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# Regulatory decoupling and the effectiveness of the ISO 9001 quality management system in the construction sector in the UK – a case study analysis

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## ABSTRACT

Construction quality defects are a widespread and recurrent industry problem; the ISO 9001 Quality Management System (QMS) has been proposed as a tool to improve construction quality. It is one of the most widely adopted management systems worldwide and is a prerequisite for many construction tenders. Institutional theory uses the concept of regulatory decoupling to probe “performative” implementation of a standard or regulation; this theory has not to date been applied to ISO 9001 QMS implementation in the construction industry. In this context, the aim of this research is to investigate the extent of regulatory decoupling and its impact on the effectiveness of implementation of the ISO 9001 QMS in 3 case study construction organizations. 34 interviews are undertaken across three case study organizations and analyzed using an abductive grounded theory approach. In all three case study organizations, regulatory decoupling between the operation of the companies and their ISO 9001 system is taking place. Disconnection of the QMS to quality “on the ground” is evident. A model showing factors that foster regulatory decoupling is produced. The picture of compliance is complex and continually evolving. The study concludes with recommendations for industry to reconnect QMS systems to site operation and management.

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## KEYWORDS

ISO 9001; quality management; regulatory decoupling



## Introduction

The construction industry in the UK has long suffered from endemic quality failures – quality has been an issue in construction as long as there has been a construction industry. As exemplified by the recent scandals of Edinburgh schools PFI in 2016, the Grenfell fire in 2017, and the problems with the London Orchard residential estate in 2017, quality problems in the construction industry have not been consigned to the past – they are an ongoing issue.

Formal Quality Management Systems have been proposed as a key tool to improve construction delivery (Arditi and Gunaydin 1997, Auchterlounie 2009). The ISO 9001 Quality Management System was introduced in 1987 and is now one of the most widely adopted management systems worldwide (Fonseca and Domingues 2017). Although adoption of the standard is voluntary (Brunsson and Jacobsson 2000), Brunsson *et al.* (2012) remark that widely adopted

standards carry market based sanctions for non-adopters. ISO 9001 has become a requirement for tendering for the majority of projects (Gunning and McCallion 2007, Swingewood and Burd 2015) – company survival can rest on its retention. The ISO 9001 standard is the result of iterative research and development (Medić *et al.* 2016). It focuses on recording, rationalising and adhering to process in order to improve customer satisfaction and reduce rework (Benner and Tushman 2003). Abdul-Rahman (1996) and Cachadinha (2009) found that, if fully implemented, construction quality should increase as a result.

Of the 3 examples of poor quality construction cited above – the Edinburgh schools PFI (2016) the Grenfell fire disaster (2017) and the Orchard Estate defects (2017) – the main contractors involved in these projects were ISO 9001 certified. This did not prevent a wall from collapsing after a storm in

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Edinburgh in January 2016, leading to the closure of 17 schools for remedial works (Cole 2017). It did not prevent the problems raised by expert witness Dr Barbara Lane to the Grenfell enquiry – the quality of installation of fire-doors, other fire-breaks, ventilation systems, cladding and insulation (Lane 2018). It did not prevent the problems in the orchard estate – including “failure to build homes to an adequate standard with regard to damp, mould, noise pollution, fireproofing and adaptations” raised in a debate in the UK House of Commons in January 2017 (Hansard 2017). Residential estate construction, residential tower refurbishment and new build schools are not inherently prone to poor quality; quality problems occur beyond these highly publicized examples across every sector of construction.

The focus of the ISO 9001 standard is to ensure that business consistently meets customer needs, and to ensure statutory and regulatory compliance. It does not directly control quality, instead it mandates management processes which are meant to lead to quality of delivery (Brunsson *et al.* 2012). It is not a panacea for all problems in the construction industry. Each of the examples given above have complex causal mechanisms leading to the point of failure which would not have been solved simply by application of Quality Management Systems. However, if the Quality Management Systems adopted by the main contractors had been applied thoroughly and effectively to these projects, problems, including lack of compliance with client requirements and regulations in the construction and assembly of components, should have at least been formally identified during the construction phase.

These examples vary across sector (newbuild education, high rise residential refurbishment and newbuild housing); contract type (PFI and Design and Build) and geographical area (Edinburgh and London). Although it is not suggested that these types of construction, contract types or geographical regions are particularly prone to poor quality, these examples do indicate a widespread problem. It can be inferred from these examples that ISO 9001 Quality Management Systems are not always effectively implemented. This study therefore aims to investigate the extent of regulatory decoupling and its impact on the effectiveness of implementation of the ISO 9001 QMS in 3 case study construction companies.

This paper proceeds as follows: in the next section we review the literature on Quality Management Systems in construction, systems, agency, decoupling and control. Next, we set out and justify the research

methods used in this study. We then discuss the findings, in the process we highlight mechanisms observed behind the implementation of the systems. We conclude with recommendations to industry that should help to reduce regulatory decoupling of Quality Management Systems and render these systems more meaningful, to help construction companies reduce defects and increase the quality of construction on site.

## Literature review

### *Quality management systems in construction*

The ISO 9001 Quality Management Standard claims to be focussed on documenting, streamlining and adhering to processes (activity which produces a product for an internal or external customer) in order to rationalize and improve these processes resulting in improved customer satisfaction, increased productivity and less rework (Benner and Tushman 2003). It is one of the most widely implemented Quality Management Systems in use (Martinez-Costa and Martinez-Lorente 2007) and is ISO's most adopted standard worldwide (Sumaedi and Yarmen 2015). It has become widely adopted in the construction sector, to the extent that it is a requirement for continuing in business (Gunning and McCallion 2007); its adoption is described by Brunsson *et al.* (2012, p. 21) as “practically binding”.

Despite the widespread adoption and acceptance of ISO 9001 as rational “best practice” (Hodgson and Cicmil 2007), quality initiatives in construction do not always lead to the desired outcomes (Brunsson *et al.* 2012) or translate to an increase in quality on site (McCabe and Boyd 2004). The effectiveness of ISO 9001 will differ from organization to organization as companies are not homogenous in their uptake, interpretation and implementation (Allur *et al.* 2014). Tam *et al.* (2000) and Ofori and Gang (2001) found that after the introduction of ISO 9001 adoption for contractors undertaking work in Hong Kong and Singapore respectively, the expected improvement in quality had not materialized. Sampaio *et al.* (2009) described the motivation of senior managers when introducing ISO 9001 as pivotal to successful implementation, similarly Lagrosen and Lagrosen (2005) found that quality management implementation is more effective when quality management values are adopted by an organization. Sampaio *et al.* (2009) developed the categories of internal motivation (to improve the business) and external (to achieve certification for marketing or prequalification reasons).

These motivations control to what extent the standard is implemented (Gotzamani and Tsiotras 2002, Castillo-Peces *et al.* 2018). Gotzamani and Tsiotras suggest that companies claim they gain certification in order to improve quality internally, but their “true” motives of external pressure and publicity gained can be more important to the decision to attain the ISO 9001 standard. They argue that this approach leads to a focus on short term benefits leading to reduced overall success.

