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|  | Project alliancing (PA) as an interactive contracting mechanism is arguably an archetype of modern-day contracting. |
|  | Well-designed PA emphasises the notion of shared goals and objectives, including detailed understanding and |

recognition of risks and reward while recognising specialist contribution by parties. However, PA has significant influence on organisational culture and cultural theory, hence reflecting the effect of culture on performance. This research study aims to determine the influence of PA on organisational culture and project performance, using the UK rail industry as a case study. A quantitative methodological approach was employed with quantitative data collection through questionnaires from 56 respondents (25 clients’ and 31 contractors’ all working in the rail industry), on a case study of an on-going alliancing project. The questionnaire results were analysed using the mode as the central tendency approach and focusing on the values that occurred most. The results from the research validated findings from the reviews while highlighting other fundamental factors underpinning the success/es of PA in project management. This study is beneficial in improving the fragmented nature of the construction industry while positioning team building and collaborative working in the core of construction project management.

1. Introduction

Increasing competitive pressure within the construction indus-try has motivated the need for change in the way relationships are managed within the supply chain. A report from the Department of Business Innovation and Skills [(BIS, 2013)](#page12) suggested that there is more evidence on the use of frameworks agreements, which demands for a need in developing models and approaches to procurement routes that focuses on collaboration.

The challenges facing the construction industry from its frag-mented processes to increasing dispute and overrun on major project has resulted in many studies recommending collabora-tive working practices such as project alliancing (PA), partner-ing, lean construction and supply chain management as a novel way of contracting. Recommendations made by Latham (1994) and Egan (1998) presented opportunities for the con-struction industry to espouse a cultural imperative aimed at improving and elevating its standards. These recommendations highlighted the requirement for the client to be at the centre of construction. It endorsed for a collaborative work approach that focused on long-term relationships, such as project

alliance and framework agreements to replace competitive ten-dering and therefore paving the conception of partnering arrangements. PA is a by-product of partnering; it has been envisioned in various guidelines [(Egan, 1998; Latham, 1994;](#page12) [NEDO, 1991)](#page12). The theoretical study of PA based on the exist-ing literature edifies the proposal made by [Egan (1998)](#page12) regard-ing the need for the construction industry to improve its efficiency. Hence, various studies have considered this concept as a novel way of contracting.

In theory, PA stands out as a robust concept; however, the set-up of this arrangement in practical terms to some extent requires comprehensive investigation, as there seems to lack research and critical assessment exploring the nature of allian-cing in practice. Also, this raises a question on if the claims made for it theoretically, reflects its practical position.

Culture in simple terms can be defined as the modus operandi of an organisation, thus the commonly used expression ‘how things are done round here’ [(Godfrey, 2001)](#page12). This view is driven by basic assumption and belief shared by members of an organisation, which subsequently defines the OC.

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Consider the dynamics of a project alliance, which requires two or more organisations merging as, one special purpose vehicle with an aim of mutually achieving agreed objectives. It is a challenge whether the existing cultures pertaining to separ-ate organisations will affect the presumed relationship. Against this backdrop, the key purpose of this study is to analyse how misalignments in project alliance interest can over time, gener-ate knock-on effect on organisational culture and performance in the rail construction industry.

In addressing the problem statement, this research investigates and explores the principles of PA in order to ascertain a holis-tic view of its concept, including the influence of culture, its interpretation and the attributes associated with performance management within a project alliance.

1. Literature review

2.1 Project alliancing

PA is a term used to describe various collaborative ventures [(Ross, 2003)](#page12) and it is a method of contracting that resides under the canopy of collaborating or partnering [(Egan, 1998)](#page12). PA defined by [Ross (2003, pg1)](#page12) as ‘where an owner/s and one or more service providers work as integrated team in delivering a specific project under a contractual framework where their commercial interest are aligned with the actual project out-

 comes’. Although, the integrated team operates under the same contractual framework, they remain legally independent organisations [(Yeung et al., 2007)](#page12). [Chen et al. (2012)](#page12) concurs that alliancing is a broad concept that emphasises inter-organisational co-operation and collaboration with [Sakal](#page12) [(2005)](#page12) arguing that PA is more than just a contract but rather a new form of conducting business that has recognised a dramatic departure from the traditional contracting practices. However, [Rooney (2006)](#page12) advocates PA as an evidence of cultural change in the contractual realms, where the change is engrossed towards teamwork processes as opposed to the competitive behaviours characterised by the traditional methods.

