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THE INFLUENCE OF KEY PERFORMANCE INDICATORS ON RELATIONSHIP AND PERFORMANCE OF JOINT VENTURE CONSTRUCTION PROJECTS IN THE UK

Joint ventures (JVs) are increasingly common within construction as companies seek to pool resources and expertise to broaden opportunities and mutually benefit from the arrangement, particularly for large-scale projects (LSPs). Whilst there are many benefits to joint ventures they are not without issue and in many cases result in dispute, often over the performance measurements used within the projects. A successful joint venture is one where parties share and understand the vision of the project. However, Key Performance Indicators (KPIs) are seldom discussed or completed collaboratively in joint ventures and may result in representing one-sided requirements. In theory, the evolving relationship between joint venture partners should lead to a refinement of KPIs along the project. However, the establishment of clear KPIs from the outset has the potential to reduce the number of disputes and provide the basis for a successful partnership. The aim of this paper is to critically evaluate the usage and influence of KPIs on joint venture projects within the United Kingdom (UK) and seek to determine factors that contribute to successful relationships. Data were collected by conducting in-depth, semi-structured interviews with purposefully selected members who had an average experience of over six years participating in joint venture projects within the UK. Findings show that KPIs are used mainly to reflect on individual businesses' performance rather than to appraise joint ventures. While there are limitations to KPIs this research also indicates that KPIs are used inappropriately at times leading to the misconceptions as to their use and may possibly cause tension between joint venture partners.

Keywords: disputes, joint venture (JV), key performance indicators (KPI), large scale project (LSP).

INTRODUCTION

A JV is a commercial business arrangement in which two or more separate parties come together to complete a specific task (JLT 2016). They are a well-established and commonplace arrangement within a range of industries worldwide and purposefully combine resources, competencies and skills for mutual benefit. Construction projects are primarily one-off endeavours, with many unique features such as long periods, complicated processes, significant financial outlay and dynamic organisational structures (Zou *et al.* 2007). Thus, the majority of construction joint ventures (CJVs) are typically short-term or for one project (Badger *et al.* 1993). The arrangement allows the partnership to compete for larger and more complex projects, and to enter niche markets previously outwith their realm. In pooling resources, a JV reduces the burden for the participating firms and, if successful, can offer considerable rewards to all parties involved with an increased opportunity to foster long-term

relationships on subsequent project ventures. Participating in a JV within the market is a very challenging task, however, and can often be highly complex. It requires developing a deep mutual understanding and strategy to enable success (Kale *et al.* 2010) necessitating time and effort on the part of all involved. One of the most common reasons for disputes arising is said to be due to the management structure on a JV project (Ruggeri *et al.* 2016). Problems could occur between the partners due to lack of trust and of strong effective leadership (Kale *et al.* 2010), disputes potentially arising over the performance measurements used by the management of JVs (Greineder and Christie 2016).

LITERATURE REVIEW

Types of Joint Venture Arrangement

The nature of the arrangement will ultimately depend upon the extent to which each party are willing to integrate, and may be formed in a variety of ways as each is modified to suit the specific conditions of the JV under consideration. At its most basic level, however, the decision is usually between an integrated or non-integrated JV. An integrated JV is where two or more entities form a separate vehicle, usually a limited company, to share profit and loss appropriate to their percentage contribution within the contract (JLT 2016). If two parties form the JV, as is often the case, then the contribution is usually divided equally. The integrated JV is commonly used for projects of an immense size where the task of apportioning the work is particularly difficult. This necessitates parties to carefully combine their resources and personnel in an agreed-upon manner, sharing both the risk and the rewards that result from it (Green 2017). Non-integrated JVs tend to be restricted 'arms-length' affairs. Each partner is allocated a range of work and is responsible for supplying resources in the agreed upon proportion as well as the profit and loss associated with it (Green 2017). This form is most commonly used where the work is easily divided into discrete sections between the JV partners and in some cases, may even have distinct roles. For example, one is responsible for producing the design, the other executing the construction works. In some instances, depending upon the complexity of the project, it may be appropriate that a combination JV (a mix of both integrated and non-integrated JVs) be formed. Each member is assigned a portion of the work for which they are solely responsible but also share a portion of the work with one or more of the JV partners. Each member is therefore responsible for both the profit and loss for the scope of works under their direct control and for the portion of the work which is shared. It should be noted that although the UK government backs collaboration and JVs, there is a thin line between collaboration and collusion, as stipulated by the competition laws which must be abided by rigorously. EU procurement laws must also be followed, therefore additional consideration is required when a JV forms as a single entity (Speyart *et al.* 2018).

