Copyright © 2020, Emerald Publishing Limited. This AAM is provided for your own personal use only. It may not be used for resale, reprinting, systematic distribution, emailing, or for any other commercial purpose without the permission of the publisher.

The version of record - Ahmed, Sa'id Namadi, Pasquire, Christine and Manu, Emmanuel (2022) Key factors affecting commercial actors in collaborative working within the UK construction industry. Journal of Financial Management of Property and Construction, 27(3), pp. 323-347 is available at https://doi.org/10.1108/JFMPC-01-2021-0004

Key Factors Affecting Commercial Actors in Collaborative Working Within the UK Construction Industry

Sa'id Namadi Ahmed (Department of Civil Engineering, Surveying and Construction Management, Kingston University , London, UK)

Christine Pasquire (School of Architecture, Design and the Built Environment, Nottingham Trent University , Nottingham, UK)

Emmanuel Manu (School of Architecture, Design and the Built Environment, Nottingham Trent University , Nottingham, UK)

Key Factors Affecting Commercial Actors in Collaborative Working Within the UK Construction Industry

Abstract

Extensive research on the importance of collaborative working (CW) and aligning stakeholders' interests in construction has been widely conducted. But often the practices of commercial actors during CW are often overlooked, particularly within the UK setting, where scholars have lamented on the lack of industry-wide collaboration. This study aims to explore the factors affecting commercial actors in CW, specific to the UK construction industry. The research used a context-based approach to seek stakeholders' perspective on the key factors affecting commercial actors in CW within the UK. Semi-structured interviews with individuals (contractors, cost consultants, designers among others) from construction and infrastructure organizations were conducted, using multiple case study investigations. The collected data was analyzed across three case studies, using inductive thematic analysis to identify the key factors. Findings from the analysis identified 'institutional' factors such as transactional cost economic influence, the prevailing construction model, and professional related drivers. Key drivers within these factors include commercial background and training, custom and practice, misaligned interests in projects, clients' perception of consultants, cost-driven environment, conventional procurement protocols, and bureaucratic functions. In conclusion, these factors continue to affect CW with undue influence on commercial actors in the UK, thus preventing performance improvement demanded by successive UK government reports. The context-based approach applied in this study is expected to provide some insight in construction management research, especially from commercial perspective in the UK, to gain an understanding of how these factors are manifesting.

Keywords: Collaboration, quantity surveying, cost consultants, construction, project delivery approach, thematic analysis.

Introduction

After the economic recession periods, Construction 2025 Report (2013) called for partnership amongst stakeholders to reduce costs by 33% and speed up time by 50%. The Farmer Report (2016), further supports this, advocating for the adoption of manufacturing advances e.g., lean construction, Building Information Modelling (BIM), and off-site production strategies for performance improvement. It seems as though galvanizing these concepts to achieve the necessary improvement would require collaborative working (CW) relationships in the industry. Scholars have described the concept of CW as having common goal to create social value (Grudinschi *et al,* (2012); Trust and transparency, cultural consideration and sense of ownership (Fischer *et al,* (2017); likewise Shared understanding (Pasquire & Ebbs, 2017). These assertions indicate the need for construction participants to work harmoniously within a community, i.e., designers, constructors, trade vendors and asset owners, to create social value and shared understanding. However, studies have shown that CW within the UK construction industry is fading, largely because of commercial behaviours (Challender, *et al;* 2016); these behaviours are reinforced by the prevailing procurement protocols and 'institutionalised' factors that surround the usual project delivery approach (Sarhan *et al.,* 2017). Likewise, the notion of social value creation is not well understood (Loosemore, 2016) as the ability of supply chain in creating value and being part of a nested business model continue to lessen in procurement practices. Consequently, their lowly position is acting as a barrier to this happing – a problem with long standing issues to many mainstream SCGs in construction innovation (Sexton and Barrett, 2003).

This lack of integration, hierarchical arrangement and commercial misalignment, remain the key issues impeding collaboration within the UK construction industry (Namadi *et al.,* 2018; Sarhan *et al.,* 2018). Additionally, the current delivery model also deters clients

and professional consultants from collaborating with supply chain groups (SCGs) during conceptual stages, on the basis that it limits competition (ICE, 2018). This supports transactional characteristics because commercial activities continue to be carried out in isolation (Nicolini, *et al.,* 2000), instead of being integrated into production, as advocated in a 'lean' system. Research studies have shown that these practices are encouraged by the 'institutionalised' system, which outlines a governance mechanism for managing and delivering construction facilities (Sarhan, 2018), thus characterising the challenges within the construction delivery model (Pasquire *et al*, 2015; Gottlieb and Haugbølle, 2013).

The prevailing UK construction model seems to comprise of two separate streams: one focused on actual production (building the project to completion), and the other institutionalised separate roles mainly concerned with implementing transactional governance using opportunistic behaviours around risk as a criterion to influence construction practices (Pasquire *et al,* 2015; Sarhan *et al,* 2014). The problem with this is that, functions performed within this latter stream (costing, design, and procurement), are disintegrated, which signifies that stakeholders performing these activities are not integrated or working in collaboration (Zimina *et al.,* 2012). Among others, actors within this stream include professional consultants, quantity surveyors (QSs), construction lawyers, purchasers etc, who are also called 'commercial actors.'

Additionally, the Farmer Report (2016) proposes that, 'surviving' has now become the new commercial norm within the UK construction landscape, where behaviours stemming from commercial practices are reinforced within the system, thus project stakeholders continue to resist transformational change. Despite the assertions of scholars that, CW should transcend beyond the hierarchical arrangement, to align the interests of commercial actors in the system (Sarhan *et al.,* 2017; Namadi *et al,* 2018), the model still encourage siloed relationships e.g., advising clients on cost management matters in

'secrecy'. This further incites opportunistic behaviours in the system, widely known but unacknowledged (Love, *et al.,* 2010).

Most recent studies that examined commercial practices have focused mainly on BIM application (Kehily & Underwood, 2017; Smith, 2014; Turk *et al.,* 2014), whilst others addressed specific organizational issues (Matipa and Keane, 2008; Sadreddini, 2012; Akintan *et al.*, 2013; Bashir *et al.*, 2015). On the same continuum, studies that examined CW still emphasize the need to improve stakeholders integration (Brien, Mbachu, & Lomax, 2014; Nagalingam, Jayasena, & Ranadewa, 2013; Rogage & Gledson, 2018; Zimina *et al.,* 2012; Zimina & Pasquire, 2011). Understanding the key factors affecting the ability of commercial actors to participate in CW is important. The study reported in this paper therefore aims to explore these factors focusing on the UK construction industry.

literature review

Concept and meaning of Collaborative Working

Collaborative working (CW) is a typical term used in the construction industry to denote a mutual and beneficial working relationship among stakeholders to deliver a project to the required standard (Mattessich et al, 2001; Xue et al., 2010). Although, in construction CW is often interchanged with partnering, Bresnen & Marshall (2000) argued that partnering entails commitment by organisations to co-operate and achieve common business objectives. This means that partnering is an element of CW. CW is still gaining prominence in the construction industry. It has been increasingly adopted over the last decade to underpin relationships between project participants, transparency, and cooperation, instead of operating based on contractual formulations (Dagenais, 2007). According to Mattessich and Monsey (1992), collaboration is about mutual and well-

defined relationships entered by two or more organisations to achieve common goals. Schrage (1990 pp20) added that it is a process of shared creation between two or more individuals with complementary skills to interact and create shared goals that none had previously shared or could have come to on their own. Likewise, Grudinschi et al., (2013) explained that it is a concept where autonomous actors from fragmented sectoral systems negotiate to share power and resources, leverage core capabilities and create rules and structures to govern their relationships, with the purpose of addressing multifaceted social concerns, thus create and capture social value. These descriptions indicate that the underlying principles for true collaboration to emerge, requires 'interaction', 'negotiation', and 'shared understanding', among stakeholders to develop and create social value.

However, Akintoye and Main (2007) argued that CW in construction is overshadowed by cultural attitudes and behaviours, where contractors enter CW with the hope of financial gains. This practice is preventing the industry from realising the benefits of CW and shows that contractors only enter such relationships if it is a viable proposition for them and not because of what their competitors are doing. In the same way, Baiden et al., (2006) added that construction projects continue to witness overruns in time and cost, which are due to lack of CW. Challender *et al*., (2014) posits that those perceptions have shifted after the austerity times, and individuals are now responding with a quest for job security, which in turn encourage the risk-averse practices that is affecting the idea of long-term relationships in construction.