The extent of implementation of an ISO 9001 system should be impartially confirmed through the audit (Gunning 1995). Internal and external auditors should act independently to the organization under audit (Guénin-Paracini *et al.* 2014) although this can be difficult to achieve in practice (Bazerman *et al.* 1997). Ahlawat and Lowe (2004) found that it is difficult for internal auditors to remain truly independent, providing objective feedback, when this conflicts with their role to provide best value solutions to issues identified on behalf of their company; auditors are heavily influenced by their desire to advocate for, and present the “best face” of their company. Regarding external auditors, it is difficult, if not impossible, for them to prove “fudging” of records in the face of determined cover up and obfuscation (Heras-Saizarbitoria and Boiral 2013). However, if an auditor does challenge contractors on their performance, the contractor may select a more lenient auditor and the auditor’s organization loses business (Guénin-Paracini *et al.* 2014).

### **Systems, coupling, agency and control**

Dubois and Gadde (2002) characterize construction as a loosely coupled system, with reliance on decentralized authority, which permits localized adaptation to allow construction organizations to cope with complexity, environmental unpredictability, and lack of uniformity of projects and project teams. With loose couplings, “actors deal with problems in a multitude of ways” (Dubois and Gadde 2002, p. 628). Dubois and Gadde (2002, p. 628) also find that some aspects of loose coupling can make problems difficult to detect and fix, suggesting that “too much emphasis on the individual project’s self-determination results in situations where the left hand does not know what the right hand is doing”.

The adoption of a standardized system in an organization will impact its employees’ control – it involves implementing procedures and organizational structures, voluntarily giving up some measure of agency and freedom – the new rules restrict behaviour

(Brunsson and Jacobsson 2000). Pokinska *et al.* (2006) suggest that adoption of a standard entails alignment between what an organization says, and what it does; however, Brunsson (2002) describes “organizational hypocrisy” where an organization says one thing, and does something completely different. Koch and Schultz (2019) find that actors navigate uncertainty through structured proactive and often chaotic reactive problem solving, mediated by the structures in the project network. They observe that formal “quality structures” are not always used as intended, and that internal and external structures may exert contradictory pressures. Giddens (1984) finds that agents can be enabled or constrained by “rules” drawn on to govern interactions – a view shared by Adler and Borys (1996), who categorize regulation as coercive or enabling and make the point that an emphasis on conformance to procedures reduces employee discretion. If the level of regulation is not aligned with the task, employees can respond with feelings of dissatisfaction and demotivation. Brunsson and Jacobsson find that standards are more likely to be resisted by those who are “highly autonomous, innovative, and different” (Brunsson and Jacobsson 2000, p. 134) and that they can be an “unwelcome, unnecessary... intrusion”. Coercive or inappropriate control can lead to resistance, reduced effort and cooperation (Christ *et al.* 2012). In a loosely coupled construction system, where site level management is afforded decentralised authority, adhering to a standard may seem like an infringement of autonomy.

### **Regulatory decoupling**

Meyer and Rowan (1977) proposed decoupling as a process that separated the day to day organization and running of a company from its symbolically adopted policies. “Fashionable” concepts are adopted as institutional rules. The “myth” of policy creates an image of compliance and efficiency which legitimates the actions of the business; however, fully complying with the apparently adopted policies requires a lot of resource – hence gaps between policy and practice are not only tolerated but built into an organization’s way of working. Meyer and Rowan (1977) suggest that organizational policies are moulded by prevailing public opinion, by law, culture and social prestige. DiMaggio and Powell (1983) looked at the spread and adoption of ideas between organizations and suggested that as an idea becomes widely accepted as the “proper” way of conducting business, it becomes a “rationalised myth” – and difficult to challenge.

Entities which do not adopt these externally legitimated “myths” are more vulnerable to accusation of negligence or irrationality. Thus, rules which are externally legitimate, but not necessarily operationally effective, are adopted by organizations. The institutional pressures to adopt a standard exerted on an organization may themselves be contradictory, thus increasing the likelihood of decoupling in order to reconcile them (Boxenbaum and Jonsson 2017). This decoupling behaviour applies in relation to externally assessed criteria, which help to “demonstrate socially the fitness of an organization” (Meyer and Rowan 1977, p. 351). Meyer and Rowan suggested that “evaluation and inspection systems are [often] subverted or rendered so vague as to provide little coordination” (Meyer and Rowan 1977, p. 343).

The process of “decoupling” of regulation from day to day activity in the financial industry is described by MacLean and Benham (2010) whereby informal, business as usual processes are protected from scrutiny whilst maintaining a veneer of compliance. They studied an insurance sales organization which had been investigated for malpractice and found that symbolic regulatory processes used for “window dressing” lacked management support leading to the delegitimization of the regulatory system, creating a “legitimacy façade” and institutionalizing misconduct. Processes which are publicized externally were in practice “disconnected from important, ongoing, line-related organizational functions” (MacLean and Benham 2010, p. 1501). Infrequent compliance training, lack of integration of the regulatory process with the actual processes used on the ground, infrequent/cursory monitoring and audit, and a weak company disciplinary process for offences contributed to the decoupling behaviour. Boxenbaum and Jonsson (2017, p. 21) explain that decoupling can be a rational response to external pressures to conform to a system which may in fact harm an organization’s efficiency or consistency; however, they do assert that in the literature on institutional decoupling there are “unanswered questions, such as why and when decoupling occurs and what decoupling brings”.

### **Synthesis/gap in knowledge**

Quality Management Systems do not always lead to better quality construction (McCabe and Boyd 2004); the motivation for their introduction influences the extent of implementation (Gotzamani and Tsiotras 2002). At the same time, Quality Audits will not always uncover poor practice (Heras-Saizarbitoria and Boiral

2013). In this context, organizations may practice “organizational hypocrisy” (Brunsson 2002) and standards which do not have internal legitimacy may be resisted by individuals who prize their autonomy (Brunsson and Jacobsson 2000). This disconnection between the professed aims and the actual performance of a Quality Management System has been examined in the construction sector, but no study has yet applied the lens of regulatory decoupling (Meyer and Rowan 1977) to this area. The concept of regulatory decoupling is a useful tool to examine problems in systems implementation and to probe the reasons why they may have occurred. Regulatory decoupling has been studied in the financial sector (MacLean and Benham 2010), in education (Coburn 2004) and Governmental organization (Tilcsik 2010); but has not yet been applied to management standards in the construction sector. This study aims to help fill this gap through investigating the extent of regulatory decoupling and its impact on the effectiveness of the implementation of ISO 9001 Quality Management Systems in the construction sector through case study research.

Using the method of abductive grounded theory, and a system dynamics model to capture the complexity of the findings, the study uses the concept of regulatory decoupling as a lens to examine compliance with Quality Management Systems in construction in a novel way, to develop theory. This theory can be described as a “Mid-Range” theory as set out by Bourgeois (1979) – it is intended to move beyond mere description, applying the mechanisms and processes described as regulatory decoupling by Meyer and Rowan (1977) and MacLean and Benham (2010) to examine a new context (Schweber 2015). This is intended to describe a network of relationships between abstract concepts to “help break with taken – for – granted assumptions” (Schweber 2015, p. 840) in an attempt to create useful insight into the operation of Quality Management Systems in the construction sector.