PA stems as a focal element that embraces the philosophy of commitment to team working and relationship development, which is a fundamental prerequisite that enables the industry to learn and take greater responsibility in improving the existing processes [(Egan, 1998)](#page12). This outlook creates an oppor-tunity for the industry to eliminate waste in the delivery process and instil innovation and learning, therefore creating incremental and sustained improvement in performance [(Egan,](#page12) [1998; Latham, 1994)](#page12).

From a client perspective as suggested by [Ross (2003),](#page12) the traditional risk transfer approach is still the most common and appropriate method adopted within many projects. It still does

not address the diverse mutable environment which construc-tion projects are delivered in. Construction projects are complex projects connected with high uncertainty, tight budget and time constraints [(Chen et al., 2012; Sakal, 2005)](#page12). The complexity of these projects is caused by unclear scope and challenging project requirements, hence such environments experience high levels of risk and uncertainty. The traditional risk transfer contracts is inadequate in dealing with these conditions as shown in [Figure](#page12) 1, therefore instigating the need for a client to select the most appropriate strategy, in order to manage the apparent risk and uncertainties and ensure that the project achieves its optimal outcome [(Ross, 2003)](#page12).

The relationship between client and contractor is not always about collaborative working. Instead, each party seeks to transfer the associated risk from one end of the spectrum and to reduce costs at the expense of quality, safety and in some cases reputation [(Xen et al., 2010)](#page12). This often tends to create misalignment between the parties. Consequently, the contrac-tor’s motivation to work in an efficient way that could benefit the project as a whole is limited.

2.2 Key features of a PA

Trust is a hallmark factor within a PA [(Yeung et al., 2007),](#page12) it is a viable tool in collaboratively procuring more successful UK further education construction strategies [(Challender,](#page12) [2017)](#page12), with honesty as the embodiment of trust, that epitom-ises the accountability of the parties [(Yeung et al., 2007)](#page12). The parties within the alliance strive to promote mutual trust through commitment and co-operation to the agreed goals, which is epitomised by the underlying principle of making decisions that are best for the project [(Chen et al., 2012)](#page12). These practices are different from the discrete traditional contracts that tend to tie compensation to individual performance and not the actual project outcomes [(Sakal,](#page12) [2005)](#page12).

PA requires support by top management due to the paradigm shift reflected by the adoption of relational contracting mechanism [(Sakal, 2005)](#page12). A project alliance typically starts during the procurement stage, at the pre-contract period or the ‘interim project alliance period’ with standards set for bench-marking performance/s, depending on the nature of the alli-ance being either strategic or project alliance, which will invariably determine the pain and gain to be shared between the parties [(Rooney, 2006)](#page12). [Rowlinson et al. (2007)](#page12) suggested that parties within an alliance should take collective ownership of all associated risks and responsibilities both in the delivery and commercial management of the project [(Chen et al., 2012;](#page12) [Ross, 2003)](#page12). They also proposed that within a project alliance, it is prudent for the client and the contractor or parties within the agreement to agree on how to apportion the risks and

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Traditional forms of contract

Transfer risk



Each party has and must

fulfil its own separate

/individual obligations

Specific risks allocated to

each party with perhaps

some shared risks

Owner Contractor

obligations obligations

Owner Contractor

risks risks

Fundamental shift in the way

risk (and opportunity) are dealt

with under the contract

‘Pure Alliance’ approach

Nearly all obligations are collective.

Some individual obligations (e.g. owner’s

obligation to pay)

Preferably all risks shared. However, some unique risks may be retained by the owner (noting that it is not normal under a pure alliance for any risks to be borne solely by the Designers, Contractors and Suppliers refers to as Non Owner Participants NOPs)

Share and jointly manage risk/opp

Mostly collective

obligations

Nearly all risks

(and benefits) shared

Figure 1. Collective sharing of risk/opportunity (source: [Ross (2009))](#page12)

responsibilities in the delivery phase of a construction project and its effect often leads to improved project outcomes. [Yeung](#page12) [et al. (2007)](#page12) further echoed these views by suggesting that PA could be viewed as a partnering agreement underpinned by economic rationalism, because the client’s intention for example could be to attain a quality product at a reasonable cost, whereas the contractor aims to maximise its profit. PA encourages open and honest communication [(Ross, 2003)](#page12) and it embraces a no-blame integrated team culture, where the project endorses relational contracting strategies, rather than competition for money [(Rooney, 2006)](#page12). Hence, these relational contracting strategies are based on the recognition of mutual benefits and win-win scenarios between the parties [(Rahman](#page12) [and Kumaraswamy, 2002)](#page12).