Therefore, it appears that CW seems to exist in principle rather than in practice. Most clients and stakeholders have acknowledged its benefits, but the propensity to inculcate it properly is still missing. This is partly because the model put in place to deliver and facilitate construction encourage 'adversarialism' through hierarchical

relationships (Bennett, 2000; Pasquire et al, 2015). According to Erikson and Laan (2007), construction clients now place more emphasis on price and authority and very little on trust, a position that is also taken by the contractors to keep their subcontractors at arm's length. This establishes a form of governance within the system that focus on price and control, despite, the suggestions that CW would help teams develop beyond the transactional perspective of 'buying behaviours.' It seems that for genuine CW to exist, trust and cooperation must thrive among stakeholders (Latham, 1994), to enable organisations restructure and manage their interrelated activities, thus improving communications and shared understanding (Challender et al, 2015).

Therefore, for the context of this study, the meaning of CW can simply be deduced as follow: interaction between two or kore individuals entrench by key principles such as 'trust and transparency', 'cultural consideration' and sense of ownership for the relationship to flourish in practice. It can also be viewed in the context of construction as a community of people working together to achieve common goals – through deep level trust with clear understanding of project values, and a sense of ownership. Thus, these descriptions highlight the need for construction participants to work harmoniously within a community, i.e., designers, contractors, QSs and asset owners, in creating social value and shared understanding.

Commercial Management Practice Within the UK Construction Industry

The Institute of Commercial Management (ICM) defines commercial management as "the identification and development of business opportunities and the profitable management of projects and contracts, from inception to completion''. Generally, commercial management in construction exemplifies the management of a project and its finances, although commercial management practices (CMP) have different connotations. Zimina and Pasquire (2011) remarked, in construction, these practices are

utilised to develop business models and strategize project operations (procurement, contracting, cost planning, money flow, and accounting). According to Lowe and Leiringer (2005) they are widely regarded as 'the management of contracts and commercial issues during project delivery, from inception to completion'. In 2010, the Royal Institute of Chartered Surveyors (RICS) connotes that CMP involves financial management of construction projects, which include regular monitoring and reporting on cash flow and profitability, evaluation and advice on financial implications, as well as taking appropriate management actions. Therefore, this implies that the practice mainly serves as a bridge between traditional project management and organisational relationships, which focuses on business and financial control of on-site construction processes (Perera et al., 2016). Hence, with these functions, i.e., valuing and costing construction projects, CMP evolved into a technical role, which are now generally carried out by cost consultants in the UK.

The functions carried out by 'commercial actors' in the UK setting include supporting activities like costing, design, procurement and other roles that underline the traditional roles of cost consultants (Perera et al., 2016), popularly known as quantity surveyors (QSs). Often, these professionals provide service-based functions (Poon, 2003), that includes managing and administering construction projects. The QSs roles are considered essential in the UK construction industry because of its significance to the economy and the high level of management expertise involved (Wao, 2015). With recent advances in the construction sector, more value adding activities are expected from the QSs, for example, whole life costing, value management, and risk management are now seen as the established roles of QSs that add best value in practice (Ashworth, 2010). But with the increased demands in construction for modernisation, QSs have now been challenged to revitalise their roles and create positive links within 'value-stream-channels' during

project delivery (Mbachu & Frei, 2011). These demands have brought some new perspectives that require QSs to explore other domains in order to strengthen their proficiencies and connections in the global construction landscape (Ashworth et al., 2013; Cunningham, 2014; Thayaparan et al., 2011).

Despite these broad skills-sets, 'commercial actors' in general (QSs, PM's, Construction lawyers) are under tremendous pressure from the UK sector to improve performance and efficiency. The project QSs were criticised for lack of value creation during project proceedings (Ashworth et al., 2013; Farmer, 2016), but this could be linked to their current position within the delivery model, where they are predominantly placed outside the core production team. Accordingly, in this position, they support their normal activity-to-activity functions, which in turn limits the ability they can offer upfront (Olanrewaju & Anahve, 2015). For instance, under the prevailing system, cost advisers are only involved when strategic decisions are taken, e.g. when designers and engineers have been appointed, briefings conducted, and technical drawings reaching completion if not completed (Olanrewaju & Anahve, 2015). Zimina and Pasquire (2011) added that some of these commercial practices do not comply with a different model like the 'lean system' in today's build environment. Seemingly, this fragmentation and lack of integration, has left 'commercial actors' (e.g., QSs, PMs) with a short-term focus to seeks benefits at the expense of CW. This makes it even more difficult to improve project performance, as we continue to see higher concentration on local efficiencies with a decline in trust and mutual relationships among stakeholders (Matthews & Howell, 2005). Brien et al., (2014) reported that the challenges with 'commercial actors' in these contemporary times are multifaceted. Predominantly, they are more service-based oriented, which does not allow them to be proactive in a CW setting. This also means information sharing between them and their counterparts is minimal (Olatunji et al., 2017).

Commercial Practices and Implications for CW

For many years, the UK construction industry has attracted much criticism over poor relationships, a lack of collaborative culture, and the way projects are delivered (Chan, et al., 2004; Egan, 1998; Eriksson et al., 2008; Latham, 1994). This is because organisational, commercial terms and the institutional environments that supports project delivery are protected within the prevailing procurement arrangements. These cover every aspect of setting transactions, from business case identification and funding to the appointment of consultants, contractors and suppliers (Sarhan et al., 2014) reinforced by the procurement routes mostly adopted in the UK are the ones that encourage fragmentation or separate roles with hierarchies and professional dominance (Zimina & Pasquire, 2011). Bennett (2000) described this mentality as where each profession occupies a well-defined position within the hierarchy of powers: architects at the top and their supporting artisans at the bottom. This perception dominates the working relationships throughout construction and the professionals involved rarely challenge this monotonous approach.

With this mind-set, clients and decision makers tends to allocate risks and deploy safeguarding mechanisms in their project-specific investments against exploitation and opportunism, relying on formal governance control means contained within the contractual agreements (Pasquire et al., 2015). In doing so, they seek advice from their lawyers, who are familiar with construction contracts and the laws related to them (QSs); and these consultants are mostly remunerated by professional fees for providing safeguarding means (Sarhan et al., 2014). Eriksson et al., (2008) argued that these consultants are not properly incentivised to adopt the unfamiliar delivery strategies that could potentially be more efficient than the conventional norm, because of 'institutional' pressure (DiMaggio and Powell, 1983; Sarhan et al., 2014). In view of this, scholars have

argued that increasing collaboration amongst project stakeholders would be the required remedy for many of the industry's drawbacks (Eriksson et al., 2008; Sebastian, 2011; Walker et al., 2017; Xue et al., 2010). This suggests that having a system that shapes project organisation and commercial practices to support the overall production process remains crucial (Pekuri et al., 2014), meaning that, procurement and contractual arrangements needs to be optimised and aligned with project operational systems (Sarhan et al., 2018), in order to strengthen commercial relationships.

Despite these concerns, the business delivery model in the UK has been the main route to procure and construct facilities (RICS, 2007). Invariably, it seems dualized and continues to dominate practice (Pasquire et al., 2015; Sarhan et al., 2016), and is often preferred by one-off clients. This division, as illustrated in Figure 1, shows how one stream focuses on actual production (building the project to completion) and the other reveals a separate role that is mainly concerned with overcoming transactional governance, using risk as a criterion to influence construction procurement (Pasquire et al., 2015; Thomsen et al., 2009). This position has been observed to have a profound influence on production, creating barriers that affects CW in construction (Cox & Thompson, 1997; Eriksson & Laan, 2007; Kent and Becerik-Gerber, 2010). The separate stream (cultural/ contractual system), typifies commercial practices, often associated with the roles of QSs, PMs, operating outside the production teams, and advising clients with safeguarding means, which forms a bigger part in the system (Love et al., 2010).

Gottlieb and Haugbølle (2013) observed that the cultural stream institutionalized contractual relationships and project-organizational goals, where rights and duties were defined and maintained. This also supports the rationale of bargaining power amongst cost consultants through commercial governance (Winch, 2010), encouraging so much emphasis on price and contract management. Gottlieb and Haugbølle (2013) further

cautioned that, for collaboration to become embedded in the daily actions and operations of project activity, it is a prerequisite for these institutionalized roles and arrangements in construction to be shaped and transformed by an integrated system. However, Zimina and Pasquire, (2011) added that there are external factors, such as the macroeconomic environment and regulations, market agents, informal institutions, and culture, that continue to exacerbate these commercial practices and behaviours. These misalignments, particularly from a commercial standpoint, add to the low productivity, litigations, cost overruns and adversarial relationships amongst participants within the construction industry (Egan, 1998; Latham, 1994; Thomsen et al., 2009). Indeed, better alignment and incentives for commercial actors (e.g., QSs) in a system like integrated project delivery (IPD) (Law et al., 2016; Lichtig, 2006; Thomsen et al., 2009) might improve the current status quo in the UK setting.

