

Construction framework process: A Qualitative investigation of behaviour change drivers and project outcomes

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Abstract

Purpose – Construction framework agreements are identified by the UK Government’s Construction Strategy 2025 as an integrated procurement path to improve construction industry efficiency. However, criticisms from industry have arisen from the lack of transparency and incorrect application of such frameworks. This research examines the client and supplier relationships within a framework agreement in order to discover what behaviour change drivers should be applied in the framework process to achieve the desired project outcomes.

Design/methodology/approach – A triangulation approach was adopted. An initial literature review on organisational behaviour and job performance theories was conducted followed by a qualitative expert review survey of client construction managers to confirm the project outcomes desired by public-sector clients and the associated behaviour change drivers. This was followed by a qualitative multiple-case study investigation of eight typical framework projects to form a commonality of views in order to explain the impact of behaviour change drivers on project outcomes.

Findings – Results from both qualitative studies demonstrated that improvements in project outcomes of time, cost, quality, sustainability, and closer relationships can be driven by two sets of behaviour drivers: client organisational behaviour change drivers (setting up incentive and risk-sharing procurement approach, effective communication through development of stronger relationships, and performance monitoring using contract KPIs), and supplier contextual behaviour change drivers (motivating conscientious behaviour and attitude towards self-improvement and innovations, supporting shared culture of providing services aligning with the client needs, promoting learning and development amongst all suppliers, and most importantly providing trust and collaboration to the client).

Research limitations/implications – The investigation was based on an expert review with eight multiple-case studies conducted within the geographical area of England. Further research should be conducted nationwide so that the findings can become more robust and benefit the entire public sector.

Practical implications – It is suggested that framework managers should apply the supplier contextual performance drivers as selection criteria in the procurement process, whilst the client organisational performance drivers should be applied in the whole procurement and construction monitoring process to drive project outcomes aligned with the government construction policy objectives.

Originality – This research demonstrates that the project behaviour of clients and suppliers can be shifted within the construction framework environment to yield the desired project outcomes. This can be achieved by applying the client organisational behaviour drivers and the supplier contextual behaviour change drivers in tandem to optimise the framework process.

Keywords – Construction framework process, Project outcomes, Behaviour change drivers, Expert review survey, Multiple-case study; Public sector

Paper type – Research paper

Introduction

Within the UK, it is estimated that construction frameworks accounted for approximately £29 billion spent on public-sector projects such as housing, schools and hospitals, and infrastructure including highways, railways and waterways in 2021 (Tussell, 2022). The use of frameworks and similar dynamic purchasing systems as a method of procurement of public sector projects has been increasing significantly from around 20% in 2018-2019 to 68% in 2021-2022 when measured as a proportion of contracts by value (Audit Commission, 2023). The use of construction frameworks is recognised by the UK Government’s Construction Playbook

(Cabinet Office, 2022, p.49) which states that *'Frameworks are an efficient method for government to procure public works, goods and services and can provide an opportunity for contracting authorities to access economies of scale. However using frameworks can have negative consequences.'* Construction frameworks need to be applied correctly to achieve the desired outcomes.

Public-sector frameworks were developed under EU Directive 2004/18/EC of the European Parliament for coordination of procedures for the award of public works contracts, public supply contracts and public service contracts. This procurement was then implemented in the UK with successive subsidiary directives by the Public Contracts Regulations 2015. A prime objective of a framework is to provide stronger relationships through longer-term arrangements using engagement with fewer suppliers (Construction Excellence, 2019). As with many other relational project contracting arrangements, such as project partnering, project alliance and integrated project delivery, frameworks have been developed as an effective and efficient production path for improving delivery through collaboration and integration of a project team (Lahdenpera, 2011). A characteristic of a framework agreement is that the relationship between a client and suppliers endures over a period of time, normally four years, theoretically providing a period during which understanding and stronger relationships between participants can be nurtured allowing consistency of overall service rather than the individual isolated performance from single projects. This characteristic makes frameworks particularly suitable for high-risk, high-value, long-term construction and maintenance programmes, such as those found in public-sector building and infrastructure projects (Constructing Excellence, 2019).

