these fora:

'Yeah. They got hijacked, they did get hijacked so they stopped. We've started them again just with the managers, the asset managers only'

Another attendee of these meetings highlighted how the development of common beliefs across his peers provided comfort. He commented

'In relation to something like say [IMS] we have for example regulatory discussion groups. You've probably heard this from members of other firms. We have regulatory discussion groups. We sit round, we say, 'Look guys, how you do this?' And we share the information and I guess seek comfort knowing that, okay [financial organization 4] are struggling with this but so are [financial organization 6] and [financial organization 7], so we all adopted this approach and I guess we take comfort in knowing that, if we're doing it wrong we're all doing it wrong together and to the best of our ability.'

The study revealed that compliance managers in competing firms were also meeting outside the formal setting of forums but also informally. A compliance manager, in C.3, described this interaction:

'You have fora, but you know I've found in my experience it's not ever, you know an official conference or forum... We all know who's doing what and where and you know if I want a conversation with someone who I know what he's doing and

I've got a decent relationship with him, we'll have a few beers a couple of times. I'll call him up on his Blackberry and I'd say to him, 'Can we meet up and have a drink and I'd love to talk about this?' And he'll take as much benefit and advantage from it as I would. You know if nothing else... cause when I say to him, 'What do you guys do?' He's going to tell me and then he's going to say back to me, 'What' do you guys do?' And I'm going to tell him something that he doesn't know and he might tell me something that I didn't know. Either way he's going to go back to his office the next day and he's going to have a better understanding. He's going to be better placed to put a value on how strong his control is. That's how I find it often happens, informally.'

5.2. Intra-Organizational Level Change

The study also revealed changes in compliance activities at the intra-organizational level occurring as a result of the post-crisis environment. At this level, findings relate to changes in practices and working arrangements occurring within the financial organizations studied. The interviews focused on investigating the role of the IMS in underpinning existing and new compliance practices necessitated by post-crisis regulatory changes.

The study revealed several changes occurring at the intra-organizational level and several factors which limit the effectiveness of these changes. Each of the themes is now presented with a choice selection of quotations to illustrate the analysis.

5.2.1. Enhancing Governance Practices

The IMS provides functionality to allow users to define workflows and to monitor and trigger actions when predefined events occur. In this way, the IMS acts as systems of governance. A senior compliance manager, in C5, described how he perceived the IMS as instrumental in monitoring and thereby governing behaviour:

'The [IMS] is essential in influencing people's behaviour, because they now know they're audited. As all their processes and transactions are being stamped in the system, then clearly their approach or their attitude shifts towards, 'I'm now being scrutinized. I therefore, will have to work properly now, if I didn't work appropriately before.'

While another compliance manager, in C.3, observed:

'I know that people have been sacked, because now looking at the audit trail they've been seen to be in serious breaches too often or perhaps trading irresponsibly.'

A compliance manager in, C.8, observed that in his opinion, IMS adoption signals to employees that compliance related activities are important and being monitored:

'The IMS sends a message to our employees that we are serious about compliance and that breeches are being recorded and followed up.'

The IMS user manual outlines how the system structures workflows to ensure that appropriate monitoring and governance of trading and compliance practices. It states that

'Workflow rules are built around queries about events, which are state changes within the system. An event might be the addition of data to a table, such as the creation of a new order, or a change in an existing record, such as a change in the order status. A workflow rule can also be linked to a system process, such as an import or export, or to a timer.'

Workflow queries now run on the middle tier server in real-time instead of on the client, improving performance and reducing possible contention for database resources.

Notifications that can be triggered by a workflow rule include desktop alerts, email, log messages, workflow monitor alerts, web administration alerts, and others. Multiple destinations are supported. Workflow rules can also be used to update or route orders automatically.

Additional escalation rules may be associated with a workflow rule. For example, if you set up a rule that emails a compliance officer when a compliance alert occurs, you can set up an escalation rule that sends a text message to the compliance officer's phone if that alert remains unacknowledged for more than 30 minutes.'

The crisis has caused the Vendor to review and update workflow functionality. A compliance executive, in C.1, described how the system facilitates a hierarchy of authority:

'For example, you can configure [the IMS] so that only a set or group of individuals can see a rule. You can have it so that only one individual or two individuals can override an alert and a specific rule. There is a hierarchy in terms

of the privileges. Now we have the ability to say, 'No, these alerts can only be closed by this group. These alerts by this group or these set of rules by this group,' or maybe, write the rule level itself so you have the ability to say, 'Only this individual or this group of individuals can close these alerts,' and that's the ultimate hierarchy'.

In addition to the Vendor updating workflow functionality, the study revealed that the financial organizations were also changing their approach. A user of the IMS, a compliance executive, in C.1, gave an example of how his firm were strengthening their workflow monitoring process in response to enhanced supervision from the regulator:

'When the portfolio manager has input his trade, normally he'll press a button right? Which shoots it off to the trader, okay. What will happen now, is that when he presses the button, it'll send the trade off to a system which will produce an alert which will do a check and if something appears to be wrong, it'll send back an alert which the portfolio manager will have to look at and say, well that's not a problem, or etc., etc., and then he'll override it and send it on.'

One senior IT Manager in C.2, described the process of changing workflows and running associated User Acceptance Tests (UAT) to strengthen handing of compliance breaches:

'So, the improved workflow tested and refined in UAT. So, users log into a test environment and... but they would replicate what they do every day in their normal job, and just make sure that the compliance checks are working. And they can pick up the order from the fund manager okay. If an order requires a second

authorisation, then the order flows through to the second authoriser's tray blotter. Then that second authoriser can pick up the trade from his blotter, authorise it and then it flows through to the dealers.'

The IMS can be used 'straight-out-of-the-box' with workflows predefined by the Vendor or configured by their clients to fit their own perspectives of how the trading workflows should be structured. An IMS consultant commented:

'The way the system comes out the shrink wrap as used by, for example, a managed service client and they have very simple work flows, they literally get the product out and they will have to turn on columns they want to see in particular screens and they can trade with it out the box.'

The pre-existing workflows are designed in-house by the Vendor based on their own perspectives of best practice. The IMS Senior Relationship Manager commented on how the Vendor's view on best practice is incorporated into the IMS:

Respondent:

The system works in a particular way. If the client decides that its own workflow is far superior then it will tailor and customize what we've got.

Interviewer:

But with your existing workflows they must come from some view of best practice, the stuff that comes out of the box?

Respondent:

That's right, yeah. These are the best practice which is driven fundamentally from US product managers coming over, talking and then going back out again and writing it, so...

The study showed that the IMS Senior Relationship Manager perceived financial organizations' attitude to using the Vendor's pre-written workflows changing as a result of reduced resources. In the first phase of the research, he espoused the view that often his clients wanted to use their own bespoke workflows. He commented:

'The problem is with every company that they don't want us to tell them how to trade, how to do the workflows. They want to map their particular workflow process into the workflow that the product has and you have things like a trigger where the system doesn't do something. You want to make sure it does do something, therefore you put some bit of clever code in the database which, if something happens, it blocks, it rolls it back, it does whatever.'

However, the study revealed that configuration of bespoke work flows is a complex and costly process which has led to companies adopting the Vendor's pre-configured workflows. An IMS consultant described an implementation he worked on:

'There are, some companies that have spent, three years rolling out the software. And why? Because they wanted their existing workflow to be mapped into [IMS] and it cost them huge amounts of money and they ended up with their workflow in a system and value for money clearly wasn't thought about. Other big companies are now saying, 'We've done that, it's no good, we now

want to roll out, or want you to tell us what is the best way of doing this particular trade, this Derivative process and we will adopt that particular process. And so, what there was to begin with, which was map my process into your system, is now map your system into my process. '

Later interviews revealed that the Senior Relationship Manager had changed his view. He now perceived his clients as being more open to adopting the Vendor's workflows and then tailoring them as required. The IMS Senior Relationship Manager suggested:

'Cost has become much more critical now. In an attempt to save costs, clients are now saying just tell me how to do it and we shall make sure that our workflow is mapped to that workflow. Not even whether your workflow is better than ours or ours is better than yours, we don't care, we want to use a product with a workflow and map it through.'

The study revealed an important weakness in the automation of the compliance workflows. The Regulator requires that workflows are appropriately segregated. The Handbooks states that firms:

'...should segregate the duties of individuals and departments in such a way as to reduce opportunities for financial crime or contravention of requirements and standards under the regulatory system' (FSA 2010).

However, an IMS consultant noted that:

'In terms of monitoring, I think [the business process] changes [as new regulatory requirements become apparent]... clients have to change the workflow of the

compliance person [within the compliance system] for it to be able to support the business people. I've seen a situation where the clients have wanted to give the Fund Managers the ability to override violations. Normally we wouldn't do that...'

In this example, the effectiveness of the workflows to meet regulatory requirements may have been eroded at the point of design if the Fund manager had been given the ability to override compliance warnings for his own orders.

5.2.2. Global Teams and Common Compliance Themes

The study revealed that financial organizations are beginning to centralise their compliance efforts globally. A senior compliance manager, in C8, observed:

'Well, the way we're working is because of the G20, because after the G20 came out, it was such game-changer really. All these different papers that were coming out from different regulators and the underlying message was that different regions were doing X, Y, Z in terms of meeting the G20 efforts. And we're a global organisation with impact in over I think 89 countries, something like that? So we now operate on a regulatory theme basis. We realized that the Old World approach where maybe you could manage compliance regionally would not work or be cost effective. When [regulations] come out from [numerous different national regulators] you have to consider that actually they're trying to meet the G20 rules, so there's something coming out from [UK Regulator], there's something coming out from [US Regulators], there's something coming out from the [Hong Kong Regulator], all trying to address the same topic. And as a business, we have to upgrade on a global basis and think, how we're going to build a successful global

business here, in the new regulatory environment, how do we do that? And the way that we do it is we have to do it by organizing globally around regulatory themes.'

Another Compliance Executive, in C.1, concurred that organizing in themes was possible due to the overlap across post-crisis regulations being introduced. He suggested:

Respondent:

Yes, I would say is there are common themes. I use a few good examples that I think any bank would recognise. So the first one is clearing. That's common across Dodd Frank and EMIR, for example. The next one is trade reporting, post-trade reporting. Again, that's common across Dodd Frank, EMIR and MiFID II. Another one is pre-trade transparency, advertising what your price is on exchanges, that's common across Dodd Frank and MiFID II. Collateral, that's another one. That's common across Basel III, Dodd Frank. It's probably in a couple of others as well. Tax is one that's taking off, so it wasn't originally a theme, but now there are others. So you have the American's who started with [Foreign Account Tax Compliance Act] which is basically taxing Americans on their overseas income and making sure that is tracked. The famous example is Swiss banking laws, where many countries are trying to understand what their citizens have in assets in Switzerland or Lichtenstein. But there are many people who have assets abroad, and so in the current climate of clawing as much tax as you can within the law, there's more regulations come out than... While the US started this drive there are many other countries that are now implementing their own versions. So there is a tax theme as another theme. So, there's also a capital theme. There's a liquidity

and funding theme, capital, obviously Basel III is the biggest. Liquidity and funding, Basel III is the biggest. I probably just did seven or eight there, so those are common across most organisations.

Interviewer:

And I suppose, if I've understood correctly then, the point of looking at these themes is to understand how that they could be applied across geographies?

Respondent:

Well, I think, yes, to what you said. I would say, making sure each theme has a sufficiently senior sponsor. Someone who is accountable for ensuring their theme delivers. Not whether the regulation delivers, that the theme delivers, which is an extract, from multiple regulations. So there is an owner of the capital theme. There is an owner of the liquidity theme. There is an owner of the collateral theme. There is an owner of the clearing theme. So that will be a senior person who knows that they're accountable for delivering within that. Now those people tend to be... well they are, in almost all cases, senior business people and not change people. And so they need, in some cases, a partner, which is a programme manager, a senior change person, who can liaise with that level of senior stakeholder, but coordinate across the contents of that theme.'

A senior compliance manager, in C.1, who had previously worked as trader, described how his firm was also taking a thematic approach and organizing around common requirements globally:

'So we have a centralised group that they've built here recently, in the last year, in the compliance department which looks at things from a holistic point of view rather than being at the coal face and doing the job. So, there's a separate group that does the day-to-day surveillance and traders' activity but I'm looking at things from the strategic perspective. And I have colleagues in the USA and Asia and Zurich who are looking at it in their own regions and we talk together about a global perspective as to how we are handling our trade surveillance and how we can do it better.... there is pretty much universal agreement we could do it better.

The way we've decided to organise our trade surveillance is that we have a regional person and I am EMEA and we have one person who has the global responsibility. And then each of the three remaining regions are differently focused; my focus because of my background is asset management. My colleague in America is covering IB [Investment Banking], my colleague in APAC is covering Private Banking. So I get a global perspective from the Asset Management viewpoint and then a regional perspective from the overall trade surveillance. If there is anything going on from the asset management perspective in the trade surveillance arena around the world my colleagues will keep me in the loop, will put my name into the frame to talk so that we get a consolidated asset management viewpoint.

And the whole concept of taking a selection of the compliance department and moving them away from being, what we call the advisory compliance people, the ones who deal with front office and do the day-to-day grind work, and moving something out into what we call the central compliance group, which is where I am, was to relieve the pressure on us and allow us to take a more big-picture view. And

my interaction so far with colleagues in other houses, and in the City, has been that they've taken great interest in that approach because of the pressure just to meet day-to-day requirements, not allowing them to look at the bigger picture'.

The compliance manager elaborated on how global approach was being implemented using overlapping data fields:

'So, we'll use the same approach, ideally we'll move to the tightest, the most stringent regulation and apply it globally. So for example, if there's a reporting obligation needs 80 [data] fields from Europe to meet a specific regulatory area and a reporting obligation from USA and another reporting obligation from Hong Kong to let's say, 70 fields, where there's only an overlap of 60 fields, we'll produce all fields required and then try and filter out what's redundant or irrelevant. So we're trying to do the right thing by saying, we need to uncover all of this information but this person only wants this information, this person only wants that information.'

The IMS facilitates the introduction of global compliance teams. A compliance executive, in C.2, described how configuring the IMS workflows allowed a central office, in this case London, to authorise breaches and authorises others to handle the breach if that office is unavailable. He described this process:

'If you've got a compliance breach out there in Brazil, then who can take ownership for that? Where is the central nervous system for compliance offices? We have them in each location. The rules are set up, the overriding control is happening here in London. But you've got people in Brazil who have got the authority to say, 'Ah, go to London, oh dear, clearly they are asleep, I won't wake

them up, I will allow this breach to go through or I will do what I have to do to manage it', because the local area doesn't have the knowledge or the authority to so act.'

The study revealed an interesting critique of this approach. A senior compliance manager, in C.3, agreed that the G20 agreements provided the opportunity for common regulatory themes. However, she suggested that by the time the regulations are implemented by different regional regulators they may differ significantly. She suggested that this would allow global firms to exploit these differences and take advantage of 'regulatory arbitrage'. She observed:

'I think if you start right at the top the biggest challenge for regulated firms right now is about managing the degree of regulatory change which is global. I recognise what you said about the G20 and clearly you're right but I think we're way, way away from a better scenario where we've got joined up regulatory change across the globe. Because even where we've got regulation change that is inspired by a global viewpoint, we've still got massive amounts of national autonomy indifference. And as stuff gets implemented down you see it change. And sometimes it can change, even if it looks the same on paper because the supervisory authorities in different countries just implement it differently and they ask for different things and they hold firms to different standards. So I think the challenge of managing regulatory change is huge at the moment. I don't think anybody would say this but firms certainly would think about regulatory arbitrage'.

5.2.3. Defining and Sharing Best Practice

The study revealed that financial organizations were using the IMS to create their own generic rule templates termed ‘Master Tests’. Such tests are often created by a centralised compliance team. The tests form the basis by which branches of the financial organization operating in different countries and under different regulatory jurisdictions can implement similar approaches for meeting analogous regulations. This is achieved by sharing the Master Test which can then be developed and refined to meet the specific requirements of that region. Thus each Master test may have many ‘child tests’ for each region where the Master Test is used. In summary, Master tests are used to share best practice across the financial organization and allow a standardised approach to be adopted across global operations.

A compliance manager, in C.1, described how the Master’s Tests were being used in his organization:

I’m in the global [IMS] compliance team. Our job is to essentially own the rule coding, ensure best practice for coding, and essentially ensure that rules globally are coded correctly. We don’t actually necessarily do the coding for the US for example. Um, they do the coding based on our Master Tests. We work very closely with US for example, to set up their Master Tests and then they will, use those Master Tests for their local needs.’

A senior compliance manager, in C.5 described a similar setup in his organization:

'So, an old part of our responsibility, apart from coding regulations is also the master test setup. Master test is like this template. [The Master Test]... is a compliance rule. It's a pre-coded automated compliance rule. An example would be maximum 10% in a single issuer. We would code a Master Test for that maximum 10% in a single issuer and somebody in Tokyo, if they wanted to code a similar rule, saying that's 5% on a single issuer, they would find that Master Test, change the units from 10 to 5, maybe make any other minor tweaks and ensure the broad structure of the rule would be appropriate for our accounting data, and would effectively be meeting best practice internally. Someone in Hong Kong could copy that and attach their account to it and that kind of removes the necessity for them to understand the coding, things like that. That process works quite well, but it has its drawbacks as well. There's no perfect model for having [IMS] in seven offices.'

The Master Tests also reduced the need for regional compliance professions to develop technical knowledge relating to how compliance rules are coded in the IMS. A compliance manager in, C.7, commented:

'And coding, by the pure nature of it, is, I use the word techie loosely, but it's a bit like coding or writing a mathematical rule. It's along those lines and you get the bracket in the wrong place or if you have ands and ors and you have brackets and you have equals, the coding's around this kind of convention. You get a bracket out of place or an 'and' instead of an 'or' and most people find it highly esoteric, then your rule won't work properly and you could end up with, errors, mistakes. So that's again the reason for having these Master Tests so that it takes away the onus

of responsibility for people in each of the offices to be a coding expert, when their focus and background may not be IT technical.'

Another compliance manger, in C.1, described how Master Test allows the standardization of compliance practices:

Interviewer:

So is there much mimicking across the compliance offices?

Respondent:

Yeah, absolutely, the master test allows template descriptions which helps to standardize things, with the master tests we are able to standardize coding conventions, things like that.'

Another compliance manager, in C.8, described how his organization used Masters Tests to apply common standards globally:

'So we might set up new master tests with the latest, best practices. Quite often there could be a problem which affects several offices. So people have their own way of dealing with it and part of what we try and do, as we are the global compliance team. So we try and harmonise processes. What we'll usually try and do is kind of pre-empt changes and so will set up a new master test and say use this.'

This process of formulating best practice is not only top down from the head office but also bottom up from regional offices. A compliance manager in, C.2, explained:

'We do talk to one another..... I kind of expect, on a daily basis, a call from New York, Hong Kong or Singapore or you know one of the other offices. So, there is a lot of sort of knowledge sharing, adopting best practices. Something that you might pick up in Tokyo that we might adopt as a house policy in London. We might say, okay, no short selling - we'll adopt that in London as a best practice'.

The use of similar underlying data was highlighted as key factor in utilising the Master Tests. This result corresponds with a previous finding which highlighted how generic templates provided by the Vendor were found to be problematic due to nuances in underlying data across firms. A compliance manger, in C.7, commented:

'We've got a set up which is supported by functionality called Master Tests. The Master Tests are, internal template, and we use the Master Tests to promote consistency and best practice globally. We've got several offices, several offices using [IMS] globally. And we're all on the same accounting system; we all use the same data, so that means there's an opportunity to actually apply a consistent approach. The way we do that is through these Master Tests which are generic in nature but the idea is that each office has broadly the same suite of Master Tests. They can find the appropriate Master Test, make any minor adjustments to it for their local needs.'

A compliance manager, in C.2, in the global team commented on the importance of being able to adapt the Master Tests to meet regional compliance requirements. He suggested that securities which might be considered low risk government bonds in one jurisdiction may not be perceived the same way in a

different location. He described this issue and why having local knowledge was important when applying the Master Tests:

This is where the local expertise is so important. I mean there are these regional and country differences as you say and but that's why, it's so important for us to work with our local colleagues in each office in understanding, their expertise and what would be considered necessary. Here's a case in point. With the Hong Kong government agencies, that they've got things like housing and development board for example. The consumer board's the same. They've got, lots of government-type agencies and in Singapore, you can invest away in all these Singapore government agencies. They're considered government securities. It's a bit like our NHS issuing bonds, but you might have an investor in Canada who wouldn't want 100% of their portfolio in these Singapore, government agencies. And they would not consider them to be government bonds. So you've, that's why you have to be very careful.

[The Master Tests] are tailored to each jurisdiction and we work very closely with the local compliance teams in understanding what their rules are. We spend a lot of time on conference calls with each of our country offices, understanding the local flavour of the regulations, the nuances, you know, the market conventions. Hong Kong clients will be quite happy having lots of Hong Kong government agency, quasi-government type bonds. Their rules and Master Tests would be based around that, based on the advice that we receive from our Hong Kong compliance team. But we also have a New York office who use [IMS] and their rules would be completely different. You know, that they would be quite happy having, their rules based on the US government offices, the Fannie Maes, Freddie Macs, G-MAs, you know, that they're considered locally to be government bonds, whereas they

probably wouldn't be elsewhere. So, we work closely with regional offices and tailor the rules.'

The compliance manager also highlighted the need to balance regional requirements with standardized Master Tests:

'Well... this is an example where the top-down approach doesn't work. Different countries have different views on what constituted an eligible government. So Hong Kong governments and all of the government agencies of the Hong Kong governments are eligible governments and what that means in Hong Kong is that you could have in theory 35 even 100% in Hong Kong government stocks. Whereas a US regulation would not permit that. There are different rules. Even UCITS (EU Regulation), might not permit 100% in Hong Kong government, whereas Hong Kong would. Which is why you have to take each jurisdiction, in isolation and actually work from there. But the top-down approach suggested is saying, okay, Hong Kong's an eligible government, but anyone anywhere in the world [whose portfolio is] going to have 100% in the Hong Kong government would get in all sorts of hot water. But our Hong Kong compliance team would understand that local interpretation, what would be understood to be 'government' and what wouldn't. So, you take the Master Test and you apply it to your local areas and say, okay, well, here are the exceptions to the Master Test or this is why it doesn't work. So there's a balance you need local knowledge but also quite centralised knowledge as well.'

5.2.4. Internal Compliance Committees

The previous findings have shown how as a response to shifts in the post-crisis regulatory landscape financial organizations have begun centralizing and standardizing compliance efforts across their global operations. The findings show that often compliance projects were being steered by upper-middle management directed by a centralized global team, see above. However, the study also revealed that one financial organization was creating an internal high-level forum whereby departmental heads could share ‘stories’ and senior leadership could be updated on current progress and outstanding issues relating to implementing new regulatory requirements. This initiative was being driven by an external consulting firm. A third party consultant described the forums as a ‘watch tower’. He commented:

[The Watch Tower] is trying to add a control function that operates across the various departments, to give visibility of all the different issues in the different departments to advertise the regulatory dependences. It's sponsored and run by the COO [Chief Operating Officer], with heads of departments attending and forces that multi-departmental view of regulatory change, and when one of those head of departments presents their story or presents their issues, you immediately have across the bank visibility.'

A senior compliance manager, in C.4, described how the new committee for overseeing regulatory projects across the organisations was implemented by the financial organization’s COO (Chief Operations Officer):

I think it must have dawned on the COO that he was accountable for all this regulatory work, and not just the adherence, but the mitigation as well. And he just

didn't have the visibility of it and so, I don't think as a COO you panic, but he sort of said, 'Well, I need to change this.' He knew that each of the projects had... or at least he hoped that each of the projects had their own current governance structure and had the appropriate controls. So what he didn't want to do was create a strong command and control structure, which overrode that. What he wanted was a light touch one that was focused on visibility, identification of overlaps, and identification of gaps, making sure that there was the cross-departmental engagement in the various steering committees, to make sure that visibility was there and I think by him chairing at least the overarching committee that made people attend. If you're called to a steering committee, focused on regulation, you're a bit of a periphery stakeholder; you probably don't attend very often. However, if the COO is saying, 'Here...' and they're presenting on this, '... and I want you to be there.' It gets more people there. So I think it was his way, it was his idea, his way of doing it and I think overall, it's worked reasonably well.'

A senior compliance executive, in C.4, commented on this high level committee and the analysis and data collection which was required to underpin the reporting element of the forum as well as how they committee in focused head of department on their compliance related projects:

'It's an hour and a half long usually, led by the COO. Facilitated by an [Management Consultancy] person, with heads of various departments or other senior people from those departments who attend. So that meeting is high level. The next part is, the administration that enables that visibility to occur. So that's a support part, so that is more pure PMO (Project Management Office), if you like, of tracking red RAGs (Red, Amber, Green Status), key issues and so forth. The third

part is the ‘value add’ part, which is recommending to a COO that perhaps he should look into this or perhaps he should look into that. Or, we’ve done a comparison of this versus this and we think we’ve found some gaps. He may want to validate that those gaps are real and if so, initiate various projects and deploy funding and so forth. So I think that that value add piece, it’s adding a brain to all the information that’s flowing through, to analyse it and identify, an actually make those realisations that corrective action can be executed. And so, you have within those programmes, they have many projects that are delivering and so one aspect is to collate via the structure, the report onto those regulatory themes, or that’s the current structure. I think I mentioned to you previously it was by a work stream level and we’ve had a few different models over the time. But to collate, okay, what is the summary status across that? What is the RAG status there? Of the milestones in 2012, we’re 11th/12th the way through the year, are we 11th/12th of the way to the milestone, it’s a simple measure? Oh we’re actually only sixty percent the way through the milestones. Bit of a warning there! And so I think it’s looking at the data in appropriate ways, pulling out what are their key issues, articulating that in a way that’s appropriate for the COO. Cause I think another example is, I don’t think most project or programme managers, when they write their reports that go into the system, I’ve seen this over many years... I think a lot of people see it as, just gotta do it, no one really reads these and they’re certainly not generally in a format that you could present a C level person. And they just... so they require some translation, if you like. And then some follow-up to say, ‘Okay, I notice you’ve got this in your reports. Can I check, does that mean A, B, or C? When you say you’re doing this about it, you’re not clear on the impact, does it impact this or

this?' So there's that discussion with the authors to clarify such that a C level summary can be generated. Or a summary can be generated. Such that, the COO can ask in his meeting, 'I notice you've got this, this and this. What does that mean?' and then the appropriate heads of department, can answer that question and explain it. And if that head of department knows he's going to be pulled up on it, then he's much more likely to be on the ball about it. So it makes the heads of much more involved in the change work in their departments when they go to that meeting.'

A compliance executive, in C.4, partly responsible for collating the information presented to the senior committee commented on the required reports and how systems such as the IMS were essential for providing supporting information:

'There's one [report] for tracking milestones. There's another one for tracking budgets and headcounts. There's a third one, which is associated with the PMO milestones one, which they put in their weekly report that highlight their top [project] risks and issues and so forth. So there are systems used across the investment bank including [IMS] which we need to draw information from. And we work with the leads to get the information they need. The general culprits are the closer you get to the front office, the less they follow the process I suppose. No, that's just the front office culture. They're far more interested in results than the reporting of the results. And especially in the investment bank, where the market can change frequently, daily. What someone thought they were doing this week or today may be very different. So it's just the very much the culture of the front office. It's very much more results oriented rather than process oriented.'

The third party management consultant driving the committee explained how these high-level meetings may provide value beyond project reporting and may facilitate the optimization of compliance practices. He commented:

'It's much more than reporting. Yes it does reporting, yes, and yes it does hierarchy of issues, yeah. So that's the admin side, but that's only half of the story. The other half of the story is the value add. By looking across, if you like the analysis work across, you can then get overlap, challenges that are going to occur. You can identify actually the clashing, let's pull these guys together. Let's get a discussion going in that forum, or there's a new regulation coming along. This is going to impact you, you and you. Let's discuss that one at that forum. So, I think that as well as the more administration, reporting, tracking if you like, there is the value-add of looking across the patch.'

However, the study revealed that several participants were critical of the 'watch tower' committees. The consultant, whose firm implemented the committee, commented on why the value of these committees was questioned by some attendees. He remarked:

'I think there has actually been substantial openness to it, because I think there is that general recognition of, the old ways can't continue, and I think every time there is something presented at that governance forum that provides insight to one or two stakeholders who may see the value of it. I think where... I mean sometimes you'll get a run of a few weeks where there'll be nothing of value for a particular stakeholder and it'll vary which stakeholder that is. So, I think, unless they had something great out of it the week before some of them are slightly disillusioned.'

A compliance manager, in C.4, also questioned the ‘openness’ of the ‘watch tower’ committees, suggesting that the presence of other peers and the COO prevented departmental heads from being open:

Interviewer:

Sure, and have you found that people are fairly open to admitting breaches and compliance shortcomings in their departments?

Respondent:

Well I think no one wishes to advertise that, but because there's been an approach that it's not so much a policing function and that is the culture that we've employed throughout this. I was going to say, nobody's been told off, but it's generally a forum listening and asking, a suggesting forum, as opposed to a shout at them for doing it wrong forum. And so I think the reinforcements of seeing that each week has made that more open, but I can think of two examples immediately where I know I do not believe their project plan. I believe that they're hiding something. I see that there's politics going on as to why they're hiding things. Well, the department heads think, oh, that's not going very well, that will reflect badly on my department, that will affect badly on my performance rating. People will realise that I kicked that off and I was the one responsible for that. So if that's going wrong, that'll look bad on me. So, people don't like to advertise failures where things are going wrong if they can think they can rescue it. Some people would rather pretend it's going okay. Or maybe it's got a few issues and then basically behind the scenes trying to repair things.'

The study also showed that the process of collecting data from the departments to provide the reports which feed into the committees was also resisted. A compliance executive, in C.4, commented on the resistance he found:

'For me to do this analysis across multiple departments, initially people were resistant to me poking my nose into their areas to try and come up with that information. They were automatically... their starter opinion was defensive. As in, they're happy to present something, but they don't want someone else poking their nose round in their areas. So I think initially defensive, individuals had a range of different opinions from open to closed. The closed ones, I could always just use a bit of extra seniority [from the COO] just to force the door open. I still think there were degrees of helpfulness. A standard tactic was to delay.'