The day-to-day management of a project alliance is comprised of a seamless project team representing both parties, well inte-grated and ensuring decisions are made while issues are resolved with no recourse to litigation [(Challender, 2017)](#page12). A project alliance creates a win-win or no-win situation envisaged through the pain and gain share, which is a conditional system that evaluates the expected return [(Chen et al., 2012)](#page12). The effectiveness of a win-win philosophy requires all parties to agree on all objectives, principles and processes [(Yeung et al.,](#page12) [2007)](#page12).

2.2.1 Merits and demerit of PA

PA has the potential to improve relationships and generate improved results [(Sakal, 2005)](#page12). While [Ingirige and Sexton](#page12) [(2006)](#page12) opined that it encourages collaboration and greater sense of commitment through reduction in uncertainties and improvement in the overall learning capacity within the project. Though the benefits derived from PA can be classified as both tangible and intangible, resulting in performance improvement [(Scott, 2001)](#page12). The anticipated outcome will enhance participants’ reputation in delivery, which might create future opportunities, hence the key motivation is driven by the opportunities to share risk and responsibility, inno-vation and commercial benefits depicted by the pain and gain share mechanism [(Chen et al., 2012)](#page12). Consequently, the over-arching value is underpinned by its future orientation which is focused on long-term outcomes.

The implementation of a PA is critical, it is prone to cultural and organisation barriers that creates major challenges and hinders the process of achieving sustainable competitive advan-tage [(Chen et al., 2012)](#page12). However, [Ross (2003)](#page12) argues that the inherent challenge is based on the fundamental cultural shift. Lack of price competition in a project alliance actually offers value for money to the client in hindsight [(Chen et al., 2012;](#page12) [Ross, 2003, pg1)](#page12). Enhancing collaborative and integrated working is

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used as a means of obtaining better value and levels of quality

 and service delivery [(Challender et al., 2015)](#page12). Although, [Ross](#page12) [(2003)](#page12) again discoursed that this disposes a relative level Challenderof uncertainty and risk to the client in the event of cost overrun as the risk is transferred to the client alone. The underlying success of an alliance is determined by the align-ment of project goals between the parties involved. The set-up of these goals in some instances might not be orchestrated in a way that benefits the PA, which creates difficulty in finding the right balance.

2.3 PA and organisational culture

[Holden (2002)](#page12) as cited by [Gunn (2014),](#page12) describes culture as an equivocal concept that has various semantic intricacies which can be expressed explicitly and implicitly as an acquired behavioural pattern and are often signified through the embo-diment of artefacts. Culture reflects the way individuals are used to the environment in which they operate (Proverbs et al, 2009), though regarded as a set of assumptions generally held by a group of people [(Sackmann, 1991)](#page12). Furthermore, [Steers et al. (2013)](#page12) propose that culture is what defines the members, which can be learned or shared and it influences the attitude and behaviour of group members and subsequently a system where a set of ideas and values are shared. Again, [Holden (2002)](#page12) as cited by [Steers et al. (2013)](#page12) advocates using the cause and effect paradigm, which is con-nected to people’s cognizance and it is a core element in under-standing culture as a concept. With [Parker and Bradley (2000),](#page12) re-emphasising it as a concept that consists of three dimen-sions; values, assumption and artefacts.

Additionally, the concept of individualism and collectivism can also explain the difference in how culture is observed in different capacities [(Chatman and O’Reilly, 2016; Phua and](#page12) [Rowlinson, 2003)](#page12). With [Hofstede’s (1980, 2001)](#page12) model, describing individualism as a loose society where everyone will have to care for themselves while collectivism is an integrated society where people stand shoulder to shoulder with each other without any compromise or reward for the support. It is a term adopted from the Latin word ‘Cultura’ and defined as the effect of human action [(Warner and Joynt, 2002)](#page12). [Ankrah](#page12) [et al. (2009)](#page12) suggested that culture is distinctive to an organis-ation; thus subjecting its definition to the features related to an organisation though some other studies claim OC is a variable or something that an organisation possesses. However, [Bresnen](#page12) [and Marshall (2000)](#page12) suggested that OC is a widespread concept to the extent that it defies simple definition. Kwantes and Boglarsky (2007, pg2) define OC as ‘relatively stable benefits, attitudes and values that are held and in common among organisational members, shared normative beliefs and shared behavioural expectations’. This definition can be reinforced with the views suggested by [Chatman and O’Reilly (2016),](#page12) where the fundamental basis for organisational culture is

epitomised through the values and conventions held by members of an organisation, thus facilitating a common shared meaning and behavioural guide at various levels.