A construction framework provides an overarching 'umbrella' contract where projects are separated into individual 'work packages' procured at a call-off stage throughout the period of agreement. Only one major tendering process is required at the 'inclusion into a framework stage' to comply with the EU regulations, which is then followed by the 'call-off' stage which involves a small number of suppliers and hence relatively simple 'mini-competition' procedures. Moreover, the use of standard documentation can greatly reduce transaction costs (Morledge, *et al.*, 2021). A report produced by Construction Excellence (2019) indicates that construction frameworks can change the project behaviour of clients and suppliers: a greater depth of understanding between all participants due to longer and stronger relationships; a higher level of commitment from the client and the supplier, also due to longer and stronger relationships; continuous improvement by the supplier engaging in best practice and the client adopting incentive reward systems.

Although framework agreements generally have received support from central government clients (Business and Enterprise Committee, 2008), they do not have universal acceptance by all parties involved with the construction process. Criticisms arise through incorrect application of a framework, in particular the measures for driving project outcomes. British Airports Authority's framework arrangements expired during 2009/10 and were replaced using elements of traditional tendering encompassing enlarged lists of suppliers effectively mirroring a traditional procurement path (Morgan, 2009). Opponents also question a framework approach and argue that the costs of using complicated and extensive tendering procedures with mini-competitions outweigh any savings made due to lower initial engagement costs. The key research questions are:

- Can construction frameworks achieve the desired benefits for public-sector construction clients?
- If so, how should framework managers change the behaviour of clients and suppliers to drive project outcomes?

Research into the effect on project outcomes has been previously conducted by Lam and Gale (2014) in a single case study of a county council but its scope of research was limited to the use of frameworks for highway maintenance. This study expands the study scope to England and aims:

- To investigate how construction frameworks should be applied to drive behaviour changes in clients and suppliers to ensure successful delivery of the desired project outcomes.

The research objectives are:

- To identify the project outcomes desired by public-sector construction clients in relation to building and civil engineering framework projects.
- To discover what behaviour change drivers should be applied to optimise the framework process to achieve the project outcomes.

The fundamental research outcome of this study is therefore to discover what behaviour change drivers should be considered to enhance the performance outcomes of construction frameworks. In relation to the research significance, the target audience would be the framework managers, clients and suppliers, who will benefit from the results of this study by applying behaviour change drivers in the procurement and construction monitoring process to improve the project outcomes. This research will also benefit the academic community due to the advancement of knowledge in procurement process.

Project outcomes for public-sector construction clients

Traditional discrete procurement for UK construction has been widely criticised as being inefficient and wasteful. The UK Government’s construction strategy calls for an integrated approach to engagement between clients and suppliers (Local Government Association, 2020). Effective frameworks can provide a more integrated solution based upon continuing and closer relationships through selection of a limited number of suppliers. In return for a higher chance of winning work, it is assumed that suppliers will provide higher levels of outcome due to collaboration and also demonstrate continuous improvement in time, cost, quality, social, economic and environmental targets. According to Lam and Gale (2014) and Lam (2017), Local Government Association (2020), Sonnichsen and Clement (2020) and Estate Management Office (2014), project outcomes desired by public-sector construction clients and the operationalised indicators are summarised in **Table 1**.

Table 1.

Project outcomes aligned with the construction policy objectives

Project outcome	Operationalised indicator
Time	framework projects keep to agreed programmes
	framework projects start on time
	framework projects completed on time
Cost	framework projects keep to agreed budgets

	framework projects minimise life cycle costs
Quality	framework projects deliver a functional product with minimal defects
Sustainability	framework projects encourage innovations leading to cost and time savings as a proportion of project totals (economic sustainability)
	framework project projects offer higher standards of health and safety (wellbeing and social sustainability)
	framework projects offer environmental improvements in terms of reduction in carbon emission, water consumption, and waste (environmental sustainability)
Closer relationships with clients	suppliers within a framework are fair, responsive and courteous
	suppliers are more positive in providing services
	suppliers usually get things right the first time
	suppliers respond effectively to client requests

Client organisational behaviour change drivers

A strong link between organisational culture and productivity/performance is well established, being supported through a substantial number of studies from the field of socio-psychological investigation into teams and groups (Zhang and Liu, 2006). Other areas of behavioural research identify progressive stratification of interaction between group culture, group behaviour and group performance (Tellis *et al.*, 2009; Oyewobi, *et al.*, 2016). An examination of groups involved with construction projects by Walker (2015) concluded that ‘*research on the impact of culture on organisational performance is mixed*’. Although Walker cited examples from a range across the cultural spectrum, he could not reach any definitive conclusions. On balance, the review of the project management literature, whilst not providing conclusive evidence between culture and performance, does support that organisational behaviour can affect group performance. How to reorganise and integrate teams, modify award structures, alter how individual performance is evaluated, and good leadership are effective organisational behaviour to improve productivity, as contended by an organisational behaviour theorist.