## **Research method**

### **Case study approach**

The attributes of this study align with those suggested by Yin (2009) as appropriate for case study research – that is, they are inextricably bound to their context, they cannot be manipulated for investigation, and the study is focussed on contemporary events. The study entails investigation of complex mechanisms in order to seek explanation, to answer “how” and “why”



questions that are best revealed by data which is rich and deep. This rich, context laden explanatory data (Guest *et al.* 2012) is grounded in the reality of those interviewed within the case study organizations. It examines the “meaning people have constructed, that is, how people make sense of the world” (Merriam 2009, p. 13). As few studies have explored regulatory decoupling and the mechanisms behind ISO 9001 operation in construction organizations, an exploratory case study approach is adopted in order to generate theoretical explanation.

### **Case study selection, data collection**

Eisenhardt (1989) proposes that the selection of case studies on the basis that they are likely to be “theoretically useful” enhances research validity. The selection criteria should be consistent with the research questions. This study entails probing interviewees on their compliance, or non-compliance, with professed company policy. There is a danger with this research, that interviewees may give socially desirable answers, potentially polluting the source of data quality (Baxter and Jack 2008). A pilot study had shown that several participants had given socially desirable, not open or honest responses, when interviewed (Brooks and Spillane 2016a, 2016b). Therefore, the existence of a prior trusting relationship with a case study organization has been included as a criterion in case study selection. The advantages of this approach include the establishment of trust, both at an organization and individual level (Saunders 2011) – giving the interviewees and organizations confidence that the interviewer will not damage interviewees or organizations with divulgence of confidential information. The main disadvantages of this approach are that the number of potential organizations for inclusion are reduced, and that the researcher may carry preconceptions regarding the organizations under investigation. Recognition of these factors including a reflexive approach to the interviews, helps counter the disadvantages. The other selection criteria, which apply to a very wide pool of organizations, are that the organization must have operated an ISO 9001 Quality Management System for at least 5 years; and that it is a construction contracting organization.

Following application of the selection criteria above, three case study organization are chosen, all based in the UK. The first (CS1) is a medium sized building contractor. This company has 79 direct employees and undertakes construction projects primarily in the residential, education, restoration, leisure

and commercial sectors. The second (CS2) is a small mechanical and electrical construction contractor. This organization has 23 direct employees and undertakes plumbing, heating and electrical installation primarily in the residential, education, commercial and ecclesiastical sectors. The third (CS3) is a subgroup of a large contracting organization which is delivering an infrastructure PFI contract. This organization primarily undertakes works connected with infrastructure including road, bridge and tunnel construction and repair, street lighting, and highways related structures.

Multiple case studies present the potential to gain a broader understanding of the phenomenon under investigation allowing comparisons within and between studies (Baxter and Jack 2008), strengthening the grounding of the study (Eisenhardt 1989). Comparative case studies afford the researcher the opportunity to systematically explore dimensions of research questions at different levels and test them within a variety of contexts (Yin 2009). Yin (2009) and Eisenhardt and Graebner (2007) find that, in an analysis of multiple case studies, each case study can stand as a single “unit”, with cross case analysis acting to extend and replicate previous findings – Eisenhardt and Graebner (2007, p. 30) say that the use of multiple cases renders theory “better grounded, more accurate, and more generalizable”. Hence use of three case studies extends the theory developed to a wider context. These three case studies are intended to generate mid-range theory in relation to the application of an ISO 9001 Quality Management System which is not limited to a single context. If the analysis of the generated data shows cross case similarities, it implies that the propositions generated may be applicable in other contexts (Yin 2009). The three case studies selected afford the researcher the ability to explore the operation of the ISO 9001 Quality Management System from numerous viewpoints in depth, gathered from a variety of data sources and interviews. In addition to the interviews the data sources, including QMS files (Case Studies 1 and 2), audit records (Case Studies 1, 2 and 3), process review maps (Case Study 3) and head office records (case Studies 1 and 2) were used to refute or corroborate the claims made in individual interviews, and the analysis; as advocated by Yin (2009) when describing methods for increasing the reliability of findings in case study research. These sources of data also helped inform the emerging theory as suggested by Dubois and Gadde (2002).

Within each case study organization, key individuals were selected for interview. In each organization, a company Director, the Quality Manager, and at least

**Table 1.** Interviewee profiles.

Interviewee code		Job role	No of years' experience in construction	No of years' experience in this organization
Case study organization 1 interviewee				
1.1	FS	Contracts Manager	16	4
1.2	END	Contracts Manager	35	30
1.3	QE	Contracts Manager	26	3
1.4	QL	Quantity Surveyor	7	4
1.5	ENH	Quantity Surveyor	9	9
1.6	DC	Site Manager	25	2
1.7	QNE	Site Engineer	3	3
1.8	QNF	Contracts Manager	40	35
1.9	NND	Site Manager	50	31
1.10	XI	Site Manager	28	28
1.11	CL	Site Manager	47	40
1.12	HBH	HSEQ Manager	35	1
1.13	BNH	Contracts Manager	53	6
1.14	ED	Site Manager	35	25
1.15	XM	Site Manager	35	35
1.16	ET	Director	47	40
1.17	TND	Site Manager	3	3
1.18	TN	Site Engineer	15	3
Case study organization 2 interviewee				
2.1	SF	Director	17	17
2.2	HH	HSEQ Manager	20	2
2.3	EH	Site Manager	18	18
2.4	JT	Director	25	25
2.5	MS	Quantity Assistant	32	32
2.6	KNL	Consultant Quality Manager	20	5
2.7	ST	Contracts Manager	45	45
2.8	LH	Site Manager	42	42
2.9	EF	Site Manager	29	29
Case study organization 3 interviewee				
3.1	MX	Quality Manager	4	1
3.2	QT	Site Manager	28	26
3.3	EFM	Project Planner	9	2
3.4	KU	Operational Manager	38	5
3.5	NT	Internal Quality Auditor	6	6
3.6	JT	Director	35	13
3.7	MH	Operational Manager	12	4

one Site Manager was interviewed. The other interviewees were selected to represent the typical function and operations of the organization, the profile of each interviewee is shown in Table 1. These 34 interviews in total are considered sufficient for the application of grounded theory technique to develop emergent theory – Strauss and Corbin (1998, p. 281) suggest that a minimum of 10 interviews should be used. In each organization, interviews were conducted until the researcher had gained sufficient data to grant in depth comprehension – defined by Loosemore (1999, p. 11) as the point “when enough perspectives have been collected to produce an in-depth understanding of the sociological phenomena under investigation”. The semi structured interview method permitted the interviewer to probe deeper into an interviewee’s responses, unpacking and exploring the answers to gain new insight with “depth nuance and meaning” (Guest *et al.* 2012, p. 116).