The interviews revealed that this financial organization was not the only one developing compliance related committees. A compliance manager, in C.8, commented on how his organization were also utilising a committee structure but that the scope of it was limited to implementing new regulations and so lacked the ‘value add’ component of the high-level committee previously discussed. He commented:

'A little bit of my time was looking at new regulations; a lot of my time was looking at funds. I'm now looking at new regulations all the time... just looking at new regulations and then the business is planning to hire somebody to look at it from a business point of view. We've got a new committee looking at new regulations to give some structure to the sort of control over what we're doing on it. And so

there's a lot more work being done than there was before, because there was so much coming out. So yes, there's a resource being put into all that.'

He also highlighted how this committee was attended by predominantly compliance professionals with advice from other business units. Consequently, this committee was not as high-level as the 'watch tower' committee. He remarked:

'The committee consists of our own compliance staff from across the business and we invite people from other areas as necessary... systems, risk, finance, front office.'

5.2.5. Aggregating Compliance Data

The study revealed that in the post-crisis environment the Regulator was perceived by the studies participants to be increasingly focused on the systems and practices used to deliver compliance. A senior systems expert, in C.2, noted:

'Understanding what's between the functionality being on tap and what's really required [is key]. That's one of the big topics at the moment – is the compliance gaps.'

Correspondingly, the Regulator was seen to be focusing on the data quality which underpinned compliance activities. An IMS consultant commented:

'What we find when we, go to implementation is one of the first things is looking at the data requirements for each of the rules. You know and making sure that the organisation has that data, you'll find that in almost every implementation, you'll find that there may be roughly twenty or thirty thousand data exceptions. Then you can't run something, you start to realise that the business just doesn't have the data

that they need to run those rules, so you have to incorporate the new data into the processes'.

A IT manger in, C.5, commented on the quality of compliance data in his organization:

'There's all these different reasons combined to give you poor quality data in the compliance and operations functions and I think one of the lessons that's been learnt over the past few years is, it that can't go on'.

A IT manager, in C.3, discussed reasons why sourcing underpinning data for compliance was problematic. Among other issues, he highlighted siloed data sources; lack of accuracy and differing points in time when data was cut as potential issues. He commented:

'The data causes so many problems. It's always astonishing to people outside the industry, how can data always be such a problem? But at every level data is a problem. Let's give you a few examples of reasons. Okay. Number one, from the front office perspective, they may only care about fields A, B, C and D being required. But from a risk or compliance perspective, maybe you also care about fields E, F and G. So, initially, when the front office implements their systems, if they're thinking on a Silo departmental basis, they don't include that stuff or they don't put the same rigour around ensuring its accuracy. Maybe they don't check it against something or maybe they just do a more junior check of its liberty before it goes into the system. So there are all sorts of ways that data can be less than perfect. I mean another point you can have is maybe risk and compliance take their

data cuts based on different time points, or they take their data based on slightly different data extraction queries, different SQL statements.'

However, the Regulator's handbook requires that organizations must ensure that data is relevant, reliable and timely,

'A firm's arrangements should be such as to furnish its governing body with the information it needs to play its part in identifying, measuring, managing and controlling risks of regulatory concern. Three factors will be the relevance, reliability and timeliness of that information.'

Risks of regulatory concern are those risks which relate to the fair treatment of the firm's customers, to the protection of consumers, to effective competition and to the integrity of the UK financial system. Risks which are relevant to the integrity of the UK financial system include risks which relate to its soundness, stability and resilience and to the use of the system in connection with financial crime.

It is the responsibility of the firm to decide what information is required, when, and for whom, so that it can organise and control its activities and can comply with its regulatory obligations. The detail and extent of information required will depend on the nature, scale and complexity of the business.' (FCA 2013f).

The Regulator's Handbook also implements the post-crisis AIFM regulations by requiring that Alternative Investment Fund Managers follow the requirements outlined below:

AIFM shall provide the following information when reporting to competent authorities:

- | |
|--|
| (a) the main instruments in which it is trading, including a break-down of financial instruments and other assets, including the AIF's investment strategies and their geographical and sectoral |
|--|

	investment focus;
(b)	the markets of which it is a member or where it actively trades;
(c)	the diversification of the AIF's portfolio, including, but not limited to, its principal exposures and most important concentrations.
	The information shall be provided as soon as possible

(FCA 2013e)

The requirement to report information regarding, 'principal exposures and most important concentrations' necessitate Alternative Investment Funds to calculate and aggregate their positions. In order to provide an aggregated view of their positions financial organizations must be able to effectively source relevant data.

In relation to these requirements a key issue identified by the studies participants was the need to move towards 'golden sources' of data and have a consolidated view of holdings and associated compliance limits across the organizations different spheres of operation. A compliance manager, in C.2, commented on how this approach was being driven by post-crisis compliance:

'Now in the old days, pre-2008, when compliance didn't really matter, when compliance wasn't an issue, people didn't focus effort on data. Now that compliance is a prime driver of many things you do and is a prime constraint and stops you doing certain trades or stops you doing them in certain structured ways, or forces you to go back to the client and ask for more collateral... as an example. Or ask for a different time point or break clauses that can affect your competitive position in the marketplace, because the client may not wish to do that. So, the big push around compliance has meant there's a big push around data quality. Hence, the push on golden sources and many other things.'

A compliance manager, in C.6, commented on the need for single source or ‘golden sources’ of data:

‘Golden sources? Simplistically, okay, what you currently have in many banks is that... let’s take an example of instrument data, all the different financial instruments. Or counterparty data. You may have different departments storing data from different original sources. Some may be keeping their own duplicate copy of some of the data, but they might be taking it at different time points or different points of accuracy. And then when downstream you come to compare compliance and finance data, it doesn’t sometimes line up. So you want all your data to line up and one of the ways of doing that is making sure that all the departments in the bank use the same source with a single version of the truth, the single version of the truth ‘golden sources’ are interchangeable phrases for different groupings of data. So you want that for your external ratings data from the ratings agencies. You want the instrument data. You want that for counterparty data. You want that for your pricing or market data. You want, basically any grouping of reference data. You want, unless it’s only used in one specific area, you would want a consistent and coherent single source that everyone pulls from, that you know that is reliable. And that will make your data line up so much more when you’re trying to meet cross-departmental regulatory requirements.’

Another compliance manager, in C.8, gave further detail on the need to effectively aggregate data to meet regulatory requirements:

‘An example might be when you’ve got a structured trade made up of four or five different trades. One department or one function may only care about the

aggregate position of those, whereas another one may well care about the individual components. So, if you were to ask in a department, what do you think is the set of trades you have that meet these criteria? Based upon different needs around internal trades, different time points at which you may endure extraction. Maybe your extraction query was based on different reference data or slightly different reference data in certain examples, each scenario can give you different datasets as to what you believe to be the real one. Especially so when you're not using golden sources and department A took their data from department B, as opposed to going to an original source. And department B maybe only update their data every couple of days and maybe on that particular day the update fails, so actually are three days out of date.'

The study found that organizing compliance around global regulatory themes, see 5.2.2, has also focused financial organizations on creating single data sources. A compliance manager in C.2, commented:

'The idea is to have a golden source globally for all sorts of data and not to have multiple sources globally. For tactical reasons or practical reasons, sometimes that is the case. I'm trying to think of a few examples... Okay, here's an example. Dodd Frank is a very American regulation. There are some regulations that come out of Japan that only the Japanese regulator cares about. There are some that come out of Hong Kong, some come out of Singapore, some that come out of India. In most cases, it's not worth creating a global standard, if that regulator is only interested in local data. So, where you have a one off or maybe two off thing, then you do tend to get that sort of thing, but for the big regulations, which tend to impact multiple countries, and if you're honest, have a good deal of common sense about them.'

They are good practice in a lot of the cases. And so it makes sense to go with a global approach.'

The move towards to ‘golden sources’ of data was also identified as providing potential to improve the infrastructure for delivering compliance. A IT manager, in C.3, commented:

'Okay, moving to golden data sources, there are all sorts of ways in which you can make this whole infrastructure more strategic, more streamlined, more efficient and able to upgrade to the lower cost.'

The findings also show that as a result of the focus on golden data sources financial organizations were reviewing their data management processes. A compliance manager noted:

'I think you want to ensure that you have robust processes for creating the data, validating the data, updating... yeah, maintenance of the data and I suppose closure, termination of the data. I mean, I think making those processes more robust, cause there's no point making a big push to correct the current data set if your on-going data management process is not robust'

The findings also revealed that not being able to source compliance data may have a competitive impact on the financial organization. If the underlying data needed to perform compliance checks on new financial products was not available then this may affect the organization’s ability to trade such products. An IT manager, in C.1, highlighted this issue:

'When you're setting up a new security and you're testing it, the data may or may not be fully available at that point in time. And then you need that data and you want that data, that's when it forces changes in how you source data. The Fund Managers want to turn something out very quickly and try to trade in it but he doesn't have all the data required for issuers checking, for classifications, checking at that point in time, then you may not be able to promote that trade. And that probably is one of the reasons why a lot of firms have adopted direct interfaces and real-time updates from data providers to try to pull as much information automatically as they can.'

The IMS Vendor has responded to the need to enhance quality data by offering an additional service to its clients. The Vendor describes this as a

'...fully-managed data offering for [Vendor] Investment Management Solution clients. Users receive more complete and scrubbed reference data aggregated from multiple data providers, including benchmark/index, security reference, pricing/evaluation, issuer, and operational data' – Vendor Marketing Materials.

Competitors of the IMS Vendor are also responding to data challenges. IMS vendors are being absorbed into firms which provide market data. For example, [IMS Competitor 4] has been absorbed into MarkIT, a provider of market data to the financial services industry. In announcing the purchase of [IMS Competitor 7] the Head of Enterprise Software at MarkIT highlighted how their data management offerings would complement the [Competitor 4] IMS:

'We think that a combination of good, cleansed, scrubbed, quality data coming out of MarkIT [Enterprise Data Management System] and feeding into [IMS Competitor 4] is what the market really wants.' (quoted in Rundle 2014).

5.2.6. Rationalising Compliance Systems

The study revealed that the ability to provide an aggregated view of a firm's holdings was also dependant on the use of core systems. From the Regulator's perspective, the use of disparate systems may affect an organization's ability to aggregate its compliance positions across all the trading desks it operates globally.

The IMS Vendor's Senior Relationship Manager observed:

'You've got big companies who have multiple [IMS] systems and therefore, do not have a clear view of their entire book of records.'

Furthermore a compliance manager in C.8, noted:

'The [Regulator] aren't keen on having lots of different applications. They'd rather see a core, system and they're not keen on lots of spread sheets either. So it is an issue.'

Core systems are also important where there exists a requirement to aggregate trades and consider all holdings in order to calculate risk limits. For example, the UCITS regulations require financial organizations to adopt a 'risk limit system' to ensure that trades do not breach the organizations risk management policies. The regulation requires that every transaction is taken into account thereby requiring a core system and consolidated data sources. The Risk management principles for UCITS (Consultation Paper) states:

'The limit system should refer to the risk profile of the specific [Fund] and should set appropriate limits for all potentially relevant risk factors. That is, it should cover all risks to which a limit can be applied and should take into account their interactions with one another. The Company should ensure that every transaction is taken into account in the calculation of the corresponding limits. '(CESR 2009 p.20)

A senior compliance manager, in C.8, commented on why his organization was focusing on rationalising compliance related systems:

'We need to invest in making our infrastructure more streamlined. Getting rid of duplications. Where we purchased other companies before and just sort of ended up with two systems in place, we need to get it to one system, but we need to get rid of a lot of the quirks and business process. We need to iron out a lot of the niggles. We need to be able to run those business processes, especially the support businesses processes, with fewer people and so less cost. So that second chunk of investment spending is about moving towards a strategic architecture, instead of taking let's say, six months or one year view. Saying, 'Okay, we need to improve this. It's going to be a three, four, five year journey to improve this area. We could be improving rationalising trading systems, rationalising [IMS]. We could be streamlining anywhere where we've got duplications with the different parts of the process. Another example is pricing systems. We may be pricing in twenty different places. Rather than just have one big pricing engine. You know you could be doing confirmations in multiple places and do that once. Have one common clearing structure. Why do you have one clearing for prime brokerage, one for OTC derivatives?'

The study found that several of the financial institutions participating in the study used different systems with similar functionality to the IMS, provided by the IMS Vendor's competitors. The IMS Relationship Manager outlined an example of one of the study participants which utilised five different IMS and was struggling. He commented:

[Financial Organization C.8], they're in the paper, so it's not secret. They have sacked about three hundred of their eight hundred people. Again it's in the paper; they've bought [Hedge Fund X], which was like a hedge fund. However, they now have lost money on that. They're looking to even disband the name and just, you know collapse it all together and we're talking about trust. We're talking about how we [the Vendor] can give them a single system. At the moment they have got five order management systems within the two companies. I think two versions of the IMS and three from competitors. So you've got five systems, all of which manage different trades, different compliance, everything else, blah, blah, blah. So it's a complete mess. However, I looked today, I had some work done for me to see just how many compliance rules each company had and what sort of data quality sits behind it and it was interesting that a company [Financial Organization C.8], has nearly 10,000 compliance rules. Of those 10,000 every single day, they have 14,500 data exception, every single day, and they don't do anything apart from close them, because they haven't got the internal process and procedure to manage quality. To manage the data that's been brought in and to... if you've got a data exception, it's a number that's missing and all of a sudden, any concentration test or any exclusion test becomes meaningless if you've not got the right numbers coming in. If this became public knowledge, the credibility of [Financial

Organization C.8], would go absolutely further out the window. It's really critical, but the problem with [Financial Organization C.8], is they're looking at how they made all those cuts with employees, have made all those cuts with losing their Band-Aids, their assets under management. And they're not small, where you know over two hundred billion, but by God, one day they're a lot bigger than that. And they're now thinking, how quickly, how cheaply can they bring in something to give one single order management system across the entire groups that they have within the company. And they're looking at this driven financially, rather than by thinking, how can we best manage? How can we best utilise, what we know, what we've got? And it's effectively, for them to do it properly, it's a fresh greenfield site, start again and look to see how you can rewrite rules, rewrite data feeds, rewrite all the workflow processes. And yet, they are absolutely against doing that, because they think, if you then suggest a Greenfield site, it means the cost of so doing, so replacing it, is many times greater. And the problem is, when you've got two systems, it's comparable to Japanese and a Chinese person trying to talk to each other. There's some overlap, but not enough and to put them together creates nothing but confusion and bigger problems. So that's just like anecdotal. You talk about trust, talking about what we're trying to do to make investors feel good and a company like [Financial organization C.3], for example, they have won numerous mandates on the back of they've got [Vendor] doing compliance. And as such, there is trust that the mandates will be looked at properly. That the data required for that is going to be there. But reality says, with a company like [Financial Organization C.8], people almost assume and think you've got the processes, because how can you not be good at what you're doing, because you're so big and you then look to

try and shave costs in the order management system. But we're looking at potentially a million dollar implementation to get a new system in there. And that just replaces a couple of systems that they've got. It doesn't integrate everything else. In terms of replacing the five systems with one and giving them a single data feed, giving consolidated compliance rules, consolidate the workflows. We're looking a multiyear project, for multimillions of dollars to replace and to organise. And the big fault is, they want it by the end of this year, it's all to be in place. And we're saying, by October of this year, so October 2013. And it's just almost a ridiculous position where you want to have the trust of the investor and yet really, you haven't got the infrastructure and the quality of personnel to provide and maintain that process.'

5.2.7. Retiring Manual Processes

As a consequence of the regulator's change in approach, there has been a push to adopt systems such as the IMS and thereby retire older processes and systems. Organizations are being encouraged to move away from manual processes often facilitated by spread sheets. Unsurprisingly, the compliance executives interviewed stated a preference for automated controls over manual ones. They preferred to automate as many of their controls as possible through the IMS, as in addition to reducing input errors, automation also facilitates real-time monitoring. Table 10 shows the percentage of rules within the participating financial organizations which were not automated by the IMS.

Prior to the crisis, the regulator was seen as tolerating the use of spread sheets provided that their use did not cause unwanted outcomes as was the case in

2006, when the Regulator fined Credit Suisse £5.6 million for ‘systems and controls failings’:

The booking structure relied upon by the UK operations of Credit Suisse for the CDO trading business was complex and overly reliant on large spread sheets with multiple entries. This resulted in a lack of transparency and inhibited the effective supervision, risk management and control.’ (FSA 2008a).

Using spreadsheets involves considerable risk to financial organizations, a senior Compliance executive, in C.3, commented:

I saw a million pound breach at my old firm... it cost a million pounds, because a spread sheet was being used to monitor for compliance and it had a wrong formula in a cell.’

However, the study revealed that post-crisis the regulator was further coercing organizations away from the use of spread sheets and encouraging them to more fully adopt automated compliance systems such as the IMS. A senior compliance manager in C.3, commented:

Compliance is becoming more and more important, simply because the competitive nature of the industry and the desperate need to meet all of the new regulatory requirements means that companies are being told they have got to have something in place. For example, we have some extremely successful fixed income fund managers and they have been told by the [Regulator] they have got to stop what they’re doing, which is currently Excel based, simply because the risk of what they’re doing. The possibility of checks not being done properly and borders being

mismatched and double counted etc. is so great. The fines that we're going to get if they make any financial faux pas and trading errors is going to be so huge that the credibility of us, as fund managers, is going to be dashed, but also the financial cost will be massive'.

The Senior Relationship Manager suggested that the complexity involved in handling large volumes of trades in organizations with large numbers of assets under management was driving the Regulator to insist on using an automated process:

'It's because of the increased complexity in what's happening. The volume of trades being as they are, the Regulator is stipulating that in order to reduce risk as far as possible, then the only way [financial organizations] will be allowed to trade is with an automated process. So [the IMS] are being used for reasons of credibility [with the Regulator], if nothing else, the whole process has an audit trail.'

Manual practices and in particular the use of spread sheets for monitoring and recording concentrations and limits are becoming increasingly discouraged and firms are being strongly encouraged to replace their manual systems. Prior to the development of IMS type systems financial organizations checked compliance by adopting a sample based approach conducted manually. A compliance manager, in C.5, described this process and the need for the overnight batch testing of compliance positions:

'If you're looking at running a concentration test on every single account, that is so much more than you did before with a handful of random accounts and therefore

the process that you had before in picking out which random accounts, then go in, a process of pen and paper, do the number crunching... is just history. The way it was done before, it was one bloke would check the odd rule to make sure that it was within breach but there was absolutely no way you could check each and every compliance condition against transactions, unless you've got teams of hundreds of people because the volumes are massive to calculate the numbers, look at the concentrations or... the easy [calculations] are to say you cannot buy tobacco. The hard ones are to work out the concentrations or to look at and incorporate any user-defined dynamic denominator in looking at what a number should be. I mean you just can't do that unless you've got a lot of gap between end of day, close of business at four thirty and half past seven kick-off the next day.'

The study found that before the 2008 crisis, the Regulator was less focused on manual processes provided that the financial organization could demonstrate that they were compliant and that their approach gave them the controls required. A compliance manager, in C.3, provided an example of how, prior to the crisis, an organization may have been able to provide pre-trade compliance analysis through a manual email system but that post-crisis the Regulator would require an automated approach such as the one provided by the IMS. He commented:

'Well, we manage just under fifty billion; in fact it might be forty four, I can't remember. I think that makes it a fairly big chunk of money. The [Regulator] will come to us and say... And if we said, we don't have a pre-trade compliance engine in place, the [Regulator] would say, 'This is standard best practice. Everyone else who manages the same amount of money, got the same amount of infrastructure, owned by a large bank, have got this in place. Why do you not believe it...?'

you'd have to work bloody, hard to justify that you didn't need to have that in place. The [Regulator] wouldn't necessarily go into the granular detail of why you're still using emails. Just as long as you could demonstrate that the emails gave you appropriate control over the process then they wouldn't have a problem with it. Now it's moved on and I now think to myself we need to bring ourselves up to speed. We need to change our process and the [Regulator] would look at your process and confirm whether or not you're compliant. They would only confirm if they were uncomfortable with it then they'd tell you what was wrong.'

The study revealed additional benefits to using an automated process for managing compliance limits. A trader, in C.4, suggested that using automated processes, over manual practices, to manage investment limits provided assurance to investors' that the potential of their capital was being maximized and that their investments were being taken up to the limits allowed by the Regulator. He noted:

'But... what would you rather do? Invest with a firms that says, 'Scout's honour, pretty close here, I'm you know, making a good guess and I will ensure that I will take you to the limit on your holdings wherever they may be, but it's done manually.' Or a firm that says the same thing and has less chance of being embarrassed because it discovers things in its closet and therefore has a compliance system which is an integral part of the process.'

Several respondents suggested that the retirement of spreadsheets was likely to be resisted by fund managers, who were perhaps less IT advanced and so were resistant to technological change and who felt that the use of spreadsheets was 'tried and tested' and therefore lobbied to preserve this practice and prevent its

discontinuation. A compliance manager, C.7, outlined the role of the IMS in automating controls and how some individuals were resistant to retiring the use of spread sheets:

'So, I think that [discussion of controls] sort of exists on an automated versus manual basis and I think you're always going to have a group of people within the company that want to stick to the tried and tested, back of an envelope, that is a spread sheet, I want to do it this way. And then you have the IT advanced individuals in organizations, who say, 'you know we should automate this, we should do it with [IMS vendor]'. If we can, we should put the time into the system, into the development of [IMS] and get this on a real-time basis' and I'm saying my preference is keep as much of it automated as possible.'

A compliance manager, in C.2, commented on how the use of manual processes and spread sheets had caused significant errors:

'The biggest tool for the fund manager has and will always be Excel because it is just so flexible, so capable in having their own fields and methods and the problem is that you've now got not one single system which can be used to store and transact but lots of Excel spread sheets which are maintained, are looked after and I have seen one debt trader sacked, because the pricing that he'd had had not been updated and not been changed and because he then made a huge goof on a transaction it caused the bond to become junk status, it caused the portfolio to become junk because he had made such a huge sell on an incorrect price and so was forced to leave the company.'

The study found that traders and fund managers were perceived as preferring the use of Excel due its flexibility. The study revealed that despite the risk, the use of spread sheets by front office practitioners such as traders and fund managers was well embedded within the financial organizations. An IMS consultant commented:

'I mean you've got fund managers for example, and they all use Excel spread sheets, because that is for the pool of choice. They will not, they refuse to go onto systems, which don't give them all the flexibility that their Excel spread sheet uses or offers. And the problem with that is there is risk in having old, stale Excel spread sheets. And unless they are forced by the regulator to upgrade and to have everything that they do put on a proper order management system they continue to use Excel and problems may come from that.'

An IMS consultant also described how the flexibility of spread sheets could not be replicated within the IMS. He suggested:

'However, today and yesterday, I saw some of the most amazing Excel spread sheets that are used by [C.6] and there is just no way you can create that in an order management system, which meets all the stuff that they're doing. I mean they have got, in Excel, real-time prices coming in which dynamically change graphs, which dynamically restructure their portfolio, risk positions and it's just amazing what they've done in Excel. It's really, really clever and there's no way you can get that in an order management system.'

A systems manager, in C.8, described how he felt the balance of power was shifting away from the front office and forcing powerful individuals, such as fund

managers, within financial organizations to adopt automated practices for enacting transactions:

'These fund managers are all assuming that they can do whatever they want, because they're managing so much money and think they are above the world. However, there are regulatory clamps now being pushed upon them and what they are enforced to do is to use certain automated systems to provide accountability and traceability. And this has meant that they are being told really in no uncertain terms [by the Regulator] if you don't use the approaches that we're suggesting, then woe behold you if there are any financial problems or irregularities. So the culture is one where they used to feel that they can do whatever they want, but they're now being pushed into the corner where they're being forced to use the electronic order management systems and be held accountable.'

The study showed that there is a contradiction between the Regulator encouraging organizations to move away from manual processes and the need to adopt the IMS. The interviews revealed that the IMS is not always able to automate new regulatory obligations at the point in time when they come into force often due to tight implementation deadlines for new regulations. Consequently, there sometimes exists a lag between the regulatory requirement coming into force and the IMS being able to automate the new rules, perhaps due to new data fields being required. In the interim, financial organizations are forced to use manual processes to meet the new regulatory requirement. A compliance manager, in C.1, described this phenomenon:

'But the problem is, when you have a very short timeline, vendors haven't had enough time to build a product that they can sell. So, there's a bit of a contradiction there. If you've got any manual compliance checks and the [IMS] just cannot do that then [IMS automated checks and manual checks] will run in parallel. So that would still continue. There may be more hooks from the [IMS] where you can see what has to be run relatively, however the checks that were being done before will have to continue, if they ever get done properly'.

Another compliance manger, in C.6, concurred:

'I mean sometimes the regulation comes out and the systems aren't capable of fully supporting, in general aren't able to support new regulations. And the data may not be fully available to support the regulation. That's common. I mean that has happened...'

A compliance manager, in C.4, described the process whereby manual practices are managed alongside the IMS. He observed that firstly, there is an initial analysis and interpretation of the regulatory requirement where it is decided that the IMS will not support the requirement. In this case, they must design a manual process. The rule is then entered as a high risk into a larger 'matrix of regulation', which is also a manually updated spread sheet, used to track automated and manual regulatory controls. This analysis is then fed back to the IMS vendor who often builds an enhancement into the system allowing the manual rule to be retired. However, this process may take time, often over a year. The compliances observed:

'There'll be an initial analysis and interpretation of the [regulatory] rule and it is decided that it has to be manually implemented. We will then enter that rule into a

larger matrix of regulation, again manual spread sheet based. So yeah, this now exists. We will enter a monitoring solution in there, that's [IMS] automated, if it's [not able to be implemented through the IMS] we have to propose or recommend something that will work. That matrix rule guidelines will then feed somewhere else that says, right, all the stuff that's in [IMS] is automated. That's fine, all the stuff we're doing manually is high risk. What can we do with it? And then you use something, that shows all your high risk rules that are manually monitored and you go to [Vendor] and say 'Guys look how much stuff I am doing manually, I don't pay you guys all this for doing these all manually, you need to incorporate this into the [IMS].' Usually, a year later, we get an enhancement an upgrade patch from [Vendor] and we can retire the manual rule.'

The IMS Senior Relationship Manager's role included canvassing his clients, the financial organizations, for the upgrades they required and communicating them back to the US so that required changes could be implemented in future upgrades of the IMS. He also observed that changes in the IMS were not only driven by regulatory change but also financial innovation and the need to support more complex financial products. He commented:

'Well manual processes may continue or may become automated, because the functionality is now available or the data becomes available with the upgrade. You know they may not have wanted to source [the data] previously, but they may source it with the upgrade. So now you have to implement these new regulations. You have to make sure you have the right, you know checking process in place. You have to make sure that you have somebody agreeing to monitor the rule properly. We have foreign clients, for example, that are becoming more sophisticated with

the use of these [financial] products over time. And demand functionality for more [complex] products and when you do an upgrade there is more emphasis on rewriting the way that they currently work, to benefit with the way the business is going and the direction the industry is heading in. You know, so if they want to introduce new instrument types. If they're going to start trading more derivatives or start trading new fixed income securities, that you have the relevant data for compliance and support its trading in various marketplaces that they may be going into.'

One senior compliance manager, in C.6, commented that he would be loath to pay for bespoke changes to the systems as they would be later incorporated into future versions of the IMS. He observed:

'Well, new regs come in when they are written they pay no attention to the capabilities of the systems, which are used to apply the regs. And therefore the systems have to try to adapt to them. When we ask the [Vendor] for changes. Well, a software house would... could well say this is a bespoke... this is a bespoke development for which they would charge us, and you'll get it earlier, but you will have paid the software house to develop their product, and then they will build it in three years later, they will build it in as a standard function of the system, for which you actually paid.'

Furthermore, the use of spread sheets alongside the IMS may also provide capabilities for monitoring the effectiveness of rules, processes and controls over time. In the case of regulatory compliance or business critical processes periodic

manual checks should also be undertaken to validate results. A compliance executive in in C.2, noted:

'Even if you're fully automated, a manual process is vital, because you need to be validating the results that your automated systems are doing. You know there needs to be that element of validation and if you're not able to effectively validate the results that [IMS] is giving you, then actually how diligent of an approach are you taking? You know you can't just put a system or control in and forget about it forever. It will change over time. So, I think this has to be part of the industry; there will always be an element of manual checking.'

The findings show that spread sheets are not the only type of manual process which is being retired by the Regulator. Often financial organizations may not conduct trades electronically through the Vendor's proprietary network. Instead, they will communicate their orders directly to brokers over the phone and then manually enter the orders into the IMS to check and monitor positions against compliance rules. A systems consultant, in C.5, commented on the different trading practices adopted by firms:

'You have some companies who currently do not trade electronically and pick up the phone, communicate their order to the broker and over the phone will conduct all their transactions.'

One systems manager, in C7, revealed how the adoption of the IMS may not significantly alter this, manual practice:

'In terms of their behaviour, what [Fund Managers] will do is they will continue to work the way they've always worked, but will employ people who are then forced to enter the data into the system and so there will be that track of what has happened, but they still intend to carry on working the way they've always carried on. So, it's almost like, 'You're telling me what to do. I will have to buy an [IMS]. I'll have to use it, but what I'll do is, continue working the way I know best and employ more people to enter those transactions once I've chosen and decided what to do.'

However, the post crisis EU Directive, MiFID II, requires that organizations publish post-trade data relating to completed transactions as close to real time as is possible. The draft regulation states:

'Pre-trade information, and post-trade information relating to transactions taking place on trading venues and within normal trading hours, shall be made available as close to real time as possible. Post-trade information relating to such transactions shall be made available in any case within three minutes of the relevant transaction.'

This requirement has caused concern in the industry with many suggesting that it could herald the end of voice trading. At the time there was debate regarding, whether new exchanges and platforms for trading derivatives should allow voice trading or be purely and so automated and captured electronically (Rennison 2011).

5.3. Summary

This chapter has focused on outlining the study's key findings derived from the interviews conducted. Figure 13 summarises the research findings which occur at the organizational field level.