The Growth of Joint Ventures

Seemingly, there is an increasing trend in the UK to move away from traditional procurement methods towards the use of more collaborative methods such as JVs (Pinsent Masons 2017). This is particularly apparent of CJVs, which in the UK is evidently due to the rise of large-scale infrastructure projects (Bachelder 2017). These include the expansion of Heathrow Airport, road and rail programs as well as an investment programme into the Northern Powerhouse. The most high-profile examples are seen in developments such as High Speed 2 (HS2), which has seen the formation of several JVs for numerous phases including the London terminus at

Euston between Mace and Dragados. The £1.3bn contract has propelled them to the top of the BCLive league table for March 2019; this single contract placing them above Kier totalling 36 contracts worth just under £300m, over £1bn fewer. According to Halai (2018), large-scale commercial projects are undertaken through JVs, but the phased development of housing also lends itself well to the JV model and is likely to play a key role with the housing shortage issue. The number of companies seeking to take advantage of opportunities such as these is likely to further drive the initiation of project collaboration and specifically the creation of JVs. Paradoxically, in combining with competitors, a JV vehicle acts as a strategy for dealing with competitors. Rather than tendering for the same projects, companies can work together to benefit both the project and themselves. However, it is of paramount importance that the correct partner to ally with has been thought out clearly and full due diligence checks are carried out (Ruggeri *et al.* 2016). Although potentially difficult to predict, the liquidation of Carillion left the remaining partners with increased workloads, a notable reduction in pooled resources and significant financial implications. In some instances, it was necessary to assume full responsibility, purchasing additional resources and employing former venture partner workers to ensure the continuity of service.

Forming a Joint Venture

Like any relationship, familiarity with the other companies' personalities and abilities is needed in order to gain inner trust (Adnan *et al.* 2011). It is necessary to perform rigorous background checks, to distinguish the acceptable companies from those who are incompatible to enter a JV agreement. Selecting the right partner from the outset can make a critical difference, and if done correctly can dramatically reduce complexity and the potential for dispute. Bresnen and Marshall (2010) stress the need for the partners not to have conflicting interests regarding culture, business, management and goals and that all alliances, such as JVs, have the project's success as the overall target. Achieving success requires developing a deep mutual understanding and strategy implemented by the management (Kale *et al.* 2010; Greineder and Christie 2016; Ruggeri *et al.* 2016), and advantages significantly outweigh the risks providing the initial setup is correct (Breslin and Deung 2018). Project governance is vital and should be a formal structure; a JV board ought to be established to make sure decisions are met collectively and the JV has the autonomy to function on its own (Ruggeri *et al.* 2016).

Joint Venture Challenges

Whilst there are many benefits to JVs they are not without issue. Precise figures are difficult to determine; however, it is estimated that at least 40% and up to 70% of all JVs result in failure (Farrell 2014). For CJVs specifically, it is estimated that one in five ends in dispute and that the duration of disputes were also on the rise (Arcadis 2017). As the complexity of working directly with another company to deliver a job is inevitable, each business unit operates in different manners and under different regulations to achieve their fundamental aims and objectives (Yuming 2014). This can create an environment where disputes and aggravation can be prevalent. According to Yuming (2014), companies have varying driving forces behind their business scopes to achieve a project's success. These issues cause an environment in which companies must compromise to achieve a way of working which fits both parties. Lack of trust in the abilities of JV partners increases the hostility when trying to work in a unified environment (Breslin and Deung 2018).