### Data analysis

Each of the thirty-four interviews was digitally recorded and transcribed verbatim, to yield 304,026

words of information for analysis using abductive grounded theory. Grounded theory was originated by Glaser and Strauss (1967) who “naively” rejected the use of theory prior to data collection and analysis, leading to criticism that it depended on an “overcomplicated ... uncertain creative process” (Rahmani and Leifels 2018, p. 2). However, its use has proliferated and its underpinning diversified such that grounded theorists now embrace a multitude of perspectives including a “Straussian” approach permitting the use of theory (proto theory) (Rahmani and Leifels 2018) thus testing the concepts developed at the literature review stage. These background concepts should be used as a guideline and should not be “forced” on the data, permitting fresh patterns and insights to emerge from the data analysis using open coding as advocated by grounded theorists (Charmaz 2006, Rahmani and Leifels 2018). The coding follows key grounded theory “rules” as established by Charmaz (2006), namely – use a systematic analytic process; start with open coding, move to more abstract codes, then through iteration arrive at the theoretical or conceptual code; building the

abstraction of the coding as it progresses. Abductive logic guides code creation, using existing theory as a guide to interrogate the data in an iterative process to find the best explanation for the phenomena under investigation (Rahmani and Leifels 2018). Analytic memos were made as the coding progressed as advocated by Charmaz (2006). The theoretical codes are derived from the data, rather than imposing pre-selected codes onto the analysis – a “voyage of discovery” as Loosemore (1999) put it. However, the prepared questions asked in the semi structured interviews are guided by previous research, hence the codes cannot be described as “spontaneously emerging” from the participants’ concerns as classic Glaserian Grounded Theorists (for instance Glaser and Strauss (1967)) would advocate. The coding was an iterative, interpretative process, with overlap between data collection and analysis within each case, and an overlap of analysis between cases.

The active interpretation and analysis of data, and composition of the findings, cannot avoid being influenced by the researcher’s background and experience – 20 years in the construction industry working both as an architect, and bid manager for a contractor, with 3 years as a full time academic. When working as an architect and bid manager, both companies held an ISO 9001 QMS although the researcher’s interaction at the time with the respective system was limited to completion of routine paperwork (not all of which was completed correctly or on time). This experience enabled the primary author to take an “insider” view during the interviews and analysis (Hellowell 2006). It helped build empathy and trust with the interviewees, as she had experienced some of the challenges and issues that the interviewees were describing and understood industry terms and processes (both generally and regarding Quality Management Systems). It helped during the creative process of theory building to make connections between concepts. At the same time, this experience risks the researcher projecting her own experience onto each interview and subsequent analysis. To counter this, each interview was transcribed verbatim; during the analysis the researcher returned to the interviewee’s own words repeatedly to ensure that the interviewee’s perspective was being reflected. A self-reflexive and critical awareness of the analyst’s preconceptions (questioning one’s own interpretation and understanding) can be help reduce bias; however, it is not possible to eliminate bias in qualitative analysis and interpretation. As Löwstedt (2015) suggests, a reflexive approach

(acknowledging the influence of “who a researcher is”) can help “construct new insights”.

### *Within case analysis*

First, each transcript was printed, and coding undertaken physically by hand. Preliminary analytic memos were noted in the margins of the transcripts. This first stage of working out underlying meaning, pattern and themes was encapsulated in these notes and initial flow diagrams sketched on the back of several transcripts. This allowed the researchers to become immersed in the data. After this process, the transcripts were imported to NVivo and a second iteration of coding was undertaken. This aided the systematic capture of codes and gave transparency and rigour to the coding process, enabling an audit trail of coding decisions related back to the transcript. In the second cycle of coding, using the hand coded scripts as a basis, each interview was re-examined to look at the emergent processes, relationships, and meanings and to refine and develop a higher abstraction level of coding. Interview responses were cross compared within each case and discrepancies were noted. In addition, comparison is made with accessed site and head office records; memos were taken when discrepancies were observed.

### *Cross case analysis*

Following the analysis within each case, the third iteration of abstraction and analysis then followed. Footnotes were made against the analysis of each case, and labelled according to the case study (1, 2 or 3) then alphabetically; these codes enabled a detailed cross-case analysis and are incorporated within Figure 1. Once coding had been completed, a narrative of each case study organization was written. Participants’ own words are used where possible to illustrate the analysis.

### *Theory building*

The goal of the case study analysis is to investigate the extent of regulatory decoupling and its impact on the effectiveness of implementation of ISO 9001 Quality Management Systems in the construction industry. In order to achieve this goal, a new mid – range theory is developed, as “investing in theory [can] improve the explanatory power of case studies” (Dubois and Gadde 2002, p. 555). The analysis does not merely describe what is found in the case study organizations, but probes the mechanisms behind the operation of the QMS, compare findings across cases;



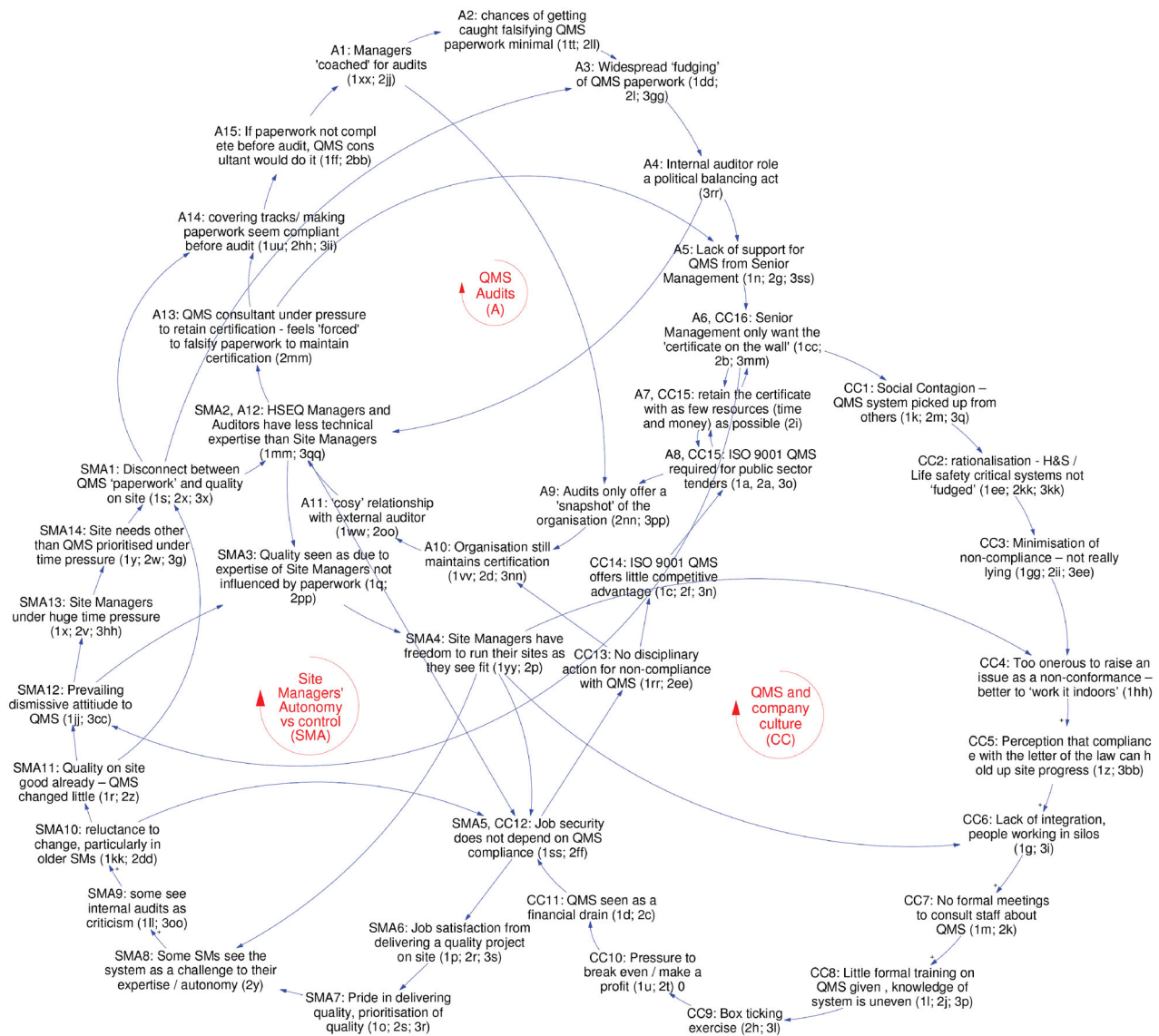


Figure 1. Causal loop diagram of the case study analysis.