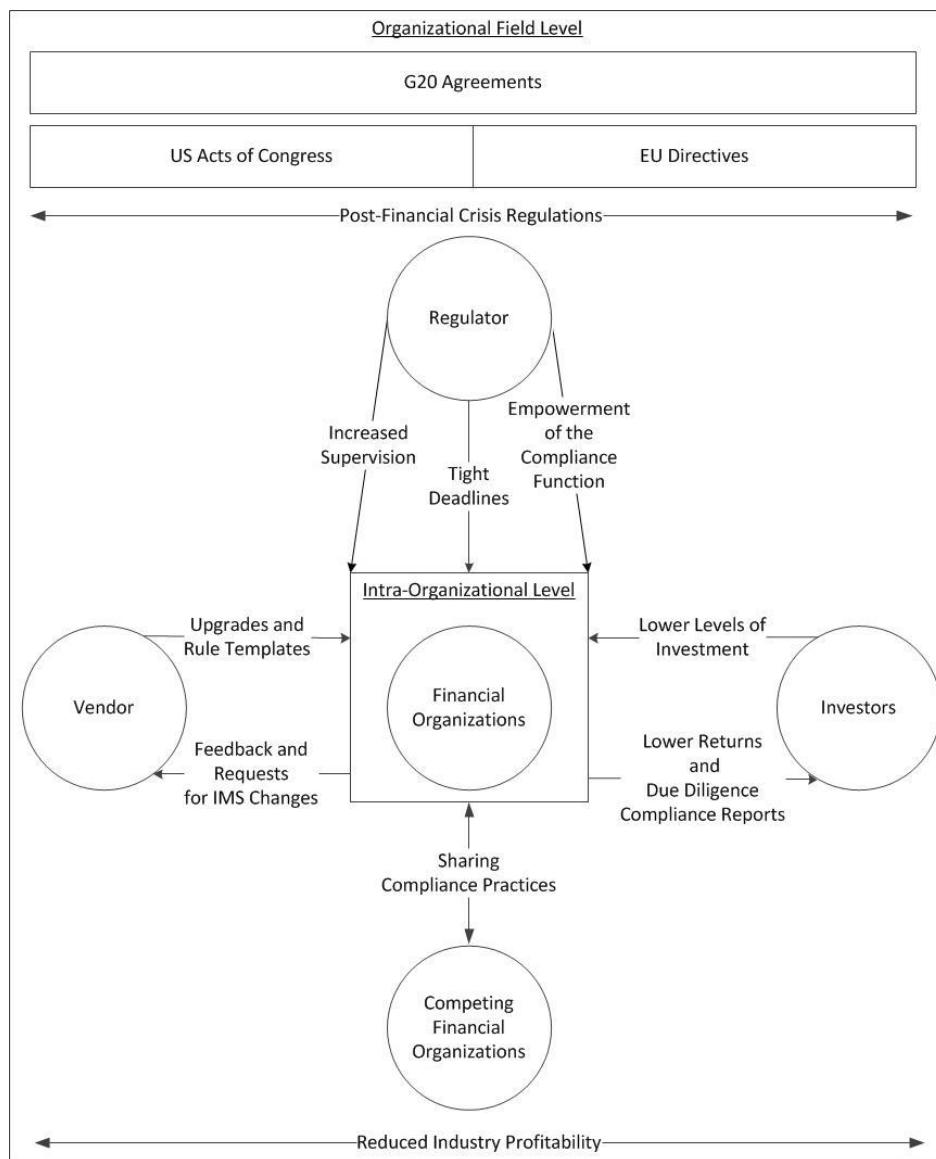


Figure 13: Post-Crisis Changes in the Organizational Field. Source: author

Table 17 summarizes the findings and the associated limiting factors identified at the intra-organization level.

Change in Compliance Practice	Limiting Factors
Further Automation of Governance Practices	Design of Workflows (Segregating Duties)
Implementing Global Teams and Compliance Themes	Cost of Reorganizing Tight Deadlines for Remediation
Defining and Sharing Best Practice	Nuances in Regulatory Jurisdictions
Structuring Internal Compliance Committees	Resistance from Senior Management Unwilling to Share Issues with Peers
Consolidating Compliance Data	Cost and complexity of moving to a 'golden' data source.
Rationalising Compliance Systems	Cost and complexity of moving to a core system.
Retiring Risky Manual Processes	Flexibility of spread sheets. Embedded use of spread sheets by senior front office professionals. Need to maintain manual processes for checking automated processes.

Table 17: Post-Crisis Changes and Limiting factors at the Intra-Organization Level. Source: author

The study shows how the IMS facilitates the automation of monitoring and governance practices. The research highlights practitioner's perspectives regarding ways in which the Regulator has altered its attitude towards the use of systems. The Regulator was perceived to be adopting a more prescriptive approach requiring organization's to adopt core systems, retire manual processes and to consolidate

data. A key driver of these changes is the need to provide aggregated views of compliance positions.

The study found that post-crisis, the role of the compliance function has developed and that compliance executives were deemed to have been empowered and exercise more control. The structure of the compliance function is also evolving with some organizations adopting a more centralised approach by establishing and disseminating best practice by organizing around common compliance themes, creating global compliance teams and the using of Master Tests. The adoption of Masters Tests must be balanced with local knowledge of the regulatory jurisdiction to ensure its relevance. Thus, at the intra-organizational level the adoption of generic approaches was found to be possible across the organization. However, due to each financial organization's nuances in asset classification and data the usefulness of Vendor defined generic templates was questioned by the study's participants.

The study found that competing financial organizations are meeting and openly sharing compliance practices. Such forums were also seen as an opportunity to lobby the IMS vendor for needed changes in future upgrades. The openness with which competing organizations shared their compliance practices suggests that compliance is not seen as a source of competitive advantage. However, the study also revealed several counter perspectives. One is that robust compliance practices may indeed assist in wining new business by providing comfort to investors that their assets are being appropriately managed. Another perspective is that robust compliance practices can allow financial organizations to bring new offerings to market quicker.

The findings highlight how in one organization high level management was becoming increasingly focused on regulatory projects and that regular committees to provide senior management with oversight of remediation projects were being implemented. The study revealed that investors were also becoming increasingly focused on compliance and that the demonstration of robust compliance practices was important in winning new business.

Yet the findings also revealed several contradictions. Firstly, that the tight deadlines for remediation are preventing some of the organizations studied from implementing strong technical architectures to support compliance activities. As profitability in the industry is reduced, organizations do not have the time or resources to build robust technical foundations for compliance and that often they are implementing ad-hoc solutions. Furthermore, the tight deadlines are preventing the Vendor from implementing systems changes in time for the post-crisis regulations. This may force financial organizations to adopt manual process often in the form of spread sheets in the interim period.

In this chapter, the findings have been presented under themes of organizing practices which encapsulate the changes the general research question aims to investigate. The following chapters seek to analyse and discuss the findings in relation to the institutionalist constructs outlined in Figure 5 to provide further insight into the phenomenon uncover.

6. ANALYSIS: IMS AS CARRIERS OF REGULATORY INSTITUTIONS

This chapter focuses on how the IMS acts as a carrier for rules and actions associated with meeting post-crisis regulatory obligations. The motivation is to understand how the IMS acts as an institutional conduit and thereby contributes to the establishment and transmission of practices for complying with regulatory rules. The findings of this chapter were derived predominantly from the first and early stages of the second phases of data collection which focused on understanding the IMS and how it was utilised in the participant organizations. Thus, the chapter draws from the previous chapters focusing on the contextualization of the IMS and correspondingly interviews conducted with the Vendor's employees and with users of the IMS in the participant financial organizations. This analysis was conducted early on in the study lifecycle, so an additional motivation was to assess the relevance and usefulness of institutional concepts to understand the IMS case and thereby support the selection of institutional theory as a theoretical lens for this research.

Through this analysis, I aim to make a contribution by developing understanding of the social and technological elements, by which regulatory institutions and practices become diffused. Furthermore, this chapter seeks to make a theoretical contribution by evaluating and developing Scott's concepts of institutional carriers. The chapter seeks to answer the following questions:

- How do regulations and compliance practices become inscribed and transmitted through IMS technology?

- What elements of the IMS allow the transmission of regulations and compliance practices through the IMS?
- How do these elements relate to categories of institutional carriers (Symbolic Systems, Relational Systems, Routines and Artefacts)?
- What pillars of institutional theory (coercive, normative and cultural-cognitive) are found to be relevant to the IMS research setting?

In order to address the research questions each of Scott's (2008) institutional carriers, as outlined in Table 7, will be considered in turn. By analysing the findings against Scott's framework of institutional pillars and carriers, see Table 7, understanding of the different types of institutional carriers in play and their associated relationship with the differing pillars of institutionalism are developed, thereby guiding the analysis.

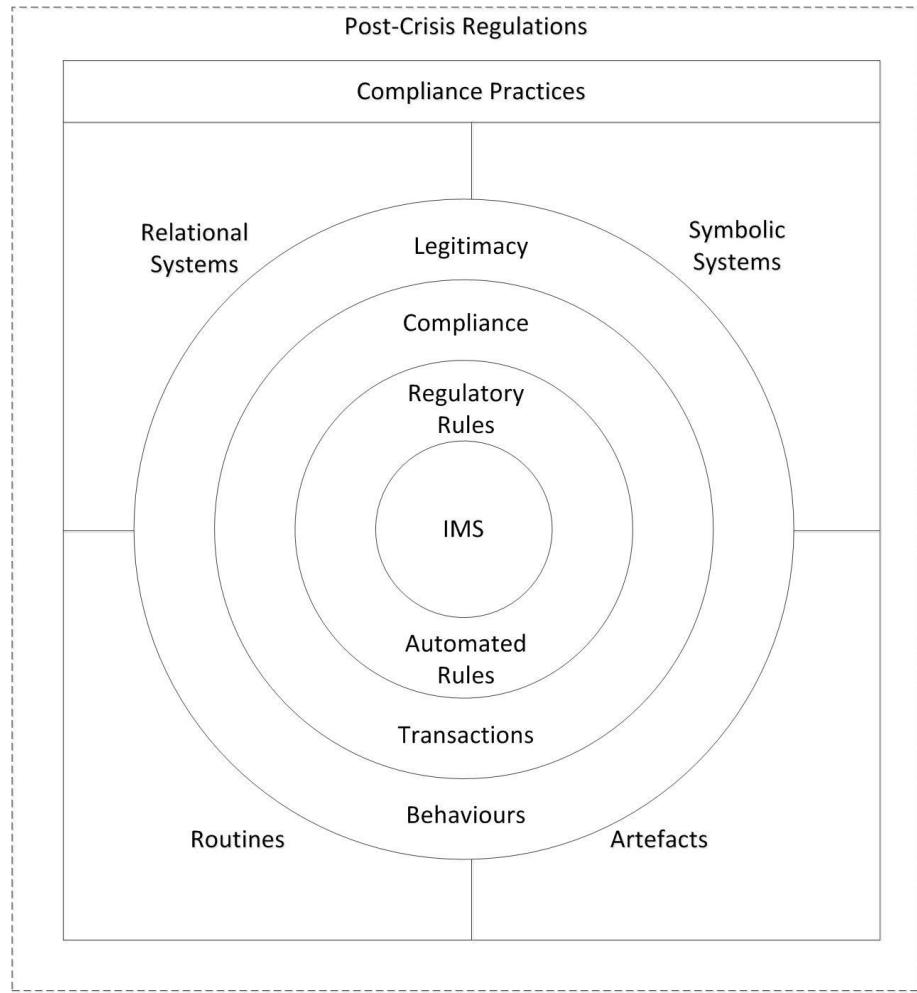


Figure 14: IMS as Institutional Carriers for Post Crisis Regulation. Source: author

Figure 14 outlines a conceptual model of how the IMS acts as an institutional carrier. Mandates from government allow regulatory authorities to set new requirements in the form of rules relating to the trading of specific financial assets or ways in which firms must conduct their overall business. Regulatory institutions and associated compliance practices for conducting transactions are transmitted and instantiated within the IMS as Relational Systems, Symbolic Systems, Artefacts and Routines. The following subsections addresses each of the institutional carrier concepts outlined previously and considers them against the study's findings. Lastly, some conclusions are formulated.

6.1. Symbolic Systems

Rules and laws are identified as being a manifestation of symbolic systems aligned with regulative perspectives of institutions - see Table 7. Clearly, a system originally designed to meet regulatory obligations, such as the IMS, will have a focus on rules and mandates. Regulatory laws are codified within the IMS as automated rules which are used to manage compliance obligations. The automated rules represent the abstraction and codification of regulatory rules into a useable model which can be applied by firms to evaluate the compliance of their transactions. Through such actions the IMS explicitly institutionalizes sets of rules for meeting specific regulatory obligations and tacitly institutionalizes associated local practices necessary for operating those rules, such as conducting overnight post trade compliance checks or the selected structure of workflows for managing breaches.

The study shows that the Vendor with selected clients develop generic rule Templates for specific regulations. Thus, these templates are socially constructed. Compliance practices in the form of automated rule templates are embedded into the IMS and consequently diffused to those systems adopters who utilise the templates, thus further legitimizing the approach through mass adoption. Furthermore, generic rule templates, developed internally by financial organizations, termed ‘Master Tests’ may also be used to diffuse and standardize compliance related best practice within organisations. Templates may then be modified as their significance to each financial organization’s individual operating environment is determined.

These findings align well with Scott and Thornton and Ocasio's views of regarding the important role of symbolic systems in diffusing institutions: 'For ideas to move from place to place and from time to time through the use of symbols, they must be encoded into some type of script that is then decoded by recipients who are necessarily embedded in different situations and possessed of different agendas' (Scott 2008 p.140). Furthermore, Scott proposes that 'laws and regulations are among the more influential and widely recognised modes of symbolic systems. While conventional approaches assume that such systems are readily transmitted and straight forward, requiring no translation, law and society scholars have taught us that laws are often ambiguous. Laws can often be obscure in their meaning and contested in their interpretation; their significance is often negotiated by various actors in the field – ranging from legislators and judges to policy administrators and managers. Legal environments are not simply imposed by legal authorities: they are endogenous, constructed by collective sense-making by multiple actors in the field (Dobbin et al. 1993; Edelman and Suchman 1997)' In the case of the IMS, the collective sense-making described occurs at two levels. Firstly, as the Vendor and clients translate the regulations into generic templates and once again where financial organizations interpret and evaluate the templates against their own operating environments or develop their own bespoke set of rules.

The analysis outlined already within this section focuses on regulative elements. However, normative and cultural cognitive elements were also found to be intertwined within the IMS symbolic systems. Normative elements of institutions 'involve the creation of expectations that introduce a prescriptive, evaluative and obligatory dimension into social life.' (Scott 2003 p.880). Symbolic

systems related to the normative pillar include values, expectations and standards - see Table 7. The definition and adoption of pre-defined templates for meeting specific regulatory mandates act as a means to transmit the values and expectations of policy-makers instantiated in the original legislation from which the templates are derived. The interpretation of regulations into automated rules provides outcomes and results against which policy-makers and regulators may judge if their requirements have been met and if the legislation has been successful in creating appropriate values and standards. The adoption and implementation of automated rules provides a departure point from which the Regulator can determine if the financial organization is meeting or likely to meet the Regulator's expectations. Through the definition of generic templates the Vendor seeks to transmit their interpretation of the Regulator's expectations and conjointly reinforces the use of the IMS as an appropriate means of meeting these expectations. Similarly, the use of Master Tests transmits interpreted yet prescriptive practices for meeting common regulatory rules across a global organization's different compliance functions.

Correspondingly, cultural-cognitive elements of neo-institutionalism 'involve the shared conceptions that constitute the nature of social reality and the frames through which meaning is made' (Scott 2003 p.880) while carriers of cultural-cognitive institutions include categories and schema - see Table 7. Generic rule templates may help cognitively shape and frame ideas on how areas of compliance should be implemented and managed by IMS adopters by allowing such ideas to be easily shared. Although the research shows that users of generic templates, such as Master Tests, are likely to alter the rules to match their specific localised business and regulatory environment, the system allows the diffusion of

solutions to regulatory compliance which must then be further cognitively translated and applied to the users' specific context. Furthermore, the IMS allows the categorization of generic templates. Appendix 7 shows an extract of the IMS user manual which shows how such templates are categorized. Categorization of regulations thus has the potential to create 'perception frameworks' to aide decision making (Preda 2007a). As templates relate to specific regulatory requirements and the IMS has prebuilt categories for them, there exists an underlying organizing pattern or schema to the predefined templates based on the regulation from which it is formed and the jurisdiction where it applies. Furthermore, the templates themselves may be seen as interpretive schemas which allow accessibility to generic symbolic representations of regulatory rules.

6.2. Relational Systems

Relational systems may also be conduits to assist the diffusion of institutions through 'social connections among individuals, groups and organizations' (Scott 2008 p.81). Within the regulative pillar, systems of power and governance are highlighted and at the normative level regimes and authority systems are emphasized, see Table 7. Scott (2008 p. 82) observes that 'normative and regulatory theorists are apt to view relational systems as 'governance systems' emphasizing either the normative (authority) or the coercive (power) aspects of these structures. Such governance systems are viewed as creating and enforcing codes, rules and norms and as monitoring and sanctioning the activities of participants.' Using these concepts to guide the analysis, the IMS may be interpreted as a governance system whereby rules and norms are enforced through a

relational system of authority emanating, at the organisational field level, for example from EU Directives, Acts of Parliament or the US Congress and then through regulatory authorities. Regulatory rules and requirements are diffused through symbolic and relational systems initially in the form of legislation and then further defined into regulatory rules by regulatory authorities before being again codified into automated rules within the IMS and perhaps disseminated in the form of Templates across organizations or as Master Tests within organizations. This view encompasses both the normative and regulative pillars as mutually reinforcing. The regulations' coercive power is legitimized through normative authorities, such as the Regulator, who support and constrain the use of power.

At the intra-organizational level, the IMS workflows are defined in a way which authorizes individuals within the firm to take specific actions, such as overriding breaches. Thus, the system acts to sanction trading activities conducted through networks of financial intermediaries, investors and issuers. The structuring of workflows creates boundaries and relationships and so establishes who has the authority to manage compliance breaches. This finding supports Scott's observation (2008 p.82) that 'classifications and typifications are often coded into organizational structures as differentiated departments and roles.' In this case, the IMS workflows act to enforce boundaries between the front office trading desks and the compliance function. Furthermore, the IMS has a workflow monitoring function, which according to the IMS user manual, allows rules to be defined around specific events. Thus, the IMS may be interpreted as a relational system of governance which confers individuals with the authority to manage compliance related events and breeches. Correspondingly, the system provides functionality for

conducting well established governance practices in the form of ‘four-eye’ tests - see Appendix 8. This refers to the requirement for at least two people to review an approach. Thus, the system acts as an institutional carrier by facilitating established methods of conducting compliance checks through networks of individuals. Furthermore, the fact that the system is structured to incorporate this practice further institutionalises and embeds four-eye tests as a legitimate compliance practice.

The research found individuals shared compliance related knowledge externally, that different financial organizations would often jointly attend meetings, often facilitated by consultants or legal experts, to discuss approaches for solving contemporary issues. Scott (2008 p.81) notes: ‘Many robust relational systems transcend and intersect with the boundaries of organizations as is the case with occupational and professional communities of practice.’ The study revealed that adopters of the IMS, in competing financial organizations, had set up communities of practice to discuss ways in which the system was being used to tackle new and challenging regulatory issues. Again, we can see that understanding the impact of a regulation on each firm requires a process of sense-making and cognitive framing. During these meetings insight into regulatory requirements was constructed socially amongst practitioners who collectively developed responses to regulatory problems.

The study shows that networks of subject matter experts communicate both internally across global divisions and externally across firms to establish how specific regulatory issues are being tackled and to share approaches and practices. A consensus towards best practice and common approaches for meeting new

regulatory obligations, which are derived from such networks, may potentially create similar configurations of the IMS and consequently increase field level isomorphism across organizations' IMS compliance practices. Internally, financial organizations were also found to share practices and approaches for using the IMS to meet similar regulatory requirements, through Master Tests thus creating homogeneity and isomorphism, at the intra-organizational level, across the firm's geographically separated compliance functions. Thus, the IMS, through its inscription of regulatory rules, acts as a conduit for the diffusion of both regulatory institutions and associated practices.

6.3. Routines

Scott (2008 p.82) observes that: 'institutions may also be embodied in – carried by- structured activities in the form of habitualized behaviour and routines.' Scott highlights the work of Winter (1990: 274-275) who observes that routines, 'range from 'hard' – activities encoded into technologies – to 'soft' organizational routines... but all involve 'repetitive patterns of activity.' Furthermore Martin (2204) highlights recursive practices a one of her criteria for institutions. Building on these perspectives, the IMS facilitates 'hard' routines in the form of automated rules and associated pathways through the system and 'soft' routines in the form of workflows.

Those theorists who emphasise regulative elements of institutions stress protocols and standard operating procedures (Scott 2008). Automated compliance rules and workflows collectively are standard operating procedures for ensuring regulatory obligations are met. Furthermore, Templates and Master Tests

encompass standardized routines for meeting compliance obligations. The IMS allows for the monitoring of workflows and, according to the IMS user manual: '*alerts the appropriate personnel of user-defined events or data of interest*'. The Vendor provides its own predefined workflows which are pre- embedded within the system. For workflows or routines to be predefined the Vendor must make assumptions, in the workflow design, as to the broad type and structure of the tasks or routines' being monitored and so further legitimises and institutionalises such assumptions by diffusing them within the IMS. The system allows for the user to also define their own workflows and both correspondingly the breaches that are flagged and how they are managed, the supposition is that surveillance controls are necessary and that pre-defined alerts and approvals processes will be required to effectively govern workflows. Thus, workflow related functionality is underpinned by the assumption that compliance practices can be structured around repetitive routines, which must be triggered on specific events. This analysis highlights how the system acts as a carrier and reinforcer of institutionalized patterns of behaviour, relating to meeting regulatory obligations. The research also highlighted that the routines built into the IMS require specific data to be able to operate and thus the IMS acts to institutionalize the use of certain data sources highlighted in Table 13.

Scott (2008) advises that normative elements of routines may consist of jobs, roles and obedience to duty. The study found that the system also acted to structure, determine and legitimize roles within the organization and what tasks were appropriate to which users. The findings show that the IMS may be reconfigured to support the routines required by business users. The system stipulates tasks appropriate for fund managers, traders and compliance roles. The

system should allow the segregation of business and compliance operators and thereby act to define and reinforce their roles within the organization. Furthermore, the surveillance aspect of the system, acts to ensure employees' obedience and conformity to professional standards associated with their ascribed duties and roles. Consequently, the IMS act as an institutional carrier for norms associated with jobs and roles which are in turn required to meet regulatory obligations, including the obligation that firms, 'should segregate the duties of individuals' (FSA 2010b).

This analysis highlights how routine and relational carriers may be intertwined, while the relational carriers' functionality of the IMS reinforces the boundaries of established roles and the nature of their interaction, the workflow functionality stipulates the tasks appropriate to each role. Scott (2008) notes that routines may be learned, sustained and renewed by relational systems and that the power and attraction of communities of practice is their ability to share routines within which is embedded the tacit knowledge of the actors who structure and operate the routines being shared. In the context of this research, the communities of practice set up by adopters of the IMS to share issues and approaches allow the process of learning to be extended beyond the confines of a single firm and thereby the IMS user community can benefit from the tacit knowledge of professionals in competing firms faced with similar challenges.

However, Oxley (1999) suggests this learning comes at a price. Where participants may benefit from the acquisition of the 'sticky' knowledge embedded within other organizations, this benefit must be balanced against the 'leakage' of their own proprietary knowledge. The fact that financial organizations are happy to meet with their competitors to discuss approaches to utilize the system suggests that

compliance is not seen as a source of competitive advantage. Many of the interviewees concurred suggesting that the firms compete on the investment side of the business, with compliance being seen as ‘necessary but non-value adding’. If through remaining compliant, a competitive advantage is not gleaned then the value of a successful compliance function is in legitimizing the organization by meeting its regulatory obligations in the eyes of its stakeholders, such as its clients and regulator. However, there was a discerning voice. A senior compliance executive, in C.8, suggested that an experienced and effective compliance function working together with their risk department could potentially allow them to be first to market with a new financial product and thereby, provide a first mover advantage.

6.4. Artefacts

The IMS and its associated automated rules, templates, databases and data feeds, as well as the hardware on which it runs and the manuals and training materials which accompany it may all be considered instances of an artefact produced and transformed by human activity through a physical or cultural environment (Suchman and Edelman 1996). Orlikowski (1992 p.84) and Giddens (1984) advise that artefacts may be seen as products of human action but that once deployed may be seen as part of the ‘objective, structural properties of the situation’. This is a perspective often obscured, as there is a separation between those who design the system, in our study the IMS vendor and those who use it, the financial organizations (Scott 2008). However, Orlikowski (1992) advises that while the initial development of a technology may require a greater engagement of human agents, the on-going possibility that users will socially and physically

change the system should not be ignored. This was observed in the study. Rival financial organizations met to discuss issues relating to their common adoption of the same IMS. These forums allowed the users to not only share experiences regarding the IMS but also to act as a collective voice to lobby the Vendor to make changes. In this way, new approaches and practices were socially constructed and consequently these new practices became embedded and so locally institutionalized within the IMS.

Scott highlights how regulative elements of artefacts may include objects which comply with mandated specifications, such as regulatory rules, while normative elements will include objects meeting standards and conventions. The on-going requirement that firms adhere to regulatory mandates is the *raison d'être* for the system's existence. Also, the IMS acts as a conduit for industry related standards and so is acting as a carrier for such institutions to further their legitimization. Examples include the use of established risk methodologies, asset ratings and classifications, indexes and benchmarks (see Table 13), as well as underlying technical standards - see Table 14. The research found that the Vendor is careful to ensure that the system utilises and meets current norms relating to technical standards and also to withdraw support of those standards which are deemed no longer relevant e.g. Sybase databases. In this way, the IMS contributes to the diffusion, institutionalization and deinstitutionalization of technical standards.

Lastly, the cultural-cognitive perspective of artefacts as institutional carriers suggests how they might actualise and personify constellations of ideas (see Table 7). The research found that the IMS has the ability to symbolically represent

various media, such as TV or Excel - see 4.7.8. In this way, the IMS allows the compliance professional to coagulate and frame the different strands of information, which are required to enable their role in the organization. Furthermore, these predefined templates of rules and workflows and are also outlined within the IMS system's user manual and release notes, thereby providing a further method of diffusion through semiotics.

6.5. Conclusions

This chapter demonstrates how regulations and compliance practices become inscribed and embedded through IMS technology and how the different types of institutional carriers and their association with different institutional pillars are in many ways intertwined and mutually reinforcing. For example, the research identified the practice of systems adopters meeting to discuss the IMS. This phenomenon was found to be relevant to the symbolic systems, artefacts and relational systems constructs, while the routines carrier may be interpreted as addressing the compliance focused activities around which the other carriers are built. Table 18 summarizes the institutional carriers identified and their classification against each institutional pillar.

Carriers	Regulative	Normative	Cultural-cognitive
Symbolic systems	Automated rules, and templates	Regulator's values and expectations	Template schema and categorization

Relational systems	Governance practices embedded in workflows	Systems of authority embedded in workflows	Boundaries between fund managers, traders and compliance identities/roles
Routines	Predefined Workflows, Templates and Master Tests	Differentiation in activities undertaken by fund managers, traders and compliance executives	Communities of practice sharing compliance practices
Artefacts	IMS hardware, software and databases/data feeds	Benchmarks, indexes, ratings. Technical standards.	Use of different screens and media to frame compliance decisions

Table 18: Institutional Pillars and Carriers for IMS. Source: author

The analysis indicates that elements of the three regulatory pillars were found in all four institutional carriers, as each of the elements outlined in Table 7 are present. While the regulatory pillar was perhaps the most explicit, perhaps due to the context of the study, the normative and cultural-cognitive pillars were also found to be significantly present. This is a key finding, as the presence and interdependence of each institutional pillar suggests the appropriateness of institutional theory as a theoretical lens to investigate the IMS and its role in meeting regulatory post-crisis obligations.

However, it occurs to the author that almost any human operated complex enterprise wide technology could be argued to have relational systems, symbolic systems, routines and artefacts e.g. an Enterprise Resource Planning (ERP) system. Nonetheless, by using Scott's institutional carriers to frame the discussion it becomes clear that the IMS acts to diffuse regulatory institutions and associated compliance practices and that coercive, normative and cultural cognitive 'pillars' are all present. This is an important point as the types of mechanisms being used to

investigate institutionalization in Chapter 9, coercive, normative and mimetic, are derived and correspond with Scott's (2008) typology of institutions - see Table 9.

An extension of Scott's perspective is derived from the view that scholars have shown how regulatory technologies, are not objective (Bamberger 2010; Callon and Muniesa 2005; Itami and Numagami 1992; Muniesa et al. 2007; Preda 2007b; Zaloom 2003). Neither is the IMS, in that it is designed to monitor compliance of regulatory rules which can be distilled into quantitative measures and metrics and so it privileges the quantifiable and acts to obscure uncertainty. In this way, the IMS has its own 'calculative agency' (Callon and Muniesa 2005). The IMS design limits the types of regulatory institutions and compliance practices which can be diffused and so further privileges the institutionalization of such practices as an appropriate means to regulate economic activity. This has the potential to obscure from policy-makers and managers unmeasurable hazards such as the weakening of cultural and ethical standards within the organization or wider industry. In this way, regulatory technologies such as the IMS may create their own world view (Heidegger 1954) which may dangerously alter the 'perception frameworks' (Preda 2007b) of those decision makers the system was designed to inform. Similarly, Bamberger (2009 p.676) observes how the automation of regulatory checks may, 'create automation biases-decision pathologies that hinder careful review of automated outcomes, especially by those with financial incentives that promote risky behaviour. These very phenomena contributed to the failure of risk regulation and risk management to prevent the recent financial meltdown.'

This IMS is also not neutral in that it allows the Vendor and Financial Organizations to be selective over the institutions and practices carried and those

which are not, such as the Sybase database. Thus, the IMS may act not only as a carrier of institutions but also as an agent of deinstitutionalization for those wishing to erode or displace an existing standard or practice. Building on such perspectives, the analysis is developed in the next two chapters by considering how the IMS is implicated in the deinstitutionalization and institutionalization of compliance practices.