[Cheung et al. (2012, pg689)](#page12) identified several cultures operating within an organisation, this according to [Bresnen and](#page12) [Marshall (2000)](#page12) is a complicating factor though common for multiple cultures to exist within and between units of the same organisation [(Phua and Rowlinson, 2003)](#page12). Culture within an organisation can be observed as managerial culture, which is occupational based whereas group culture is derived from geo-graphical proximity and worker culture is based on common hierarchical experiences [(Cheung et al., 2012, pg689)](#page12).

It is common for sub-cultures to exist within a culture and the existence of sub-cultures creates horizontal and vertical differ-entiation [(Bresnen and Marshall, 2000)](#page12). The effect of horizon-tal differentiation could lead to marginalisation of a project team within the organisation [(Bresnen and Marshall, 2000)](#page12). [Phua and Rowlinson (2003)](#page12) concurs that the existence of mul-tiple cultures could lead to the development of differing cul-tural values which arises when two or more organisations merge as partnerships, thus the different management struc-tures and objectives of different organisations might lead to greater interorganisational differences.

OC is a source of competitive advantage and a key factor that contributes towards organisational effectiveness [(Zheng et al.,](#page12) [2010)](#page12) and a conducive and progressive culture drives efficiency, which can have an overall impact on the organisation perform-ance. OC has the capacity to influence and shape the behav-iour of the project members and character of the project [(Cheung et al., 2012)](#page12) and also, can have an influential and progressive effect on individuals and organisation performance which plays a critical role in motivating innovative behaviour [(Hartmann, 2006)](#page12).

[Chatman and O’Reilly (2016)](#page12) suggest that the control of atti-tude and behaviour are bound by norms and collective expec-tations. Compliance with the shared norms will enable individuals to understand the functioning of the organisation, which will inevitably shape their behaviour and the character of the organisation [(Hartmann, 2006)](#page12). The process of institu-tionalising new behaviours, attitude, beliefs and values can be extremely challenging, therefore implementing the presumed norms within an organisation might fail, as these norms might assume the need for change and the articulated direction specified may be taken as a given [(Bresnen and Marshall,](#page12) [2000)](#page12).

2.4 Project alliancing and project performance

The aspiration of the construction industry is to be efficient according to [Egan (1998),](#page12) however, the construction industry

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is considered wasteful when compared with other industries [(Egan, 1998; Takim and Akintoye, 2002)](#page12). The need to drive efficiency, which ultimately has an impact on performance, is evident; the challenges is on the unique nature of the industry, which is compelled to various risks and uncertainties [(Chan](#page12) [and Chan, 2004)](#page12).

[Cheung et al. (2012)](#page12) suggested the development of a forward-looking attitude that identifies efficiency and productivity within an organisation as the antidote to the current existing issues and if applied appropriately could counteract the ineffi-ciencies of the industry from perpetuating. Hence, ‘Successful project delivery relies on the concerted effort of all thoseinvolved’. [Xiao and Proverbs (2003)](#page12) suggested that a project success can be influenced by the con-struction time, quality and sustainable development, which are fundamentals of good project performance (PP) typically project objectives, as shown in [Table](#page12) 1.

[Chan and Chan (2004, pg204)](#page12) defined project success as ‘a set of

 principles or standards by which favourable outcomes can be completed within a set of specifications’. Success can mean different things to different people. Performance measure from a traditional perspective is purely on the assessment of the financial criteria rather than the long-term ‘sustainable’ goals, which to some extent is deemed as regressive [(Mbugua et al.,](#page12) [1999)](#page12). The project success can be measured through objective and subjective performance measures [(Chan and](#page12) [Chan, 2004)](#page12).