theory is constructed using the lens of regulatory decoupling. Dubois and Gadde (2014) suggest that the process of theory building is messy and complicated and entails creativity (Bourgeois 1979). Dubois and Gadde (2002) describe the process of building theory from case studies as "systematic combining" – moving from data to theory and back using abductive reasoning, adjusting the interpretation of the findings and the framework developed in a non-linear iterative process through which the case study analysis and theoretical framework gradually evolve. This process – matching the data with emergent theory within the framework of regulatory decoupling – helps explain the mechanisms occurring within the case study data (Schweber 2015).

Analysis of the case studies showed that the mechanisms behind the implementation of the ISO 9001

QM systems in all 3 organizations were complex systems, with multiple integrating processes which had knock on effects on other actions. To theoretically capture from the complex patterns that have been found from the case studies it is useful to use system dynamics. System dynamics is the study of complex systems, using amongst other tools feedback control and causal loop diagrams (Sterman 2010). This study uses a non-quantified causal loop diagram to depict the complex system derived from the qualitative analysis in the form of the alphanumeric labels derived from the third coding process. To formulate the causal loop diagram, footnotes were added to the narrative analysis of each case study. The notation used was a number for the case study (1, 2, 3) followed by a letter code for the footnote (a, b, c etc.). Analytic memos taken during the case study analysis were used to

build the theory that is demonstrated in the diagrams. The causal loop diagram was constructed using Vensim software.

## Results and analysis

The system dynamics causal loop diagram (Figure 1) shows 3 main processes operating within the case study organizations. The diagram is a combination of perspectives from all 3 case studies, built up during the analysis. The alphanumeric figure in brackets after each descriptor represents a code derived from the qualitative analysis. Each of the processes highlighted in the diagram – QMS and company culture, Site Managers' autonomy vs control, and QMS Audits – will next be considered. Each factor identified in Figure 1 has been given a label according to the process or processes that it contributes to (Company Culture, CC1–16; Site Managers Autonomy vs Control, SMA1–14; QMS Audits, A1–15), to aid connection between Figure 1 and the analysis below.

### QMS and company culture

In sectors other than construction, Sampaio *et al.* (2012) and Llopis and Tari (2003) found that the benefits accrued from a QMS were closely aligned to the motivation for certification. Gotzamani and Tsiotras (2002) and Lagrosen and Lagrosen (2005) suggest that this factor is pivotal to the extent of implementation. If a company culture is fully aligned to the implementation of their ISO 9001 QMS, the environment will be much less likely to foster regulatory decoupling. In all case studies, the external legitimacy conferred by the standard is the primary motivation for continued certification. When asked why they thought their construction organizations had implemented the ISO 9001 system, 28 interviewees, across all 3 case studies, suggested that the system was a requirement of the contract, or required for tendering for government work (Figure 1, A8, CC15). In case study 1, NND said "it's helping them to get jobs, but that's all it's doing". EH in case study (CS) 2 said that "they are doing it because they have to do it. If they didn't need it they wouldn't be doing it". According to NT (CS3), "realistically speaking, if they don't have this [the ISO 9001 QMS] they are not going to get any work". 5 interviewees across all cases mentioned the benefits the system would bring, in terms of efficiency or recognition. The interviewees who mentioned that the system would reassure clients highlight the external legitimacy that the organizations sought by having

the certification. The instigation of a QMS in response to client compulsion to as a requirement for tendering is a strong indication of "ceremonial" adoption of a system as a "window dressing" exercise.

Regarding the reason why their organization carried the system, one interviewee replied, "there's no choice, you have to have it" (ENH, CS1); and another describing it as "like car insurance" (QL, CS1). QMS was primarily a "box ticking exercise" (Figure 1, CC9) across all cases – Senior Management wanted the "certificate on the wall" (Figure 1, A6, CC16), both phrases strong indicators of regulatory decoupling. Gunning and McCallion (2007), Ribeiro (2000) and Love and Li (2000) found that the ISO 9001 certification is a prerequisite for tendering for many construction sector projects. Perhaps in the early days of the ISO 9001 standard, it did differentiate a company from its competitors. The standard is now effectively a requirement for doing business and confers virtually no competitive advantage (Figure 1, CC14). In case study organization 3, JT the Commercial Manager observes that the value of the QMS has been diluted by the fact that "it's more just the case that it's the norm". These quotations illustrate the adoption of QMS as a "box ticking exercise" – the system has little internal legitimacy – an approach that lies at the heart of regulatory decoupling.

The training in all 3 case studies was found to be inconsistent at best, inadequate at worst, with the majority (25) of the 34 respondents reporting having had no induction training and no formal training on their organization's QMS (Figure 1, CC8). In case study 1, knowledge was so poor that 3 interviewees knew little of the requirements of the formal system when asked, with one interviewee (QL) remarking "I know there's a 9001 and 14001 and that's really where it stops; I really don't know anything else about it". In case study 3, none of the interviewees reported having had any formal induction or training on the QMS system, described by KU the operational control room manager as a "massive gap... at all levels". The widespread lack of formal training in the QM systems sets the scene for promulgation of work arounds and incomplete compliance through social contagion. Nine of the Eleven Site Managers in all 3 case studies picked up the operation of the system from others as they worked (Figure 1, CC1). As KNL in case study organization 2 puts it "the young guys are taking their cue from the older guys". Gino and Bazerman (2009) suggest that unethical behaviour is contagious. Once non-compliance with the system has been undetected the first time, both the person indulging in this action

and everyone around them are emboldened to try this the next time. This continues until misconduct is normalized. The lack of formal training in the QMS indicates that there is a gap between the advertised aims of the system, and the operation of the system in practice – and as such demonstrates regulatory decoupling.

In some cases, indulgence of non-compliant behaviour comes from the very top of the organization. Langevoort (2018) suggests that the culture for unethical behaviour is set by the most senior company management (Figure 1, A5, A6, CC16). In case study 2, the sole contracts manager “really hasn’t embraced it that well to be honest” and “just doesn’t care” according to other interviewees in the company. In the same case study, the chairman admits that “I have no doubt that some of my contract managers or some of my site foremen may have manipulated paperwork to achieve the industry standard” yet states that he does not condone this.