7. ANALYSIS: DEINSTITUTIONALIZATION OF COMPLIANCE PRACTICES

This chapter utilizes Oliver's (1992) seminal work on deinstitutionalization to investigate how different types of social, functional and political pressure, channelled and applied through technology, causes compliance related practices to become discontinued or eroded - see Table 6 and Figure 8. The chapter draws from the previous chapters focusing on the contextualization of the IMS and correspondingly interviews conducted with the Vendor's employees and with users of the IMS in the participant financial organizations. I aim to make a contribution in two areas. Firstly, by utilising Oliver's theory of deinstitutionalization in exploring the role of technology in implementing regulatory change, I aim to assess and extend Oliver's work within this setting. This is achieved by investigating the role of technology in applying not only functional pressures relating to technical specification but also, pressures rooted in social and political dimensions. Secondly, the research aims to highlight the factors contributing to the abandonment or erosion of compliance related practices within the financial organizations studied. Consequently, the research employs the following research questions:

- How are outmoded compliance practices becoming deinstitutionalised through the IMS?
 - What compliance practices are being deinstitutionalised through the IMS?
 - What are the social, political and functional pressures to deinstitutionalise practices for compliance

- What are the empirical predictors of deinstitutionalization within financial services?

Figure 15 provides a model of the concepts discussed in this chapter to address the research questions. The post-crisis environment is theorised as causing the deinstitutionalization of processes and systems, behaviours and regulatory rules in order to ultimately prevent inappropriate trading behaviours and transactions.

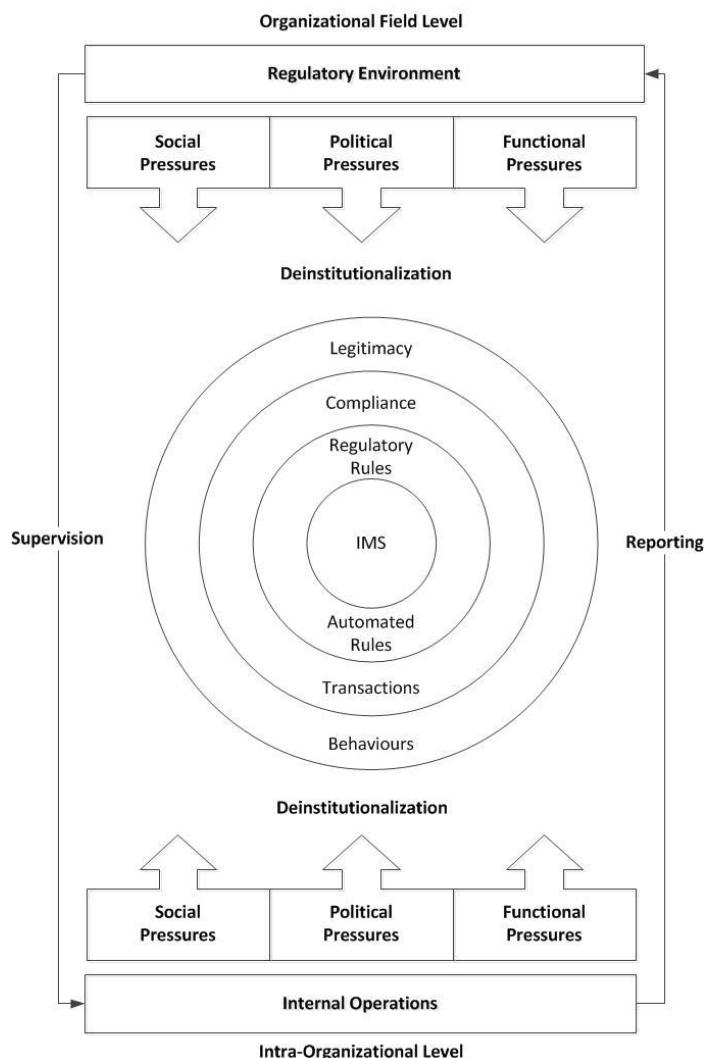


Figure 15: Deinstitutionalization of IMS Practices. Source: author

This diagram outlines the research context in relation to, social, political and functional pressures for deinstitutionalization applied at both the field and intra-organizational levels.

The chapter is structured as follows. The next sections review the empirical findings of the research in relation to the theoretical constructs previously outlined. The focus of the analysis is to understand how the IMS, acts as an agent for the deinstitutionalization of compliance practices. Consequently, each of Oliver's antecedents of deinstitutionalization is considered in turn. Finally, some conclusions will be drawn.

7.1. Social Pressures

Oliver (1992 p. 575) explicitly highlights 'changes in state laws or societal expectations that prohibit or discourage the perpetuation of an institutional practice' as an antecedent for deinstitutionalization. This social pressure is at the core of the study and is perpetuated across the organizational field. Large scale changes in regulatory rules and principles create pressure to discontinue practices and behaviours now deemed inappropriate.

Prior to the financial crisis the Regulator had adopted a principle based approach to regulation and 'light-touch' approach to supervision. This approach was contrary to a post-crisis; focus on prescriptive rules and intense supervision. The Regulator justified this approach by suggesting that large volumes of detailed rules were a burden on both regulators and firm's resources and that a focus on outcomes was better suited to respond to rapidly changing markets. The Regulator argued that highly complex rules may divert firms towards obeying the letter of the

law as opposed to achieving the desired outcome and that dynamic markets may make prescriptive rules irrelevant quickly. However, 2009 saw ‘principles-based’ approaches to regulation replaced in the wake of the financial crisis. The Chairman of the UK Regulator, the FSA, advocated a move towards ‘intense supervision’ (Financial Services Research Forum, 2009; International Securities Association for Institutional Trade Communication, 2011; Turner, 2009).

Oliver (1992 p. 574) notes that, ‘state pressures on organizations to conform to public demands and expectations typically displace or deinstitutionalise previously institutionalised practices’ and categorizes this as a social pressure. In this case, changing public expectations has created pressure on the state to deinstitutionalise outmoded approaches to regulating financial organizations. In 2010, the Managing Director of Supervision at the FSA described how changing public expectations had shaped the previous approach:

‘Previously the [Regulator] rarely intervened until it was clearly evident that something had gone wrong. Intervention needed to be based on evidence that risks had crystallised. The old approach was never going to stop firms making mistakes, as that was not its intention. This approach was of course the mandate for the [Regulator] set by the city and society at that time’ (Pain 2010).

The study shows how state pressure to conform to public expectations to protect investors, in the wake of the financial crisis, may deinstitutionalize practices, once considered appropriate and necessary. Changing societal expectations have contributed to the deinstitutionalization of the ‘principles based’ approach to regulatory governance and supervision. The new approach adopted by

the Regulator was deemed by the research participants to be far more prescriptive than the principles based approach. As a consequence of the move away from principles to prescriptive rules, opportunities to exercise discretion in the enactment of financial regulation have diminished and so agency and correspondingly choices over the practices employed are also reduced within this context. For example, the study showed that the Regulator was perceived to be leaning towards preferred systems' vendors. To summarize, new supervisory approaches act to deinstitutionalize established regulatory practices. These changes will require the reconfiguration of the IMS automated rules. Technology has a key role to play in facilitating change by applying disciplinary effects to afford or constrain practices and thereby produce new patterns of action (Leonardi 2011; Majchrzak and Markus 2013; Markus et al. 2006). In this way, the IMS acts as facilitator to erode or discontinue outmoded practices. This pressure for deinstitutionalization occurs at the field level as the regulations apply across all financial organizations.

Oliver suggests that social pressures resulting in deinstitutionalization may occur as the result of 'normative fragmentation'. This fragmentation may occur as discordant views emerge between the organization's members, regarding the meanings and interpretations attached to working practices. The first phase of the study revealed that the IMS Vendor collaborates with key clients to define templates of pre-written automated rules. These templates inscribe specific regulatory rules, thereby providing standardized responses to new regulations which are then disseminated to the Vendor's wider client base. In this way, collective meanings and interpretations were attached to technical responses to new regulations. Such templates, if they are widely adopted, have the potential to

become embedded across organizations, thereby creating isomorphic configurations of the IMS through the adoption of similarly structured automated compliance rules. The second and third research phases revealed that few organizations were adopting these templates due to nuances in underlying data and differing approaches to classifying and categorizing assets. This is not a fragmentation of existing consensus as Oliver proposes. However, the low adoption of standardized rules templates points to a lack of consensus regarding best practice for asset classification and data amongst its clients. Classification, of assets may build ‘perception frameworks’ which influence how assets are treated (Preda 2007a). As a result of disparities across organizations regarding how data is defined, employed, structured and sourced, the Vendor and its competitors are moving towards providing managed data services to improve the availability and quality of data but also to provide uniformity within the system to facilitate ease of future upgrades and systems support. New services are being introduced to slowly replace the standardized templates, as the Vendor offers service to write and support codifying regulations into automated rules. Thus, an old embedded practice, the development and distribution of rule templates, is becoming slowly eroded as the Vendor moves towards an outsourcing business model. This change is occurring through the Vendor’s identification of a naturally emerging lack of uniformity and consensus across its clients, regarding best practice for organizational practices.

This finding highlights the blurred demarcation between the processes of institutionalization and deinstitutionalization and poses questions regarding whether, in this context, deinstitutionalization is merely a by-product of the institutionalization process. In this case, the new service being offered by the

Vendor acts to displace the existing practice. Here, deinstitutionalization occurs not as a result of ‘normative fragmentation’ but as the result of a lack of consensus and agreement in the first place. Oliver suggests that social pressures explain conditions whereby organizational members do not proactively deinstitutionalise practices. Thus, she emphasizes the importance of structural forces over agency in creating social pressures to deinstitutionalise practices. Indeed, the lack of uniformity and consensus regarding best practice for data sourcing and asset classification has developed as a result of organically developed historical nuances in each financial organization’s operating environment and not as a result of organizational members consciously choosing to adopt different approaches.

At the intra-organization level, however, I do observe the deinstitutionalization of outmoded compliance practices as a result of building consensus around best practice and standardization. A global compliance team works with regional compliance teams to generate share and embed uniform practices, through Master Tests, which may be interpreted as form of internally derived best practice. In this case, deinstitutionalization occurs as compliance practices which do not meet best practice are made redundant. This happens not as a result of ‘normative fragmentation’ but as the result of ‘normative fusion’, the building of consensus and agreement regarding best practice. This process has also been enabled at the field level by reaching high-level consensus of the appropriate regulatory response to the crisis through international policy forums, such as the G20. Thus, I observe normative fusion, the creation of consensus, occurring at both the field and Intra-organizational level.

Oliver also highlights how previous scholars have shown that shared definitions of social reality and common understandings are often dependent on geographical proximity and that institutional norms and practices are more likely to be discontinued when organizational constituents are autonomous (Berger and Luckman 1966; DiMaggio 1998; DiMaggio 1988; DiMaggio and Powell 1983). Thus, she identifies both intra-organizational and field level structures as influencing factors in deinstitutionalization, thereby underlining her observation that social forces for deinstitutionalization are influenced, although not exclusively, by structural forces.

However, the study shows that through the use of technology, the necessity of a physical proximity to establish norms and standardized templates is negated. Oliver states (1992 p. 578): ‘Across organizations, geographical dispersion and parochial differentiation disaggregates institutional environments and reduces the likelihood that organizations will reproduce specific shared interpretations of reality through observation, imitation and network interaction.’ However, Oliver’s perspective was formulated in 1992, and so her view that interaction between geographically disparate entities is problematic, while possibly accurate at the time, it may now be considered redundant in light of advancements in networking information and communication technologies since 1992, when her paper was published, in particular the widespread adoption of the Internet and World Wide Web. Issues relating to ‘observation, imitation and network interaction’ can be somewhat overcome by subsequent technological developments. In the context of this study, the distribution of Templates and Master Tests allows interpretations of

compliance rules to become dissipated, established and refined and thereby facilitates the sharing of interpretations of regulatory obligations.

Furthermore, the introduction of a centralized approach to compliance is becoming embedded in some financial organizations and represents a structural change within the organizations. Again, the process of institutionalization and deinstitutionalization may be seen as, two sides of the same coin. One approach, the geographically fragmented one, is becoming deinstitutionalised as a new approach, the centralized global compliance function, becomes institutionalised locally at the intra-organizational level. In this case, deinstitutionalization occurs not as a result of ‘structural disaggregation but as the result of ‘structural aggregation.’ At the field level, Oliver (1992 p. 578) suggests that ‘when the structure of an organizational field becomes more physically dispersed, loosely connected, non-interactive or locally differentiated, deinstitutionalization of collective values and practices is more likely to occur.’ In doing so, she takes an aggregated organizational field where there are synergies and interactive behaviours as her starting point and then, as local differentiation is increased and interactivity reduced, this institutional field becomes disaggregated and embedded practices become discontinued. In contrast, the study shows that the global regulatory environment, is aiming to become ‘structurally aggregated’ as the G20, FSB and Basel Committee acts to develop common regulatory objectives to be applied globally. Thus, aiming to reduce local differentiation and deinstitutionalize those practices no longer deemed appropriate. By doing so, Regulators aim to reduce opportunities for global financial organizations to engage in regulatory arbitrage. However, the findings show that nuances in local environments still persist. Thus,

at the field level we observe ‘structural aggregation’ as the point of departure for deinstitutionalization not ‘structural disaggregation’.

Similarly, at the intra-organizational level, the study reveals a pre-crisis environment where compliance practices were also ‘physically dispersed, loosely connected, and locally differentiated.’ (Oliver 1992 p.578). However, the findings show that financial organizations are beginning to ‘structurally aggregate’ by centralising and standardizing compliance practices through the use of Master Tests, the creation of global compliance teams and by organizing around common global compliance themes. The decision by organizational members to disregard previously siloed approaches for managing compliance is primarily driven by social pressures, in the form of regulatory reform, occurring at the field level. Specifically, the ‘structural aggregation’ occurring as a result of the G20 agreements allows global organizations to leverage compliance efforts globally and organize around regulatory themes common to numerous jurisdictions. The decision to reorganize and remove ineffective practices is one made actively by organizational members, selecting which practices to adopt in the wake of shifts in the organizational field. Thus, we can observe both agency and structural forces collectively acting to erode siloed compliance practices.

In summary, Oliver (1992) identifies structural disaggregation happening at the field level, across organizations, as a social pressure for deinstitutionalization. However, the findings show how ‘structural aggregation’ may occur at the field level driven by international policy forums, as well as at the intra-organizational level as the structural arrangements for organizing common compliance activities are evolved. The study shows how some financial organizations are reacting and to

the G20 agreements and that resultant similar regulatory obligations being introduced in different jurisdictions to establish global compliance teams and to organize around common compliance themes. This has resulted in the discontinuation of some localised compliance practices. The IMS has underpinned the erosion of regional practices through its Master Test functionality. In addition, social fusion, the building of consensus and agreement, by the G20, at the field level and by the global compliance teams, at the intra-organizational level, have enabled financial organizations to structurally aggregate and centralise compliance practices. Furthermore, social pressure emanating from changing expectations within society has resulted in the regulator changing its approach to supervising firms and deinstitutionalizing ‘light-touch’ supervision. As a consequence of the regulator’s move towards a more prescriptive approach, firms are being encouraged to move further away from manual processes and adopt automated processes through systems such as the IMS, thereby eroding the use of spread sheets within the organization. This finding illustrates how the deinstitutionalization of approaches to regulatory supervision at the field level may lead to the deinstitutionalization of compliance practices at the intra-organizational level. Thus, I now consider how functional pressures may also contribute to the deinstitutionalization of practice.

7.2. Functional Pressures

The financial crisis was unforeseen and caused unprecedented losses and as a result caused a deep revaluation of existing regulations, which have in turn led to some compliance practices becoming deinstitutionalised. This observation supports

Oliver's (1992 p. 574) argument that 'although... events and data may be idiosyncratic, non-repetitive and unpredictable, their consequences may be profound in terms of deinstitutonalizing existing beliefs and activities.' Oliver (1992 p. 572) further observes: 'anything that acts to increase an organization's technical specificity and reduce the ambiguity of an organization's processes and outputs will provide fertile ground for deinstitutionalization.' As a response to the financial crisis, financial organizations in conjunction with systems' vendors are updating technologies to meet new regulatory obligations. An example is the EU's Short Selling Regulation which requires that financial organizations report significant short positions (tacking a position that the value of an asset will go down as opposed to up) 'to the ...[Regulator] when they at least equal to 0.2% of company issued share capital and every 0.1% above that.' (ESMA 2013). Thus, users of the IMS will have to create new automated rules which implement this new regulatory rule. Another example is UCITS IV which requires that a risk management policy must be in place which stipulates a system of limits for each fund in order to prevent inappropriate trading activity which could damage the firm and investors (CESR 2009). This regulatory rule requires organizations to consider their risk appetite, identify risks, and set limits on risky transaction and monitor transactions against limits. The Vendor enables this process not only by developing new data fields and automated rules to enforce limits but also by enabling organizations to measure and benchmark how assets are performing and to calculate risk values by applying relevant methodologies. Thus, the IMS technical capabilities are evolved to facilitate these new requirements.

The study found that compliance practices were being abandoned as new regulatory requirements came into place. A global compliance executive, in C.5, commented on reconfiguring workflows as a result of new regulatory obligations:

'What we will do [as a result of new regulatory obligations] is actually decommission part of other processes or setups and actually move to the new one.'

Another manager, in C.4, provided the following example of how they updated their workflows for monitoring derivative exposure as a result of the introduction of new regulatory rules:

'So, what we actually did was to create a new process and we could then scrap the old process and with the result being that we could better, more accurately and more robustly monitor derivative exposure.'

Furthermore, the results show how the Vendor's pre-written workflows were becoming increasingly accepted and that some financial organizations were no longer seeking to define their own but instead were happy to apply the Vendor's propriety workflows as it simplified use of the system.

The deinstitutionalization of a 'principles-based' approach, through the introduction of intense supervision, means that the regulator is becoming more prescriptive in the practices deemed appropriate for facilitating trading and so technical specificity is increased. As regulatory rules become more prescriptive so are the regulators' views on the types of processes and systems firms should use to impose controls on trades. As a result, processes and systems which do not fulfil the Regulators expectations are becoming discontinued. The Regulator's increased

focus on how organizations conduct their business and the ways in which they achieve compliance has begun eroding embedded trading practices which rely on manual systems. In particular, spread sheets are further frowned upon by the Regulator. Oliver (1992 p. 571) observes that ‘the perceived worth of an institutional practice, is not invulnerable to re-evaluation or reconsideration in technical terms.’ She observes that this functional pressure may occur as the result of unexpected environmental events, such as the financial crisis, challenging the advisability of maintaining an institutionalised practice, such as utilizing spread sheets.

In this case, manual processes implemented prior to the crisis have lost the support of the Regulator due to short comings in their functional capabilities and robustness and thus are becoming further discontinued as a result of changes in regulatory policy. Emerging economic events and the resulting crisis has created pressure to change the technical specificity of regulations and associated compliance practices. Thus, this functional pressure is applied at the field level.

Oliver (1992 p.571) notes that ‘the potential for innovative pressures and performance problems to deinstitutionalize enduring organizational practices is also related to technical or functional considerations that tend to compromise or raise doubts about the instrumental value of an institutionalized practice’. A review of press stories relating to fines levied by the Regulator provides various examples of financial organizations whose functional approaches to compliance have been criticised by the Regulator and as result have had to refine functional aspects of their systems and processes. Thus, performance problems in compliance related activities have led to approaches, deemed technically inappropriate, to be

discontinued. For example, the Regulator fined Credit Suisse £5.6 million for ‘systems and controls failings’. (FSA 2008b). Another example was provided by a senior compliance manager who described how Financial Organization C.3’s fixed income fund managers were told by the Regulator that they had to stop using spread sheets. External assessment of organizational performance by the Regulator, based on technical criteria, has caused some financial organizations to reconsider and alter established practices. This pressure for deinstitutionalization occurs at the field level as the pressure emanates from the Regulator’s feedback.

Oliver (1992 p. 571) suggests that ‘an institutionalised activity may discontinue or decay because its perpetuation is no longer rewarding.’ Furthermore, she (1992p. 572) notes that ‘the utility of an institutionalized practice will also be reassessed when economic criteria of efficiency and effectiveness begin to conflict with, or intrude on, institutional definitions of success.’ According to the Vendor’s senior implementation consultant, the financial crisis of 2008 and associated losses caused many financial organizations to reconsider their product offerings and risk management approaches, all of which had a direct impact on regulatory practices and the configuration of IMS.

In this case, unexpected economic events caused assumptions regarding rules associated with risk management and compliance to become discredited. The IMS functionality and technical specificity is constantly evolving as a result of financial innovation, resulting in new products and associated changes to regulatory exposure, as well as the introduction of completely new regulatory requirements. As a financial product no longer provides appropriate economic rewards the technical or functional compliance practices associated with this product become

deinstitutionalized. Thus, automated rules are discontinued as new ones are created which are more relevant to the financial organization's products and associated regulatory requirements. The study shows that Vendor seeks to evolve the IMS functionality so that it can manage new both new financial products and services and also new regulatory obligations. Consequently, the Vendor spends large sums on research and development activities. In summary, both technical changes in regulatory rules and financial products through innovation and refinement contribute to the deinstitutionalization of redundant IMS functionality and associated practices, as more compliance obligations can become automated through the addition of required data fields or the introduction of new algorithms. So, as the technical specificity of the IMS evolves, the possibility to further automate compliance practices increases and manual processes are further eroded or discontinued.

Often, compliance related practices may become discontinued as new risk methodologies for evaluating financial instruments become available. This occurs as established methodologies become out-dated or irrelevant, frequently due to the introduction of new financial instruments and differing views on acceptable approaches to managing risk (FSA 2010a). A senior compliance manger noted:

'In terms of monitoring derivative exposure on a portfolio. Some people are quite reserved about, you know derivatives. How much exposure you can have. So, you know there are often new requirements creating new methodologies and ways of calculating derivative exposure' and, 'Yeah, what we might do is actually decommission part of other processes or setups and actually move to the new one...

if we find a better way of doing something. All of which has to be incorporated into [IMS]’.

The IMS is evolved as old rules, benchmarks and indexes become functionally outmoded and new ones are introduced. For example the IMS utilises financial indexes, referential data and benchmarks, see Table 13. However, while such data structures may be institutionalised their use may become discontinued as practices underpinned by these data types are evolved. These changes may be driven internally or by the regulator and occur as these old rules, benchmarks and indexes no longer relate to the financial products being traded and so their adoption is of no instrumental value to the organization. The IMS facilitates the discontinuation of these practices by their removal from the system and correspondingly prevents user access to such functionality by constraining the IMS affordances (Leonardi 2011; Majchrzak and Markus 2013). Thus, the IMS imposes a disciplinary effect and constrains behaviours by preventing access to outmoded methodologies and rules and by enforcing revised governance practices. The findings show that as new benchmarks arise and achieve acceptance, then old methodologies may become discarded. In summary, the deinstitutionalization of methodologies associated with calculating acceptable limits on types of trades may also necessitate the reconfiguration of associated IMS. As these methodologies are introduced externally this mechanism of deinstitutionalization occurs at the field level.

Oliver (1992) suggests that pressures arising from increased technical specificity will act to reduce ambiguity regarding the process and outputs required and so deinstitutionalise those practices which are no longer deemed functionally

appropriate. She advises that this pressure emanates from the field level, as when processes and technologies for achieving goals are unclear then their appropriateness is more likely to be determined by the confidence and collective understandings of field participants. If further clarity is provided regarding functional requirements, those practices which have been embedded but do not meet the new standards may become deinstitutionalised. For Oliver, a lack of technical specificity and the corresponding possibility of selecting various solutions allows for a forum where censuses can be reached between organizational members as to the most legitimate approach. In Oliver's examples, institutionalised practices are removed as the organization internally decides that the practice is no longer functionally valid. Thus, Oliver places discretionary choices through collective decision making as central to the deinstitutionalization process. By doing so, she emphasizes an agency influenced perspective of institutionalization. The findings support Oliver's argument, in that I find an environment where technical specificity through more prescriptive regulations has indeed caused practices, to become discontinued. However, in this study the pressure to deinstitutionalise does not just emanate at the intra-organizational level, from choices made within the organization but also from new external regulatory obligations, derived at the field level. For example, the pressure to discontinue the use of manual processes comes not from internal choice and agency but from external coercive regulatory pressure. Consequently, this finding gives primacy to the structuralist perspective. Due to a change in the regulator's expectations, the use of the IMS is becoming embedded as firms seek legitimacy from the regulator through the adoption of such systems. Agency is reduced as the organization's discretionary options for meeting

compliance is diminished. Therefore, this finding gives primacy to isomorphic forces and correspondingly the structuralist perspective.

To summarize, at the intra-organizational level, the antecedents of deinstitutionalization identified include: the changing economic utility of established practices and the increasing technical specificity of the IMS. At the field level, Vendor changes to the IMS, the introduction of new methodologies, benchmarks and indices, unexpected economic events and the external assessment of performance have all acted as antecedents for the deinstitutionalization of previously embedded compliance practices.

7.3. Political Pressures

Oliver (1992 p. 569) suggests that ‘the development of political dissensus or conflicting interests that disrupt the unanimity of agreement among organizational members on the value of a particular practice will be a critical antecedent to deinstitutionalization.’ She suggests that the de-legitimization of organizational practices may be caused by ‘... a growth in the criticality or representation of organizational members whose interests or beliefs conflict with the status quo’ (1992 p. 568). The study showed that within financial organizations, fund managers and senior traders are perceived as powerful individuals critical to the organization’s success. The study highlights how pressures to adopt IMS are, on occasion, being resisted by such front office individuals. Often there was perceived to be a resistance on the part of Fund Managers to move away from manual processes such as trading over the phone or using spreadsheets towards adopting automated practices, in the form of trading through electronic platforms. In this

context, the dissensus is not just internal within the organization, as Oliver suggests, but between traders and fund managers at the intra-organizational level and with the Regulator's views on appropriate practices at the field level. These finding shows how conflict between internal and external entities, advocating conflicting institutional practices, may act to deinstitutionalise the practice whose proponent loses the conflict. This finding is relevant to current discourse between institutional scholars. In addition to the structuralist versus agency debate, an additional dialogue centres on the role of performance (Heugens and Lander 2009). Scholars of institutionalism have highlighted how isomorphic conformity may conflict with the organization's performance and technical efficiency (Lawrence et al. 2009a; Meyer and Rowan 1977; Zucker 1987). Some theorists hold the view that organizations adopt new practices primarily to be perceived as acceptable and legitimate, regardless of their impact on performance (DiMaggio and Powell. 1983; Heugens and Lander 2009). In contrast, other scholars suggest that organizations are likely to favour practices that allow them to achieve substantive benefits as well as status, reputation and legitimacy (Deephouse 1999; Westphal et al. 1997). The study contributes to this debate by investigating the tensions between practices prescribed by the regulator and those practices which are deemed by powerful organizational members as being superior. Where institutional adherence conflicts with efficiency, conformity may be 'ceremonial' or at the surface (Pfeifer 1983; Zucker 1987). This ceremonial conformity is achieved by decoupling symbolic practices from the organization's performance driven activities (Meyer & Rowan, 1977). However, these practices deemed technically superior may themselves also be institutionally defined and embedded internally within organizations (Carroll et

al. 1986). Furthermore, Zajac and Westphal (2004) highlight how decoupling may occur in organizations where powerful actors may mediate institutional effects.

The study revealed that traders and fund managers may conform to the requirement to adopt an IMS but may use the system merely to record trades after transactions have been conducted over the phone. By doing so, they circumvent the IMS capability to highlight non-compliant trades before execution and the resultant requirement to work closer with the firm's compliance professionals. The outcome of this evasion is that these individuals avoid erosion of internally institutionalised trading practices by meeting the bare minimum requirements of the Regulator and so seek to maintain practices they deem to be superior. Thus, powerful individuals at the intra-organizational level seek to reduce the effects of external pressures to deinstitutionalise practices in order to preserve their own internally institutionalised working practices. Consequently, these individuals are attempting to exercise their own selectivity and discretion over the institutional practices available. Thus, we see institutions derived at the intra-organisational level competing with institutions from the field level and correspondingly, agency and selectivity competing with structural isomorphism.

For Oliver, political dissensus may come from growth in the power or criticality of individuals. The study shows that there may be resistance to the regulators attempts to deinstitutonalise trading practices. However, this resistance emanates not from a growth in the criticality or representation of organizational constituents but from individuals which already hold powerful positions. Traders and Fund Managers seek ways to maintain their own institutions, while appearing legitimate in the eyes of other institutional constituents, such as the regulator.

However the study also revealed that the growth in criticality of compliance professionals was also an antecedent to the deinstitutionalization of practices. The findings show that compliance executives have become empowered as a result of the crisis. This has led to compliance professionals having more power to prevent inappropriate trading behaviours. For example, compliance executives were perceived as having increased power to veto risky transactions or the extension of clients' credit limits. Prior to the financial crisis, the status quo was to allow trading professionals to sometimes overrule compliance executives. Yet, the research participants felt that the empowerment of the compliance function has led to the discontinuation of often over ruling compliance professionals. The empowerment of the compliance function has occurred in conjunction with a move towards strengthening compliance workflows. The automation of governance practices, through the IMS, allows structured workflows to be introduced which provide clear audit trails regarding how compliance breeches were managed. Thus, the introduction of such practices discontinues previous non-automated processes for managing breaches. The ability of compliance executives to restructure governance practices and correspondingly automate workflows is partly a result of increased empowerment across the compliance profession. This empowerment is drawn from the need to implement post-crisis regulatory obligations and also improve the robustness of compliance practices, to meet the Regulator's enhanced supervisory approach.

Oliver (1992 p. 568) notes that 'the political conditions under which the de-legitimization of organizational practices is predicted to occur include mounting performance crises'. The study found that one of the financial organizations was

found to be suffering a performance crisis and had lost money as a result of buying a hedge fund and had to downsize considerably. This organization was also found to be running five separate IMS type systems and so was in the process of rationalising these systems. Thus, deinstitutonalizing established systems and associated practices. Therefore, a performance crisis was also found to be an antecedent by which the organization sought to reevaluate and rationalise its compliance systems to improve efficiency.

Oliver (1992 p. 568), further observes that ‘increased pressures to adopt innovative practices’ may also cause deinstitutionalization. In recent years, as a result of declining returns on low risk instruments, firms have moved away from traditional product offerings and instead developed evermore complex financial instruments with higher yields, such as credit derivatives. These have in turn contributed to financial failures and so precipitated further regulation (Turner 2009). In fact, the US Dodd-Frank Act and the EU European Market Infrastructure Regulation (EMIR) and Markets in Financial Instruments Regulation II (MIFIR) provide significant changes in the regulation of derivatives. These regulations implement G20 agreements to ensure that OTC derivatives, which have traditionally commanded strong margins, will now be cleared through a central clearing house and traded on regulated markets instead of being privately negotiated in order to reduce the risk of counterparty default and improve overall transparency within derivatives markets. (Financial Stability Board 2013).