Cost–budget is a fundamental measure of a project perform-ance as shown above [(Xiao and Proverbs, 2003)](#page12). It should not be confined solely on the tender sum, but on the whole contract sum [(Chan and Chan, 2004)](#page12). Time is a critical variable that has economic implication to both the client and contractor and it is frequently intertwined with the cost variable [(Xiao and Proverbs, 2003)](#page12). The measure of quality is an important aspect that contributes to the overall assessment of an effective performance. Quality is a subjective measure often associated with the client and end-user expectations

Table 1. Factors that influence project success

|  |  |  |  |
| --- | --- | --- | --- |
| Factors that influence | Criteria that measure |  |  |
| successful performance | project success |  |  |
| Planning effort in construction and design | Budget performance |  |  |
|  |  |
| Project manager goal commitment | Schedule performance |  |  |
| Project team motivation | Client satisfaction |  |  |
| Project manager technical capabilities | Functionality |  |  |
| Scope and work definition | Control satisfaction |  |  |
| Control system | Project manager/team |  |  |
|  | satisfaction |  |  |
|  |  |  |  |
| Source: De Wit (1998, pg165) |  |  |  |



[(Xiao and Proverbs, 2003)](#page12). Similarly, [Chan and Chan (2004),](#page12) considered the assessment of quality as subjective.

[Xiao and Proverbs (2003)](#page12) suggested that sustainable develop-ment is a factor integral to project performance. It can be assessed through the recognition of relationships developed within a project and the emphasis laid to sustain the needs of customers, employees, suppliers and the wider community [(Mbugua et al., 1999)](#page12). Offering essential training to the employees can enhance their competence and enable employ-ees to develop innovative ideas that might influence the performance of a project [(Cheung et al., 2012)](#page12). Statistics indicate a trend of improvement in health and safety in the construction industry (Manu et al, 2014). The industry is prone to significant cost due to injuries and fatalities associated with construction accidents [(Pearce, 2003)](#page12). Failure to take proactive actions will increase the apparent risks, which will affect the health and safety performance standard [(Hetherington, 1995)](#page12).

An effective performance looks beyond the achievement of measurable benefits, this approach will ensure that perform-ance is effectively applied and sustained [(Cheung et al., 2012;](#page12) [Xiao and Proverbs, 2003)](#page12). It requires an organisation to use business performance model, as this will aid in accelerating continuous improvement [(Challender et al., 2015; Robinson](#page12) [et al., 2005)](#page12). Similarly, Kaplan and Norton (1992) opined that the balance scorecard framework can be applied to assist a business in reviewing its performance from four different perspectives: (a) client, (b) internal business, (c) financial, (d) innovation and learning perspectives. It is an indicator used to identify areas for improvement and benchmarking against best practices [(Robinson et al., 2005)](#page12).

2.5 Research strategy

To fulfil the aim and objectives of this research study, it was deemed necessary to pursue an in-depth investigation of an ongoing PA. This approach was considered essential in provid-ing sufficient information that will enable the study to achieve its aim. The case study was based on an ongoing PA between a public-sector client and a private-sector contractor working within the rail construction industry. The project was at its last phase of a seven-year agreement. Hence, it was considered a suitable example to investigate due to its level of maturity. A case study research approach was deemed necessary, as it would facilitate the conduct of a detailed inquiry, to generate insights from an intensive and an in-depth study of a phenom-enon in its real-life setting [(Saunders et al., 2015)](#page12). As it is imperative to contextualise this study into a real-life setting in order to obtain a pragmatic view of the phenomenon.

An explanatory case study method was applied within this research. This assisted in diagnosing the situation and it

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influenced the application of a deductive approach by using the theoretical proposals conveyed in the literature review as a baseline to test the theoretical applicability in the case study [(Saunders et al., 2015)](#page12). A survey design was applied to the case study. This design consisted of quantitative research methods.

The quantitative method used a deductive approach where the focus was to test the theory using data collected from the literature review concerning the different areas of the study; therefore, a questionnaire was conducted as part of this research.

2.6 Questionnaire rationale

The research questionnaire consisted of a mixture of questions and statements. A sample of the questionnaire survey is dis-played in Appendix 1. The questionnaire was not structured in any particular format, as the questions were general in nature. It was considered the respondent’s knowledge and perception of the project would be sufficient in assisting the respondents’ to complete the questionnaire. The theme covered by these questions explored the concept of PA, OC and performance management. An indication on the role of the respondents was included in the questionnaire but was not included in the analysis. The aim of the questionnaire was to gather a relative holistic insight from the project participants on the concepts highlighted in order to gauge their understanding and opinions on the subject matter addressed within the study.