Pasquire et al., (2015) added that most of the commercial issues stems from the 'institutional' pressure exerted on clients by the third parties (consultants and lawyers), who have vested interests in the wider spread of these inefficient strategies. Indeed, clients and decision makers in the conventional system do not seems to comprehend the implications and the misalignment of commercial interests in a collaborative production system, and consequently, these continue to diminish project value and the dynamism of collaboration (Doloi, 2011).

Furthermore, Fellows et al., (2003) examined leadership practices and power sources within QSs in construction projects in Hong Kong, and concluded that, QSs power possession has been related to their position in client and contracting organizations, which they continued to exercise as leadership and power ratio. However, they cautioned that, these professionals often deploy this mechanism to dominate and control through surveillance (routinization of procedures, supervision etc.), activities that are designed to

control the behaviours of members of an organization. The implication of this is that they are formalized in practice through contract mechanisation or deployed for negotiations in pursuit of self-interest. However, this demonstrates a lack of shared understanding of project value among these groups, which echoes the issue of incentives and misalignment, that thus affects collaboration (Zimina et al., 2012). Consequently, this deprives QSs of the ability to optimise end-to-end processes, which is why they often adopt a 'push' approach in which power that is used negatively in a practice that is counter-productive, as often QSs roles are largely onerous, instead of linking with value identification e.g. optimising the whole piece (Bertelsen, 2002). Indeed, this pursuit of power still dominates QSs' activities, and stems from the deficient system (one that typifies transactional characteristics).

These behaviours have shown that the continued cultural resistance to change, as often seen within the UK industry, does have consequential influence on 'commercial actors' and implications for CW. The Egan report (1998) has laid down some excerpts demonstrating parallel thinking that could fit with a collaborative project delivery system. This was also reported by Latham (1996) who suggested the use of relational contracts e.g., NEC3. The development of a collaborative agreement produced by Construction Excellence are a step towards an Integrated project Delivery (IPD) approach. Equally, Mosey in 2000 developed partnered contracts that in many ways resembles the IPD agreement (PPC2000). Yet, over the years, we continue to see the use of traditional project delivery approaches and procurement protocols that have not comprehensively improved performance in the UK industry (Baiden, 2006) nor aligned commercial interest in the system. Theory suggests that fragmented teams and the hierarchical arrangements, which form various sub-layers of parties, yet bounded by traditional cultures, preventing radical change in the construction industry (Payne et al, 2003; Akintan et al., 2013). As

such, the need to conduct a study that evidences the decline in CW from 'commercial actors', and identifies the factors driving their behaviours in construction practices remains critical.

Research Methodology

Through a literature review, a number of commercial practices with implications to CW were identified (Figure 1). Multiple case study was chosen as the main research method for two reasons, as follows: (1) its suitability to address the how and what questions (e.g., how commercial actors behave in CW practices and what are the factors that influence their behaviours) and the influence of the social context; (2) it provides opportunities to investigate in-depth (Pratt 2009; Yin 2009) through qualitative data over sufficiently long periods of time, that would clarify key aspects of pivotal practices (Miles and Huberman 1994). This line of inquiry informs the research strategy and the data collection technique. Robson (2002) asserts that "the flexibility of case study lends itself particularly well to exploration", hence identifying various themes relevant to the problem particularly suited for this study.

Case Selection and Description of Case Studies

There were two main criteria for selecting the multiple case-studies, which includes: (1) the study focusing on 'commercial actors' and their relationships in CW practices, hence cases were sought where 'commercial actors' are integrated in an enterprise delivery model; (2) the cases are adopting CW values that cut across the project teams to allow opportunities for directly observing key personnel, conducting interviews and reviewing their project documentation. The three cases involved the construction of water and rail infrastructures (Table 5). All the projects are from a public client and were procured through alliancing and joint venture arrangements. The case studies were coded as

follows: case study project alpha (CSPA), case study project beta (CSPB), and case study project gamma (CSPG), which are referred to as alpha, beta and gamma respectively. The cases were coded mainly for the purpose of confidentiality. Table 1 shows the distribution of participants interviewed across the cases.

Data Collection

Research data were collected through multiple sources of evidence to improve the quality of findings, analysis and conclusions (Yin, 2009), thus, three kinds of evidence were utilized in this study, as follows: (1) direct observations, (2) semi-structured interviews with stakeholders which is in line with the observation of Ghauri and Gronhaug (2002); Bryman (2015) and DiCicco-Bloom and Crabtree (2006); and (3) document studies. Overall, 23 participants across three organisations were recruited with experiences ranging between 15 to 30 years. Although, the issue of representation in field research is still debated (Steinberg 2010, and Baker and Edwards (2012); However, their combined personal experiences of the participants in CW practices were extensive making their responses more credible.

The study adopts purposive sampling method in selecting the cases. Bryman (2012) maintained that this allowed researchers to choose case(s) that can answer particular question(s). For example, one of the criteria for the case study selection was that the companies must have adopted integrated and CW values that cut across project teams and supply chain groups (SCGs). Some of the participants interviewed include client, directors (commercial, alliance & procurement), designers, contractors, cost consultants, estimators, lean practitioners, and suppliers. The author focused on the interrelationships and commercial behaviours amongst these groups. Table 5 illustrates the characteristics of the cases studied.

Direct Observations

Collecting information from observation before interviews has been described as a good practice as it can provide valuable insight on the questions to be asked during interviews (Alvesson, 2011). Thus, three design and costing workshops and two construction meetings were observed. Prior to observing the workshops, some preliminary information regarding the organisations and the objectives of each project, along with their costing and design documentation, were collected through email communication. The information collected was used to evaluate the project attributes i.e., participants roles, nature of works, mode of partners & supply chain selection, contract conditions and CW activities. During the observation, a qualitative approach was utilized i.e., the events were recorded for further analysis (Stake, 1995). As a result, filed notes from each workshops and meetings were produced describing the activities and interrelationships amongst the participants and the authors remarks about them.

Interview Process

The importance of interview techniques in a qualitative study cannot be overemphasized. The interview process in this study was based on a structured guide, designed for conducting field research (Kvale and Brinkmann, 2009). These are all associated with exploratory studies, where the objective is to understand in-depth inferences and meaning ascribed to findings (Fellows & Lui, 2008; Sanders et al, 2012). Participants in each case were interviewed in two rounds of interview (23 in total). The interview protocol consisted of two sections with questions directed to the participants regarding commercial practices and their experiences and knowledge of CW on projects. From the outset, the researcher sent an invitation/consent letter for participation, where several participants i.e., contractors, consultants etc. were recruited. The invitation sheet introduced the research aim and the importance of the participant's contribution to the research. The

designed protocol was sent to the participant's organisations beforehand, to familiarise themselves with the questions and the interview guide. All the interviews lasted an average of one hour and were recorded with the permission of the interviewee. In accordance with ethical guidelines anonymity was assured. This is important, as safeguarding the confidentiality of the participants, increases the confidence of the respondents in the process that further supports quality responses from them (Naoum, 2013). To increase the reliability, all interviews were tape-recorded, and case study protocols were constructed (Yin, 2009).

Document Studies

Costing and design documentation and collaborative arrangements were studied continuously throughout the cases. Costing activities involving commercial actors within the cases were emailed to the author after their workshops. Together with interview data, documentary materials were used to examine in detail commercial management processes in each project and how CW relationships were maintained.

Data Analysis

Sampling of interview respondents

The Interview participants were selected based on their ability to provide relevant information that address the problem under investigation. This is important, as Creswell (2013) emphasised on the need to recruit participants that are willing to share their knowledge relative to the research. In view of this, the participants were purposively selected, complemented by the snowballing technique. The appropriateness of these techniques has been highlighted by Sanders *et al.* (2012). Thus, combining snowballing and purposive techniques offered the chance to achieve consistency for the researcher between the stakeholders accessed through referrals and those that were purposively

selected. This also allow the researcher to consider those who qualify to participate in the study. For instance, to capture a holistic view on commercial practices in the UK construction industry, purposive sampling was used to select key stakeholders. This included project managers, designers, commercial directors, QSs, and contractors as indicated in Table 1 below.

Data Analysis Approach

Scholars have generally concluded that there is no single method for analysing qualitative data (as commonly used in exploratory studies), simply because the data type and the researcher's creativity often prevails (Henn *et al.,* 2006; Berg and Lune, 2014). Bryman (2012) observed that the principles of inductive, thematic analysis and coding processes are commonly used to analyse qualitative data. Thus, the study's transcribed interview procedure, followed steps 1 - 6 of the thematic analytic principles of (Braun and Clarke, (2006) shown in Figure 2.