Within the construction industry, the use of financial pain/gain monetary payments to encourage increased output set against out-turn productivity targets has historically been a popular method of incentive. Bresnen and Marshall (2000) proposed that operational financial incentives coupled with advanced contracting methods could improve both commitment and motivation within projects. In a case study examined by Lam and Gale (2015), it was decided that incentive mechanisms could be linked to key performance indicators (KPIs) enabling focus upon the client project outcomes through financial incentives. The resultant pain or gain could be a purely financial transaction (monetary bonus or deduction) based upon a graduated scale of results, or an improved chance to be either selected or deselected for a future project. To be effective, the case study example was relevant to that particular market – suppliers preferring the chance of winning further work rather than individual project bonuses and the framework agreement reflected this choice.

Lam (2022) examined what KPIs should be applied during the construction phase to monitor and ensure successful project outcomes in sustainable design and construction for development. The results demonstrated that economic, social, environmental and functional

sustainability KPIs are relevant for performance monitoring. The significant impact of KPIs upon project outcomes was also identified by Oyewobi, *et al.* (2016) through regression analysis. Although most KPIs within construction measure the performance of suppliers, Butcher and Sheehan (2010) recognised the role clients play. Clear leadership at the procurement and construction phases are qualities of ‘good clients’ to ensure commitment and inclusion (Cabinet Office, 2020). Such qualities are reinforced through longer relationships afforded by framework procurement methods. Both parties feel a part of a collaborative team and this reinforces the leadership offered by a client.

Based on the arguments of organisational behaviour theory, construction clients should make behaviour changes to improve productivity and drive to achieve the desired project outcomes. The client organisational behaviour changes and operationalised drivers are summarised in **Table 2**.

Table 2.

Client organisational behaviour change drivers

Behaviour change	Operationalised driver
Procurement approach	it is better to have more suppliers in the framework rather than fewer due to competition
	frameworks that use pre-priced schedule of rates provide a better share of risks between client and supplier
	frameworks do improve performance through standard documentation in clear and concise language with clear evaluation procedures
	frameworks establish stronger relationships between suppliers and clients due to longer arrangements
	an extension to the framework is an incentive to gain continued good performance from suppliers
Communication (construction phase)	effective communication is achieved with a framework supplier due to stronger and longer relationships
Incentives (construction phase)	monitoring performance within a framework encourages better outcomes and the ability to win further projects
	publication of performance results creates a culture of driving performance
Performance monitoring KPIs (construction phase)	use of specific KPIs concentrates performance upon the client desired outcomes
	carry out monthly formal and informal site inspections to measure performance is worthwhile and effective
	applying incentives to KPIs is worthwhile and effective

Supplier contextual behaviour change drivers

The job performance theory suggests contextual and task performance are the critical criteria in personnel selection (Masa’deh *et al.*, 2016). Contextual performance refers to the activities that employees carry out to contribute to the social and psychological core of an organisation. It has emerged as an important aspect of an employee's job performance, which is no longer considered to consist strictly of technical performance on a task. Semi-structured interviews

conducted with some of the largest construction clients in the UK determined that the following behaviours, attitudes and culture were contextual performance behaviours prevalent in the service provided by national contractors (Butcher and Sheehan, 2010).

Behaviour: being open about a company’s business strengths and weaknesses set against their peer group; self-improvement without the need for prompting; focusing on innovation and added values with tangible outputs.

Attitudes: maintaining effective two-way communication; exceeding the client and stakeholder expectations; providing consistent communications amongst staff at all levels.

Culture: providing senior management support through attending meetings and discussions for the programme of works; confirming ownership of the programme through commitment of resources at appropriate times; encouraging mutual levels of trust and respect for all; providing cultural alignment with the client needs; supporting shared culture of learning and development amongst all suppliers through regular risk-sharing workshops; understanding what each party’s needs and aligning outcomes to deliver these objectives; providing learning and development opportunities shared among all suppliers and stakeholders.