The questionnaire used a rating style question format as the intention was to obtain opinion data, therefore the ‘Likert-Style’ rating was adopted within the questions. The respondents were asked to express how strongly they agreed or disagreed with the statements and questions in the survey [(Saunders et al., 2015)](#page12). The statements within the question-naire were short, clear and concise.

2.7 Research sample and method of analysis

Selecting a research sample as suggested by O’Leary (2014, p. 183) should be ‘broad enough to allow you to speak about a parent population, large enough to allow you conduct the desired analysis and small enough to be manageable’. This research applied a mixture of random and non-random sampling methods. Cluster sampling was applied to capture the quantitative data by surveying the entire population within the given project. The application of these sampling methods enhanced the research capacity, as it explored the boundaries of PA as a phenomenon (O’Leary 2014).

As the premise of this study is pinned on the case study approach, the questionnaires were issued to the project partici-pant working within the project alliance. The questionnaire

survey was sent electronically by way of ‘Survey Monkey’. The sample used in this survey supported the quantitative research. The target of more than 50 responses was achieved as 56 respondents participated in this survey.

The quantitative data were summarised using the mode as the central tendency approach which focused on the values that occurred most frequent [(Saunders et al., 2015)](#page12) and the data gathered were expressed as percentages. The participants in the survey were considered the dependent variable, and the inde-pendent variable was measured by the level of agreement they made to the statements and questions presented in the survey, in order to assess the significance of the results observed and establish their influence in this study.

1. Research findings

3.1 Questionnaires findings

The raw data consisted of a rating style opinion score [(Saunders et al., 2015)](#page12) allocated to each question within the questionnaire. The scores was in four categories to represent the level of agreement and disagreement within each statement and question in the survey. These questions were derive from the literature review to illustrate the responses shared by the project participants, which infer a common consensus within the project.

Overall 56 respondents participated in the survey. The research population consisted of 31 contractors and 25 clients’ respondents, which formed a reasonable and representative sample size. The respondents are from the rail industry that has one form of alliancing in place on the project they are working on.

3.2 Concept and attributes of PA

The aim was to identify the key principles of project alliance and understand whether the principles implied by the state-ments were pervasive within the project. The results revealed both contractor 88% and client 94% respondents agreed with the principle of collaborative working, while the contractor 84% and client 97% respondents believe that the project really integrate the project teams together.

3.3 Risk and responsibility

Both contractor’s and client’s respondent ranking are similar in term of collaborative responsibility and risk sharing. In con-trary to the presumed collaborative nature, the contractor 74% and client 84% disagreed with the principle of no-blame culture, which implies that blame culture is common to the alliance and thus undermines the veracity of the alliance. Collaborative working and the integration of project teams is a key attribute of PA, however, lack of regular workshops and training on collaborative working undermines the realness of

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the alliance and its apparent weight as both the clients 84% and contractors 90% believed that regular workshops and training are not offered to the project teams.

3.4 Cultural perception

It explores the influence of culture within the alliance and fundamental values that determine how the project environ-ment operates. Understanding the perception of culture is imperative, as it confers the shared values and beliefs unique to the environment. However, to determine the significance of the shared values, these questions addressed aspects that are linked to the organisational environment, which plays an important role in shaping the OC [(Rameezdeen and](#page12) [Gunarathna, 2003)](#page12). Without understanding how the organis-ation environment is formed and functions, it makes it difficult to decipher the organisational culture from an outside perspective, as it is often fragmented, hence challenging to understand.

The client 96% and contractor 97% respondents agreed with understanding the purpose and mission of the project. In terms of challenging the status quo was mixed review, from both the client 52% and contractor 62% on whether they agreed or disagreed with this statement.

3.5 Performance

Communication is a vital component in any activity or project. It serves as a bedrock for success, therefore inferring the need for openness in sharing information between the project parties. Both the client 72% and contractor 71% agreed that communication is effective within the project. The question-naires aimed to understand if the alliance offered an environ-ment that was inclusive and promoted good work ethics including the factors, which the employee considered impor-tant in measuring performance.