The unit of analysis in a case study research consists of individuals, groups, an organisation, or an event (Darke *et al.,*1998; Yin, 2014). Therefore, in this study the unit of analysis was the multidisciplinary organisations. Each case was analysed using costing and design process documentation and CW arrangements, interview transcriptions, and observation notes. Besides, the multidisciplinary environment is presumably a setting where commercial relationships are aligned with the rest of the production team. As such, this study considered it as the 'focal-lens' to investigate 'commercial actors' and the emerging challenges to CW.

First, within case analysis was carried out exploring the unique pattern of each case (Eisenhardt 1989b). The organisation of CW within activities during design and costing process was analysed, which is valuable for not only explaining the process, but also

reflecting upon the underlyning factors that affect commercial group and their relationships with the project team (Yin, 2009). Hence, this technique was utilized to explore how members of the commercial group contribute in value creation; how they address risk attitudes with supply chain groups and their overall views on collaboration in construction. After this, a cross-case analysis was utilized to examine the similarities in and differences among the cases. For this purpose, the data were organised in matrices (Miles and Huberman, 1994). The matric included key factors influencing commercial behaviours in CW and the professional related drivers on the factors identified.

Adopted steps for thematic analysis and coding process

The study adopted the principal steps developed for thematic analysis from Braun and Clarke (2006), which entails: familiarising oneself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing a report. During the initial steps, the interview data were coded to identify important information relevant to the research question. While some of the codes represented the early extracts from the interview transcripts, others originate from the literature combining to form the overall codes. As the process developed, the researcher took an iterative path, and revisited the codes several times to ensure that the problem was narrowed down to the most important ones subsequently used throughout the data analysis process (Kim and Andersen, 2012). Further into step 3, the ideas of themes representing coded extracts, started to emerge. The whole process was supported by CAQDAS also known as Nvivo 12, with features that assist in maintaining the relationship between the extracts and the identified codes (Eker and Zimmermann, 2016). The process continued with categorising and aggregating the coded extracts into refined themes as described by Braun and Clarke (2006). This involves examining codes to assess their fit with defined themes and ensuring the themes reflected the research questions.

The sub-themes that coincided with similar concepts were linked to each other to form a candidate theme.

Results and Discussion

Results

Table 2 presents the results from the three case study findings on 'commercial actors' and the factors affecting CW in practice. These were analysed across the cases, which revealed three common driving themes. Several factors emerged during the data analysis process, and were categorised based on three candidate themes i.e., transaction cost economic influence, the prevailing construction model influence, and professional related drivers. All themes emerged from following steps 1- 3 of the coding process adapted from Braun and Clarke, (2006).

Identifying key factors influencing 'commercial actors' in CW

After combining the results in Table 2 and the analysed occurring themes in Table 3, the key factors on which the boundary of this research was established became apparent. Table 4 below presents the key factors influencing commercial practices.

Discussion of Results

The result analysis has yielded empirical evidence which emanate within the UK context revealing significant factors that are influential on 'commercial actors' as follows:

Professional Related Drivers

This centres on what drives consultants, in particular QSs, and how their trainings and backgrounds affect CW. Under this, there are other elements such as: vested interest in professional roles, commercial backgrounds and training, and client's perceptions of

consultants among others.

Commercial Backgrounds and Training

Some of the respondents were of the view that commercial practices in multidisciplinary settings are hindering CW arrangements. When asked on how, a senior director stated that:

> "Commercial teams often behave around the contract with the need to protect an organisation/client at all costs, which stems from traditional QSs trainings, where they perceive that the only way to maintain profitability is through a constant aggressive stance, which is dictated by the market they came from conflicting with the business model." [CSPA, SD_01]
>
> Another respondent also lamented on this saying: "I think some of our QSs comes with such backgrounds, I mean you can see it on their CV's projecting how they save claims, monies in previous jobs which in turn affect their behaviours even in this environment, which also transfers into how they manage our SCG." [CSPA, PD]

This demonstrates commercial behaviours, which are inspired by the 'institutionalised' factors and professional related affiliation that promotes safeguarding practices in the construction industry (Pasquire et al., 2015). Accordingly, these practices incite all sorts of opportunistic behaviours, even within a multidisciplinary setting. Arguably, this also influences the prescriptive roles of commercial actors (i.e., interpreting contracts) with a bounded culture to protect client/organisation at all costs. Perhaps, a lack of knowledge or shared understanding, as well as some of the perceptions of traditional clients on commercial actors, are contributing to these behaviours in practice (Sarhan, et al, 2019). Consequently, this view has brought in a short-term mentality and rigid mind-set (win-lose mentality) within commercial practices that continues to affect their behaviours in CW programmes (Eriksson and Laan, 2007).

Vested Interest on Professional Roles

The interview analysis discovered that 'vested interest' is a prevalent norm in practice and common amongst PQS and CQS, especially in activities that relates to costing and risk management in construction. This is significant barrier to commercial actors, discouraging efforts to collaborate in projects. One of the respondents commented:

> "There is massive issue of trust & transparency among the two streams because of QSs presumptions and self-interest, it's a huge barrier, as everyone is trying to protect their own parent companies even at the expense of the team and the project'' [CSPA DM].

Previous studies have identified that this mentality emerged in construction because of strong absence of relational norms and fragmentation (Pasquire et al., 2015). Accordingly, this offers little incentive for QSs to collaborate in practice, instead it harbours and entrench wastefulness in various processes across boundaries through opportunism, unnecessary premiums, claims and disputes. The manifestation of this indicates a strain in commercial practices and hence, the need to discard these and support industry-wide collaboration.

Clients' Perceptions of Cost Consultants

The study revealed that QSs roles/competencies are generally underutilized and used traditionally where its suites clients and employers. Thus, the more this situation continues, the more it hinders commercial actors from participating in CW. More so, because clients perceives that the roles of QSs is to settle commercial friction between contracting parties creating a barrier to improving practice. Some of the respondents observed saying:

> "Traditionally, where clients decide to buy designs, multiple number of QSs are engage to fight battles with contractors, and these QSs comes in with different objectives and agenda into the project" [CSPG CO_01].

Evidently, this means that clients prefer to pay significant fees to safeguard their interests and provide compensation mechanisms in anticipation of a failure in project outcomes rather than invest more in processes to ensure desired outcomes are achieved. Indeed, it seems the practices involved in these safeguarding actions are not only unable to contribute to delivering the project outcomes but may even act against them. In order words, clients are paying for professionals who cannot guarantee the project outcomes, and part of whose roles and expectations are to get more people (QSs) for safeguarding purposes. This was observed by another respondent:

> "After we're employed by the client, within the early days we get more pressure usually within 6 months to get in more people, and from there our objectives and agenda becomes different with the overall project goal" [CSPG SQs_01].

This indicates how clients view the QS role in construction, which arguably typifies their behaviours when it comes to CW in construction. Indeed, this mentality detaches QSs from collaboration in practice (Mbachu, 2009). Additionally, they're not part of the core production team or linked with the value stream in a project, but instead confined to service-based roles or to subduing commercial adversaries between clients and contracting parties. It could also be the reason why QSs are reluctant to take risks in projects or be assessed based on a collective performance, but rather they preferred to be paid on the cost-plus-fee basis (Frei, 2010). Customarily, these consultants are generally assessed based on how they are utilised in projects rather than valued based on their performance and ability to collaborate effectively.

These factors exert negative pressure on CW; for example, the role of cost consultants is

too prescriptive and rigid, mostly confined by custom and practice rather than the interests of the project. Thus, during a tender process, the QSs' point of view is generally to read, understand and confirm the brief, likewise their costing activities become affirming rather than contesting for best value options. This epitomises how they are employed, largely to inform an intelligent client, thus reluctant to challenge their prescriptive roles, and limiting their input into CW. In addition, the fact that cost consultants are generally assessed based on how they are utilised in projects, instead of being valued according to their performance, perpetuates their disinterested view of collaboration. This also feeds into how clients perceive the role of QSs, where they traditionally engage them to settle commercial disputes. Regardless of the environment, they still conform to conventional protocols, customs and practice, maximising their positions and fees.