Performance Measurements

Beamish (2010) states that for a JV to be successful both parties must discuss what performance measurements they will use in advance of the JV taking place. According to Robson (2004), KPIs are the UK's preferred type of performance measurement. As a staple of the construction industry for several years, they enable a company to monitor its realistic targets and goals, in an engaging way to achieve the fundamental objectives whilst obtaining continual improvements. BRE (2017) state that for best practice, KPIs should be developed jointly with those involved. They must also: agree with the stakeholders involved within the project, must be relevant, measurable, and shared openly to achieve best practice and unify the JV. Within companies with the best practices, senior managers firmly believe that measurement and targets are essential to communicate their goals and aspirations, and help to keep their employees continuously striving for improvement (Ruggeri *et al.* 2016). Yeung *et al.* (2009) suggest KPIs are a managerial issue whereas Yang *et al.* (2010) have specified the need for performance measurements to be at project, organisational and stakeholder levels. For overall success, KPIs must be objective and subjective, as well as hard and soft (Gligorea 2017). Ozorhon *et al.* (2008) suggest that the partner's overall satisfaction on JVs is one of the most frequently used subjective indicators.

The lack of managerial structure and performance indicators within JVs is a major problem (Roberts *et al.* 2016). Assessing the KPIs means that the associated parties can have common aims and objectives to work towards giving the JV a strong foundation for success (Constructing Excellence 2017). Not only do KPIs allow performance to be tracked and measured, but they also can be used to penalise poor performance and reward good work. Jelinek and Pettit (2012), state the importance of defining soft KPIs such as information sharing, innovation, and speed of decision making in addition to developing hard KPIs around growth and profitability, conducting meetings to address challenges of working together and establishing protocols for managing differences. Ruggeri *et al.* (2016) suggest the critical need to predefine performance measurements and state that by using them, even at the selection stage, will help focus the right partner with the right goals and rewards. KPIs should be viewed as a preventative measure; avoiding or reducing issues before they occur by adjusting practices accordingly. In JVs, performance measurements and KPIs are often not discussed or done in collaboration becoming one-sided requirements (Beamish 2010, Roberts *et al.* 2016). Yeung *et al.* (2009) indicate the need for research into the importance KPIs hold in setting benchmarks for JV success.

METHODOLOGY

This study adopts a purposive sampling technique to engage individuals with relevant experience in the UK construction sector and uses a qualitative data approach to provide insight into their experiences. The methodology is in line with the exploratory nature of the research to provide a further understanding of the research subject (Brinkmann 2008). The semi-structured interview process allowed a balance between the flexibility of an open-ended interview and a structured interview, and involved a set of questions developed in advance, and consistently administered to participants (Campion *et al.* 1988). The interviews focused on a combination of questions related to JVs and KPIs, designed and ordered to lead from one to another, to target broad, descriptive responses, enabling the respondents to provide as much focused information as possible. The questions were developed from a review of the literature, taking themes from within the UK and other countries, and refined

following a pilot study conducted with a construction professional with experience of working with JV projects.

The sampling strategy involved five participants currently working at professional level within the UK construction sector. Participants were purposefully selected from organisations with multinational experience, providing a variety of services; however due to the sensitive nature of the research few participants were willing to openly discuss matters involving JVs. The study was therefore limited to professional roles including Quantity Surveyors, Project Managers, and Company Directors with an average experience of over six years of working with JV projects and KPIs. Ethical guidelines were followed whereby each participant was informed of the nature of the research, its purpose, and what the resultant data will be used for (Naoum 2007). Informed consent of the participants was obtained and anonymity and confidentiality were assured. In addition, the original recordings and transcript files were safeguarded by password protection and securely stored with restricted access.

The interview contained questions on individual demographic and career details, together with a set of 13 in-depth questions focused on the advantages and disadvantages of entering a JV partnership, together with questions focussed on the use of KPIs specifically on JVs. The participants were requested to respond to questions such as “how could partnerships be improved?”, and “how could KPIs used in JVs help achieve success?”. The participants were interviewed individually, for a duration of between 45 and 60 minutes, using either a face-to-face or a telecommunications application (Skype) method, depending upon their location or availability. The open-ended nature of the questions enabling the participants to fully express their experiences on the research subject. The interviews were digitally recorded to ensure that all information was captured, and verbatim transcriptions were produced enabling thematic analysis to be conducted, described by Braun and Clarke (2006) as "a method for identifying, analysing and reporting patterns (themes) within data". This was achieved in part by coding the transcripts, then gathering and collating the different pieces of related information to systematically identify themes within the data for analysis, an approach recognised by Agapiou (2002) as relevant to construction management research.