Lam and Gale (2014) identified from highway maintenance framework projects that suppliers should demonstrate these behaviour changes within a collaborative framework environment in order to provide value for money services to the employer. It is logical to deduce that these contextual performance drivers are applicable to both civil engineering and building construction frameworks as they allow longer and stronger relationships set up between clients and suppliers, which in turn nurture other behaviour changes. The supplier contextual behaviour changes and operationalised drivers are summarised in **Table 3**.

Table 3.

Supplier contextual behaviour change drivers

Behaviour change	Operationalised Driver
Conscientious behaviour and attitude	framework suppliers are open with peers about strength and weakness
	framework suppliers self-improve without the need for prompting
	framework suppliers focus on innovations and added values
	framework suppliers maintain effective two-way communications
	framework suppliers encourage consistent communication at all levels of the construction team
	Framework suppliers provide timely responses and quick reaction times
Culture	framework suppliers encourage effective management and commitment to programme
	framework suppliers provide alignment with the client culture by understanding what they want and deliver what they require
	framework suppliers provide a shared culture of learning and development amongst all suppliers
Trust and collaboration	framework suppliers encourage collaborative behaviour through high levels of trust and respect for the client

Lam and Gale (2023) researched the influencing factors of framework performance but placed emphasis on the use of quantitative approach in the investigation. Although the regression analysis results showed a positive correlation, it is paramount to examine and contain evidence from the real-life projects to discover fundamental causes of the relationships, i.e. what influences the behaviour changes of a client and suppliers in the framework process and how.

Research Methods

The research methods were designed to address the following research objectives:

- To identify the desired project outcomes of civil engineering and building construction frameworks in the public sector.
- To discover what behaviour change drivers should be applied within construction frameworks to achieve the desired project outcomes.

Data collected should represent the public-sector construction frameworks. According to the Office of National Statistics (2020), England accounts for 90% of total construction firms and employees in Great Britain, whilst Wales for 3.9% and Scotland for 6.1%. It is reasonable to deduce that construction statistics from England can reflect the construction industry in Great Britain. In relation to public-sector organisations, there are 343 local authorities (Unitary, County and District) in England in 2018/2019 according to the Local Government Association (2019). The Statista (2022) statistics for 2018/19 show there are a total of 164 universities in the UK and 130 of them are publicly funded universities and university colleges in England. These two unique public-sector organisations formed the basis upon which this research was conducted. Typical civil engineering framework projects examined in this research covered highways, transportation, infrastructure and coastal protection. For building construction frameworks, this study focused on architectural, landscaping, structural engineering and building services engineering works undertaken by the universities. Due to the sheer volume and repetitive nature of these types of works, construction frameworks are often employed to execute these projects in the public sector.

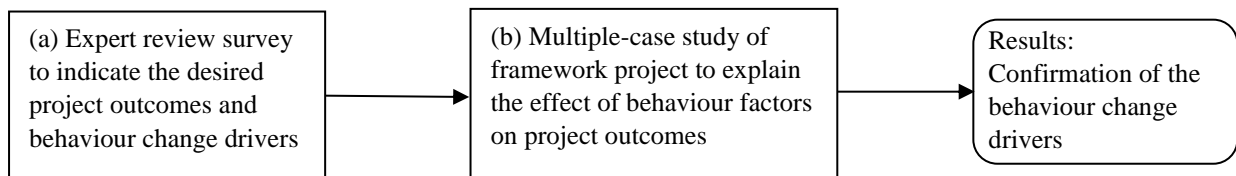
A triangulation approach was adopted to discover the project outcomes and behaviour changes that construction clients and suppliers should make within a construction framework environment. Fellows and Liu (2015) contend that the use of two or more methods to investigate the same phenomenon by triangulation approach can ensure that a study can be undertaken as vigorously as possible to avoid bias and to obtain appropriate amounts of account data. Consequently, a qualitative expert review survey and multiple-case study interviews were employed for this study. A priori qualitative expert review survey was conducted with three senior client managers possessing extensive experience of more than 20 years in managing construction frameworks in the public sector. A proforma was used to collect their expert experience and views to indicate the desired project outcomes and associated behaviour change drivers with which to compile questions for successive semi-structured multiple-case study interviews. An expert review survey is an efficient qualitative research method to explore in-depth and technical knowledge and is frequently used (Meuser and Nagel, 2009; Bogner et al., 2009). The number of expert reviewers tends to be small, ranging from two or three to over 20 experts (Olson, 2010). Three experts with extensive knowledge and practical experience in construction frameworks was felt to provide sufficient data to achieve effective and efficient results.