Transaction Cost Economic Influence (TCE)

TCE conceptualises 'behavioural uncertainty' as the amount of difficulty associated with monitoring and evaluating the performance of the exchange partners against established contractual agreements (Williamson, 1985). This relates to safeguarding issues with commercial governance, where clients and decision makers in construction often conform to the "buy it'' type governance using contractual instruments, whilst transactions and performance are evaluated through stringent conditions agreed in advance. (Sarhan *et al,* 2014). These instruments include the use of standard forms of contracts, disclaimer and privileged clauses of contracts, conventional insurance arrangements, and collateral warranties. This still affects CW with undue influence on commercial actors. Factors under these include: Safeguarding/custom and practice; leadership and bargaining power amongst consultants; balancing standard with innovation etc.

Custom and Practice

Custom and practice is a dominant factor associated with members of the commercial groups in construction. Some of the respondents commented on this, saying:

> "Members of the commercial teams are transforming well here under our model, but how they persist with due diligence, protocols is driving behaviours that continue to show inconsistency especially their working relationships with our SCGs" [CSPA, SD_02].
>
> Another respondent also observed: "Reflecting on their activity-to-activity thinking, commercial teams are still lagging in terms of fully understanding what alliance is, how they should work within a team and being consistent here is a challenge" [CSPB, PM].
>
> Similarly, another interviewee commented that: "Custom and practice are still major factors in terms of how commercial teams operate which is served by a win-lose mentality (zero-sum game theory) behaviour, and we still witness this here. For them, it's simply doing what their roles described, proving their worth to the client" [CSPG, SCM].

These statements indicate that custom and practice are so prevalent not only in traditional environments (where CW is less practiced), but also in multidisciplinary settings (where CW is highly encouraged and practiced). Accordingly, this view creates an adversarial position in practice, which continues to entrench waste in the construction process and delays in the mainstream work (Pasquire *et al.,* 2015). Perhaps, this could also be the reason why clients traditionally use members of these groups through transactional interfaces, instead of aligning their interests with those of the project team (production). Other practical implications associated with this are: misalignment of interest that reveals sub-optimisation (individual activity thinking), and a lack of professionalism that still exists amongst commercial actors representing clients and those on the contracting parties (Fellow et al., 2003).

Leadership and Bargaining Power amongst Consultants

The study discovered that leadership and bargaining power is still an issue associated with QSs and is still lingering within the commercial world, which is also serving as a barrier to CW. For instance, one of the respondents stated that:

> "QSs often sit on the cost and would not share information because for them knowledge is power" [CSPB PD].

This corresponds with the finding of Fellow et al., (2003) which reported that QSs possess power by the nature of their position in client/contractor organizations and exercise it as leadership. However, they cautioned that, QSs deploys this as a mechanism to dominate and control via surveillance (routinization of procedures, supervision etc.), activities, which are designed to control the behaviour of members of an organization. The implication is that; these are formalise in practice via contract mechanisms or employed through negotiations in pursuit of self-interest. Obviously, this means that there is apparent lack of trust and the mind-set to collaborative between QSs and other stakeholders is missing. As most Often, QSs do not necessarily optimise the end-to-end project process, for instance during costing development they still encourage clients to minimise cost in individual packages and include blanket costs as contingencies in their budgets, which they are often reluctant to share the cost information with their counterparts (reference).

Balancing Standard with Innovation

This challenge still remain, where commercial teams struggle to embed innovative ideas during CW. However, because they are not entrenched upfront with the project team, their innovative thoughts go unacknowledged. One of the respondents lamented on this and said:

> "This might be information asymmetry and because we don't speak directly to designers, a lot of the time people don't critique the delivery of most solutions and often these are left unchallenged" [CSPA CM_03].

This indicates that, because of the interface and fragmentation, the commercial team leader can only talk to the PM to pass on new ideas to the designer. However, the designer might argue and stick to what he/she knows, and the PM would not know otherwise or would not be able to test the true legitimacy of that claim. Because the designer is looking at maximising eloquent solution and the commercial team comes from an efficiency perspective better integration early in the process would benefit outcome. The implication here is that, because they are disconnected and sit outside the production team, the ability for that scheme to take such efficiency ideas on-board remains a challenge. This shows how far distant commercial teams are from the production team compared to designers, despite the efficiency knowledge they possess. Thus, this downplays the idea of knowledge sharing and collaboration (Challender et al., 2014). The researcher asked why new ideas coming from the commercial team aren't considered. The response was that:

> "Part of it is because we are hitting our targets, and because the commercial team comes from the side-lines" [CSPG, CM_05].

This further explains why clients and regulators are hesitant on taking drastic changes as long as they're meeting targets. The idea of continuous improvement and innovation are often ignored during project delivery, this only becomes relevant when things aren't working as planned and the idea of knowledge sharing, and collaboration suddenly spring to mind.

These factors still affect CW with undue influence on commercial actors, for example, bargaining power among consultants sees architects dictating the use of overly prescribed design specifications, and QSs convincing clients to include blanket contingencies in their

budgets, or share information with their counterparts and so on (Laryea and Watermeyer, 2016). Similarly, in the traditional practice, costing is subsumed with erroneous assumptions and normally carried out under pressure; consultants protect their roles through 'secrecy', with budgets fixed even when too little information is available at the outset (Hanid *et al.,* 2011). This creates 'guess-work' and inconsistent decisions managed through risk contingency that provide money to safeguard the parties by concealing waste rather than revealing it and removing it. These all stem from the TCE influence, which acts against CW, increasing commercial pressure and in turn stifling innovation and imposing safeguarding by passing risk down the supply chain and the inclusion of compensation clauses in the contract.

The Prevailing Construction Model Influence

This is defined as the 'institutional' systemic establishment that reinforces traditional procurement protocols, thus encouraging commercial behaviours in practice. Factors under this include inflexible roles of QSs and estimators, a cost driven environment, and excessively bureaucratic roles of commercial actors in project.

Inflexible Roles of QSs/Estimators

An issue revealed from the interviewees was the role played by estimators/QSs during pre-contract cost planning and management. The roles of these professionals were perceived to be prescriptive and rigid, often confine to doing only what they're told to do. Some of the respondents lamented on this saying:

> "During tender process, QSs point of view are generally to read, understand and confirm to the brief, this is also similar in their costing approach, as affirming on what they're being told to do rather than challenging it or advising on what's the best valuable option." [CSPA TM]. "The issue is that they are not seating closely in the project team to influence design, and they are not involved as they should be during

> conceptual stages thus, they wouldn't have any details to comment on."[CSPB SD_03].

This epitomised how QSs are employed, largely to inform intelligent clients, thus, reluctant to challenge their prescriptive roles, and this limits their input in collaborative relationships (Namadi *et al.,* 2018). More so, because consultants generally are assessed based on how they are utilised in projects instead of being valued according to their performance. Hence, their disinterested view in collaboration. This also feeds into how clients perceived the role of QSs, where they traditionally engage them to settle commercial disputes (Olatunji *et al.,* 2017). Regardless of the environment, they still conform to the conventional protocols, custom and practice, maximising their positions and fees. Arguably, the upfront investment (platform for collaborative dialogue with clients and other stakeholders) could equip them with the necessary skill to be able to have that conversation prior to contract formulation (Olanrewaju and Anahve, 2015). Perhaps, even enable these groups to become more constructive in CW practices.

Excessively Bureaucratic Roles of Commercial Actors in Projects

Another challenge associated with the commercial actors is the way clients persists with strong governance, excessive monthly reporting and maintaining assurance in projects within a multidisciplinary setting. This of course, typifies how commercial teams are used to mount pressure on project delivery groups through bureaucratic processes that often fail to add value to the project or to their respective roles. The PD and the CM observed this, saying:

> "Clients even here have strong governance with the belief that the team needs to be more efficient. But certainly, this puts more pressure on the team, and I think this process should be optimised – allowing commercial teams to contribute more value" [CSPA, PD]. "One of our challenges here is focusing on what we need to do to

> deliver the project, but there is a lot of bureaucratic process, programme reporting and our commercial teams are so entrenched in these activities that sometimes can't give any degree of detail back to the delivery team for them to understand financial implications" [CSPB, CM_04]. A similar view from another respondent was that: "We sometimes witness these onerous requirements on process and justification from the commercial team. But it is more at the tier-2 level, which is seen that they must protect the client, and they've got to be seen finding things in that sense – but at the tier-1 you don't often see that because of the maturity in terms of collaboration" [CSPG, CO_02].

These quotes further illustrate how commercial activities can come into conflicts with business delivery models and CW. This indicates the need for commercial actors to be in a position beyond interpreting contracts but engrossed in value creating channels to align with the overall project goal (Olanrewaju and Anahve, 2015). The heavy reliance on data to measure performance leaves a huge hole through redundant monthly reporting processes that arguably could be better balanced by the project teams themselves. These persisting roles, especially from commercial perspectives, prevents the understanding of efficient 'flow' and 'value' channels in construction processes, as their competencies are continuously under-utilized – hence, the continued escalation of costs and time overruns in projects (Doloi, 2011).