Over time, the judgement as to what exactly qualifies as unethical behaviour moves. Most people perceive themselves to be ethical and rationalize deception as a “white lie” that will have little impact, and they can still feel like a moral person. This is certainly the finding in the case study organizations – in case study 1, only 4 of the 18 interviewees considered “fudging” the QMS paperwork to be unethical (Figure 1, CC3). This indicates that falsifying QMS paperwork has become an accepted institutional behaviour – that “business as normal” is continuing behind a façade of compliance with the QMS system. Some interviewees justified their non-compliance to themselves and the interviewer; for instance, on Case Study 1, TND said “there’s certain times you have to do certain things to get a job finished. You just can’t go by the book all the time” (Figure 1, CC5, CC10). Some felt uncomfortable when probed further and did not like the word “cheating” to be used. One interviewee, who was described by others as non-compliant with the QMS, denied any instance of cheating or “fudging” in his interview. He was exhibiting signs of ethical manoeuvring, as suggested by Shalvi *et al.* (2015), where those cheating a system try to preserve their image as ethical, “good” people.

### **Site managers’ autonomy vs control**

Intrusive regulation of Site Managers’ activity is likely to signal a lack of trust in their work and lead to resistance and covert workarounds of the QMS (Christ *et al.* 2012); at the same time Brunsson and Jacobsson

(2000) suggest that those who are highly autonomous and innovative may resist standards. A difficult balance needs to be reached, to avoid creating conditions where regulatory decoupling will flourish.

All case study interviewees report a degree of autonomy – where it occurs it is universally enjoyed. In case study 1, DC said of the management “they’re never on my back”, and TND said, “...they’re not breathing down my neck”. NND said that he was able to run his site as he wanted as he felt “100% my own boss”. The chairman confirmed this perspective “I am happy solely to rely on those employees to do the role – whatever that may be – within the company ... - there’s an element of trust”. In case study 2, the director SF said of his employees “they get a fair bit of freedom”. EH says “I just enjoy being your [sic] own boss” and ST the contracts manager says, “I have complete freedom end of story” (Figure 1, SMA4). Case study 3 presents a more structured environment, partly due to the larger size of the company and partly due to the complexity and demands of the contract. However, the interviewees still seize the opportunity to exert their autonomy where possible, where the managers are in control of their teams and manage their work in their own way (within the confines of the contract). QT the Site Manager said, “I’m pretty in control ... there’s definitely an element of trust”, and MH asserts “they leave me alone to do what I need to with the team”. In the case study organizations, the intrinsic motivation of the site managers to deliver quality construction on site has hardly been affected by their Quality Management Systems, for the simple reason that those who do not “buy into” the systems largely ignore them. Where it is not possible to ignore the systems, they are a source of irritation (Figure 1, SMA12). In case study 1 BNH said of the attitude to visits from quality managers “[site managers] used to look upon it as a bloody nuisance ... ‘here they come. Try and get rid of them.’ And there was a very poor level of acceptance of ... what they were trying to do”. The site managers’ knowledge of construction is greater than that of the Health, Safety, Environmental and Quality (HSEQ) Managers, whose area of expertise is wider and concerns the operation of the ISO 9001 system (Figure 1, SMA2, A12). This is characterized by NND in case study 1, who questioned the competence of the HSEQ manager and the Health and Safety officer to challenge him in his construction methods: “why is some man telling me to do that that way, and there’s a simpler way of doing it ... I wouldn’t think they’d have the experience ... They go by the book. I don’t go by the book ... they’re book

men" (Figure 1, SMA9). The Site Managers prioritise the demands of their sites – and the need to run them efficiently – over what they perceive as the inefficient, bureaucratic imposition of the QMS regulations. They ignore the regulations and those trying to enforce them when possible – an example of decoupling the operation of the site from the QMS regulations.

The site managers and senior managers of the case study organizations all took great pride in the quality of construction which they handed over (Figure 1, SMA6, SMA7). The behaviour which is covered up by the façade of compliance is not necessarily wrong or unethical; it is aimed at delivering high quality construction to their clients, but in a different manner (the site managers' way) and with less paperwork than that dictated by the Quality Management Systems (Figure 1, SMA1). The Site Managers do not see a practical connection between delivering quality on site (the reality of operations) and the operation of the QMS (the institutionalized "myth") This is a new finding in studies which look at decoupling. As McCabe and Boyd (2004) put it, some of these site managers prefer "actions not words". The site managers in the case study organizations are highly intrinsically motivated to deliver good quality construction but want to run the sites and deliver quality their way (Figure 1, SMA11). They relish the autonomy which they have been given. Many resent the challenge to their authority that any criticism, feedback or visits to sites from the quality managers can infer (Figure 1, SMA8).

In the interviews, the delivery of quality construction is seen almost universally as more to do with the experience and expertise of the site managers than to do with the Quality Management System (Figure 1, SMA3). This makes sense when one considers that not everything relating to quality delivery in construction can be described in a written procedure (Pheng 1993); however, the system is talked of with contempt in many cases when asked about its connection to quality construction (Figure 1, SMA12). Douglas *et al.* (2003) found that 54% of their 104 survey respondents agreed that it was possible to be ISO 9001 certified and still produce poor quality output. One example brought up in the interviews was the experience of ES, who at the time of interview had moved to case study organization 1 from a medium sized company which had gone into administration. He talked admiringly of the Quality Management System of the previous company but admitted that the quality which was delivered on site was very poor and observed that this was the inverse of case study organization 1, where

the QMS compliance was poor, but quality delivered on site tended to be very good – both providing examples of regulatory decoupling.

### QMS audits

Auditors are "gatekeepers" of regulatory compliance (Gunning 1995) – effective audits should ensure that regulatory decoupling does not occur and if it does it is corrected quickly. However, the audit can only cover a small sample of a company's operations (Heras-Saizarbitoria and Boiral 2013), and the auditor position can be compromised by conflicted loyalty to an organization and to the standard that they expected to uphold (Bazerman *et al.* 1997, Guénin-Paracini *et al.* 2014).

In case study 1, DC the site manager says, "I see a lot of fudging and bluffing going on" (Figure 1, A3). When CL was running behind with paperwork showing toolbox talks before an audit, he says "I would just put another heading in [the sign in sheet], another date, run it through the copier - and I have done... I don't feel guilty about it to be honest with you". END, describing the rating of subcontractors, said "when there's somebody coming to do an audit, we'll just cook the books to suit". In case study 2, MX the quality administrator says of the QMS paperwork "if it doesn't happen on site, then we have to make it up... that's the way it is here - and I think it's probably the same in all other places" (Figure 1, A15). In case study 3, when asked if he "fudged" the QMS records QT the site manager replied "I'm not going to lie. I have... and I'd be surprised if too many more people, when it gets really hairy here, haven't done the same" (Figure 1, SMA14). Five of the interviewees alluded to the unlikelihood of an auditor finding out where they had cheated QMS paperwork (Figure 1, A2, A9), particularly if, like EF in organization 2, they take trouble to cover their tracks – "It's all different pen (laughs)". When END talks of "cooking the books" in case study 1, he is sure that this will not be uncovered – "no, because it's there, it's a record and I've signed it... It can't be disputed". NND in the same organization says "the auditor would never find out, no, because the dates would be right, you see, on that. The dates would be right from the signing" (Figure 1, A14). These examples of falsifying QMS paperwork to successfully pass audits allow organizations to maintain a display of conformity with the QMS and thus their certification – this also permits behaviour that decouples practice on the ground from the organization's QMS to continue.