Following the review, a qualitative multiple-case study was conducted upon three building construction and five civil engineering framework projects using semi-structured interviews to provide explanations and support for the casual relationships between the project outcomes and behaviour change drivers identified. Based on past research experiences, a total number of eight interviews is an acceptable number to achieve data saturation (Farrell and Sunindijo, 2022). Typical case organisations were selected in order to provide a contextual balance. These organisations were chosen according to similarities with asset management responsibilities, types of services and works, procurement routes and procedures, and where the organisation offered performance monitoring and incentives. Within each organisation, a representative building construction or civil engineering framework project was chosen in terms of size, value and scope of work to assist with the explanation of causal relationships between project outcomes and the performance drivers identified. This generally included a public-sector project of probable value between £2 million and £15 million. In addition, the project was recently executed by the organisation and had been deemed successfully concluded in relation to the desired project outcomes. Fellows and Liu (2015) and Yin (2018) advocate that a case study approach can serve to investigate phenomena in a real context and from which rich conclusions can be drawn. According to Yin (2018), multiple case studies allow strong, valuable and reliable evidence and create more convincing results when the findings are supported by various empirical evidence.

The triangulation methodology for this study is summarised in Figure 1 below.

Figure 1:

Triangulation Methodology: Expert Review Survey formed the basis for Multiple-case Study



Source: (a) Meuser and Nagel (2009) and Bogner et al., (2009); (b) Fellows and Liu (2015) and Yin (2018)

The background of the eight case studies together with the breadth of experience of the participants are shown in **Table 4** and **Table 5**.

Table 4.

Multiple-case Study of Building Construction Frameworks - Background of the Cases

Background	Case Study 1	Case Study 2	Case Study 3
Position of the participant and duration of related experience	Head of Built Environment 15+ years' experience	Deputy Director of Estate 25+ years' experience	Estate Quantity Surveyor 20+ years' experience in construction
Authority	County Council	Public university	Public university
Location	South West	London	London

Typical works undertaken	Building construction work	Building construction work	Building construction work
Value of the framework	£5.25Bn	£50M	£30M
Project chosen for this study	Conversion of a care home into a special needs school	Construction of an advanced metal casting centre	Campus enhancement project
Contract period and tender sum	9 months £4M	18 months £5M	15 months £5M

Table 5.

Multiple-case Study of Civil Engineering Frameworks - Background of the Cases

Background	Case Study 4	Case Study 5	Case Study 6	Case Study 7	Case Study 8
Position of the participant and duration of related experience	Construction Manager 20+ years' experience	Chief Engineer 25+ years' experience	Contract Manager 30+ years' experience	Service Manager 25+ years' experience	Design Manager 30+ years' experience
Authority	District Council	County Council	District Council	City Council	Borough Council
Location	South East	South East	South Coast	South East	North West
Typical works undertaken	Civil engineering including coastal	Civil engineering including highways	Civil engineering	Civil engineering	Civil engineering
Value of the framework	£12M	£250M	£25M	£50M	£300M
Project chosen for this study	Coastal protection works	New carriageway	Recycled paving	Highways	Highways
Contract period and tender sum	6 months £2M	12 months £7M	12 months £2M	18 months £7M	12 months £10M

For each case study project, an in-depth qualitative interview was conducted with the senior project manager. All senior project managers had more than 10 years of experience in managing frameworks and 15 to 30 years of experience in construction management. Each interview took approximately 45 minutes, using a semi-structured questionnaire which covered the following themes:

- Project outcomes which were actually achieved by a framework project.
- Behaviour change drivers associated with the project performance of a framework.

The interviews were conducted with the following semi-structured questions relating to the behaviour drivers of project outcomes:

- Project outcome of time: Which factors do you think encourage the case study framework project (a) to keep to agreed programmes, (b) to start on time, and (c) to finish on time?