Cost-driven Environment

The approach to target costing and risk management practices are often not transparent within the prevailing system, which continues to reveal varying perspectives from both client and the contracting parties. One of the contractors stated this:

> "In every 5% increase we lose 20% of our cost, in a TC of £120m, the client gets 80% of the cost spend, which means if we spend over, we get punish heavily and if we spend under, we get little compensation. The contractor further adds that we share the pain, but the gain isn't equal, I would say somewhat 80-20 in favour of the client. On the current scheme, we've bid and negotiate for TC, but the client later decides

> to cut 10% from the TC, after 3 months of negotiation we later agreed to proceed - but we know deep down that were going to find ways to claim the 10% back". [CSPG CO_01].

Evidently, this typifies why negative behaviour persist stemming from the prevailing risk-averse environment and external influences (regulators, stakeholders etc.) in practice (Zimina *et al.,* 2012). As revealed from the participants, these impacts exert pressure on project teams, which eventually spread across boundaries inciting all sort of opportunistic behaviours right from the start. This also confirms the old clichés in construction (risks are transferred to those with least power or ability to manage it), yet without proper incentives to spur innovation or support CW relationships. In the same way, this indicates how narrow collaborative culture is, as the environment is incessantly driven by price (Zimina *et al.,* 2012). Moreover, CW relationships are still overwhelmed by certain contractual clauses, which promote legal concerns among contractors and SCGs (Common *et al.,* 2000; Alarcon *et al.,* 2002; Farmer, 2016). Hence, the relentless opportunistic behaviours in practice.

The prevailing model has been fragmented and is typified with a 'survivalist' mentality where each professional occupies a well-defined position within the hierarchy of powers: architects at the top and their supporting artisans at the bottom (Bennett, 2000; Farmer, 2016). This mentality allows 'commercial actors' in both traditional and multidisciplinary settings to persist with due diligence that remain bounded by the rationality of protecting themselves and their clients at all costs. The implication is that these actors continue to exhibit 'win-lose' mentality at the expense of CW. Invariably, this encourages gaming of tender activities, which also inspire opportunistic behaviours in practice (Schöttle and Gehbauer, 2013). Consequently, these practices leave cost consultants disengaged from collaboration in projects.

Conclusion

Majority of the respondents felt that CW offers significant benefits in construction. However, many also believed that most of the challenges to successful implementation were 'institutional' and commercially related. Thus, understanding some of the key factors driving commercial behaviours is paramount to achieving a fully-fledge industry-wide CW. The study was conducted to understand these key factors within the UK construction sector. The main factors driving commercial behaviours detrimental to CW included commercial background and training, custom and practice, misaligned interests in projects, conventional procurement protocols, cost-driven environment, clients' perceptions of consultants, and lack of cross-functional integration.

Custom and practice is one of the factors that still exist within the cultural system, linked with commercial activities, which continue to stifle CW through transactional behaviours around contracts, over-persistence on due diligence to maintain client profitability at all costs. As such, the recurrence of these in a collaborative setting shows that CW is still patchy, and these commercial behaviours would continue to stifle industry reforms.

Similarly, onerous and excessive bureaucratic functions and clients' perceptions of consultants were factors seen to be consisted in all the cases studied. The influence of these indicates that 'commercial actors' still mount pressure on project team members via protocols or validation exercises (these are client's perception of consultants roles). Although some of these routinisations are designed to control behaviours in projects, but they are flawed and formalised in practice – which leave a huge gap through redundant monthly routinisation processes that arguably would be better managed by the project team members themselves. Consequently, these routines do not add value in projects but encourage adversarial relationships in project environment.

The study concludes that the aforementioned factors are hence the reasons why commercial actors within the prevailing system are hesitant to collaborate or support CW efforts. Noticeably, within the deficient system, they are engaged differently and at different times, which is why they continue to lean towards their accustomed behaviours. Some of these behaviours were also seen in multidisciplinary settings. Hence, this implies that, without aligning commercial actors in production domains, most of the barriers found to unsettle collaboration would remain, regardless of the environment.

The study provides some theoretical and practical contributions insight on factors that influenced 'commercial actors' and how they are impeding CW. From a theoretical standpoint, the study revealed the disconnect and lack of CW particularly in commercial functions (costing & design) from 'collaborative production system' within the UK construction industry. Practically, the study provides a view on how fragmented the role of commercial actors are within the prevailing UK business delivery model, which continues to deter efforts on transformational change in the industry.

Research Limitation

The identification of key factors influencing commercial actors and their behaviours did not sufficiently cover trust and risk dimensions as incentives to CW, establishing this could provide more insight and improvement to the fully-fledged CW in the industry. The study was undertaken with three large UK multidisciplinary organisations that have started adopting collaborative practices. Findings from this study can therefore not be generalisable throughout the wider UK construction industry. Application of findings would have to be restricted to cases that bear similarities to those reported in this study.

Recommendation for further studies

Given the increased demand by the UK government for modernisation, sustainable project delivery, and lately aligning commercial interests in an enterprise model in construction, future studies are recommended to conduct an action research on factors that would motivate members of the commercial groups in 'collaborative production system' within the UK construction industry and relate it to this study's findings. This could provide a clear picture of the prerequisites for achieving commercial alignment with greater success at the beginning of projects and at appropriate interim milestones.

References

Akintan, O. A., Morledge, R., Akintan, O. A., & Morledge, R. (2013). Improving the Collaboration between Main Contractors and Subcontractors within Traditional Construction Procurement. Journal of Construction Engineering, 2013, 1–11. https://doi.org/10.1155/2013/281236

Alvesson, M. (2011). Interpreting interviews, Sage, London.

Ashworth, A. (2010). Cost studies of buildings (5th Editio). England: Pearson Education Limited.

Ashworth, Allan, Hogg, K., & Higgs, C. (2013). Willis's Practice and Procedure for the Quantity Surveyor. Retrieved from https://books.google.com/books?id=nJwSZ8BeDcsC&pgis=1

Baiden, B. K., Price, A. D. F., & Dainty, A. R. J. (2006). The extent of team integration within construction projects. International Journal of Project Management, 24(1), 13–23. https://doi.org/10.1016/j.ijproman.2005.05.001

Bashir, A. M., Suresh, S., Oloke, D. A., Proverbs, D. G., & Gameson, R. (2015). Overcoming the Challenges facing Lean Construction Practice in the UK Contracting Organizations. International Journal of Architecture, Engineering and Construction, 4(1), 10–18. https://doi.org/10.7492/IJAEC.2015.002

Bennett, J. (2000). Construction – The Third Way, Managing Cooperation and Competition in Construction. Butterworth-Heinemann, Burlington, MA.

Bertelsen, S. (2002). Bridging the Gaps – Towards a Comprehensive Understanding of Lean Construction. Iglc 10, 1–13.

Brien, P. O., Mbachu, J., & Lomax, S. (2014). Current and Future Challenges Facing New Zealand Quantity Surveyors : Priority Issues and Potential. 1829.

Baker, S. & Edwards, R. (2012). How many qualitative interviews is enough? Expert voices and early career reflections on sampling and cases in qualitative research. Nat Centre Research Methods Review Paper.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3, 77-101.

Bryman, A. (2012). Social research methods. Oxford university press.

Bryman, A. (2015). Business research methods / by Alan Bryman and Emma Bell, Oxford, Oxford : OUP.

Buetow, S. (2010). Thematic Analysis and Its Reconceptualization as 'Saliency Analysis'. Journal of Health Services Research & Policy, 15, 123-125.

Challender, Jason, Farrell, P., & Sherratt, F. (2016). Effects of an economic downturn on construction partnering. Management, Procurement and Law, 169(MP4), 159–167. https://doi.org/10.1680/jmapl.15.00033

Creswell, J. W. (2013). Qualitative inquiry & research design : Choosing among five approaches / by John W. Creswell, Los Angeles, Calif., Los Angeles, Calif.: SAGE.

Chan, A. P. C., Chan, D. W. M., Chiang, Y. H., Tang, B. S., Chan, E. H. W., & Ho, K. S. K. (2004). Exploring Critical Success Factors for Partnering in Construction Projects. Journal of Construction Engineering and Management, 130(2), 188–198. https://doi.org/10.1061/(ASCE)0733-9364(2004)130:2(188)

Common, G., Johansen, E., & Greenwood, D. (2000). A survey of the take-up of lean concepts among UK construction companies. In Proceedings of the 8th International Group for Lean Construction Annual Conference. Brighton, United Kingdom.