Boxenbaum and Jonsson (2017) suggest that organizations that decouple their regulation from day to day activity either avoid, or seek to control, audit and scrutiny. Case study organization 2 had tried to control which sites were audited in the past, encouraging the auditor to visit the sites of EF, who has enthusiastically adopted the system. This ploy did work for several years, until (according to EF) “[the auditor] was sick of seeing me and that was just the truth – she wanted to see somebody else because she’d seen me a whole pile of times and most [sic] to prove to her...the firm was doing it in other places”. In case study 1, the organization tried to control the audit, by changing the paperwork just before the audit to make it appear compliant and by coaching the Site Managers on what to say during the audit. END in case study 1 said that before the audits “I was basically told what I would be asked” (Figure 1, A14, A1). This attempt to minimize and control inspection and evaluation is an indicator of “institutional isomorphism” – one of the elements that Meyer and Rowan (1977) used to describe decoupling.

Work arounds, deception and performance of compliance allows unsuitable regulation to continue unchallenged (Hodgson and Cicmil 2007). The source of problems on a project is not exposed, where it can be discussed and mitigated. In case study 3, the quality manager cites a case when she had admitted that some of the procedures had not been followed and said that she was in the midst of putting in measures to correct this. The client responded with a formal letter complaining about the missed targets. She said, “I could just ... pretend everything is fine but I’m actually being really honest and telling you what’s going on here and then all I get back is a formal letter of ‘we want you to sort this, this, this and this out.’” This creates the environment in which fudging records and covering up non-compliance becomes acceptable – even a rational reaction. It could be argued that the pressure to show continual improvement in a company operating an ISO 9001 QMS is a disincentive to admit when things are not going well in terms of compliance.

Auditor independence and competence are required for a good audit (Guénin-Paracini *et al.* 2014). The extent of independence given to internal auditors and quality consultants who are retained by organizations to maintain the ISO 9001 systems will depend entirely on the support given to them by the directors in charge of their organization. In organizations where the ISO 9001 QMS is seen as a badge, little independence is likely to be given – why should a director

interrupt sites and risk programme in order to convincingly meet a standard in which she places little value? NT in case study 3 describes the situation where he uncovers “something you find or something you can challenge – but you can’t; it has to be... [ignored for] political reasons. And that’s what really, really gets me” (Figure 1, A4). HBH when asked about support from senior management in case study 1 replies “sometimes you get it, sometimes you don’t and it’s a bit difficult, obviously” (Figure 1, A5). The lack of support for auditors from management supports the case that the inspection and evaluation is adopted as window dressing only – it is there to satisfy external requirements and maintain external legitimacy.

The internal auditors and quality consultants are experts in the systems which they administer, but from the interviews, all have less hands-on experience of construction than the Site Managers whom they are auditing. As discussed earlier, 3 of the older site managers in case study 1 resented being told what to do by the quality manager and the Health and Safety officer, seeing any suggestions or input as a challenge to their authority and autonomy on site (Figure 1, SMA8). In case study 3, the internal auditor would say to those he was auditing “I won’t lie to you, I don’t know this process, I have a vague understanding of it”. In the same organization, JT the commercial director suggests of internal auditors that “often they haven’t got sufficient knowledge of the subject matter to do a comprehensive audit” (Figure 1, SMA2, A12). This lack of technical knowledge inhibits auditors from revealing problems or uncovering false information, creating the conditions for Site Managers to continue to falsify the QMS and decouple practice from

Internal auditors, quality managers and quality consultants’ job security rely on the success of the system (Douglas *et al.* 2003). In case study 2, the directors had employed the external quality consultant to keep the ISO 9001 “badge” (Figure 1, A6, CC16). Without wholehearted support from the directors, and without much sanction against those who did not fulfil their part in the system, the consultant was left with few tools to do his job according to the ISO 9001 requirements – he had little alternative but to take short cuts. He was placed in the situation where he had to complete QMS paperwork before an audit (Figure 1, A15), to visit site and “coach” recalcitrant site managers into what to say in the audits (Figure 1, A1) – if the company failed an audit, it would be bad for the company and bad for him – he would be out of a job and his reputation as a consultant would suffer



(Figure 1, A13). In these circumstances, he was put in a situation where he had little choice but to collude in regulatory decoupling. Once it became known in the company that the QMS consultant would do this, there was little incentive for the site managers to complete their own records – they were under huge time pressure (Figure 1, SMA 13) and there was little consequence for not doing so (Figure 1, CC13; SMA5, CC12). The internal quality managers and auditors have a difficult balancing act to enforce the quality management rules without antagonizing site managers and those expected to implement the rules (Figure 1, A4).

## Discussion

The analysis has found three major elements that impact the operation of the ISO 9001 QMS and the extent of regulatory decoupling in an organization: the company culture regarding the QMS; the autonomy granted to Site Managers in tension with the control exerted by the QMS; and the attitude towards audits within the organization. Boxenbaum and Jonsson (2017) suggest that decoupling is more likely to occur with those who do not fully believe in the benefits of the policy in question. The company culture, which is led by those at the top of an organization, can set the context in which ethical manoeuvring (Shalvi *et al.* 2015) leads operatives to believe that they are doing no wrong when falsifying QMS documents. These operatives have subscribed to the QMS as a “rationalised myth” as described by DiMaggio and Powell (1983).

There is a disconnect between the QMS (the “process quality” described by Jraisat *et al.* (2016) and quality on the ground (the “product quality”). Part of the reason for this is the lack of involvement and discussion with the site managers and operatives when setting up the system, and ongoing discussion to refine the system to each company’s needs. Thus, the systems are set up by quality management experts who have much less hands on experience of construction quality than those expected to use the system. Grytnes *et al.* (2020) consider the balance between independence and control in the context of health and safety system implementation, through a case study analysis of construction sites in Denmark. They find that joint engagement between the “enforcers” of rules and operatives with local knowledge at site level is key to harnessing the expertise of operatives without infringing their sense of autonomy. This would in

turn engender the shared knowledge and understanding advocated by Giddens (1984).

It could be suggested that those setting up the QMS approach it from a systems point of view, thinking primarily of what the ISO 9001 standard requires to be shown, less from a bottom-up perspective thinking about the processes that have been seen to deliver quality on site. In terms of system creation, there has been little reliance on “ground level” expertise as advocated by Olde Scholtenhuis and Dorée (2014) in their description of High Reliability Organizing. To a certain extent the quality delivered on site will always be due more to the expertise of the site managers, but the QMS should be seen as an invaluable tool in their arsenal to help them deliver quality, which they cannot do without; not one which they actively work to avoid.

The behaviour behind the façade of compliance with the QMS is aimed at avoiding the paperwork and bureaucratic burden imposed by the system, which is considered superfluous to the delivery of quality. This is an indictment of the ISO 9001 QMS system, which costs so much effort and money to maintain, and is required to remain in business. It is vital for the usefulness of ISO 9001 Quality Management Standards that this connection to quality on site is remade. This may happen as part of the changes to ISO 9001:2015 with its more risk-based approach which is aimed at reducing paperwork (Fonseca 2015a, 2015b; Medić *et al.* 2016).

According to Meyer and Rowan (1977) who first introduced the concept, decoupling is a process in which the day to day running of an organization becomes separated from its symbolically adopted policies. In all 3 case study organizations, it is clear that regulatory decoupling between the operations of the companies and their ISO 9001 systems is taking place. When referring to the QMS in the 3 case study organizations, the interviews feature words like “tickbox” “lip service” and “façade” time and again, with some referring to it as “the certificate on the wall” or merely a “badge”. In case study 2, it is a “piece of paper to put on the wall that would allow them [senior management] to apply for contracts” (JT CS2). The process of regulatory decoupling could explain why previous studies carried out by McCabe and Boyd (2004), Tam *et al.* (2000) and Ofori and Gang (2001) that found that QMS implementation did not necessarily lead to improvements in quality on site.