- Project outcome of cost: Which factors do you think encourage the case study framework project (a) to keep to agreed budgets, and (b) to ensure life cycle costs minimised?
- Project outcome of quality: Which factors do you think encourage the case study framework project (a) to deliver a functional product with a minimum of remedial works.
- Project outcome of sustainability: Which factors do you think encourage the case study framework project (a) to encourage innovations leading to cost / time savings expressed as a proportion of project totals, (b) to offer higher standards of health and safety, and (c) to offer environmental improvements in terms of reduction in carbon emission, water consumption and waste?
- Project outcome of closer relationships: Which factors do you think encourage the case study framework project to ensure participants are treated fairly, responsively and courteously, (b) to ensure that suppliers usually get things right first time, and (c) to ensure that suppliers respond effectively to client's requests?

The project manager responses collated through practical experience on the case study project, along with any supporting documents, were analysed by qualitative content analysis in which cohesive views and experience were drawn from the framework case projects to establish the behaviour change drivers. There were only eight project cases involved so it is possible to conduct a cohesive analysis to draw a commonality of views for explaining the impact of behaviour change drivers on project outcomes. Advanced software such as NVivo is appropriate for researchers to quickly and accurately analyse large amounts of data and uncover underlying themes and therefore was not adopted in this instance. The purpose of the qualitative inquiry sought to discover explanations and support for causal relationships between project outcomes and behaviour change drivers of participants (clients, framework managers, and suppliers) within a framework environment.

Results and Discussion

Qualitative expert review survey

Within the public-sector environment, five project outcomes were identified through a literature review which were supported by the qualitative expert review survey. These project outcomes were time, cost, quality, sustainability and closer relationships (**Table 1**). Client organisational behaviour and supplier contextual behaviour change drivers were also confirmed by the experts to be influential on the project outcomes of construction frameworks (**Tables 2 and 3**).

Qualitative multiple-case study and causal relationships

A content analysis was undertaken to identify common themes arising from the multiple cases and the results are given in **Table 6**. One interesting aspect of correlation involves a parity of results between building and civil engineering frameworks – participants involved with either framework type recognised similar performance drivers for the project outcomes. These results contained explanations regarding causal relationships and identified performance drivers which participants observed affected performance within the framework environment of the cases. These behaviour change drivers were found to be related to the procurement and

construction monitoring process in which the client and the supplier are involved. Explanations of the causal relationships are given in the next two sections.

Table 6.

Behaviour change drivers identified by content analysis of the multiple cases

Project outcome	Behaviour change driver
Time	longer and stronger relationships and teamwork; working as a team to achieve the agreed programme
	performance monitoring using key performance indicators; continuity in workload and good reputation
Cost	staff and company's experience of similar projects within the longer-term framework for the enhancement of design and construction
	teamwork and commitment to keep to the agreed budget; open discussions with the client
Quality	after doing a number of similar projects, the suppliers know which areas to look for to reduce defects; experience sharing with the client and other suppliers within the framework;
	constant performance monitoring using key performance indicators
Sustainability	teamwork and discussions with the client; discussions between the suppliers on a framework for improvements of future projects
	longer and stronger relationships within the framework; use of key performance indicators for monitoring and selection for future projects
Closer relationships	having key sub-contractors in the supply team
	teamwork and respect
	providing effective responses to client requests

Client organisational behaviour change drivers and project outcomes

The impact of client organisational behaviour change drivers on project outcomes was revealed in the content analysis. Framework procurement normally lasts for a long duration of four years which can be extended for performing suppliers. The senior project managers recognised that longer and stronger relationships nurtured within a framework allowed the supplier, the client and their framework manager to work together as a team to achieve the project outcomes. Framework suppliers were committed to keeping to start and complete on time and to the agreed budget. This result is supported by Constructing Excellence (2019) which advocates that it is necessary to create and maintain closer relationships with the whole supply chain.

Performance monitoring, through the use of key performance indicators (KPIs), ensured the project achieved the project outcomes of time, cost, quality, sustainability and closer relationships. The contract-based KPIs were found to be very effective performance measures for control of time for civil engineering frameworks by Lam and Gale (2015).

Frameworks provide continuity in workload and the suppliers had to perform well, as measured by the contractual KPIs, in order to be selected for future projects and to gain good a reputation. These were two strong incentives driving performance for all project outcomes. Morledge *et*

al. (2021) suggested, but with discrete projects, that financial incentives can improve both commitment and motivation, and hence project outcomes.