The contractor 84% and client 84% felt motivated to work effi-ciently within the alliance, which denoted a positive factor that suggest the project members from both parties applied one mind-set in their approach to work. Cost, time and quality are inextricably linked with measuring the success of a project (Atkinson, 1999; Xiao and Proverb, 2003) with all parties considering these aspects as primary in measuring PP.

3.6 Effectiveness

The responses implied that project participants felt the environment catered towards their development of skills and knowledge, which in turn inspired them to have a clear commitment in driving effective performance and achieving the set project objectives and targets. The client 72% and contractor 81% respondents shared the same goals that were consistent and aligned.

3.7 Analysis and discussion of findings

To draw conclusions concerning the influence a project alliance will have on OC and performance in a 7 year on-going project alliance between public sector clients and private sector con-tractor within the rail industry, an exploration of the current theory was explored. The inception of PA by British Petroleum (BP) in delivery, an improvement to a more complex project has spread across the globe [(Kerfoot, 2015),](#page12) it will be a valuable ideal to understand practical effect on OC and per-formance since most of complex projects are been executed through PA.

An analysis from the quantitative results are discussed in the following key findings.

3.7.1 Principle of a project alliance

Collaborative working and integration of teams is a key PA principle that is underpinned by the notion of mutual trust and openness in communication [(Challender, 2017)](#page12). It is evident that both parties confirm the environment, embraced team integration, collaborative working and openness in communication as core principles of PA as they create sustain-able competitive advantage [(Ingirige and Sexton, 2006)](#page12) which adds value to the project.

3.7.2 OC within a project alliance

The goals held by the parties within the alliance are aligned. Both parties share the same value, which demonstrate the project teams understanding of the mission and purpose of the project and their commitment to meet and exceed project goals. These factors can be considered as cultural cognition, which are tacit and act as structuring devices in creating the predisposed reality [(Sackmann, 1991)](#page12). Performance of the alliance was influenced by the culture with the underlying assumption of shared values and goals depicted by both parties, and will drive the project in achieving its goals. The key performance indicators and service delivery indicators are metrics set holistically to drive the iron triangle of cost, time and quality [(Challender et al., 2015)](#page12).

Collective sharing of risk, implied that each party takes a percentage of the risk and responsibility thus creating equitable relationships. The results analysed from the quantitative research sample signified the shared values attributed within the project were depicted through the delivery aspect of the project. Culture is defined as an acquired behavioural pattern that defines the shared values of members within a group [(Holden, 2002)](#page12). These values contribute in creating competi-tive advantages that created overall organisational effectiveness [(Zheng et al., 2010)](#page12). The shared values from an operational perspective dictated the way the project operated. In this case, the project was focused on driving its delivery performance.

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However, the argument to this conclusion is that the organis-ation failed to focus its effort on the contractual management of the project.

3.7.3 Attribute associated with PP within a project alliance

Performance management is an integral factor in any project. The need to drive efficiency and innovation is a major challenge within the construction industry as suggested by [Egan (1998)](#page12). Therefore, understanding how performance is measured or envisaged within a PA is imperative, since it is a headline factor that contributes towards the interpretation of success within an alliance. The findings from the questionnaire survey indicated that cost, time and quality were considered the key components used to measure performance. Safety is a feature that was outlined as integral in the performance measurement from the primary research. These factors are interrelated and create an integrative approach in managing the success of a project [(Atkinson,](#page12) [1999)](#page12).

3.7.4 Effectiveness of a project alliance

According to the literature review the key constraints towards PA is the shift from the traditional adversarial approach to one that embraces collaboration [(Ross, 2003)](#page12). This cultural realignment poses a challenge that sometimes can be difficult to manage. From the findings collated, the project embraced collaboration and integration of teams through its sharing of resources and experience thus driving the focus on the operational achievement of project results [(Cheung et al.,](#page12) [2012)](#page12), as envisaged through the delivery-orientated culture. However, to fully optimise the effectiveness of a project alliance, there needs to be a balance between the alignment of goals from a delivery and commercial perspective. The delivery side of the alliance is depicted in the delivery targets which overall dictates the perception of performance. However, from a commercial perspective and according to the findings, there were irregularities in the management of the contract. The perception dictated by the consensus denoted the management of the contract as one that portrayed an adversarial combative approach.