The study suggests that new innovations in products may delegitimize existing products and associated regulatory practices and thus require a reconfiguration of their IMS. An IMS Consultant explained:

'We have one client who said that they would only always have one counter party for credit default swaps or for trading contracts for derivatives. But there would always be one counter party. Then all of a sudden they evolve the [financial] product and you find out that there's multiple counterparties and the exposure has to be calculated for numerous counterparties and they had to seriously reconfigure the product...'

Thus, at the organizational field level, we see financial innovation leading to financial failures and resulting in global regulatory change. By moving trading of derivatives to regulated markets regulators are deinstitutionalising previously embedded practices for trading such securities. As new complex financial products, such as credit derivatives, are found to have contributed to the financial crisis, further regulations addressing them have been introduced which require organizations to significantly change the underpinning practices which facilitate trading. Consequently, systems must again be reconfigured and unnecessary compliance practices made redundant. Thus, I observe pressures to innovate having a direct impact on regulatory practices. Furthermore, as firms increase the complexity of their product offerings in order to compete they may expose themselves to more onerous regulatory requirements, which in turn requires the reconfiguration of the IMS and the deinstitutionalization of established rule structures associated with now outdated practices.

The findings show how political pressures emanating from regulatory changes can cause the deinstitutionalization of compliance practices through the reconfiguration of IMS. At the level of the organization, antecedents of deinstitutionalization which have been identified as present include, conflicting

internal interests and the criticality of organizational members whose interests or beliefs conflict with the status quo as well as mounting performance pressures. At the field level, increasing pressure to innovate was found to be an antecedent of the deinstitutionalization of regulatory practices.

7.4. Conclusions

This chapter aimed to answer three distinct research questions. The first question focused on identifying the compliance practices are being deinstitutionalised through the IMS. Table 19 summarizes the compliance practices which are being deinstitutionalised as a result of post-crisis regulatory change.

Compliance Practices
Principles based requirements and 'light touch' regulatory supervision
Vendor defined Templates of regulatory rules
Autonomous organizational structures for compliance
Locally developed compliance practices which fall outside of newly defined best practice
Manual processes for meeting compliance
Redundant workflows and governance processes
Outmoded automated rules, methodologies and data fields
Retirement of duplicate systems
Front office executives' ability to override compliance executives

Table 19: Deinstitutionalised Compliance Practices Source: author

The second research question focused on identifying the social, political and functional pressures to deinstitutionalise practices for compliance. This question was addressed by empirically evaluating the theoretical constructs summarized in Table 8. Consequently, I delineate sub-pressure which draw from Oliver's broad

classifications of pressures, political, functional and social to categorize and describe the social forces observed.

Table 20 summarises the social, functional and political sub-pressure which were identified by the study at the intra-organisational and field levels.

Level of Analysis	Political Pressure	Functional Pressure	Social Pressure
Intra-Organizational	Mounting performance crisis	Changing economic utility of financial products	Increasing structural aggregation
	Conflict between internal and external regulators and internal managers	Increasing technical specificity of regulations	Increased social fusion
Organizational Field	Increased innovation pressures	Increasing technical specificity of IMS	Changing regulatory rules and values and increased structural aggregation
	Increased empowerment of compliance professionals	Emerging economic events and data	Lack of uniformity and consensus and increased social fusion

Table 20: Pressures to deinstitutionalize compliance practices (Adapted from Oliver 1992)

A comparison of Table 8 and Table 20 shows that the results broadly empirically validate the pressures identified by Oliver. The findings directly support Oliver's views that: increasing innovation; changing institutional rules and values; emerging events and data; mounting performance crisis and changing economic utility may all act to deinstitutionalise practices. No relevant data was collected to consider pressures increasing competition.

The study also supports Oliver's views that social fragmentation may lead to deinstitutionalization. However, the study builds on this concept and highlights how social fusion, the building of consensus and agreement regarding practices and norms, may displace embedded practices which fall outside this consensus. The analysis found no examples of Oliver's concept of structural disaggregation. However, the analysis built on this useful construct and found that structural aggregation, the increased interactivity of dispersed geographical entities, may also cause working practices to be discontinued. Evidence of both structural aggregation and normative fusion was found at both intra-organizational and field levels. This is perhaps unsurprising, as conceptually they are related. While normative fusion refers to the building of consensus, structural aggregation refers to a reduction in geographical and parochial differentiation, which assists consensus building.

The use of technology to centralize governance practices and achieve efficiencies is well established (Ross and Weill 2005). Given these findings then, scenarios where organizations move towards an aggregated, as opposed to fragmented strategy, seems likely to occur often. Furthermore, it is interesting to note that the creation, dissemination and application of standardised rule templates through the Vendor to various firms was unsuccessful due to nuances in each organizations data and asset classification. However, at the intra-organizational level this approach of developing standardised templates of automated rules is being applied within organizations across global divisions. As data and asset classification are already harmonised across different geographical operations within the same firm.

The findings supports Oliver's view that increasing technical specificity may cause deinstitutionalization and shows how this pressure may be applied at the field level, by entities on which the organization is dependant becoming increasingly prescriptive in the results the practices by which they are achieved.

The study revealed that financial organizations have a degree of discretion when choosing how to respond to regulatory requirements at the field or intra-organisational level, although this is being diminished through the adoption of prescriptive regulatory rules. However, organizations may control their exposure to regulatory responsibilities by being selective over the types of transaction in which they engage and the products they offer. They also have some degree of choice over the types of systems and processes they adopt to meet regulatory obligations.

The third contribution of this chapter is to define empirical predictors of deinstitutionalization relevant to this research setting and so extends the empirical predictors outlined by Oliver. Table 21 summarizes these predictors and highlights to practitioners and policy makers the factors contributing to the abandonment or erosion of established practices within financial services.

Intra-organizational Factors	Organizational Field Relations
<p><i>Political Dissensus</i></p> <p>Declining organizational performance or crisis</p> <p>Dissensus between the Regulator and proponents of embedded organizational practices</p>	<p><i>Social environment pressures</i></p> <p>Changing regulations</p> <p>Changing societal expectations regarding regulatory governance and supervision</p> <p>International consensus regarding regulatory change and reform</p>
<i>Changes in functional necessity</i>	<i>Random external occurrences</i>

<p>Removal of manual processes and adoption of automated systems</p> <p>Loss of discretion in how compliance practices are implemented</p> <p>Need to efficiently reallocate resources and share best practice</p>	<p>Unforeseen financial events and data</p> <p><i>Political Conflict</i></p> <p>Conflict between internally derived and embedded working practices and newly formed regulatory expectations</p>
<p><i>Changes in Social Consensus</i></p> <p>Agreement regarding standardisation/best practice</p> <p>Greater cohesion in compliance and trading practices across geographical operations</p>	<p><i>Changes in functional requirements</i></p> <p>Greater technical specificity and prescription in regulatory rules</p>

Table 21: Empirical predictors of deinstitutionalization within financial services: Source:author

8. ANALYSIS: INSTITUTIONALIZATION OF COMPLIANCE PRACTICES

In Chapter 7, the discussion focused on how the IMS acts as carrier for regulatory institutions and associated compliance practices. While Chapter 6 focused on pressures which may cause compliance practices and behaviours to become deinstitutionalised. This chapter addresses the third and final set of theoretical constructs considered, mechanisms of institutionalization, see Table 9. Many of the post-crisis regulations focus on introducing new regulations which are correspondingly causing new compliance practices to become embedded in financial organizations. The findings show that new practices are being embedded as a result of regulatory change. However, as the study progressed it became apparent that important counter mechanisms were also at work which limited the ability of the IMS to completely facilitate new practices. In this chapter I aim to make a contribution by highlighting the important role of the IMS in complying with post crisis regulations but also the limitations of the system in completely institutionalising new practices. The chapter addresses the following research questions:

- How are new compliance practices and behaviours becoming institutionalised through the IMS and what factors may prohibit this?
 - What are the coercive, normative and mimetic mechanisms at work?
 - What are the sub-mechanisms by which new compliance practices are becoming established?

- What are the counter-mechanisms which may limit new compliance practices becoming institutionalised?

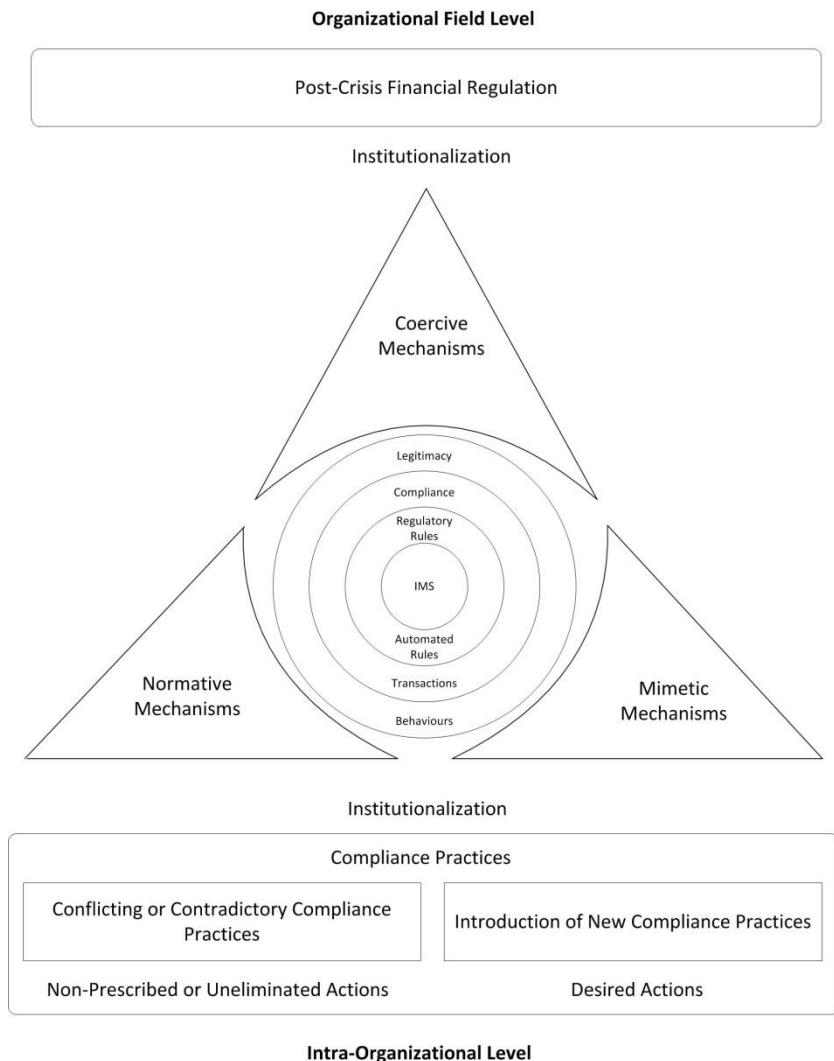


Figure 16 A Model of Institutionalization through IMS use. Source:author

Figure 16 provides a model of the concepts discussed in this chapter to address the research questions. The model highlights the relationship between, institutional mechanisms, the research context and non-prescribed persistent practices. The following section draws from the conceptual model outlined in Figure 16 to present the discussion. The first section focuses on how inappropriate trading behaviours may become displaced through monitoring and surveillance

practices facilitated by the IMS. The next section discusses the automation and consolidation of systems. Finally, the last section discusses how new compliance practices are developed through a social process of sharing and learning. Finally, some conclusions will be drawn.

8.1. Mechanisms of Segregation and Monitoring

The post-crisis regulatory landscape provides enhanced frameworks for enforcement and the application of sanctions. For example, the US Dodd-Frank Act establishes a ‘bounty’ for whistle blowers who report violations to the Regulator. The Act allows the whistle blower to receive a percentage of the fine imposed. This ‘bounty’ has the potential to be of considerable value. For example, in 2012 Goldman Sachs was fined \$22 million for sharing non-public information with its Traders (Orol 2012) and Barclays Bank was fined \$200 million for manipulation of the LIBOR rate (CFTC 2012). Employees and partner organizations are now strongly incentivised to report wrong doings. Consequently, organizations are seeking to enhance their systems and controls to prevent failures and associated costs and loss of reputation.

The Vendor has responded to the need to provide enhanced surveillance and monitoring controls by introducing additional services. Their ‘Compliance Monitoring Services’ comprise specialists employed by the Vendor to review and assess overnight compliance incidents and provide a daily summary of alerts, warnings, actions taken and items requiring escalation. This service is deemed as complimentary and is not designed to replace their clients’ own monitoring activities. Instead, it enhances financial organisations’ existing monitoring

arrangements and so allows organizations greater assurance of maintaining compliance.

However, the concepts illustrated in Figure 16 suggest that there may remain possibilities of inappropriate actions that new operational practices may be unable to eliminate. Individuals or groups of individuals may seek ways to circumvent systems of control. The creation of new regulations and associated systems of control are mostly reactive and may seek to plug gaps which have become evident due to events which have shown the existing framework as lacking and unable to fully prevent undesirable behaviour. Regulators' abilities to foresee and prevent future scandals are limited. While often providing enhancements to existing frameworks, the introduction of new regulatory frameworks and associated systems of control also provide new opportunities for loopholes and shortcomings in design to be exploited (Gillespie et al. 2012). Even where new regulatory rules are robust, powerful individuals may act to influence and weaken controls at the point of design and implementation. By doing so, they may ensure that controls are not sufficiently robust to fully prevent inappropriate behaviour and that there exist pathways through the system's workflows which allow them to evade key points of control. Consequently, newly embedded practices are unlikely to completely eradicate market abuse.

In 2012, the case of Kweku Adoboli, perpetrator of the UK's biggest bank fraud at the time of writing, highlights how pre-crisis regulatory responses to market abuse have been unable to prevent losses. Adoboli was a former UBS employee, whose unauthorised and misguided market calls created loses of £1.4

billion (Croft 2012). In addition, the Regulator fined UBS £29.7 million for having ‘systems and controls failings.’ (FSA 2012a p.1). The Regulator found that: ‘*the trade capture and processing system had significant deficiencies, which Adoboli exploited in order to conceal his unauthorised trading.*’ This case is illustrative of how existing regulation and UBS systems for monitoring transactions were inadequate to prevent the losses incurred. Systems such as the IMS may reduce the possibilities of such frauds by separating the process of order selection from order fulfilment and correspondingly the role of the fund manager from the trader. Research into fraudulent activities suggests that the potential for fraud is increased where there are incentives, often in the form of the need to meet targets or hide losses, together with the ability to rationalise the fraud and crucially, the opportunity to commit the act (Albrecht et al. 1995). The IMS provides a pivotal role in preventing opportunities for market abuse and assuring that individuals do not have inappropriate access to processes and systems by which they may commit unauthorised transactions. The Regulator’s (FSA 2010b p.1) Handbook states that organizations ‘*...should segregate the duties of individuals and departments in such a way as to reduce opportunities for financial crime or contravention of requirements and standards under the regulatory system.*’

The IMS separation of order creation and fulfilment goes some way to meeting this requirement. However, a senior implementation consultant described a case where the client wanted to configure the IMS workflows to provide the Fund Manager with the capability to override compliance violations generated as a result of rule breeches. This was seen as highly abnormal and in contradiction to the segregation of duties required by the Regulator and was strongly discouraged by the

IMS consultant. This suggests, though, that while firms may seek to use technology to embed appropriate trading practices and displace non-compliant and illegal trading behaviours, there remains potential for committed individuals to find ways round these systems and so the possibility for un-prescribed behaviour persists. To summarize, enhanced surveillance mechanisms, while certainly necessary, rely mainly on coercive mechanisms and are ultimately likely to prove fallible as conformity is only one possible response to such pressure (Streeck and Thelen 2005).

8.2. Mechanisms of Automation

The findings provide evidence that compliance managers utilising the IMS in financial organizations now perceive their organization's clients, the investors, as taking a heightened interest in compliance activities and that the demonstration of robust compliance practices through the adoption of automated compliance systems, such as the IMS, are now critical for winning new clients.

Furthermore, several of the compliance executives interviewed felt that post crisis, the Regulator has become interested in not only whether financial organizations are ensuring outcomes which meet regulatory requirements but on how they achieve these outcomes. In their view, financial organizations' ability to exercise discretion in how they implement compliance practices has become more limited. Several of the study's participants noted how, before the financial crisis, the Regulator operated on a principles-based approach and was not overly concerned with the systems financial organizations employed, as long as the system provided the required outcomes. However, post-crisis 'intense supervision' has

been adopted by the Regulator. One way in which this has manifest has been the perception that the Regulator disapproves of organizations utilising spread sheets and many different applications instead of a core system. Furthermore, the Regulator was seen as coercing organizations to adopt specific systems, such as the IMS, thereby reducing individual organizations' discretion over how they met their regulatory obligations. It was felt that the Regulator was leaning towards preferred systems providers and if those systems were utilised the adoptive organization would come under less scrutiny. However, many of the compliance executives also felt that the Regulator would not explicitly endorse specific systems' vendors for fear of setting a legal precedent if such systems fail. Consequently, pressure to adopt automated compliance systems is an informal type of coercive pressure as opposed to one formally applied through rules inscribed in regulatory mandates. However, in the view of one respondent while organizations remain compliant, there is little the Regulator can do other than enhance its monitoring of that firm if that organization chooses to use such methods. In contrast, a systems consultant described how he felt the balance of power was shifting away from the front office and forcing powerful individuals working at the front office to adopt automated practices for enacting transactions. In the view of one of the traders interviewed, this new approach was seen to be unnecessarily prescriptive and dictatorial. Some companies currently do not trade electronically via IMS instead they will conduct their transactions via phone by communicating directly with a broker and then use the IMS to record trades through manual input. Whilst acknowledging the need for tighter regulation, the Trader would have preferred to maintain control over how transactions are enacted as he felt that phone trading allowed important advantages

over a purely electronic approach. Furthermore, some respondents were sceptical as to whether the adoption of the IMS would significantly displace existing manual practices such as telephone trading, suggesting that the adoption of the IMS may be merely ceremonial. They took the view that fund managers and traders will find ways to continue to work the way they have previously, but will comply with the need to have an IMS but only use the IMS to track holdings by employing people to enter data into the IMS after trades have been completed.

However, a systems consultant suggested that it may be in the firm's interest to trade electronically via the IMS proprietary network. In his opinion, benefits to this approach include allowing lower value orders to be traded algorithmically. This would allow these transactions to be automatically logged within the system and so prevent possible errors if they were to be inputted later. High value orders could still be traded over the phone and so Traders would still benefit from talking directly to brokers to ensure the best spread. Thus, it is possible that these benefits may act to further justify use of the IMS and enable it to become embedded within the organization, thereby displacing other trading practices. Currently, there is a debate as to whether new exchanges and platforms for trading derivatives will allow voice trading or be purely electronic (Rennison 2011). In addition, MiFID II requires that organizations report trades to the market as close to real-time as technically possible, thereby coercing firms into using systems which facilitate electronic trading.

As a consequence of the Regulator's change in approach, manual practices and, in particular the uses of spread sheets for managing trades are becoming increasingly condemned by the Regulator. A compliance manager provided the

example of his firm where, in the post-crises environment, they had some extremely successful fixed income Fund Managers. Despite their success, the Regulator recommended they stop using their current process which was Excel based, simply because the risk was deemed unacceptable. He noted that if there had been any '*financial faux pas*' or trading errors they would have been heavily fined and that the credibility of the Fund Managers would also have been damaged resulting in a large overall financial reputational cost.

Unsurprisingly, all the compliance executives interviewed stated a preference for automated controls over manual ones. They preferred to automate as many of their controls as possible through the IMS, as in addition to reducing input errors, the IMS also facilitates real-time monitoring of positions against changing market data. However, a system's consultant suggested that the displacement of spread sheets was likely to be resisted by front-office employees such as Traders. He suggested that some of these individuals '*were less IT savvy*' and so were resistant to technological change and felt that the use of spread sheets was, '*tried and tested*' and they therefore lobbied to preserve this practice and prevent its displacement. This perspective was shared by a Trader.

Some compliance managers also felt that predicting the demise of spread sheets was premature. They suggested that the use of spread sheets may compliment the IMS by providing capabilities for monitoring the effectiveness of automated rules, processes and controls over time. An IT manager suggested that in the case of regulatory compliance or business critical processes, periodic manual checks should also be undertaken to validate results. This view was supported by several compliance managers who expressed the view that a truly diligent approach

to compliance requires that the results of automated systems are validated, as controls like processes may change over time. Consequently, some managers were of the opinion that the use of spread sheets will persist if only for validation purposes.

Furthermore, the IMS is not always able to automate new regulatory requirements immediately. Due to tight implementation deadlines for new regulations there may exists a lag between the regulatory requirement coming into force and the IMS being able to automate the new rules, perhaps due to new data fields being required. A compliance manager described this process as, '*Lagging Functionality*.' He observed that firstly, there is an initial analysis and interpretation of the regulatory requirement where it is decided that the IMS will not support the requirement. In this case, they must design a manual process. The rule is then entered as a high risk into a larger 'matrix of regulation', which is also a manually updated spread sheet, used to track automated and manual regulatory controls. This analysis is then fed back to the Vendor who often builds an enhancement into the system allowing the manual rule to be retired. However, this process may take time, often over a year and so there can be a significant lag between the regulation coming into force and the IMS being able to fully automate the necessary controls and underlying business process.

8.3. Mechanisms of Standardization

The post-crisis environment has caused organizations to reevaluate their approaches to key areas of regulatory compliance. As more requirements come into force and the cost of compliance rises some organizations are looking to both

strengthen their own capabilities and ensure they are robust, while also looking for ways to reduce the costs of compliance. Several of the compliance managers highlighted the high costs of meeting post-crisis regulation, at a time where financial organizations' profit's margins are being diminished due to shifting economic circumstances (The Economist 2012b). Consequently all the compliance managers interviewed agreed that there existed more financial pressure to operate compliance activities in a cost efficient manner. By adopting a more strategic enterprise wide approach to managing common compliance themes, financial organizations are aiming to standardize compliance practices and reduce the overall cost of compliance. The opportunity to streamline and standardize practices across global operations is enabled by the fact that many of the new regulations are derived from G20 agreements and so post-crises regulations in different countries and regulatory jurisdictions are to a large degree similar in focus. Consequently, many of the financial organizations who participated in the study were seeking to run initiatives to standardize and streamline compliance practices globally by organizing efforts around common regulatory themes, such as surveillance and monitoring. Other organizations were continuing to organize compliance on a region by region basis. The IMS facilitates the standardization of compliance practices by allowing organizations to define and share standardised compliance rules, termed 'Master Tests' across different countries and trading desks. Each department would then use the 'Master Tests' as a template and modify them depending on their own individual requirements and nuances in the obligations stipulated by their local Regulator. Furthermore, the Senior Relationships Manager's view that his clients are now more willing to adopt the Vendor's pre-

defined Workflows, if so, this will act to increase the standardization of compliance practices across financial organizations.

8.4. Mechanisms of Consolidation

From the Regulator's perspective, the use of disparate systems may affect an organization's ability to aggregate its compliance positions across all the trading desks it operates globally. The study found that several of the financial institutions participating in the study used different systems with similar functionality to the IMS, provided by the IMS Vendor's competitors. Often these systems were in use as a result of systems inherited through mergers and acquisitions. Where global organizations use numerous IMS type systems, if such systems do not integrate then the firm will not have a clear aggregated view of their global positions and correspondingly their overall compliance status. A senior consultant suggested that such integration was extremely difficult to achieve due to overall complexity and nuances in underlying data utilised by the systems.

The study also found that the consolidation of data into 'golden sources' was integral in creating an aggregated view of the organizations' compliance positions. The IMS utilises different data sources, see Table 13, often provided by third parties, this adding extra layers of complexity to data management efforts. The issue is further compounded when data is shared across departments who use data sourced at different points in time or from different sources.

In summary, the inefficiency of disparate systems combined with the Regulator's preference for organizations to adopt core systems are contributing factors in motivating many of the IMS vendor's clients to undertake initiatives to

consolidate compliance systems and data. The purpose of these reviews is to displace or retire compliance practices and systems, now deemed redundant, costly and counter to the regulator's preferred method and to introduce new practices such as core systems or 'golden data sources'.

However, the findings show that there is a conflict between providing a compliance platform that utilises 'gold plated' standardized processes and implementing new regulatory requirements within the designated timeframes. While compliance managers are struggling with implementing the nuances of specific regulations under tight time frames, senior management are striving to reduce the costs of compliance and adopt more efficient and standardized approaches across the organization.

As Figure 16 suggests, in addition to nonconformist behaviour new regulative institutions may also have unintended effects. Several compliance managers felt that there was a considerable 'opportunity cost' to implementing new requirements. They felt that the scale of change required to meet post-crisis regulations and the tight time frames for implementation required by the regulator were resulting in the development of poor compliance architectures as there was little time and few resources available to adopt fully automated solutions or replace disparate systems with a core system.

8.5. Mechanisms of Interpretation, Sharing and Learning

The respondents described the way they interpret and make sense of new regulations. Several of the compliance managers felt that they knew many of the post crisis regulations were ambiguous. Due to the tight timeframes between the

final regulation being released and the implementation deadline, organizations must begin working on remediation projects from incomplete draft versions of the mandate.

While the Regulator's approach is seen to be more prescriptive, teams working to implement new compliance requirements must still interpret the relevance of the new rules to the organization's activities and products. Subsequently, they must design and codify relevant rules into the IMS rules library. As previous neo-institutionalist studies have shown, the interpretation of mandates may be seen as a dynamic process, led by informed professionals, to shape understanding of laws and their implications (Edelman et al. 1999). The participants suggested that programs for delivering specific areas of regulatory change often will require cross-functional teams. An example given was MiFID II which includes a requirement to extend the scope of trades and transactions which must be reported to firm's regulatory authorities. Within this example, the IMS ability to manage asset classes and currencies is pivotal as is its ability to capture the transaction data to be reported to the regulator. The implementation of this type of requirement necessitates views from various professional perspectives and organizational functions including: legal experts, traders, compliance, IT, risk and project managers. In addition, these teams may draw from established standards for best practice, such as the Committee of Sponsoring Organizations (COSO) framework for internal control or the Control Objectives for Information and related Technology (COBIT)³.

³ From a regulatory perspective COSO and COBIT provide two important frameworks. The COSO framework outlines five major domains of control: the control environment, risk assessment, control

Respondents commented that in the post-crisis environment competing organizations are more willing to share regulatory solutions. The study's participants discussed how existing compliance practices are often defined or amended as a result of sharing and social interaction with peers. Several compliance managers described how they would regularly attend 'discussion groups' focused on specific areas of regulatory change. These meetings, also termed 'forums,' were often hosted by third party service providers such as consultancies or law firms. The purpose of these meetings was to openly discuss and share challenges and approaches for meeting new regulatory requirements

In addition to forums focused on specific nuances of regulation, the interviews showed that users of the IMS in competing financial organizations had set up regular group meetings to discuss ways in which the IMS was being utilized and configured. According to the research participants, typical areas of discussion at these meetings focused on issues relating to data, configuring and testing automated rules and discussing systems gaps and upgrades. Representatives from the IMS vendor were deliberately excluded from these meetings. It was felt that their presence had previously limited discussions around the system's ability to meet current regulatory challenges.

activities, information and communication, and monitoring (COSO. 1992. "Internal Control - Integrated Framework Executive Summary." Retrieved 19th September, 2009, from http://www.coso.org/publications/executive_summary_integrated_framework.htm). However, COSO is a highly abstract conceptual framework and does not specifically address IT. Consequently, organizations often look to supplement COSO with COBIT. COBIT provides organizations with reasonable assurance of their IT control structure and maps to the COSO framework (IT Governance Institute. 2012. "Cobit 5: A Business Framework for the Governance and Management of Enterprise It " Retrieved 15th October, 2012, from <http://www.isaca.org/COBIT/Pages/default.aspx>). Both frameworks are used as a benchmark by auditors and regulators specifically in the context of meeting the internal control requirements of Sarbanes-Oxley (Tuttle, B., and Vandervelde, S.D. 2007. "An Empirical Examination of Cobit as an Internal Control Framework for Information Technology," *International Journal of Accounting Information Systems* (8:4), pp. 240-263.)

Respondents highlighted how compliance managers in competing organizations frequently met informally on an ad-hoc one-to-one basis, to discuss the approaches being adopted by one another and how they were meeting new requirements through the IMS. One compliance manager in particular felt that these personal networks were far more useful than discussion groups and forums for sharing approaches to meeting new regulatory requirements. These findings show that compliance managers using the IMS have developed communities and personal networks whereby they can freely and openly exchange and mimic one another's practices and so together derive similar responses to regulatory issues.

The views of the research participants were extremely mixed when asked if overall compliance systems bought a competitive advantage. Some thought that it did and pointed to the role of the IMS in winning new business. In the post-crisis world, investors see the adoption of such IMS as a legitimate means to ensure meeting regulatory objectives. The expectation of the client is that firms will have such systems in place. The IMS acts as an expected norm or standard to assure investors that their financial interests will be safeguarded through compliant behaviours. In this way, the use of such systems is becoming further institutionalised.

However, other participants felt that compliance system do not provide a significant competitive advantage. They felt that their businesses competed by making profitable investments and not meeting regulatory obligations. Other participants suggested that if compliance practices failed and the organization was fined and suffered a loss of reputation then compliance could be '*a source of*

competitive disadvantage.' However, the fact that compliance professionals were so willing to share approaches with peers in competing firms suggests that compliance is not viewed as a source of differentiation.

8.6. Conclusions

This section also outlines the mechanisms distilled from the findings which act to embed compliance practices. Drawing on the work of institutionalists I identified three broad institutional mechanisms by which regulations may embed compliance practices, namely coercive, normative and mimetic mechanisms see Table 9. However, I find that these broad terms have insufficient granularity to explain the phenomena studied. Consequently, I delineate sub-mechanisms which draw from these three institutional mechanisms and categorize and describe the social forces observed. I find that these sub-mechanisms do not have an individual one-to-one mapping with each of the institutional mechanisms. Furthermore, the study identifies social mechanisms, termed 'Limiting Mechanisms' which may limit the ability of the IMS to institutionalise compliance practices. Such mechanisms may potentially limit the extent to which new compliance practices may become embedded and enable existing practices no longer deemed appropriate to persist. Table 22 summarizes these findings. Each of the table's sub-mechanisms is now discussed in turn.