However, in common with the observations of Andras Tilcsik (2010) the picture is not clear cut – not every person in each organization was partaking in

the façade; some individuals believed that the system would help them deliver quality and did their best to administer it fully; and some did not “fudge” all of the time, only when it was expedient. This is supported by Coburn (2004) who found that response to regulation varied between and within organizations depending on an individual’s outlook and the pressures within their organization, and whether the pressures are contradictory (Boxenbaum and Jonsson 2017).

### **Recommendations for industry**

Even a “performance” of implementation of a QMS takes time, effort and resource. It is not feasible for a construction company (other than the smallest domestic scale organization), to continue in business without a certified ISO 9001 system. In the case study organizations, interviewees are highly motivated to deliver high quality construction. Therefore, it makes sense that construction companies in the UK use ISO 9001 systems to help them deliver quality construction “on the ground”. To reconnect ISO 9001 systems to delivery of quality, the conditions which led to the uncoupling need to be addressed.

### **Company culture**

In one case study company, the director knew about and implicitly condoned the “fudging” of quality management documents. The ISO 9001:2015 update mandates more input from company directors during audits. This should motivate directors to be more involved in and supportive of their Quality Management Systems – and make their support known.

Although some found it acceptable to “fudge” or game the quality management systems in the case studies, all interviewees took care to disclaim that this was not the case where life safety and health and safety was in play; it is no longer culturally acceptable to cut corners in health and safety. Poor quality construction can be a life safety issue. It should be made culturally unacceptable to “fudge” quality regulation, starting with formal induction training on the quality systems, to set expectations from day 1 of employment and remove the excuse of ignorance and the “social contagion” where bad habits are spread from old hands to new recruits.

### **Site managers’ autonomy vs control**

Site managers’ judgement and experience is paramount when delivering quality construction – it is hugely difficult to capture all aspects of quality

delivery in a set of written procedures, (Pheng 1993) leaving a lot of scope to the site managers’ discretion. To get “buy in” from the site managers, and to balance their autonomy with the control needed in a well-functioning QMS, site managers should have more input into the design of the systems in their organizations, adopting only procedures that can help delivery quality construction on site and deleting any that are there to tick a procedural box. It is only by using the expertise of the site managers that a system which moves towards the goal of connection between the paperwork and delivery of quality at the source can be progressed.

### **Audits**

Directors’ explicit support for their ISO 9001 systems have been seen to be tempered with an implicit acceptance of regulatory decoupling. If the HSEQ managers no longer have to manage this contradiction, their power will be enhanced and they will not have to balance the retention of certification with the lack of engagement from many tasked with operating the system to the same extent. A productive relationship should be fostered between internal auditors and site managers, bringing about the mutual knowledge that Giddens (1984) suggested enables meaningful action. It should be emphasized that internal audits are not a form of criticism. It should be made easier to admit when things have gone awry and to fix problems in a no blame environment, not for them to be “swept under the carpet”.

The recommendations can be summarized thus: construction organizations should adhere to the spirit of their Quality Management Systems, not taking them literally and mechanistically, to use their potential to deliver quality on site.

### **Limitations, recommendations for future research**

The risk of personal bias is inevitable with an interpretative research approach, particularly in the creative and “messy” process of theory building (Schweber 2015); although care has been taken to reflect on this and connect the analysis to the source data where possible. In addition, this research is based on 3 case study organizations which were selected on the basis of a prior relationship with the authors. This has most likely led to better quality of data where the interviewees are more able to admit to wrongdoing; however, it would be beneficial to test the findings of this research on a wider population of respondents in future research.

ISO quality standards and health and safety standards have similar structure, methods, implementation and monitoring processes (Heras-Saizarbitoria and Boiral 2013). The issues of autonomy, regulation and the nature of “tick box” compliance with systems has been examined in the context of health and safety systems (including Oswald *et al.* (2018) and Grytnes *et al.* (2020)). However, “regulatory decoupling” has not been used as a lens with which to examine Health and Safety operation in construction, which could be a useful avenue for future research. It may be an interesting future research direction to see if the culture around quality system implementation in organizations could be changed, and implementation become more reliable, through application of a high reliability organizing (HRO) lens (Olde Scholtenhuis and Dorée 2014).

The difficult balancing act managed by internal quality managers and internal auditors has been considered. In some cases, they have been managing internal company politics, whilst trying to improve their organization’s implementation of quality management and maintain their certification. However, further research focussed on this group of key actors in the implementation of the standard would shed more light on the difficulties that they face, and on how the conflicting pressures brought to bear on them can be better managed by their organizations. It would also be of value to investigate the experience of the financial sector as regards audit procedures and their validity, to see if lessons learnt in the financial sphere can be brought to bear in the construction sector. The application of the ISO 9001 standard in construction companies has been investigated. Given the pressure to maintain certification and keep overheads to a minimum is also being felt by consultants and designers, there is a possibility that these decoupling practices are also occurring in this sector. Further investigation into this area is called for.

## Conclusion

This study aims to investigate the extent of regulatory decoupling and its impact on the effectiveness of implementation of ISO 9001 Quality Management Systems in construction organizations and develop mid-range theory using abductive grounded theory. Bourgeois (1979) describes mid-range theory as a theory that sits between an all-encompassing “law” or unified theory, and minor, day to day working hypotheses. Rich empirical findings have been analyzed and linked to Figure 1 which is grounded in the data, but

due to cross case analysis can be generalized across different contexts than just the case studies under examination.

The empirical findings have determined that regulatory decoupling of professed company policy and the operation of the ISO 9001 Quality Management System does happen in construction organizations but is not uniform within organizations. In terms of theoretical contribution, the research has linked regulatory decoupling to QMS implementation in construction and delved into the mechanisms behind regulatory decoupling in an attempt to answer the question posed by Boxenbaum and Jonsson (2017) as to why and when regulatory decoupling occurs. This theory building (Colquitt and Zapata-Phelan 2007) introduces a new lens (regulatory decoupling) to the process of systems compliance. The system dynamics model produced shows that the processes behind decoupling are complex and interlinked. The three driving factors that foster decoupling have been identified as the prevailing company culture relating to the motivation for and acceptance of the QMS; site managers’ desire for autonomy which may be in conflict with company control; and the operation of, and support given to, audits, from top management to site operatives. QM systems can be recoupled to practice on the ground in construction operations through less emphasis on “performance” and a shared organizational approach to apply the essence of the system to drive quality construction “on the ground”.

Regulatory decoupling has been found in other sectors notably financial (MacLean and Benham 2010) educational (Coburn 2004) and pharmaceutical sectors (MacLean *et al.* 2015). This is the first study which has empirically identified widespread regulatory decoupling practice in quality management in the construction sector and used these findings to develop a theory to examine the elements behind this process. This study, whilst based in the UK, could be applied internationally. The ISO 9001 standard is an international one, with the same requirements regardless of jurisdiction.

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No potential conflict of interest was reported by the author(s).

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