Dicicco-Bloom, B. & Crabtree, B. F. (2006). The qualitative research interview. Medical education, 40,314-321.

DiMaggio, P.J., & Powell, W. W. (1983). 'The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields.' American Sociological Review, 48(2), 147–160.

Doloi, H. K. (2011). Understanding stakeholders' perspective of cost estimation in project management. International Journal of Project Management, 29(5), 622–636. https://doi.org/10.1016/j.ijproman.2010.06.001

Eisenhardt, K. (1989b). "Building theories from case study research." Acad. Manage. Rev., 14(4), 532–550.

Egan, J. (1998). Rethinking Construction: Report of the Construction Task Force.

Eriksson, P. E., & Laan, A. (2007). Procurement effects on trust and control in client-contractor relationships. *Engineering, Construction and Architectural Management*, *14*(4), 387–399. http://doi.org/10.1108/09699980710760694

Eker, S. & Zimmermann, N. (2016). Using Textual Data in System Dynamics Model Conceptualization. Systems, 4, 28.

Farmer (2016). The Farmer Review of the UK Construction Labour Model: Modernise or Die. Mark Farmer, Founding Director and CEO, Cast Consultancy. Published

by the Construction Leadership Council (CLC).www.constructionleadershipcouncil.co.uk

Fellows, R., Liu, A., & Fong, C. M. (2003). Leadership style and power relations in quantity surveying in Hong Kong. Construction Management and Economics, 21(8), 809–818. https://doi.org/10.1080/0144619032000174521

Fischer M., Ashcraft H., Reed D., and K. A. (2017). Integrating Project Delivery. Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Ghassemi, R., & Becerik-Gerber, B. (2011). Transitioning to Integrated Project Delivery: Potential barriers and lessons learned. Lean Construction Journal, 2011(January 2011), 32–52.

Ghauri & Gronhaug (2002). Research methods in business studies : a practical guide / by Pervez N. Ghauri and Kjell Gronhaug, Prentice Hall.

Gottlieb, S. C., & Haugbølle, K. (2013). Contradictions and collaboration: Partnering in-between systems of production, values and interests. Construction Management and Economics, 31(2), 119–134. https://doi.org/10.1080/01446193.2012.756141

Hanid, M., Siriwardena, M., & Koskela, L. (2011). What are the big issues in cost management? RICS Construction and Property …, 1–10. Retrieved from http://vbn.aau.dk/files/65750085/COBRA_proceedings.pdf#page=738

ICE (2018). Insittute of Civil Engineers: P13 Commercial Hnadbook. *Published May 2018.*

Kehily, D., & Underwood, J. (2017). Embedding life cycle costing in 5D BIM. Journal of Information Technology in Construction, 22, 145–167.

Law, D. B. L., Perlberg, B., & Darrington, J. (2016). Webinar : State of the Art in IPD Contracting.

Laryea, Samuel, & Watermeyer, R. (2016). Early contractor involvement in framework contracts. Proceedings of the Institution of Civil Engineers: Management, Procurement and Law, 169(MP1), 4–16. https://doi.org/10.1680/jmapl.15.00012

Lichtig, W. A. (2006). The Integrated Agreement for Lean Project Delivery. 26(3), 1–8.

Loosemore, M., 2016. Social procurement in UK construction projects. International journal of project management, 34 (2), 133–144.

Love, P. E. D., Davis, P. R., Ellis, J. M., & Cheung, S. O. (2010). A systemic view of dispute causation. International Journal of Managing Projects in Business, 3(December 2015), 661–680. https://doi.org/10.1108/17538371011076109

Love, P. E. D., Zhou, J., Edwards, D. J., Irani, Z., & Sing, C. P. (2017). Off the rails: The cost performance of infrastructure rail projects. *Transportation Research Part A: Policy and Practice*, *99*, 14–29. http://doi.org/10.1016/j.tra.2017.02.008

Lowe, D. J., & Leiringer, R. (2005). Commercial management in project-based organisations. Journal of Financial Management of Property and Construction, 10(1), 3–18. https://doi.org/10.1108/13664380580001060

Matthews, O., & Howell, G. a. (2005). Integrated Project Delivery: An Example of Relational Contracting. Lean Construction Journal, 2(April), 46–61.

Mbachu, A., & Frei, M. (2011). Diagnosing the strategic health of an organization from SWOT analysis results: Case study of the Australasian cost management profession. Construction Management and Economics, 29(3), 287–303. https://doi.org/10.1080/01446193.2010.547865

Miles, M.B. and Huberman, A.M. (1994). Qualitative data analysis: An expanded sourcebook. Sage Publications, Incorporated.

Namadi., Pasquire C., and Manu E (2018). 'Evaluating Why Quantity Surveyors Conflict with Collaborative Project Delivery System.' In: Proc. 26th Ann. Conf. of the Int'l. Group for Lean Construction, Chennai, India, 18-20 Jul 2018. pp 1272-1282.

Nicolini, D., Tomkins, C., Holti, R., Oldman, A., & Smalley, M. (2000). Can Target Costing and Whole Life Costing be Applied in the Construction Industry?: Evidence from Two Case Studies. British Journal of Management, 11(4), 303–324. https://doi.org/10.1111/1467-8551.00175

Olanrewaju, A., & Anahve, P. J. (2015). Duties and Responsibilities of Quantity Surveyors in the Procurement of Building Services Engineering. Procedia Engineering, 123, 352–360. https://doi.org/10.1016/j.proeng.2015.10.046

Olatunji, S. O., Olawumi, T. O., & Aje, I. O. (2017). Rethinking Partnering among Quantity-Surveying Firms in Nigeria. Journal of Construction Engineering and Management, 143(11), 1–12. https://doi.org/10.1061/(ASCE)CO.1943-7862.0001394

Pratt, M. (2009). "For the lack of a boilerplate: Tips on writing up (and reviewing) qualitative research." Acad. Manage. J., 52(5), 856–862.

Pasquire, C., Sarhan, S. and King, A. (2015) 'A Critical Review of the Safeguarding Problem in Construction Procurement: Unpicking the Coherent Current Model',

23rd Annual Conference of the International Group for Lean Construction, 44(0), pp. 309–318. Available at: http://www.iglc.net/papers/details/1163.

Paul, E., & Pasquire, C. (2017). Shared Understanding: The Machine Code of the Social in a Socio-Technical System. 25th Annual Conference of the International Group for Lean Construction, 365–372. Retrieved from https://doi.org/10.24928/2017/0342

Robson, C. (2002). Real world research : a resource for social scientists and practitioner-researchers / by Colin Robson, Blackwell.

Sadreddini, A. (2012). Time for the UK construction industry to become Lean. Proceedings of the ICE - Civil Engineering, 165(5), 28–33. https://doi.org/10.1680/cien.11.00009

Stake, R. (1995). The art of case study research, Sage, Thousand Oaks, CA.

Sarhan, S. (2018). Institutional Waste Within The UK Construction Industry : An Exploratory Study of Nottingham Trent University.

Sarhan, Saad, Pasquire, C., & King, A. (2014). Institutional Waste within the Construction Industry: An Outline. Proceeding IGLC-22, June 2014, Oslo, Norway, 44(0), 895–906. https://doi.org/10.13140/2.1.1471.4569

Sarhan, Saad, Pasquire, C., King, A., & Manu, E. (2018). Institutional Waste within the UK Construction Procurement Context : A Conceptual Framework Conceptualization of Waste in Construction. Engineering Project Organization Journal, 8(January). https://doi.org/10.25219/epoj.2018.00102

Sarhan, Saad, Pasquire, C., Manu, E., & King, A. (2016). Are Tier 1 Contractors Making Their Money Out of Wasteful Procurement Arrangements ? International Group for Lean Construction, 83–92. https://doi.org/10.13140/RG.2.1.1157.5288

Shalpegin, T., Sommer, S. and Wan, Z. (2018) 'Collaborative Prototyping of Alternative Designs Under a Target Costing Scheme', Production and Operations Management, 27(3), pp. 496–515. doi: 10.1111/poms.12811.

Steinberg, W. J. (2010). Statistics alive!, Sage Publications.

Schöttle, A., and Gehbauer, F. (2012). "Incentive systems to support collaboration in construction projects." Proc. of the 20th Ann. Meet. of the IGLC, San Diego, USA.

Smith, P. (2014). BIM & the 5D Project Cost Manager. Procedia - Social and Behavioral Sciences, 119, 475–484. https://doi.org/10.1016/j.sbspro.2014.03.053

Sexton, M. and Barrett, P., 2003. Appropriate innovation in small construction firms. Construction management and economics, 21 (6), 623–633.

Thomsen, C., Darrington, J., Dunne, D., & Lichtig, W. (2009). Managing Integrated Project Delivery. 105.