Sub-Mechanism	Coercive Mechanisms	Normative Mechanisms	Mimetic Mechanisms	Limiting Mechanisms
Monitoring	Y	N	N	Exploitation of Loopholes

Segregation	Y	Y	N	Negatively Influencing Workflow Design
Automation	Y	Y	N	Validation, Resistance to Technological Change and Lagging Functionality
Consolidation	Y	N	N	Remediation Pressure
Standardization	N	Y	Y	Remediation Pressure
Sharing and Learning	Y	N	Y	Competative Ambience

Table 22: Mechanisms of Institutionalization

The first sub-mechanism is termed ‘Monitoring’ and refers to the way the IMS facilitates monitoring of trading behaviour against automated compliance rules. The system acts to ensure compliance by both constraining and enabling the transactions in which the financial organization may engage. In this way, the IMS seeks to coerce compliant actions and remove inappropriate trading behaviours through adherence to regulatory rules which are inscribed in the system. However, there exists the possibility that individuals will find loopholes in the regulations themselves, and thereby limit the IMS ability to prevent inappropriate behaviour. The ability of the IMS to prevent behaviour is highly dependent on the quality of the regulations inscribed in the system. If the post-crisis regulations are ineffective at preventing future crisis then so will be the systems that enact them.

The next sub-mechanism is termed ‘Segregation’ and describes how the IMS acts to segregate the roles of those who define and select orders with those

who fulfil them. The IMS also seeks to segregate those who participate in trading activities from those who monitor and sign off compliance breeches. By doing so, the IMS seeks to meet regulatory requirements to appropriately segregate roles and so prevent the inappropriate structuring of processes for conducting investment activities. Thus, a key mechanism through which practice is changed is coercion to regulatory requirements. In addition, normative pressures are applied emanating from expectations regarding the duties and responsibilities contained within a person's role in the financial organization. For example, it was not considered appropriate that a Fund Manager have the responsibility of signing off compliance breaches. However, the findings showed that powerful individuals, such as Fund Managers, may seek to limit the effectiveness of this sub-mechanism by aiming to circumvent these controls at the point where the systems' workflows are being designed to fit the client's business.

The third sub-mechanism identified is 'Automation'. This describes the process by which manual processes for managing trades and compliance are being displaced through use of the IMS. This is occurring as the result of the Regulator's push for financial organizations to adopt automated approaches deemed more reliable for trading and compliance practices. This requirement is not explicitly stipulated in the Regulator's Handbook. Instead, the Regulator is perceived as placing pressure on organizations to adopt automated systems by increasing their supervision and pursuing heavy penalties if manual systems are adopted and fail. So, while the Regulator cannot coerce organizations to adopt automated systems formally, they may apply a softer informal coercion instead.

Furthermore, the clients of the financial organizations using the IMS are increasingly interested in the quality of the compliance practices utilised by the organizations. Investors are now expecting that organizations use appropriate systems to manage their holdings and ensure that their investments are being taken to the regulatory limits specified but not beyond to the point of breach. The IMS provides a legitimate means by which to pursue the goal of regulatory compliance while maximizing the positions taken on behalf of investors. The use of the IMS or similar systems is now becoming an expected norm by investors. Investors have a common expectation for how compliance activities should be conducted. They expect an automated system to be in place over a manual system facilitated by spread sheets. Thus, I identify both normative and coercive mechanisms as enabling the automation of manual processes.

The complete automation of manual process is potentially limited by three counter mechanisms. The first is that the use of manual processes and particularly spread sheets is seen by many compliance managers as a useful tool to validate automated systems. The second is that powerful individuals, who may be less IT savvy, such as senior traders and fund managers, may be resistant to moving away from what they deem as tried and tested previously institutionalised practices. They may be unwilling to adopt an electronic system of trading over arranging deals through the telephone or reduce their dependence on spread sheets. Consequently, the impact of the IMS and its ability to displace inappropriate actions, enabled through manual processes, may also be limited by resistance to technological change. The third limiting mechanisms is termed ‘Lagging Functionality’ and refers to the way in which systems, such as the IMS, may not be ready to facilitate

regulatory changes at the time of the remediation deadline. Consequently, such gaps in functionality are temporarily plugged with manual processes while the IMS vendor seeks to incorporate the required changes into the next version release.

The fourth sub-mechanism identified is ‘Consolidation’ and refers to the consolidation of disparate systems and the use of a core system as well as the introduction of ‘golden data sources’. Financial organizations are being encouraged by the regulator to adopt a core system, which will allow organizations to establish an aggregated view of their holdings. Furthermore, requirements to aggregate holdings across departments require organizations to also aggregate siloed data sources. These requirements are not explicitly stipulated in the Regulator’s Handbook. The regulator was observed exercising a softer form of coercion to move financial organizations away from using numerous applications towards using a core system.

A limiting mechanism which may hinder the rationalization of duplicate systems is termed ‘remediation pressure’. This refers to external pressure from the Regulator resulting in organizations making changes to practices to meet deadlines for implementing new regulatory requirements. Organizations’ may find their limited resources channelled towards meeting the Regulator’s formal deadlines thereby limiting their ability to implement new efficient more practices. Often deadlines emanate from G20 agreements on when countries should implement changes and so are relatively inflexible. Furthermore, many interviewees suggested that the challenge of meeting new regulatory requirements was inadvertently creating ‘poor compliance architectures’ with ad-hoc manual systems being used to fulfil regulatory requirements within the designated time frame. In summary,

remediation pressure to meet tight deadlines may prevent organizations from reviewing and consolidating redundant systems and may act to increase the number of disparate systems as organizations struggle to meet deadlines through the use of non-strategic ad-hoc systems.

The fifth sub-mechanism is termed ‘Standardization’. This refers to initiatives taken by financial organizations to capitalise on the common regulatory topics introduced by the G20 agreements to streamline and standardize approaches for meeting common regulatory themes and thereby introduce firm-wide best practice. By doing so, organizations are aiming to reduce the total cost of compliance at a time when resources are diminished due to reduced trading volumes. Consequently, organizations are under no coercive pressure from the regulator to conduct such programs. Instead, the will to embed and standardize compliance practices, firm-wide, emanates from a need to ensure that such practices are appropriate to the organization’s changing business circumstances and not out of an instrumental need to meet regulatory requirements. The IMS acts to constrain and enable behaviours to facilitate the implementation of preferred best practice through the application of standardised compliance rules, in the form of the Vendor’s ‘Templates’ or ‘Master Tests’. ‘Master Tests’ are shared across similar business units operating in different countries, while the Vendor’s Templates are shared across financial organizations.

Standardized practices are formulated through normative mechanisms. The structure of the practice is arrived at collectively through the application of professional values and the use of established standards. The creation of a standardized approach is informed by the professional values held by those

participating in the creation of the practice. For example, employees from the legal or IT departments each draw from their own conceptions of desirable practice derived from their professions to contribute to the formulation of a standardized approach to monitoring trades. In addition, norms relating to standards, such as COSO and COBIT also help to guide and influence the formulation of standardized practice. In summary, normative mechanisms contribute to the formulation of standardized practices by drawing from institutional norms such as institutionalised professional values and standards.

I also identify mimetic mechanisms as contributing to this phenomenon. Shared logics of action and mimicry, across different departments and different countries, create similar isomorphic configurations of the IMS within the organization. This is facilitated as ‘Master Tests’ are shared and applied to similar business units. Furthermore, as standardised compliance practices are adopted and become embedded, they become legitimized by senior compliance executives as an approved process, firm-wide.

‘Standardization’ sub-mechanisms may also be limited by counter mechanisms relating to remediation pressures. The need to meet regulators’ deadlines may limit opportunities to standardize compliance practices in some organizations. Several compliance managers felt that they were struggling to meet regulatory deadlines and did not have the time and resources to create and disseminate standardized practices which could be applied across different countries. For some financial organizations the ‘opportunity cost’ of meeting new regulatory requirements is the possibility of applying a strategic and holistic approach to compliance across different countries. The tight timeframes and

associated resources required to meet regulatory deadlines limit the opportunity to increase the efficiency of compliance practices globally and remove duplicate practices. Thus, pressures for remediation are again contributing to the development of ‘poor compliance architectures’.

The last sub-mechanisms identified are termed ‘Sharing and Learning’ and refers to how practices for meeting new regulatory requirements are further shaped through communities of practice and socialization between peers in competing organizations. As a result of these interactions new approaches to compliance may be derived which instigate monitoring, segregation, automation and consolidation mechanisms. The study found that compliance executives in similar roles attended ‘forums’ and ‘discussion groups’ where approaches to meeting new regulatory requirements were shared. Compliance executives using the IMS met frequently to discuss how they were utilising the system to meet new requirements. Furthermore, one-to-one informal meetings between peers in competing organizations to discuss common issues also facilitated the sharing of compliance practices. Such interactions were driven by expedience and the need to meet new regulatory requirements and so here too we observe coercive mechanisms at work.

The driver for these social interactions was the need to respond to the uncertainty of upcoming regulatory challenges. This uncertainty is compounded by tight regulatory deadlines and the corresponding need to meet regulatory requirements before the mandates have been finalised. As a result of the ambiguity of the regulations faced by organizations, compliance managers sought to share and learn from one another and so mimic each other’s approaches, resulting in shared compliance practices becoming embedded. Consequently, I identify mimetic

institutional mechanisms at work. The data provided no insight into potential limiting mechanisms for ‘Sharing and Learning’ though the highly competitive attitude prevalent in the financial sector may have inhibited the sharing mechanism amongst some of the participants.

In conclusion, the IMS is found to play an important role in complying with those regulatory obligations that can be met by applying quantitative restrictions to trades. The Vendor markets the system as providing a consolidated compliance platform for trading numerous asset types in various currencies. Financial organizations that use the IMS place expectations on the Vendor to maintain the system in order to ensure that it is able to meet upcoming requirements. The IMS clients expect the system to be able to facilitate their trading activities, now and in the future, and to provide them with a controlled process which both facilitates their investment activities while ensuring that trades are compliant and individual roles are appropriately segregated. The clients of the financial organizations, the investors, view the IMS as a legitimate way to manage trading activities and provide assurance that their investments will be appropriately managed. The Regulators view the IMS as a legitimate means to automate compliance practices, appropriately segregate duties and aggregate compliance positions.

Overall, the expectation placed on the IMS is that by applying automated compliance rules to trades, inappropriate behaviours will be constrained and appropriate behaviour enabled. Through mechanisms of institutionalization the IMS is expected to embed new compliance practices and deinstitutionalise practices deemed inappropriate. This study sought to establish if the IMS fulfils this expectation. By drawing on DiMaggio and Powell’s (1983) coercive, normative and

mimetic institutional mechanisms I was able to identify the sub-mechanisms which facilitated this process. Overall, the expectation that the IMS will enable post-crisis regulations by enabling and constraining behaviours is reasonable and to some extent it is fulfilled. However, as the study progressed it became apparent that important counter mechanisms were also at work which limited the ability of the IMS to completely facilitate the displacement process. Consequently, I find evidence, which suggests that the institutionalization of technology-induced compliant behaviour is likely but uncertain.

9. ANALYSIS: IS CAPABILITIES FOR MANAGING COMPLIANCE

The previous chapters' analysis has been developed based on Figure 5 and related theoretical constructs and so collectively seek to make an academic contribution. However, the study also aims to make a contribution to the practitioner community and so this chapter seeks to distil the findings into a model of IS capabilities for regulatory compliance useable by practitioners. Consequently, the IS capabilities discussed in this chapter have been refined into a maturity model for IS compliance, see Appendix 9.

The financial crisis revealed that the failure of financial organizations, such as Lehman Brothers, creates significant systemic risk to our economy (Gillespie et al. 2012). The enactment of new regulations designed to mitigate such risk and their robust delivery, through compliance practices underpinned by effective IS capabilities, has potential to provide social benefit by somewhat protecting the organizations' stakeholders and the wider economy. Consequently, this chapter addresses the following research question:

- What are the IS governance and management capabilities which support compliance activities?

This section delineates the IS capabilities outlined in Figure 17, which are empirically derived from the study.

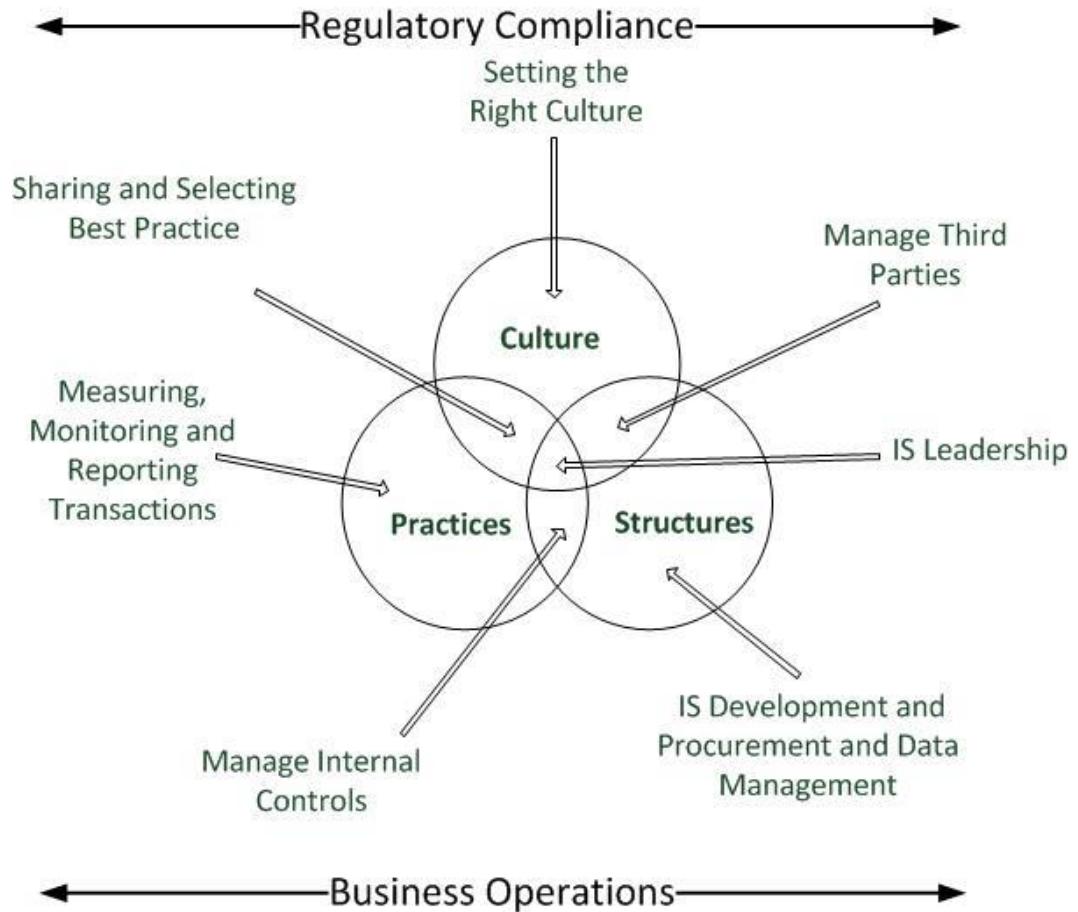


Figure 17: IS Capabilities for Regulatory Compliance. Source: author

These requirements will require organizations to set limits on specific types of transactions, calculate exposures to certain securities, calculate risk values, and perform pre and post-trade analysis. From a systems perspective, the ability to accurately access, structure, monitor and report transaction related information is essential to meeting regulatory requirements.

Capabilities for supporting IS governance and management are well documented (Feeny and Willcocks 1998; Willcocks et al. 2006). Examples of studies which have addressed the use of IS capabilities within specific business contexts include outsourcing of financial organization's back office functions (Lacity et al. 2004), mergers and acquisitions (Robbins and Stylianou 1999), the

impact on firm performance (Ravichandran and Lertwongsatien 2002), competitive positioning (Doherty and Terry 2009) and supply chains (McLaren et al. 2004). However, the literature lacks studies which address the capabilities which underpin technologies facilitating post-crisis regulatory compliance. The nuances of IS capabilities for supporting the new regulatory landscape are distinct from other industries and so warrant investigation.

9.1. Managing Internal Controls

The post-crisis environment will oblige organizations to set limits on specific types of transactions, calculate exposures to certain instruments, calculate risk and collateral values, perform pre and post-trade analysis, have the ability to perform audits, quickly report executed trades to the market and facilitate the clearing and settlement of transactions. Furthermore, these regulatory rules to which financial organizations must adhere are applied on a transaction-by-transaction basis. These mandates require systems to impose structured controls on the financial organization's activities to ensure compliance. Unsurprisingly, the compliance executives interviewed stated a preference for automated controls over manual ones. The respondents suggested that controls for ensuring compliance related policies and risk tolerances should, wherever possible, be automated. However, manual controls may also require IS support as they may often utilize systems such as spread sheets or databases. Table 10 shows the percentage of rules within the participating financial organizations which were not automated by the IMS. The study also revealed that the IS function may encounter some resistance to automating controls, as individuals may be used to manual processes, such as

spread sheets. Furthermore, in the case of regulatory compliance or business critical processes, periodic checks of the results of automated processes should also be undertaken. This is often achieved through comparing the outputs of an automated process with the outputs of a manual process.

Controls are essential, not only to set tolerances and limits on financial positions and assets held, but also to enable levels of authority. Technology plays a pivotal role in preventing opportunities for market abuse and assuring that individuals do not have inappropriate access to processes and systems by which they may commit unauthorised transactions. Thus, a key control is the appropriate segregation of duties to prevent conflicts of interests and unethical behaviour. However, the introduction of new systems may provide opportunities for individuals to circumvent established controls and practices. As a precaution, one organization interviewed conducted an audit of systems' access rights on a regular basis.

9.2. Measuring, Monitoring and Reporting Transactions

The next IS capability relates to the need to manage and report across all compliance activities within the organization and also to report transactions to markets and regulators. The measurement, monitoring and reporting of compliance activities enables strategic thinking at both the business and IS levels. The role of IS, in ensuring reporting requirements, is to facilitate the various channels of communication which are necessary to provide the appropriate data and to collate it and format it as required. Furthermore, compliance management technologies allow the measurement, management and reporting of controls and risk tolerances

associated with transactions. These are benchmarked against internal policies and regulatory requirements, as well as industry best practice and standards. A key compliance system adopted by the respondent organizations aggregates and monitors the positions held in accounts and portfolios to ensure the organization's total holdings are compliant on an on-going basis. The system allows regulatory rules relating to limits on transactions to be transcribed into automated rules. The system facilities orders and automatically checks them against the automated compliance rules when the orders are scoped and also during an overnight batch process once they have been processed. These checks are performed in real-time as they consider the actual holdings against live market data.

The Vendor has responded to the need to provide enhanced surveillance and monitoring by introducing additional services. Their 'Compliance Monitoring Services' comprise specialists employed by the vendor to review and assess compliance incidents and provide a daily summary of alerts, warnings, actions taken and items requiring escalation. This service is deemed as complimentary and is not designed to facilitate the wholesale outsourcing of monitoring activities. Instead, it complements existing arrangements and so allows organizations greater assurance of maintaining compliance.

9.3. IS Development & Procurement

This capability relates to obtaining required functionality, either by purchasing capabilities from a vendor or through internal development. Our study revealed that organizations needing to implement new systems in order to meet new regulations may be forced to source such systems externally, as they may not have

the resources to develop the necessary systems internally within required timeframes. A senior compliance executive, noted,

'If we develop in-house, we have the internal IS cost, and all the rest of it, head count, that we need to bring in to do that. So we have to balance the cost of doing that and having the people on board and the on-going maintenance with paying a license fee and putting a package in place' and 'I mean the trade-off is the time though. I mean we can get an off-the-shelf system put in and up and running within three to six months. If we start an analysis process in-house to build this thing that we want to do exactly what we want to do, it'll be a couple of years at least.'

Whether a bespoke or off-the shelf- approach is adopted, the organization is required to develop a clear understanding of the new controls and associated functionality required. For example, the MiFID II Directive requires that post trade information be published as close to real time as is technically possible (Linklaters, 2012). This requires organizations to adopt new systems enabling real-time reporting to markets.

The study revealed that the introduction of new regulatory requirements may cause gaps in compliance systems as new requirements come into force before internal development teams or vendors are able to develop the necessary functionality to bridge the gap. In the meantime, organizations may be forced to adopt riskier manual processes as vendors lag behind developing new areas of functionality. Systems supporting compliance must be continually developed and improved to stay current with the organization's changing regulatory exposure and dynamic business environment.

The study revealed that organizations needing to implement new systems in order to meet new regulations may be forced to source such systems externally, as they may not have the resources to develop the necessary systems internally within required timeframes. Furthermore, the availability of new functionality for enabling compliance may also act to initially displace older systems. The new MiFID II EU Directive requires that organizations ensure new products/services comply with all applicable rules and that risks associated with new products are adequately managed (Linklaters, 2012). Correspondingly, several systems experts suggested that technologies underpinning compliance must be continually developed and improved to stay current with the organization's changing regulatory exposure.

Organizations may find that well-developed compliance systems with advanced functionality may provide an income stream as such systems are sold on to other entities. As one compliance executive, noted,

'I mean, sorry to say, in most investment management firms [compliance] is a cost centre, but here actually those compliance services can be sold to other entities that might want to use your compliance platform, pulling in data from the accounting system, running compliance, because they don't have one. So it can be sold, so it can be a profit centre, which it is here.'

9.4. Managing Third Parties

Where outsourcing/offshoring arrangements are in place, contracts must reflect the level of service required to support compliance activities, adhere to internal policies and meet regulatory obligations. When meeting regulatory requirements, organizations should not assume that outsourcing key processes

means that they have delegated responsibility to their provider. The FSA and FCA rules states,

'when relying on a third party for the performance of operational functions which are critical for the performance of regulated activities... [firms must] on a continuous and satisfactory basis, ensure that it takes reasonable steps to avoid undue additional operational risk.' (FSA, 2007b p.1).

This requirement applies where organizations outsource the coding of compliance related controls into systems. The study revealed compliance systems' vendors may now provide their clients with data feeds and prewritten automated compliance rules as part of their service offerings, thereby allowing clients to outsource areas of data ownership and raw coding. Furthermore, knowledge and process outsourcing arrangements may have to be evaluated to ensure that the new practices do not degrade internal controls. Here, the role of IS management is to contribute to the creation of SLA/contracts by examining how new arrangements with third parties impact on systems' controls and operations. When this capability is optimised, contracts and SLA agreements consider regulatory requirements, policies and risk tolerances and are aligned with business and IS strategies. The IS department is consulted when defining performance measures and controls for third parties.

9.5. IS Leadership

Effective leadership and project planning is essential for supporting compliance activities. The research findings suggest that IS management must be clear about what existing systems, architectures and data will allow when consulting with compliance executives. In addition, time frames and milestones for

establishing appropriate systems must be well managed and communicated, due to tight deadlines imposed by the regulator.

The respondents suggested that IS should be represented on any committees which review new compliance practices or the alteration of existing approaches. Compliance executives should also be consulted when developing new systems. One compliance executive, described the structure of project teams,

'I've worked in a risk and controls team, which is sort of between compliance and business. But you will see a similar generic breakdown of functions, which is somebody who understands the business and comes from the business, such as a lawyer or a regulator or an internal compliance person. Somebody who understands the system and then perhaps people in-between who will put it into practice'.

A senior compliance executive, in C.7, suggested that the creation of compliance focused senior committee, consisting of compliance directors and senior management from effected business functions, was essential. In her view, it is crucial that IS should be well represented on this committee. Within her organization, regular monthly meetings occurred between middle management and a monthly compliance report was prepared for their 'Operating Management Committee'. However, a compliance executive noted that in his firm, '*...governance committees are infrequent and the actual real business is done on this ad hoc basis...'*

IS leadership may contribute to understanding and evaluating the costs and benefits of adopting different approaches to compliance. Furthermore, strong IS

leadership is required to lobby systems' vendors to ensure they are developing systems in alignment with the organization's changing regulatory requirements. Increasingly, firms have to demonstrate compliance capabilities to attract clients. The IS function may provide a reassurance to clients by demonstrating compliance systems and thereby support sales and marketing activities.

9.6. Sharing and Selecting Best Practice

Our research revealed that many IS professionals were confused about the contribution of industry-recognized frameworks and best practice to the emerging regulatory landscape. A complete review of the various frameworks and standards is beyond the remit of this paper. However, Figure 18 highlights some of the more well-known frameworks.

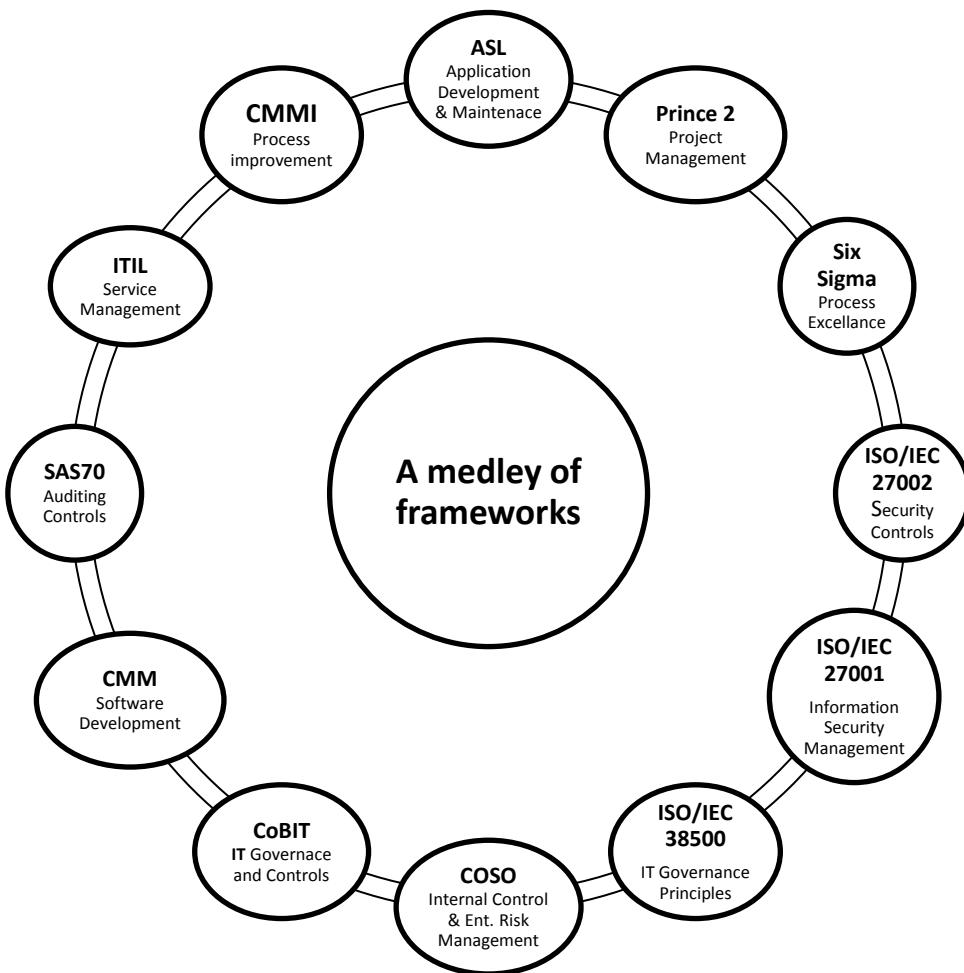


Figure 18: Relevant Standards of Best Practice for Regulatory Compliance. Source: author

All of these frameworks have a very different focus but give organizations insight and a point of departure from which to structure their compliance arrangements. Established standards provide a common language between the business and technicians, an operational foundation, incorporate best practice and facilitate knowledge sharing. Crucially, they are auditable and are well recognized by stakeholders including regulators, shareholders and investors.

However, individual compliance requirements in each organization will differ due to nuances in their business environment, product portfolio, resources,

strategy and regulatory obligations. Due to this and also as no single framework or standard provides a complete compliance solution, organizations may often review these frameworks and then plan an approach that blends the best practices of each along with the needs of the organization.

The findings suggest that in the post-crisis environment, IS experts and compliance managers are more willing to share approaches across organizations. Internally, different business functions and geographical divisions impacted by the same policy or regulation may also seek to share best practice. The study revealed that organizations with similar systems and regulatory exposures share best practice for dealing with common compliance issues. Informal networks are deemed especially valuable for sharing proposed practices for dealing with new regulatory requirements. The findings revealed that firms may also collaborate with other organizations to determine industry standards for defining compliance metrics, monitoring processes and reporting structures.

Organizations with in-depth knowledge of a specific regulation may contribute at the industry level, through associations with high-level bodies and can also assist with the development of systems. A senior compliance manager noted in C.4:

'I am involved in the IMA, Investment Management Association, which is a UK body and I've sent out the information to them, just trying to get people to think about [EU Regulation: CESR 10-788]. And then I shall be contributing to software houses. We use [system vendor], and I've agreed that when they start to do their coding, I'm ready to have my brain picked on it.'

9.7. Data Management

Our study found data to be a key challenge when developing complex controls. As one IMS consultant noted: '*what we find with a lot of clients, is they may not... have all of their supporting data.*' Furthermore in the case of controls relating to regulatory compliance and risk tests, such as stress testing and scenario analysis, data may have to be sourced externally. Our research also highlighted how changes in compliance requirements, often due to changes in regulatory obligations, will require new data. New regulations and mandates may require changes in data requirements.

A key factor is the availability and format of the data which supports the controls. A systems consultant remarked that this is often the '*biggest chore*' when implementing a rule. Furthermore, changes in compliance related activities may require a change in controls which in turn may require additional data, which must be appropriately formatted so that it can be shared across systems. The Senior Relationship manager for the IMS vendor observed that when the system was upgraded, '*we introduced parameters that required certain data that the client can use and they have to make sure that they have that data available.*'

Gaps in the data required to support controls relating to policies emanating from compliance activities may influence a firm's ability to meet customer requirements and trade. In addition, gaps in data or functionality relating to compliance affected activities may require processes to be performed manually. This in turn may reduce the effectiveness of controls. An IMS consultant stated '*[Previously] ...it was a manual process and they had to do this manually... the*

functionality wasn't fully there or maybe they didn't have the data fully in place to correct the functionality'.