In relation to the project outcome of cost, regular meetings and open discussions held between the client and the supplier allowed prompt agreement of cost variations and the final account. Suppliers offered advice to improve design, planning and construction methods and to reduce the life cycle cost, based on their experience of similar projects within the longer-term framework. This was particularly essential for works programmes of large value.

Supplier contextual behaviour change drivers and project outcomes

The impact of contextual behaviour change driver on project outcomes was also revealed in the content analysis. For the project outcome of closer relationships, participants felt that as relationships were built over time between clients, their framework managers and suppliers, and this reduced conflicts. The relationships provided a collaborative partnership scenario, with everyone treating each other with respect and courtesy. The closer relationships allowed suppliers to understand client needs better and this allowed effective responses to their requests. With collaborative frameworks, suppliers offer high levels of trust and collaboration to a client and other stakeholders, which are essential for project success. Yeung *et. al.* (2008) found trust and respect are critical for solving problems.

Changes in supplier conscientious behaviour and attitude within a framework also influenced the project outcomes of sustainability. Suppliers demonstrated and committed to higher standards of health, safety and welfare in order to gain and maintain a place in the framework.

Culture was the most significant supplier behaviour change driver for project outcomes. The cultural change was developed through management commitment and alignment with the client objectives for a framework.

Empirical experience from these case studies demonstrated that project outcomes of time, cost, quality, sustainability and closer relationships can be improved by applying client organisational behaviour and supplier contextual behaviour drivers to shift their behaviour in the procurement and construction monitoring process. These causal relationships are supported by organisational behaviour theory (Walker, 2015) and job performance theory (Masa'deh *et. al.*, 2016).

Conclusions

Summary of findings

This research expands the scope of current research to a wider geographical area of England and covered both building construction and civil engineering framework projects so that the results can benefit a wider public sector environment. The study has successfully achieved the fundamental research outcome by discovering which behaviour change drivers should be considered when used to enhance project outcomes of construction frameworks.

Triangulation methodology was successfully conducted to draw evidence from real-life case projects. This involved the use of two methods to investigate the same phenomenon, thus

ensuring that the study can be undertaken as vigorously as possible with regard to bias. The expert review survey confirmed the project outcomes desired by public-sector clients for construction frameworks. Empirical evidence from the multiple-case study demonstrated that project outcomes of time, cost, quality, sustainability and closer relationships can be improved by behaviour change drivers applied within the framework environment.

Research implications

There are three practical implications arising from the framework procurement process. Firstly, in managing frameworks, construction clients should modify their behaviour in the procurement and construction monitoring stages to achieve desired project outcomes from suppliers. These behaviour changes are related to improving the relationships with suppliers and their productivity through incentive and risk-sharing procurement approach, effective communication through developing stronger relationships, and performance monitoring using contract KPIs, as highlighted in **Table 2**. The impact of these behaviour changes on project outcomes is well supported by the organisational behaviour theory and the case study results.

Secondly, to ensure successful delivery of the desired framework outcomes, the suppliers should modify their behaviour as well. These include motivating conscientious behaviour and attitude towards self-improvement and innovations, supporting a shared culture of providing services aligning with the client needs, promoting learning and development amongst all suppliers, and most importantly providing trust and collaboration to the client (See **Table 3**). All of these behaviour changes can improve project outcomes, as explained by the case studies and underpinned by job performance theory which advocates contextual performance as a key performance driver and hence a critical selection criterion.

Lastly but most importantly, the research findings can serve as guidelines for framework managers to enhance the construction framework process and outcomes. They should apply the contextual behaviour change drivers as key selection criteria to select competent suppliers in the procurement process, and execute the client organisational behaviour change drivers in the whole procurement and construction monitoring process.

Limitation and further research

This research is based on an expert review and eight multiple case studies drawing common practical views on the causal relationships between project outcomes and behaviour change drivers, all conducted within the context of construction frameworks in England. It is recommended further research should be done with other nations to provide robust results in similar environments and benefit public-sector construction clients aligned with government construction policy objectives through optimisation of the framework process. Although frameworks are regulated within the public sector, no such requirements are legislated for the private sector. Further research could be conducted in the unregulated private sector so the whole construction industry is involved and benefited.

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