Walker, D. H. T., Davis, P. R., & Stevenson, A. (2017). Coping with uncertainty and ambiguity through team collaboration in infrastructure projects. International Journal of Project Management, 35(2), 180–1https://doi.org/10.1016/j.ijproman.2016.11.001

Wao, J. O. (2015). Predicting the Future of Quantity Surveying Profession in the Construction Industry. 5(2), 1211–1223.

Winch, G. (2000). 'Institutional reform in British construction: partnering and private finance. Building Research & Information, 28(2), 141–155.

Williamson, O.E., 1985. The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting, NewYork: The Free Press

Yin, R. (2009). Case study research: Design and methods, 4th Ed., Sage, Thousand Oaks, CA.

Yin, R.K., (2014). Case study research: Design and methods. Sage publications.

Zimina, D., Ballard, G., & Pasquire, C. (2012). Target value design: using collaboration and a lean approach to reduce construction cost. *Construction Management and Economics*, *30*(5), 383–398. http://doi.org/10.1080/01446193.2012.676658

Zimina, D., & Pasquire, C. (2011). Tracking the dependencies between companies' commercial behavior and their institutional environment. 19th Annual Conference of the International Group for Lean Construction 2011, IGLC 2011, 434–443. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-84876757204&partnerID=tZOtx3y1

Table. 1 Interview Respondents' Information

S/N	Type of Organization/Code	Interviewee title and Code	Years of Experience
1.	Infrastructure CSPA	Senior Director (SD_01)	25
2.	Infrastructure CSPA	Commercial Manager (CM_01)	27
3.	Infrastructure CSPA	Design Manager (DM)	20
4.	Infrastructure CSPA	Procurement Director (PD)	30
5.	Infrastructure CSPA	Technical Manager (TM)	19
6.	Infrastructure CSPA	Estimating Manager (EM_01)	20
7.	Infrastructure CSPA	Estimator (E)	18
8.	Infrastructure CSPA	Commercial Manager (CM_02)	20
9.	Infrastructure CSPA	Commercial Manager (CM_03)	23
10.	Infrastructure CSPA	Senior Director (SD_02)	20
11	Infrastructure CSPB	Programme Manager (PM)	21
12	Infrastructure CSPB	Process Designer (PD)	19
13	Infrastructure CSPB	Commercial Manager (CM_04)	18
14	Infrastructure CSPB	Senior Director (SD_03)	30
15	Infrastructure CSPB	Quantity Surveyor (QS)	20
16	Construction CSPG	Commercial Manager (CM_05)	22
17	Construction CSPG	Senior QS (SQS_01)	17
18	Construction CSPG	Estimating Manager (EM_02)	18
19	Construction CSPG	Senior QS (SQS_02)	19
20	Construction CSPG	Contractor (CO_01)	20
21	Construction CSPG	Supply Chain Manager (SCM)	24
22	Construction CSPG	Contractor (CO_02)	21

Table 2: Cross-case analysis of factors influencing 'commercial actors' & CW

	CSPA	CSPB	CSPG
Factors influencing 'commercial actor' on CW	Commercial background and training	Siloed roles through individual optimisation	Fragmentation and hierarchical roles
	Custom and practice	Misaligned interest in project	Vested interest on professional roles
	Cultural resistance	Balancing standard with innovation	Balancing standard with innovation
	Misaligned interest	Leadership and bargaining power among consultants	Safeguarding and opportunistic behaviours
	Bureaucratic functions	Poor approach in cost management practices	Inflexible roles of QSs/consultants
	Conventional procurement protocol	Cost-driven environment	Lack of cross-functional integration
	Cost driven environment	Bureaucratic functions	Custom and practice
	Inflexible roles of QSs/consultants	Conventional procurement protocol	Perception of consultants

Table 3: Key factors and influential drivers

	Professional Related Drivers	Transaction Cost Economic Influence	The Prevailing Construction Model
Candidate themes	Commercial Background and Training	Custom and Practice	Inflexible Roles of QSs/Consultants
	Misaligned Interests in Projects	Safeguarding and Opportunistic Behaviours	Bureaucratic functions/Protocols in Projects
	Siloed Roles through Individual Optimization	Balancing Standards with Innovation	Cost-Driven Environment
	Clients' Perceptions of Consultants	Leadership and bargaining Power among Consultants	Fragmentation & Hierarchical Roles
	Vested Interest on Professional Roles	Poor approach in Cost Management Practices	Conventional Procurement Protocols
			Lack of Cross-functional Integration

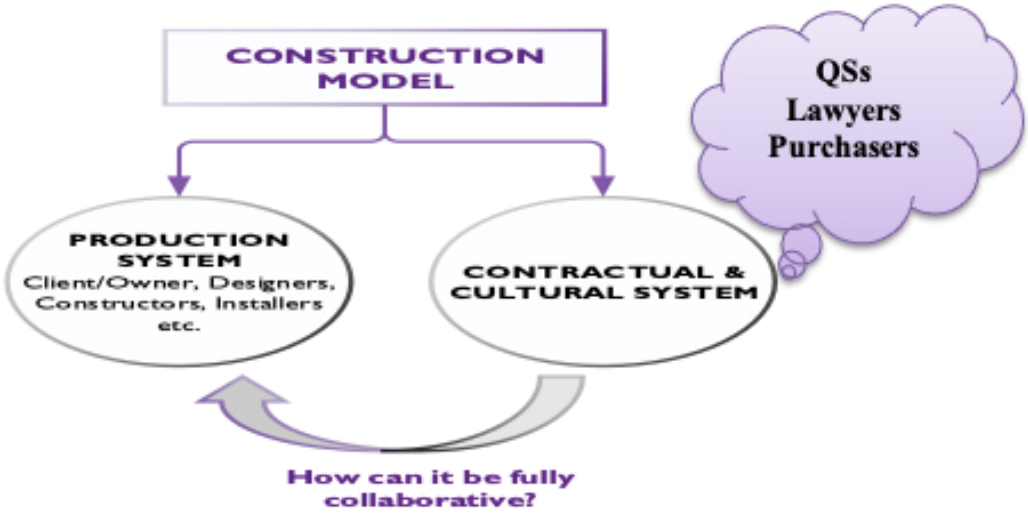

Figure 1: The Prevailing UK Construction Model (Adapted: Gottlieb and Haugbølle, 2013).

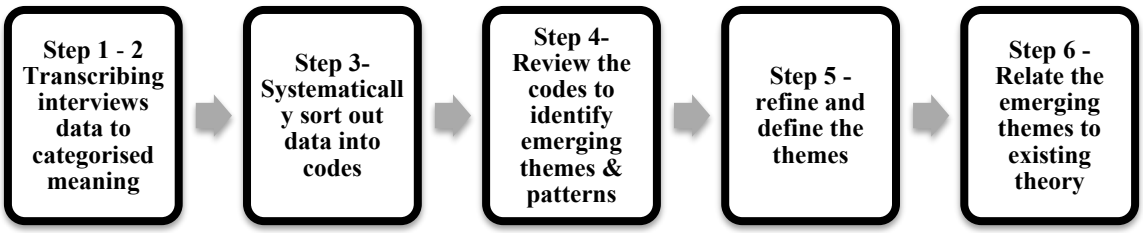

Figure 2: Coding Process Adapted from (Braun and Clarke, 2008)

Table 4: Data Source Across the Three Case Studies

	Case Study A	**Case Study B**	**Case Study G**
Semi-Structured Interviews	(4) directors, (2) commercial managers, (4) QSs/estimators/designers	(3) QSs/estimators/designers, (1) director, (1) commercial manager and a contractor	(4) QSs/estimators/designers, (1) director, (1) commercial manager and a contractor
Documentary Analysis	Documents on financial business case (cost-based information), design & costing delivery processes, procurement & commercial model, cost and risk management guidelines.	Company profile document, supply chain policy documents, project description documents.	Costing & estimating manual cost estimating & project framework (PCF).

Table 5: Characteristics of the Case Studied

Project Attributes	Case study 1	Case study 2	Case study 3
Nature of projects	Infrastructural	Infrastructural	Infrastructural
Location of projects	UK	UK	UK
Nature of works	Design & construction of water recycling treatment plant	Construction of water recycling treatment plant and sewage works	Upgrade of highway to smart motorway btw J19 & 16
Types of clients	Public	Public	Public
Mode of partner selection	Alliance framework	Joint venture framework	Joint venture framework
Proposed duration	60 months	60 months	24 months
Procurement arrangement	Centralised procurement system	Design and Build	Design and Build
Contract sum	£1.2 billion	£200 million	£120 million