Changes in business objectives may also require further data as new products must meet internal and external polices and established risk tolerances. Analysis derived from such data may alter business objectives and policies. An IT manager, in C.3, noted that '*[new products may require] ...more data may impact the business to a degree. To the extent that they may find that the calculations weren't what they were expecting initially.*'

In summary, the findings suggest that the appropriate management and sourcing of data is essential to support all compliance activities. Consequently, effective IS governance is integral to defining policies which control data sourcing, formatting and management.

9.8. Enabling Cultural Change

A key challenge is to create the right culture. One senior compliance executive in C.5, observed:

'Things are volatile right now and people want to know that you're in a good safe place and it all starts in compliance and that culture then resonates through the rest of the firm.'

Prior to the crisis, senior traders and fund managers had increased control over the systems used for conducting transactions and for applying automated controls. Furthermore, respondents highlighted that adopting appropriate IS systems to provide controls reinforces a commitment to a culture of compliance. A senior

compliance executive, in C.5, commented that '*it's a good culture for people to know that they're being monitored and reviewed*'. Another systems consultant suggested that systems and controls act to influence culture by ensuring changes in behaviours. 'COSO's well-established Internal Control Framework explicitly requires organizations to develop a control environment in order to influence employees' attitudes and goes as far as suggesting that such a culture is the foundation for effective internal control. Effective corporate governance is dependent on creating a culture which supports 'doing the right thing' (COSO 1992).

However, several respondents highlighted concerns regarding the development of a dominate control culture. Many organizations have built up considerable innovative and creative capabilities in order to think and act differently as a reaction to dynamic markets and ever-changing business environments. Thus, management has focused on developing a culture which ensures that organizations can change at the pace demanded. Our responses suggest that, if compliance is misunderstood, there is a danger of a culture of overt control developing which may stifle innovation. A compliance executive, in suggested that compliance could act as an aide to innovation by helping to '*find alternatives if problems exist*' and that good compliance was about '*business protection not business prevention*' and that '*if compliance is acting as a barrier, it is not performing its role properly.*' Furthermore, one compliance manager, in commented that a culture where individuals are more risk aware could have a positive effect on innovation by helping to '*identify new opportunities*' and situations, '*where risks were worth taking*'.

The respondents had much to say regarding the appropriate cultural tone. One compliance manager, observed that an important aspect of developing the right culture was the need for individuals to '*take pride and gain recognition*' for doing the right thing. She suggested that the often championed '*learning culture*' where people do not apply blame is in contrast with the nature of compliance which is to '*hold people responsible for their actions and behaviours*'. A compliance executive noted that, in his opinion, organizations '*need to accept that compliance is quality*' so that the attitude within sales, for example, is that a '*trade is not a good trade unless it is a compliant trade*'.

In summary, firms should strive for a culture where individuals are aware of the expectations placed on them with respect to ethics, risk and legal regulations. However, this culture is balanced by a culture which simultaneously supports innovation. Compliance is welcomed and viewed as enabling new products and services innovations by ensuring they are legally compliant. IS has a key role to play in influencing behaviours and thereby changing cultures.

9.9. Conclusions

In the post-crisis environment, key stakeholders such as investors, auditors and regulators are increasingly looking for organizations to be able to demonstrate not just current compliance but also robust and quality practices in place for underpinning successful compliance in the long term. The IS Capabilities identified provide a series of categories from which organization may evaluate their own abilities in each area. Maturity in each capability may be calibrated on a scale. At one end of the scale they are a set of fragmented or loosely interconnected activities

and technologies focused on risk, regulation and policy. At the other end of the scale IS capabilities for compliance may be conceptualized as an enterprise wide initiative with the potential to improve governance through developing an in-depth understanding of risk and compliance on business performance. Furthermore, by adopting an enterprise-wide approach to compliance and involving IT leadership, expenditure on compliance becomes more transparent. Appendix 9 outlines a maturity model of IS capabilities based on this analysis.

The management of internal controls is essential to ensure rules are adhered to and limits respected. The outputs of such controls should be monitored and benchmarked and results reported to key stakeholders. Procurement and development of systems capabilities must ensure that new parameters and controls to meet upcoming requirements are incorporated and that data and system's architecture's will effectively underpin new practices and avoid causing an overreliance on manual process, while technical gaps are bridged. Where third parties are employed, their own abilities to support compliance practices should be considered and evaluated on an on-going basis. Meeting new compliance requirements which are still being reviewed and refined close to the deadlines is challenging, as are reevaluating existing requirements in relation to shifting markets and the introduction of new and the retirement of old products. Strong IS leadership is important to ensure that IS has a voice when considering such changes and the impacts on the firm's regulatory exposure.

Often compliance is not perceived as contributing to a competitive advantage and so organizations' should not be deterred from seeking to overcome the challenges of short implementation deadlines and shifting environment factors

by seeking to share best practice and approaches. Effective data management practices underpin all compliance efforts. Planning early and establishing the key data sources which will underpin controls and reporting requirements may assist organizations to build appropriate interfaces between systems which may in turn take time to test and refine. Changing cultures associated with pre-compliance views on appropriate trading behaviours is a huge challenge, which goes beyond the deployment of specific IS capabilities. By developing strong controls, robust systems and clearly structured and appropriately segregated workflows, organizations can demonstrate a commitment to a compliance culture. Furthermore, IS systems have the ability to both constrain and enable specific types of behaviour and so may contribute to the desired cultural reforms.

10. FURTHER CONCLUSIONS AND CONTRIBUTIONS

This final chapter seeks to draw out and summarize final conclusions from the analyses previously detailed. Firstly, the high level research question is revisited and the multiple findings and associated theoretical contributions are delineated. The section that follows summarises further contributions, for practitioners. The next section discusses the limitations of the study. The penultimate section provides suggestions for future research, and finally some concluding remarks bring the research monograph to a close.

10.1. Revisiting the Research Question

The high-level research question which has guides this study asks: *How does pre-embedded IMS technology influence behaviours and practices for post-crisis regulatory compliance within financial organizations engaged in investment activities?* In order to answer this question institutionalist concepts have been employed to guide understanding of the ways in which the IMS acts as a carrier of regulatory institutions (Chapter 7), how social, functional and political pressures may lead to the deinstitutionalization of compliance practices (Chapter 8), and how mechanisms and counter mechanisms may facilitate and hinder institutionalization (Chapter 9). The discussion sections in Chapters, 7, 8 and 9 have already detailed the study's findings and conclusions in each of these three areas. Key contributions include: establishing how elements of the IMS constitute Scott's typology of carriers of institutions (see Table 18), identifying the compliance practices which are becoming deinstitutionalised (see Table 19), empirically identifying the social, political and functional pressures acting to deinstitutionalise established practices,

(see Table 20), identifying the empirical predictors of deinstitutionalization (see Table 21) and by identifying institutional sub-mechanisms facilitating the institutionalization process, and related counter mechanisms which limit the ability of the IMS to embed new practices and behaviours (see Table 22).

However, it is recognised that the findings and analysis delineated in Chapters, 7,8, and 9 are interdependent and rely on the same set of data and findings and so this concluding section aims to bring each chapter's findings together in order to address the high-level research question.

Overall, the expectation that the IMS will enable post-crisis regulations by enabling and constraining behaviours is reasonable and to some extent it is fulfilled. Yet the analysis shows that even prescriptive rules-based regulations are not neutral and require interpretation (Edelman and Suchman 1997) and that as a result the rules encoded within the IMS (Orlikowski and Iacono 2001) have their own form of 'calculative agency', biases and assumptions embedded within the system (Bamberger 2010; Callon and Muniesa 2005; De Goede 2005; Itami and Numagami 1992; Muniesa et al. 2007; Preda 2007b; Preda 2006; Pryke 2010; Zaloom 2003). For example, design decisions are embedded within the IMS shaped by underlying calculative and analytical approaches and through the use of established indices and benchmarks, which are often provided by third parties.

The study underpins how regulative technologies are more than simple black-boxes of technology determining if trades are compliant but, are in practice complex systems comprising of symbolic systems, relational systems, routines and artefacts (Scott 2008). As Scott notes, institutional, '...carriers are not neutral

vehicles, but mechanisms that significantly influence the nature of the elements they transmit and the reception they receive.' (Scott 2003 p.1). Thus, the IMS acts as an institutional conduit privileging certain institutions and practices thereby influencing the perceptions, possibly dangerously, of those decision makers, including regulators, compliance managers and traders, the technology is trying to inform (Barry and Slater 2002; Mirowski 2002; Muniesa et al. 2007; Podolny 2001; Zuckerman 1999).

The IMS rules-based approach creates affordances which predetermine the scope of potential decisions and associated outcomes (Gibson 1986; Latour 2005; Leonardi 2011; Majchrzak and Markus 2013; Zammuto et al. 2007). The systems is enacted from evolving human agency in the form of the trading behaviours it facilitates, but simultaneously also constrains such actions (Leonardi 2011). As these carriers are in flux, the affordances and world views they create, which constrain and influence decision makers, are also in flux. Correspondingly, the IMS rules-based approach creates affordances which contribute to the predetermination of the scope of potential decisions and associated outcomes. As the institutional carriers inherent to the system are in flux, the affordances and world views they create, which constrain and influence decision makers, are also in flux.

As constraints and affordances within the IMS are composite of intertwined human agency, 'the ability to form and realise goals' (in this case to conduct trades), and material agency 'the capacity for non-human systems to act on their own apart from human intervention' (Leonardi 2011 p.147 and 148), in this case by calculating if a trade is compliant or not), then both IMS material and human agency are influenced not only by coercive elements of regulatory institutions but

also from normative and mimetic elements as well (DiMaggio and Powell 1983). Furthermore, there exists a tension between human and material agency within the IMS, as the systems' material agency is formed from institutionalised logics (Thornton and Ocasio 2012) derived from regulatory obligations, and so acts to constrain and discipline human agency influenced by, arguably, logics of action to create preferable trading outcomes, profitability and for individuals to receive high-bonuses and increased status within the firm.

The study contributes by utilizing the same findings to illustrate concepts of institutionalization and deinstitutionalization so underlines how these two concepts are interrelated. The findings highlight the blurred demarcation between the processes of institutionalization and deinstitutionalization. Often there exists a dissonance between theoretical constructs of institutionalism and empirical research (Hasselbladh and Kallinikos 2000). This obfuscation of concepts may explain why studies of deinstitutionalization are rarer than studies of institutionalization. Within the post-crisis regulatory landscape the removal or addition of regulations and associated organizational practices was found to not occur in a vacuum. The findings show that the process of deinstitutionalization often takes place around the institutionalization of a new practice and that social, functional and political pressures as well as coercive, normative and mimetic mechanisms may collectively act to simultaneously institutionalise as well as deinstitutionalise practices. This finding provides an important critique of Oliver's work, as it suggests that social, functional and political pressures of deinstitutionalization may also be applicable to processes of institutionalization. This poses questions regarding whether deinstitutionalization is merely a by-product of the institutionalization process and

where the boundaries and interfaces between the two processes exist. In this study, it seems that the two are often interlinked, complimentary and directly implicated in the unprecedented global regulatory change and corresponding changes to practice resulting from the crisis.

Scholars have described a process where existing rules are removed and new ones introduced as ‘displacement’ (Mahoney and Thelen 2010; Streeck and Thelen 2005), that is, new institutions displace old ones. However, this study finds this definition useful as a bridging concept but insufficient to explain the interaction between pressures for deinstitutionalization and mechanisms of institutionalization. While some post-crisis regulations are, in the author’s view, new and designed to plug holes which were previously undetected and thus create new obligations, other areas of regulatory change are refinements and iterations of previous obligations e.g. UCITS IV, MiFID II, CAD IV. It seems, from the present study, that few changes actually retire existing regulatory obligations.⁴ The introduction of new regulatory obligations is causing a shift in the environment which are causing some practices to be refined, a few to be removed and many more to be introduced and so the view that a new regulatory obligation acts to displace another is perhaps an over simplification of this dynamic and complex environment in which many factors, including social, political and functional pressures, alter social interactions and technological artefacts.

To summarise, the study addresses the research question by illustrating how regulative technologies are more than simple black-boxes of technology (Millo and

⁴ The move away from principles based ‘light touch’ regulations was not the retirement of an existing obligation but instead a shift in the Regulator’s approach to rule making and supervision.

MacKenzie 2009; Williams 2013) determining if trades are compliant but, are in practice complex systems comprising of symbolic systems, relational systems, routines and artefacts that create a specific world view which influences the perceptions of regulatory bodies and the compliance managers it informs (Heidegger 1954). Furthermore, complex interplay between social forces for deinstitutionalization and social mechanisms for institutionalization structure regulatory rules and correspondingly the IMS. The resultant affordances the IMS forbids and creates contribute directly to discourses and ordering of regulated economic activity (MacKenzie 2006; Preda 2006). Through the instantiation of automated rules the IMS privileges the measurable over the unmeasurable. The system, while embodying normative and cultural elements ultimately provides a binary view of regulation, either a trade is compliant or not. Thus, the system does little to highlight important yet unmeasurable factors, such as the development of inappropriate cultural values.

10.2. Comments for Policy Makers and Practitioners

Chapter 9 provides a contribution to practitioners through the definition of IS capabilities for regulatory compliance and the related maturity model outlined in Appendix 9. The study also highlights how, post-crisis, the regulator has reacted to criticisms of pre-crisis principles based on ‘light-touch’ regulation by increasing supervision and becoming more prescriptive through the introduction of EU Directives, which are rules-based, resulting in higher volume of rules, which further institutionalize the use of the IMS. High volumes of complex rules simply cannot be applied to existing financial holdings and tested against proposed transactions

without automation, which provides its own material (Leonardi 2011) or calculative agency (Callon and Muniesa 2005). Consequently, the EU and US regulators' philosophy of responding to failings by introducing ever more rules, and the IMS corresponding ability to automate large volumes of rules is mutually reinforcing and acts to institutionalize both practices.

The non-neutral nature of the IMS, it's affordances and the resultant perceptions and decisions it creates and guides, has the potential to create information asymmetries (Greenwald and Stiglitz 1994; Solomon 2013) between those who have access to such systems and those who don't. This is assuming of course that such systems' calculations are underpinned by high quality data and appropriately defined indices and benchmarks. In fact the FCA's Risk Outlook for 2014 (published after the study's analysis was completed) outlines the major risks the industry, is facing from the Regulator's perspective and highlights asymmetric information as an ongoing risk: 'Information asymmetries – when one party in a transaction has more or better information than the other party – are common in most retail and wholesale financial markets transactions. They potentially affect outcomes along the distribution chain, causing miss-selling and reduced trust, and can affect market integrity if used to benefit the firm at the expense of one or more conflicted clients.' (FCA 2014 p.8).

Unsurprisingly, as the regulator moves away from a principles-based 'light-touch' approach towards intense supervision and so focuses more on the processes and systems which support compliance, agency is reduced and structural forces emanating from the Regulator's authority become more dominant. Thus, individuals' and firms' agency regarding how they implement compliance practices

are found to be reduced in the post-crisis environment. The tension between structural forces and agency are highlighted by this study (Deeg 2010; Giddens 1984; Heugens and Lander 2009; Hirsch and Lounsbury 1997; Perrow et al. 1986; Seo and Creed 2002). The primacy of macro forces' (regulatory institutions) ability to shape practices is underlined by the research. Yet at the time of the research, financial firms still had the ultimate control over the systems and processes they adopted as long as they remained compliant. However, the FCA has highlighted that it intends to continue to focus on risks created by technology in 2014 stating, 'Technology may create effective and cost-efficient distribution channels, increasing competitiveness, innovation and efficiency, but can also be limited by vulnerabilities in the design and management of systems and infrastructure.' (FCA 2014 p.9).

Investment firms may also control their levels of regulatory exposure by selectively choosing which services and financial products to offer and which regulated markets to participate in. Since the crisis, various firms have chosen to exit markets where new regulations are reducing profitability (The Economist 2012b). Whilst compliance practices are most overtly influenced by structural forces and mechanisms emanating from regulatory coercion and less overtly by normative and cultural-cognitive elements, organizations and individuals still excise some agency over responses to these institutional factors and may seek to limit their impact through deploying counter mechanisms to resist the institutionalization of new practices and the erosion of old ones.

At a time when budgets are being squeezed and trading across the industry is reduced organizations are being required to pour resources into large scale

change management programs driven by regulatory change. Pressure on resources are compounded by tight deadlines for implementation set by regulators and the resultant need to begin working on implementing the regulations before final drafts have been agreed. Thus, uncertainty is creating an additional drain on organizations' resources. Consequently, many organizations are focused purely on meeting compliance deadlines, and not on developing a strategic enterprise-wide approach to compliance, and creating much needed efficiencies. Instead, managers are in danger of implementing their own siloed compliance solutions within business functions. Furthermore, changes in regulations may create gaps in systems and processes which, in the short term, need to be plugged by manual processes. This may create a higher number of regulatory breaches, with possible financial and reputational penalties. This is a potentially a major issue given the scale of regulatory change in the wind. Thus, the post-crisis regulatory environment creates a paradox as short timeframes are forcing firms to focus on creating non-strategic compliance solutions which meet deadlines but are less robust in the long term.

Software vendors' abilities to assess the impact of regulatory change on their offerings and their ability to efficiently and quickly translate regulatory rules into structured systems has the power to ease the pain and cost of compliance as well as reducing the risk of breeches by reducing the need for interim manual systems. Compliance managers are advised to engage with vendors early to ensure the changes they require are being incorporated into future releases.

While compliance may still not be seen as providing a competitive advantage, ineffective compliance management could certainly create a competitive disadvantage through reputational damage if failures are made public or by being

unable to take new offerings quickly to market, due to missing compliance data fields or absent underlying data. This study shows that understanding the data required to support regulatory change is essential, and that firms should consider data implications early on in the design of new compliance rules. Often new requirements will require organizations to consider sourcing data from third parties.

The study shows how field level structural forces are acting to shape compliance practices and creating isomorphic patterns of compliance. Examples include the perception that the regulator is moving towards tacitly favouring specific vendors and systems, the use of Master Tests across global business operations to standardise compliance practices within organizations and the G20's establishment of common regulatory goals across jurisdictions, allowing organizations to centralise and standardize compliance practices. Furthermore, financial organizations are meeting to discuss, share and derive practices for meeting specific upcoming regulatory obligations, which in turn, may lead to similar practice and structures being adopted across firms. Thus, new compliance practices are socially constructed. Correspondingly, Master Tests and generic Templates supplied by the Vendor may help cognitively shape and frame views on how areas of compliance should be implemented and managed by IMS adopters. Although the research shows that implementers of the system may slightly alter the rules to match their specific business environment, the system allows the diffusion of solutions to regulatory compliance which must then be cognitively translated and applied to the users' specific context, thereby providing a hybrid combination of local structures and ideas derived from previous experience. This phenomenon is termed Bricolage by Scott (2008).

The presence of ‘Structural Isomorphism’ is an important finding from both a vendor and systems user perspective. If regulatory technologies are conduits of best practice and so act to create homogeneity, then future upgrades of compliance focused systems may leverage commonalities across organizations to further standardize compliance practices and so reduce associated investment. The development of effective inbuilt templates and workflows which provide a strong return on investment may provide a software vendor competitive advantages over rival software firms. However, the presence of Bricolage suggests that any such generic compliance frameworks which may be applied across similar organizations will have to be appropriately high-level, so that they can be refined for each adopter’s business environment, while being detailed enough to still be valuable.

10.3. Limitations of the Study

Firstly, it is worth noting that my findings do not purport to investigate the entire process of institutionalization, for compliance practices, but instead, the part of the process broadly termed ‘objectification’ by Tolbert and Zucker (1999) and ‘legitimation’ by Currie (2004). That is the part of the process where the underlying rationale of the institution is developed, tested, refined, and propagated and consequently, where social consensus is formed. At the time of writing, many of the compliance practices considered were newly designed and not universally embedded. Correspondingly, the EU and US regulatory responses to the crisis are not yet fully crystallised and so a limitation of this study is that its findings are historically contingent on a period of time where the final outcomes of the new regulatory environment are uncertain. However, this is also a contribution of this

study as it provides a glimpse of this transient environment. It is conceded that for a practice to become truly institutionalized it will have to be accepted and adopted beyond the eight financial organizations considered or indeed the user community of a single IMS. As institutions become further embedded they enter a state of ‘sedimentation’ which is, ‘... characterized both by the virtually complete spread of structures across the group of actors theorized as appropriate adopters, and by the perpetuation of structures over a lengthy period of time’ (Tolbert and Zucker 1996 p.184). The study revealed that practices which had reached the ‘sedimentation’ process were also present and being ‘carried’ by the IMS. Examples include the four-eye tests and the segregation of duties, which are well established best practice.

The Vendor’s customer base are limited to organizations which participate in the ‘buy-side’ of the investment banking industry, the buying and selling of securities for investment purposes (to make a profit) on the behalf of clients and so the study’s findings are limited to this specific area of the industry. As post-crisis regulations come into force the IMS plays a pivotal but limited role in complying with new mandates. Its role is limited to managing compliance in regulatory obligations which require organizations to apply limits on trading positions and monitor trades. For example, the system has no role to play in capping banker’s bonuses, or controlling risks from banks being ‘too-big-to-fail’, and therefore many post-crisis regulatory requirements are not facilitated by the system. Correspondingly, the study is limited in its ability to address the plethora of factors which contributed to the financial crisis and the broad scope of regulations which aim to plug gaps in the regulatory system. A further limitation of the study is that

the historical background used to contextualise the use of the IMS focused purely on the UK and US, as the participant organizations were either UK companies with US operations or US firms with UK operations. Thus, each firm was exposed to both US and UK⁵ regulatory obligations. Yet, some of these firms also had operations in Asia, which were not considered in the historical review. A further limitation of the study is that it focuses on just eight financial organizations using a single vendor of IMS.

However, the study did seek to apply criteria to ensure that the cases considered were comparable and generalizable. The study applied Yin's (2009) replication logic, focusing on criteria such as the length of time the IMS was adopted, the types of financial products offered and correspondingly the regulations they were exposed too. The study applies what Yin (2009) refers to as 'analytic generalizability.' This approach involves applying a set of results to a broader theory through replicating findings across other cases.

Correspondingly, interpretive studies involve a reasoning process to generalise from first level constructs, the facts that the researcher interprets and records, to second level constructs, which are theoretical formulations created to explain the patterns found in the first level constructs. Thus, second level constructs may be thought of as 'interpretations of interpretations' (Maanen 1983 p.40). In this study, the identification of first and second level constructs was operationalised through 'descriptive' and 'then' pattern coding.

⁵ Composite within UK regulations are EU directives.

Interpretative generalizability formulates theory in order to provide expectations to the researcher regarding what has been observed and also what might help researchers to be unsurprised or anticipate related observations made within the same research setting. (Lee and Baskerville 2003). Thus, ‘the essential task of theory building here is not to codify abstract regularities but to make thick description possible; not to generalize across cases but to generalize within them.’ (Geertz 1973 p.25-26). Thus, at the minimum this study allows for generalizability across the user community of the IMS studied. The data collected did not allow for all findings to be replicated across all eight cases thus, the findings are may be viewed by some as illustrative not definitive (Patton 1990), for example only one organization was setting up an internal committee run by its COO. Yet, I would argue that the findings may well be generalizable to users of such systems provided by other vendors, which all function similarly through a rule based approach to automating compliance. The fact that many vendors of similar systems are adapting their offerings to overcome common issues, such as data quality and availability, supports the view that vendors and users of these systems are facing similar issues to the ones identified in the study.

In summary, the theories outlined in the research may be bounded to the user community of the IMS during a specific period of time where regulatory responses to the financial crisis were being developed. Bounding the generalizability of the case to the user of the community of the IMS Vendor would not, however, detract from the study’s value as the, ‘... philosophical tradition of interpretivism places no particular emphasis on generalizability or the striving for universal laws. In interpretivism, theory’s pertaining only to the setting where it

was developed would not detract from its validity or scientific status. At the same time, interpretivism would not prohibit the researcher from extending his or her theory to additional settings.' (Lee and Baskerville 2003). Indeed, aspects of the study do extend theory beyond the user community of the IMS for example, the identification of pressures to deinstitutionalize compliance practices (Table 19), the predictors of deinstitutionalization (Table 21) and the model of IS capabilities for compliance outlined in the previous section. However, it is accepted that these theories may require further validation through application to other settings where regulation, technology and capital markets intersect, to be fully validated.

Finally, it is interesting to note that some of the theories outlined have some similarity to the findings of studies into other enterprise wide technologies, such as ERP systems, in different settings⁶. Specifically, issues arising from data quality availability, complexity and aggregation and issues arising from bespoke modification, 'vanilla' systems, templates and standardization of practices (See for example: Davenport 1998; Davenport et al. 2004; Themistocleous et al. 2001; Xu et al. 2002). Furthermore, the conceptualization of enterprise systems as carriers of institutions has been applied in other studies focused on rules based systems. As Lyytinen et al (2009 p.287) observe, in their study on ERP systems in the Saudi steel industry, '... ERP systems act as material carriers of institutional logics (Berente et al. 2008) or in Jepperson's terms: 'socially constructed, routine-reproduced programs or rule systems' (Jepperson 1991 p.149). Consequently, it may be possible to generalise some of the findings, related to data quality,

⁶ I am grateful to Professor M. Lynne Markus for pointing out these similarities

automation and standardization to other settings where rules based systems are used.

10.4. Opportunities for Future Research

At the time of writing, post-crisis logics and associated practices are newly designed and so their impact is currently uncertain and so future research may want to revisit such practices and investigate how they have matured. Thus, a natural development is to develop the longitudinal nature of this study and to continue to investigate responses to post-crisis regulations as they become more demarcated. Once post-crisis regulations are implemented and their impact on compliance practices further defined there is an opportunity for future research to revisit this phenomenon and assess the extent to which new practices were institutionalized and which deinstitutionalised and also to evaluate the role of technology in the ultimate success or failure of such regulations and practices. While this study explores the point of institutionalization termed ‘objectification’ by extending the longitudinal nature of the study it may be possible to glean insight into later points of institutionlization termed ‘objectification’ and ‘sedmimention’ (Tolbert and Zucker 1999).

While increased coercive pressure, derived from new regulatory obligations, may constrain organizations, firms still have considerable choice in how they organize compliance practices and may even respond by choosing to abandon products and services which expose themselves to new regulatory orders deemed too onerous. Thus, future research may also focus on investigating the variation between compliance practices adopted, post-crisis, and the extent to which

approaches and practices have become discontinued and which have become isomorphic across the organizational field.

The study focuses on the ‘buy-side’ of financial markets and so further research may also explore technologies which facilitate post-crisis ‘sell-side’ regulation. Furthermore some scholars have suggested that systems of monitoring, surveillance and control may actually negatively impact trust and elicit negative, behaviours (Barratt 2008; Bernauer and Mahon 1994; Foucault 2008). Within the context of our research this remains a distinct possibility. The interviews revealed a perception that some powerful traders and fund managers are likely to resist the move away from manual spread sheets. When faced with coercive forces, compliance is just one option available to actors (Streeck & Thelen, 2005). So, future research may investigate the impact of IMS related technologies on employee trust and how powerful individuals may seek to subjugate the IMS.

Preda (2007) offers the example of analysts who provide evaluations of securities to traders and investors and so act as ‘information intermediaries’. In order to evaluate and compare the performance of securities they must be classified and placed in sets (e.g. energy derivatives, technology stocks, manufacturing stocks etc.) such work creates a ‘perception framework’ within which traders and investors make decisions. However, securities which do not fit into one clear category or fit into several may lead to inconsistent classifications resulting in more volatile prices (Zuckerman 1999). Such perspectives resonate well with this study’s research context, financial organizations houses utilising IMS. Such systems seek to categorise trades and financial holdings in order to apply regulatory rules and guide investment decisions through the application of benchmarks and indices provided

by third parties (information intermediaries). An interesting avenue of future research may be to build on Zuckermans' work and investigate if securities which have inconsistent categories are more frequently subject to compliance breaches.

The literature review highlighted various streams of literature, relevant to addressing the financial crisis and so future studies may consider the role of institutional trust, asymmetric information, ethics and culture as well as governance and transparency in relation to technology and the financial crisis. The focus of this study, however, has been predominantly on how institutional arrangements are shaping social practices for compliance and not on how such practices perform regulations and markets. However, researching the performativity of the IMS and in how it shapes markets and regulations is a potential avenue for future research.

The study was also useful in identifying areas of future research from which practitioners may benefit, not least, in exploring the ways in which investment in regulatory compliance may provide a strategic advantage or in confirming the predominate view that compliance is a non-strategic function providing little or no competitive advantage. In addition, the impact of new regulatory developments and in particular the Regulator's move to intensive supervision of organizational practices may also provide fertile ground for future research relevant to practitioners. For example, PwC notes, 'Outsourcing has increased considerably in scale and complexity since 2007 when the UK Regulators' rules for such activities first became mandatory for UK banks under SYSC (Senior Management Arrangements, Systems and Controls section in the Regulators' handbook). Although these rules remain unchanged, the implications for Recovery and Resolution Planning (RRP), resilient client service provision and reliable market

operations ensure these developments have become an increasing concern for both the PRA and FCA, and their interpretation and enforcement of SYSC requirements has hardened.' (PwC 2014 p.1). So, one potential avenue of research may seek to investigate the use of technology in managing regulatory compliance across financial organizations' outsourcing providers.

In summary, over the course of this study, ongoing events in the financial services industry as well as other industries, such as the press phone hacking scandal or the BP oil spill, has underlined to me the importance of regulation in dealing with organizational failures and I continue to believe that technology is implicated in the success and failure of regulatory institutions. Consequently, I believe that this area will provide an interesting and worthwhile research trajectory in years to come.

10.5. Concluding Comment

Why do these findings matter? The philosophy of reacting to organizational and regulatory failures by introducing ever more controls and rules means that compliance activities will become increasingly reliant on regulatory technologies which can encode and apply high volumes of rules to individual transactions. Yet such automation comes at a price by limiting the scope of regulatory structures and analytical processes, and does not address deep rooted unethical behavioural practices beyond providing accountability and surveillance of existing compliance rules. The financial crisis and resultant failures were the result of individuals and organizations exploiting areas where regulation was weak or non-existent. As more unethical practices through collusion across organizations, (for example the FX

scandal) become apparent then it seems the issue may not lie with individual organizational culture but the culture of the financial services industry as a whole. However, societal expectations for regulators to be able to completely foresee and prevent economic and organizational failures seem unreasonable. Furthermore, the cost of regulatory compliance is inevitably passed on to investors and so introducing more and more regulatory agents to totally safeguard economic systems may be counterproductive if the spiralling cost of compliance reduces access to economic systems and also dampens economic productivity. Technology, however, may play a key role in reducing such costs. Overall, it seems that public expectations to be completely protected from moral hazards in a system which thrives on risk may be unrealistic. In conclusion, it seems that along with a reactive approach to plug regulatory gaps, what is also required is greater open debate regarding the role of regulation in society, its costs and limitations and what levels of protection technologies can realistically afford.