No blame culture is a key philosophy pertaining to a PA and exemplifies the achievement of common goals and objectives [(Rowlinson et al., 2007)](#page12). From the survey, majority of clients and contractor’s respondents’ considered the blame culture existed within the project. The existence of a blame culture undermines the effectiveness of the alliance and acted as a key detriment. Establishing an alliance requires the parties to consider how they envisage the alliance in practical terms, compared with their theoretical understanding of how an alliance should operate. The success of an alliance is

determined by how it is planned and executed. Therefore, it is imperative to consider the theoretical underpinning PA and adapt these aspects to the alliance from the onset in practical terms.

When setting up a PA it is imperative to consider the project parties have the essential knowledge and capacity in operating an alliance. Strong leadership is an essential feature that can support the management of the alliance. The key limitation to the performance of PA is a lack of experience from the project parties, which results in a PA operating without incorporating the full spectrum of PA principles.

It is imperative to ensure that goals are aligned. The goals in this project were aligned from a delivery position, however, from a commercial standpoint the goals appeared to be misaligned to some extent; this is an evidence of poor contract management, which could be considered as the facilitator to the combative behaviour. However, the antidote could be envisaged through regular coaching in collaborative working. The existing terms and conditions of project alliance could be adapted to suite a pure alliancing model.

1. Conclusion

PA concept relies on openness, teamwork, cooperation and equality between the various members in the alliance. From this study, it is evident that the model applied conforms to the standards of an alliance where the client and contractor have committed to working together within an inclusive environ-ment depicted by enhanced communication and a spirit of mutual trust and respect towards the achievement of shared aim and objectives. The concept of partnering, collaborative working, framework agreement and integration of team are key principles evident in the case study.

Collaborative working is further underpinned through the alignment of goals between the project parties. From delivery perspective, both the client and contractor goals were aligned, however, this aspect from a contractual perspective is not accurately upheld within the project, which lessened the integrity of the alliance.

The compliance towards the norms and collective expectations drives the concept of organisational culture [(Chatman and](#page12) [O’Reilly, 2016)](#page12) and the practical operation of PA from the onset will determine the culture, which will be adopted within the alliance. To drive this aspect, requires significance input from the senior management, who according to the respon-dents should have adequate skills and knowledge in managing an alliance. Setting up alliancing workshops is essential in breaking down cultural barriers. These workshops will embrace and educate the project members on the establishment

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of trust, good communication and further educate the project members on knowledge of achieving a win-win approach and the key principles that underpin good team working. This approach will create leverage in the management of the PA and thus shape the overall culture and ensure the participating organisations are geared in representing the true essence of a project alliance.

Human behaviour, which constitutes the culture, exhibited within a PA, help shape the behavioural pattern within a PA will affect the performance outcome of the project because behaviour does affect cultures, which have relative effect on productivities. The analysis made from the findings deduced the need for parties within an alliance to invest in conducting regular training on collaborative working.

1. Recommendation

The recommendation from the research based on the findings is detailed below:

The analysis made from the findings deduced the need for

parties within an alliance to invest in conducting regular train-

ing on collaborative working since this method of procurement

is still developing when compared to other developed countries

e.g. Australia, that have adopted PA since 1990 (for 31 years).

An alliance cannot effectively evolve without key consideration on its theoretical application. Therefore, to drive the win-win situation project alliance parties need to uphold the theoretical principles and optimise them during the practical implementation.

Appendix 1 Questionnaire Survey Results



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| --- | --- | --- | --- |
| 1 | The project encourages collaborative working |  |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 2 | The project teams are integrated |  |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 3 | The project offers an environment where skills and knowledge are valued at all levels |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 4 | The project encourages open and effective communication |  |  |
|  | Agree) | Tend to agree) | Tend to disagree) | disagree) |
| 5 | I have a good understanding of the purpose and mission of this project |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 6 | I have a clear commitment to meet and exceed the set objectives |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 7 | I feel motivated to work in the most efficient way |  |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 8 | Challenging the status-quo is encouraged within my team |  |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 9 | The senior management team is perceived to be strong and supportive at all levels |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 10 | The organisation embraces a no-blame team culture |  |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 11 | Regular workshops and training on collaborative working are offered within the project |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 12 | The project members share the same set of relative consistent values and method of doing business |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 13 | Cost, time and quality are imperative factors in measuring performance within the project |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
| 14 | My day-to-day tasks are aligned to achieve the overall project goals |  |
|  | Agree) | Tend to agree) | Tend to disagree) | Disagree) |
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