Appendix 1: Nomenclature

Affirmation: Message required for the settlement of the transactions, stating that trades have been confirmed and authorization.

AIMFD: Alternative Investment Fund Directive (EU).

Back Office: The administration and support functions within a financial organization.

Basel I – III: Accords defined by the Basel Committee on Bank Supervision (BCBS), which provides standards for regulation of risk and its relationship with regulatory capital.

Best Execution: The obligation under MiFID for firms to ensure the best possible result for clients when executing orders.

Blotter: Application within the IMS which application that consolidates all dealing activity and allows traders to manage and execute incoming orders from multiple investment managers.

Buy Side: The buying and selling of securities for investment purposes (to make a profit) on the behalf of clients.

CAD I-IV: EU Capital Adequacy Directives implement the Basel Accords.

CCO: Chief Compliance Officer.

CFTC: Commodities and Futures Trading Commission (US Regulator).

Clearing House: Organization which facilitates clearing and settlement

Clearing: Matching the buyer's and seller's records and checking that there are no discrepancies in the trades attributes.

Concentration: The extent of exposure to a specific industry, country or organizations.

Confirmation: Acknowledgement that a trade has been completed

COO: Chief Operating Officer.

Counterparty: the other party involved in a financial transaction, either the buyer or seller.

Custodian: Organization which holds and administers the securities on behalf of their clients.

Depository: Organization that holds and enables the transfer of securities.

Derivatives: Contract which derives its value from an underlying asset or entity such as index.

Dodd-Frank Act: US Act of Congress created as a response to the financial crisis.

EMEA: Collective term for Europe, Middle East, Africa regions.

EMIR: European Markets Infrastructure Directive (EU).

EMS: Execution Management System

Equities: Shares in organizations

ESMA: European Securities and Markets Authority

EU Directive: Legislation passed through the EU

Execution: Completion of a buy or sell order

FCA: Financial Conduct Authority

FCA: Financial Conduct Authority (Current UK Regulator)

FIX: Financial Information Exchange used by the IMS Vendors' proprietary trading network

Fixed Income: Securities providing regular payments.

Front Office: Sales and corporate finance functions in financial organizations.

FSA: Financial Services Authority (UK Regulator, 2001-2013).

FX: Foreign Exchange (Currency Trading)

IMS: Investment Management System.

Investment Manager: Individual responsible for setting investment strategies

Investors: Individuals or organizations investing in securities.

Issuers: Organizations issuing securities.

MAD I-II: Market Abuse Directives (EU).

Market Data: Data related to the movements of financial markets.

Master Test: Generic rule templates created and disseminated internally financial organizations using the IMS.

Middle Office: The IT and risk functions within a financial organization.

MiFID I-II: EU Markets in Financial Instruments Directive.

OMS: Order Management System.

Order Allocation: The allocation of a block trade to different brokers.

OTC: Over the Counter. Trades conducted outside of an exchange or regulated market

PMO: Project Management Office.

PRA: Prudential Regulatory Authority (UK Regulator).

RAG: Red, Amber Green (used to signify level of risk).

Reference Data: Data which describes a security, price identifying code etc.

Regulatory Capital: Capital which organization are required to hold to offset risk and ensure liquidity.

SEC: Securities Exchange Commission (US Regulator).

Securities: Collective term for financial products.

Sell Side: Business activities focused on creating and servicing securities.

Settlement: The delivery of securities and cash.

SLA: Service Level Agreements

SOX: Sarbanes-Oxley Act

STP (Straight through Processing): Allows the complete automation of the trade process without manual intervention.

Trading Destinations: Brokers, dealers and markets.

UCITS I-V: Undertakings For The Collective Investment Of Transferable Securities (EU Directives).

Vendor: The firm which supplies the IMS being studied.

Workbench: IMS central workspace where order are created.

Appendix 2: NVivo Screenshots

The screenshot shows the NVivo interface with the title bar "23-02-2014 Data2.nvp - NVivo". The main area displays a data table for "Phase 1 Interviews". The table has columns: Name, Nodes, References, Created On, Created By, Modified On, and Modified By. The data includes:

Name	Nodes	References	Created On	Created By	Modified On	Modified By
001 Transcript S [REDACTED]	28	58	14/02/2013 22:13	DPMG	04/05/2014 20:15	DPMG
002 Transcript S [REDACTED]	32	80	15/02/2013 20:55	DPMG	22/02/2013 21:46	DPMG
003 Transcript S [REDACTED]	42	146	16/02/2013 18:18	DPMG	22/02/2013 21:47	DPMG
004 Transcript S [REDACTED]	31	122	22/02/2013 21:39	DPMG	23/02/2013 17:34	DPMG

Below the table, a transcript preview for "001 Transcript Seddon CRD 1" is shown. It includes basic metadata: Interview No: 001, Date: 11/12/2009, Company: [REDACTED], Interviewer: Daniel Gozman (DG), and Respondent: [REDACTED]. The transcript content starts with "JS: We may have to have several meetings. Let me begin with my normal ramble and when there are things which clearly I haven't covered then we can always meet".

The screenshot shows the NVivo interface with the title bar "23-02-2014 Data2.nvp - NVivo". The main area displays a data table for "Participants". The table has columns: Name, Sources, References, Created On, Created By, Modified On, and Modified By. The data includes:

Name	Sources	References	Created On	Created By	Modified On	Modified By
Financial Intermediary 1	1	1	16/02/2013 12:15	DPMG	20/03/2013 22:03	DPMG
Compliance Manager 1	1	0	16/02/2013 18:13	DPMG	17/02/2013 17:58	DPMG
Financial Intermediary 2	0	0	23/02/2013 22:02	DPMG	23/02/2013 22:17	DPMG
Senior Compliance Manager 1	0	0	23/02/2013 22:18	DPMG	23/02/2013 22:18	DPMG
Financial Intermediary 3	0	0	27/02/2013 16:13	DPMG	27/02/2013 16:13	DPMG
Senior Compliance Manager	1	1	27/02/2013 16:19	DPMG	27/02/2013 16:21	DPMG
Senior Risk Manager	1	1	27/02/2013 16:14	DPMG	27/02/2013 16:21	DPMG
IMS Vice Chairman	0	0	16/02/2013 16:00	DPMG	22/02/2013 21:41	DPMG
IMS Consultant 1	1	1	15/02/2013 20:08	DPMG	04/05/2014 20:19	DPMG
IMS Consultant 2	1	1	16/02/2013 20:55	DPMG	16/02/2013 23:11	DPMG
IMS Senior Consultant	0	0	22/02/2013 21:41	DPMG	22/02/2013 21:43	DPMG
IMS Senior Relationship Manager	1	1	16/02/2013 18:27	DPMG	17/02/2013 17:58	DPMG

Below the table, a transcript preview for "001 Transcript Seddon CRD 1" is shown. It includes basic metadata: Interview No: 001, Date: 11/12/2009, Company: [REDACTED].

The screenshot shows the NVivo interface with the title bar "23-02-2014 Data2.nvp - NVivo". The main area displays a data table for "Themes". The table has columns: Name, Sources, References, Created On, Created By, Modified On, and Modified By. The data includes:

Name	Sources	References	Created On	Created By	Modified On	Modified By
About the IMS	0	0	14/02/2013 21:40	DPMG	14/03/2013 21:54	DPMG
Control	3	6	14/02/2013 23:32	DPMG	23/02/2013 12:43	DPMG
Optimization of IMS	4	9	14/02/2013 22:41	DPMG	23/02/2013 11:21	DPMG
Data	5	25	14/02/2013 22:05	DPMG	24/02/2013 00:15	DPMG
Development	4	11	15/02/2013 00:18	DPMG	24/02/2013 00:19	DPMG
Functionality	5	22	14/02/2013 22:51	DPMG	24/02/2013 00:17	DPMG
FX Network	1	1	15/02/2013 00:10	DPMG	16/02/2013 18:44	DPMG
Gaps	4	23	14/02/2013 22:44	DPMG	23/02/2013 18:05	DPMG
IMS Global Operations	3	4	14/02/2013 22:00	DPMG	23/02/2013 18:08	DPMG
IMS Scope	1	1	16/02/2013 19:00	DPMG	16/02/2013 19:09	DPMG
Incorporating Best Practice	4	11	16/02/2013 19:05	DPMG	24/02/2013 00:08	DPMG
Interacting With Other Systems	3	11	16/02/2013 18:55	DPMG	24/02/2013 00:08	DPMG
Relationship Management	1	1	14/02/2013 23:21	DPMG	16/02/2013 18:44	DPMG
Risk	4	4	15/02/2013 21:13	DPMG	22/02/2013 22:05	DPMG
Rules	5	21	14/02/2013 22:02	DPMG	24/02/2013 00:14	DPMG
Segregation of Duties	1	3	14/02/2013 23:32	DPMG	16/02/2013 18:44	DPMG
Specific Areas of Regulation	3	9	15/02/2013 21:33	DPMG	24/02/2013 00:15	DPMG
Support	2	4	14/02/2013 22:58	DPMG	16/02/2013 21:04	DPMG
Systems Architecture	2	2	14/02/2013 22:05	DPMG	16/02/2013 18:44	DPMG
Systems Evolution	4	10	14/02/2013 22:01	DPMG	24/02/2013 00:09	DPMG
Testing	4	11	14/02/2013 22:53	DPMG	23/02/2013 23:59	DPMG
TYPES OF CLIENTS	3	5	14/02/2013 23:11	DPMG	23/02/2013 23:55	DPMG

Below the table, a transcript preview for "001 Transcript Seddon CRD 1" is shown. It includes basic metadata: Interview No: 001, Date: 11/12/2009, Company: [REDACTED].

Appendix 3: Sample Interview Guide



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

**Information Systems and
Innovation Group**

Department of Management

London School of Economics and
Political Science
Houghton Street
London
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Interview Guide Version 1.3

Daniel Gozman

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Date:

Name:

Company:

Position:

How long in this company:

Questions:

1. From an industry wide perspective, how do financial regulations influence the design and structure of compliance related systems?

2. From an industry wide perspective, how do systems influence the design and structure of regulations?

3. How are shared values regarding best practice disseminated across compliance practitioners?
4. How does best practice and the shared values of compliance related professionals influence the design, structure and capabilities of compliance systems?
5. How do compliance systems' design, structure and capabilities influence the assumptions about best practice and the shared values of compliance related professionals
6. How do compliance functions mimic the approaches of one another in general, what are the similarities in approaches relating to workflows, systems adopted management practices and organizational structures? What is taken for granted by practitioners?
7. How does the design and structure of compliance systems enable or cause organizations to adopt 'taken for granted' compliance practices regarding workflows, systems adopted, management practices and organizational structures?
8. How do systems cause organizations to mimic one another?

9. How does imitation across compliance functions feedback and influence the design and structure of compliance systems?

- a. What is the advantage of having a compliance system
- b. For business performance?
- c. For your clients?
- d. For your relationship with the regulator?

10. Please describe the process which you undertake when a new regulation, such as MiFID II is released, from understanding the impact of the regulation on the firm to incorporating the appropriate rules into a compliance system?

11. Regarding the initial implementation of a compliance system at [C.3] and subsequent upgrades:

- a. What new compliance methods (such as workflows, systems, management practices and organizational structures) have been introduced? (Please give examples)
- b. What is the business reason/value for this adoption?
- c. Which old compliance practices (such as workflows, systems, management practices and organizational structures) have been updated? (Please give examples)
- d. What is the business reason/value for this adoption?

12. In the case of new regulations effecting [C.3] which require that new methods (such as workflows, systems, management practices and structures) are adopted how have the new practices been influenced by the:

- a. By the regulations themselves?
- b. How prescriptive are the regulations?
- c. By compliance professionals?
- d. Does the compliance community share views on best practice?
- e. By the way other compliance functions operate?
- f. Copy other successful approaches?
- g. By the capabilities of existing systems?
- h. Need to obtain new functionality?

13. Regarding the initial implementation of a compliance system at [C.3] and subsequent upgrades, have existing compliance related workflow, systems, management practices or organizational structures been:

- a. Absorbed into another existing practice?
- b. Considered over complicated and so un-worthwhile?
- c. Isolated from other practices and so irrelevant?
- d. To compete with existing practices?
- e. Completely replaced?

14. In the case of new regulations (e.g. MiFID II) requiring that [C.3] existing methods (such as workflows, systems, management practices and organizational structures) are updated have the:

- a. Parts of the old method been adopted in the new?
- b. Re-invention of existing methods occurred?
- c. Re-emergence of old methods occurred?
- d. How does [C.3] leverage compliance related practices in different global regions if at all?
- e. How do different compliance functions co-operate?
- f. How does [C.3] work to influence the design and application of mandates by the regulator?

Appendix 4: Sample of Interview Transcript

D; Is it a new system then?

O; Um, I'm not sure how long they've been marketing it. It's their proprietary system um, which they're now selling externally. But I think on the basis that they've got um, 53 clients, I guess it's, they've been selling it externally for a while. Um, I've heard it's very good and certainly on the strength of the demonstrations that we've had.

D; What sort of stuff does it do that Vendor doesn't potentially?

O; Yeah, it's very different in the sense that [IMS Competitor] take a lot more ownership of um, data and compliance. So in many ways it's, it's partial outsourcing agreements. Um, one of the main differences between the two is that with [IMS Competitor], um, you're outsourcing the rule coding. Um, at the moment, with [Vendor], we're dealing with the rule coding, all the regulations, all the prospectus rules for retail funds, um, you know, segregated accounts, IMAs, industrial management agreements. We do all the coding for that. Um, with [IMS Competitor], they would do the coding. They also own the data. So at the moment, we bring in the data from Bloomberg. [IMS Competitor] actually use

Thompson Reuters source. They take, um, the data into their systems, clean it and scrub it and then, they then disseminate that data to all of their clients. So there are a couple of key differences there. So you're kind of tranching outsourcing your data over and completely outsourcing your raw coding.

D; Well that's fantastic because I think last time we spoke, we talked a little bit about the templates that are assigned and that's almost like [Vendor] defines their own best practice. Then they give it to you to apply it to your business and there's quite a lot of change again you mentioned, that goes on around products or perhaps you don't even the use templates at all.

O; That's right, we don't. Yeah. They are vendor-supplied templates especially for things like rules. Um, and even regulations rules that is. Even for non-regulatory rules, that they supply templates but we don't use them. Because we actually, although their templates are based upon their security types and investment classes which are broader, um, asset classes. We define our own. So that means that we effectively can't and wouldn't want to use their vendor-supplied templates.

D; So how will that change then with the potentially well, potentially change with the other system because they're still have to understand what influences your data which I would imagine would be quite difficult for an outsourcing to do, to understand exactly you know, the structure of the data, and how it's all getting integrated. I mean it sounds to me what they're trying to do is quite ambitious cause I always assume that the reason [Vendor] didn't take that approach was because, everyone's data's so different.

O; That's right, yeah. And there is flexibility in [IMS Competitor] um, service. So what you tend to find is with UCITS for example, even with I don't know UK UCITS, the coal rules or Luxembourg UCITS, even at that level, different clients will have difference interpretations um, different internal processes and procedures. And there is the flexibility with [IMS Competitor] products to actually um, take accounts and build those, manage a specific flavours of UCITS into the rules. So that they will have a basic um, UCITS rule. And into that they can build each management company's interpretations.

D; Right. So would you be actually able to send them the transaction data then and they'll be applying transaction data and putting the rules on top of it?

O; Um, it's, it's similar to [Vendor]. It's a core kind of management and trading tool as well. So we would be using their tool, their platform to actually manage our portfolios to generate trades, using their auto-management system for the dealers to actually handle the trades. So it's really more about using the, it's doing what we normally do but on their platform. So it's their coding, their data and then us doing our normal management activities on their platform. So we still retain our accounting system, for example, but, and that feeds our positions into our portfolios using their data and compliance is checked against our rules, coded by them.

D; So this also, you're almost sort of outsourcing some of the client functions, responsibilities then because I guess it's um, in this case, [IMS Competitor] will make a decision about how regulations apply or the relevance of the regulations to your business and how the rules will come on top of that?

O; That actually stays with us, yeah.

D; Right. So my next question was going to be, so I think the FSA who are, it's time is limited, soon to expire, um, is you know, making it quite clear that you can't outsource responsibility. It does remain in-house.

O; Yes, yeah, that stays with us. So we effectively, for a UCITS fund for example, we would say, okay, this is a Luxembourg UCITS fund. This is how we interpret the Luxembourg UCITS rules, this is how we want them coded, please code them like this. They will go off and code them. And then there's a bilateral process um, agreeing the results of activity off their coding. We sign off the fact that we're happy with the way they've coded the rules. Um, and then after that, although we can actually see the rules, we can't change them. That's their job. But we're responsible for the monitoring of all the outputs of the rules. So any pre-trade or post-trade breaches um, are our responsibility to investigate.

Appendix 5: Sample Coding

<i>Scheduled Question</i>	<i>Participant Answer</i>	<i>Descriptive Coding</i>	<i>Pattern Coding</i>
Can you please describe the process that [C. 6] undertakes when a new regulation comes through?	There'll be an initial analysis and interpretation of the [regulatory] rule and it is decided that it has to be manually implemented. We will then enter that rule into a larger matrix of regulation, again manual spreadsheet based. So yeah, this now exists. We will enter a monitoring solution in there, that's [IMS] automated, if it's [not able to be implemented through the IMS] we have to propose or recommend something that will work. That matrix rule guidelines will then feed somewhere else that says, right, all the stuff that's in [IMS] is automated. That's fine, all the stuff we're doing manually is high risk. What can we do with it? And then you use something, that shows all your high risk rules that are manually monitored and you go to [systems vendor] and say 'Right, I don't pay you guys all this for doing these all manually, you need to incorporate this into the [IMS].' Usually, a year later, we get an enhancement an upgrade patch from [systems vendor] and we can retire the manual rule.'	Automated Rules Design Manual Practices Lobbying IMS Vendor for Changes Monitoring Rules Use of Spreadsheets	Automation Monitoring Coercive Mechanisms Normative Mechanisms

<i>Non-scheduled Question</i>	<i>Participant Answer</i>	<i>Descriptive Coding</i>	<i>Pattern Coding</i>
You mentioned that aside from conferences and forums approaches to designing new regulatory controls comes from personal networks. How does that work?	We all know who's doing what and where and you know if I want a conversation with someone who know what he's doing and I've got a decent relationship with him, we'll have a few beers a couple of times. I'll call him up on his Blackberry and I'd say to him, 'Can we meet up and have a drink and I'd love to talk about this?' And he'll take as much benefit and advantage from it as I would. You know if nothing else... cause when I say to him, 'What do you guys do?' He's gonna tell me and then he's gonna say back to me, 'What' do you guys do?' And I'm gonna tell him something that he doesn't know and he might tell me something that he doesn't know. Either way he's gonna go back to his office the next day and he's gonna have a better understanding. He's gonna be better placed to put a value on how strong his control is. That's how I find it often happens, informally.	Informal Networks Automated Rules Design Implementing New Regulations	Normative Mechanisms Sharing Sense-making

Appendix 6: Interview Notes

Date: 25th October 2012

Interviewee: XXXXX

Company: XXXXXXXX



Back in time 5 years ago business in sales not bothered about risk and compliance

‘Pain of adherence’ has increased

Changed with the crisis sales and delivery can no longer park compliance for others

Program of change being undertaken considers regulatory mitigation as important:

- Involves reevaluating Risk models
- Extra hedging
- Closing down business units

E.g. Basel III requires that some higher risk is penalised for some business segments and becomes more expensive. No longer viable for some business units or asset classifications. So many IB selling business units. Not only because returns are not worth regulatory exposure but that the risk adjusted capital

Compliance function’s role has moved no longer controlling oversight , 100 people now involved, the COO is accountable no their exists a governance committee with head s of department.

Regarding risk models, some banks will be using simplistic risk models as well as advanced. Termed in Basel II as standardised and advanced.

Most big players advertise that they are using Advanced methods but there are exceptions e.g. Location such as Ireland or some asset classes excluded from advanced approach

Need authorization from the regulator to use standardised approach.

Banks going through massive programs to update models not deemed risk competitive. If model is not sufficient they are unable to trade

Most major banks want to be able to offer wider range of products if not client will go to competitors.

Causing banks to focus more specific transaction and products e.g. Citi group and Deutsch bank have best FX but clients still use other FX e.g. hedge funds wishing to hide trades

Previous to Crisis Compliance has been very siloed

Now no point in doing EMIR in Europa and Dodd-Frank in US ,projects are now structured on themes e.g. Trade Transparency and Clearing Program

Change programs need to take oversee synergies gaps and overlaps ‘have to be holistic’

Watch tower team reports directly to COO

They have 11 different themes or programs e.g. reporting

The regulatory liaison group works with FSA SEC and each delivery team to ensure they are aware of regulatory developments

In addition, internal and external audit ensure that regulatory efforts are up-to-date and meet upcoming requirements

Previous to the crisis solutions have been put in place as quick as possible.

Budget were tight, things out in a minimal way causing ‘non-strategic solutions to be built on of non-strategic solutions’

Banks taught humility after crises and realise need help implementing wholesale change and don’t have the right capabilities or experience

Bigger players have more capabilities and so role of consultants is to provide projects oversight for senior management

Outsourcing and offshoring is becoming more prevalent as there is a recognition that cost of regulatory compliance is more significant

Banks looking at streamlining and improve their operational architecture and to improve operating models to assist with competition

SEC regulations have very tight timescales encouraging poor architecture as no time to build strategic solutions also creates lagging change

Regarding rules vs. Principles Pauls view ‘SEC and FSA evolving their approach’ ‘Agree that the FSA is becoming more specific’.

Current burst of regulation will reduce over time but settle at a higher level

Politics drive regulation

Generic regulation templates problematic due to differences in cores systems, operating systems and data within banks

Need to fundamentally change business approaches require culture changes which are problematic

Appendix 7: Template Schema

Template	Region Code - RGLRGN	Regulation Code - RGLCODE
Africa		
CRDSAFRICACISCA	SAFRICA	CISCA - Collective Investment Schemes Control Act
CRDSAFRICAREG28	SAFRICA	REG28 - Regulation 28
Asia		
CRDHONGKONG	HONGKONG	HKMPFSA - Mandatory Provident Fund Schemes Authority
CRDHONGKONG	HONGKONG	HONGKONG - Securities and Futures Commission
CRDJAPANJITA	JAPAN	JAPAN - Japan Investment Trusts Association
CRDSINGAPORE	SINGAPORE	CIS -
	SINGAPORE	CPF -

Extracted from IMS User Manual

Appendix 8: Four Eyes Test

'Four Eyes' Test Approval

- Useful for SAS 70 or ISO 9001 certifications
- No chance of tests going live without review/approval
- Full audit trail of approvals and modifications
- New 'Status' field on Test
 - In Development → Approval Requested → Approved



Vendor's materials

Appendix 9: IS Capabilities for Compliance Practitioner Framework

Capability	Maturity of IT Capabilities for Compliance				
	Initial	Controlled	Managed	Optimized	Innovative
IS Development & Procurement	No compliance systems' roadmap exists. Decisions are made by business silos on an ad-hoc basis. Many controls are manual.	Understanding of what compliance related functionality is available and where gaps in functionality /opportunities to automate exist. This analysis feeds decision making for obtaining functionality.	Organization is knowledgeable regarding vendor offerings and has built key relationships. Heavily regulated industries consider compliance implications when evaluating new requirements and during the development cycle.	A clear compliance systems roadmap is developed which is in alignment with the organization's policies, appetite for risk, upcoming regulatory requirements and its IT and business strategy. IT Governance and compliance practices are integrated.	Organizations actively advise key vendors on opportunities for improvement and work with them to automate new requirements. Compliance personnel are integrated with IT development teams. Compliance systems may be sold as a service.

Capability	Maturity of IT Capabilities for Compliance				
	Initial	Controlled	Managed	Optimized	Innovative
Contract Management	Compliance is not considered when defining SLA and contracts with 3rd Parties. SLA and contracts may fulfill regulatory requirements but are not monitored on that basis.	Contracts are drafted with a view to meeting regulatory requirements with results being periodically monitored. Basic outsourcing/offshoring policies are defined.	Outcomes relating to key processes and regulatory requirements are regularly monitored and validated. Risk management informs offshoring/outsourcing decisions.	Contracts and SLA agreements consider regulatory requirements, policies and risk tolerances and are aligned with business and IT strategy. Compliance systems enable SLA/contact definition and monitor the performance of related controls.	Long term 3rd party contracts are detailed and flexible enough to allow for changes to the organization's regulatory exposure and risk appetite.

Capability	Maturity of IT Capabilities for Compliance				
	State				
	Initial	Controlled	Managed	Optimized	Innovative
IT Leadership	IT is rarely considered during the planning of compliance efforts. Typically, IT is only consulted after breaches occur.	IT becomes involved in compliance activities after requirements have been defined.	At the middle management level, IT works with other subject matters experts across the organization to enable policy setting, risk management activities and remediation with regulatory requirements. IT governance policies for automated controls defined.	IT is represented on senior committees defining compliance strategies and committees formed to discuss related issues at the business function level. IT Strategy and compliance are aligned. The firm's IT Governance competencies are highlighted by sales and marketing.	The relationship between IT and compliance leadership is bi-lateral with compliance and IT working together to develop strategic offerings for both internal and external requirements.

Capability	Maturity of IT Capabilities for Compliance				
	Initial	Controlled	Managed	Optimized	Innovative
Analysing and Tracking Regulatory Requirements	Analysis and tracking of upcoming regulatory requirements is done individually by each business silo without IT involvement. No collaboration or benchmarking with external entities.	Analysis of regulatory change is handled differently depending on the business silo impacted. Tracking and analysis chiefly achieved through spreadsheets.	3 rd Party solutions used to monitor regulatory change e.g. Complinet. Users of the same COMPLIANCE system collaborate across organizations. IT Governance practices supports all systems associated with remediation efforts.	IT Governance activities define clear policies outlining the responsibilities of IT in analyzing the impact of new legislation and meeting associated deadlines	Organization works with compliance systems' vendors to develop approaches for complying with specific mandates

Capability	Maturity of IT Capabilities for Compliance				
	Initial	Controlled	Managed	Optimized	Innovative
Selecting Best Practice Standards	Firms utilizes no best practices standards and does not collaborate.	Firm borrows aspects of IT and professional standards but does not fully adopt them. Different silos may adopt different standards.	Organization understands the usefulness of established standards and selects the ones which are the initial best fit with an aim to becoming accredited where appropriate.	Firm has detailed understanding of the strengths and weaknesses of relevant standards for best practice and cherry picks accordingly. Organizations collaborate on compliance and systems' issues with peers	Organizations collaborate with compliance systems vendors and standards organizations to define best practice.

Capability	Maturity of IT Capabilities for Compliance				
	State				
	Initial	Controlled	Managed	Optimized	Innovative
Enable Automated and Manual Controls	Control automation occurs on an ad-hoc basis depending on the systems owner and the business function where the control resides.	Effort to decommission manual controls, where possible. Policies require the automation of key controls, necessary to meet regulatory obligations and maintain risk policies.	IT and Compliance collaborate across the business to develop controls, which are structured in a consistent manner. Best practice for internal control, such as COSO is observed. Controls are mapped to key policies and regulations. Compliance systems monitor controls.	Greater emphasis is placed on monitoring manual controls focused on covering functional gaps and ensuring they become automated in later systems. Automated controls are validated with frequent manual checks.	Organizations can demonstrate such a high level of control and an absence of breaches that the firm's control structure becomes a sales or marketing tool.

Capability	Maturity of IT Capabilities for Compliance				
	Initial	Controlled	Managed	Optimized	Innovative
Data Sourcing and Management	No analysis of data availability or format considered before designing COMPLIANCE processes and controls. Lack of data awareness diminishes compliance activities and creates unnecessary manual processes.	In general, data availability and formatting does not hinder compliance. Data is often sourced from numerous external providers with different formats.	Data for compliance activities is managed centrally with clear IT Governance policies relating to external data providers and formats. Data sourcing and management allows the design of effective and efficient controls.	Data sourcing and formatting is considered at the design stage of compliance systems. Adopters of the same systems may compare approaches to data sourcing and management for remediation with particular regulatory requirements.	Data sourcing and management enables the design of more advanced controls, which enable the business and enhances its risk management capabilities. The organization is able to offer data feeds and consulting to organizations requiring similar types of data.

Capability	Maturity of IT Capabilities for Compliance				
	Initial	Controlled	Managed	Optimized	Innovative
Measuring, Monitoring and Reporting	Measuring, monitoring and reporting done on an ad-hoc basis by each individual business silo. Duplicate channels of communication exist.	Measuring, monitoring and reporting are instigated by specific problems or regulatory requirements. Reporting is coordinated but inconsistent in format and content.	Organization has a clear understanding of what compliance activities need to be measured, monitored and reported to which stakeholders. Consistent formatting and content achieved for reports.	Channels of communication streamlined. Measurement, monitoring and reporting of compliance activities enables strategic thinking at both the business and IT levels.	Firm collaborates with other organizations to determine industry standards for defining compliance metrics, monitoring processes and reporting structures.

Capability	Maturity of IT Capabilities for Compliance				
	State				
	Initial	Controlled	Managed	Optimized	Innovative
Enabling the Right Culture	Organization has little focus on culture beyond focusing on the need to adhere to legal requirements.	IT systems provide some training on ethical issues. Risk tolerances are communicated where appropriate by individual departments.	IT Governance policies require behaviours that reflect the organization's risk tolerances and legal requirements.	IT supports the development of regular training programs on ethics as well as regularly communicating expectations regarding risk and legal compliance. Confidential, help-line is proved for those with ethical dilemmas.	A culture is developed where individuals are aware of the expectations placed on them with respect to ethics, risk and legal regulations. However, this culture is balanced by a culture which simultaneously supports innovation. Compliance is welcomed and viewed as ensuring that new ideas are risk appropriate and legally compliant.

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