FINDINGS AND DISCUSSION

The findings from the semi-structured interviews were derived from a thematic analysis of the interview transcripts. The analysis revealed themes within the data that were discussed in relation to the factors that contribute to a successful relationship between JV partners, and the influence of KPIs on JVs.

Factors that Contribute to a Successful Relationship between Partners

A common consensus throughout the interviews was the vital role communication plays within JVs. However, although it was clear from the transcript data that participants were aware of the need to communicate effectively, they reported experience of resistance to do so, mainly due to organisational, cultural or language differences, which was expressed frustratingly by one participant as “*they just shout, that’s their way*”. Although ‘working in a silo’ is a major risk to organisations, and a collaborative approach is required for JVs, participants’ responses indicated that it was not working, and it was expressed succinctly by one participant as “*they excluded us from their operations*”. The participants agreed with previous research of Zhang, Wong and Chen (2010) that a clear communication strategy needs to be in place

before the work starts to prevent disputes negatively impacting on productivity and relationships. Two of the more experienced participants also emphasised the need for a mutual understanding of abilities and expertise, which confirmed the findings of Yuming (2014), in terms of the need for trust and acceptance between the partners. Participants also agreed on the benefits of combining and uniting technology within organisations, thereby improving skill sets and capabilities of individuals. There was a fundamental tension between the resources required for day to day operational activities and long term strategic goals.

The spreading of risk was identified as a key benefit, all participants acknowledge that entering a JV does pose risk, and agreed that if the risk was properly considered it can be shared. The participants with the most experience with working with JVs made the point that although risk sharing is an advantage, due diligence tests are essential to minimise the risk. This premise agreed with Ruggeri *et al.* (2016), who stated that due diligence was carried out to make sure the selected partner is the correct one. Some participants agreed that a JV was a way of entering into new markets, and it was emphasised by two participants that it was a means of taking advantage of organisations who have specific skills and expertise.

A main advantage of a JV identified by all participants was the sharing of expertise and skills. They emphasised that combining the correct expertise and skills was needed to execute elements of the works a single organisation would not be able to do on their own. Responses from all participants agreed that organisations operate with different aims and objectives and that working with another organisation can be difficult, as it may be hard to find a balance. This agrees with the research of Bing *et al.* (1999) who acknowledged that companies operate to achieve their own aims and objectives in different ways. For the relationship to remain strong throughout a JV, the participants agreed goals must be set at the start of a project. A conscious effort should therefore be made to select common goals which promote trust and collaboration between all partners.

Participants placed high importance that the management team must be collaboratively set up at the start of the venture, and not “*pulling in different directions*” affecting decision-making, and having the potential for unnecessary delays and additional costs. It was emphasised by four of the participants that avoiding conflicting interests is difficult, confirming the research of Bresnen and Marshall (2010). Problems associated with different organisational reporting styles were identified by some participants as a disadvantage to JVs. The lack of a unified approach or the need for an organisation to adopt an unfamiliar style, has the effect of potentially slowing down the venture and clear guidelines need to be put in place as to which reporting style the venture will follow. All participants agreed that personality differences had the potential to be problematic, with a participant amplifying that if mindsets are adversarial “*they just won’t speak to you*” and ways of working have to be gauged, if to be successful. This is supported in the findings of Bird and Mendenhall (2016), who explain that because of differing cultures, everyone operates in different ways. Appreciating differences and using those to strengthen the partnership would ideally be useful for JVs.

All participants discussed the importance of learning in order to improve the success of a JV, and whilst learning can take place over the course of a JV, a theme from the data was that parties who have previously been involved in successful JVs can understand mindsets and attitudes, as they are more open to learning about different

ways of procedure. For those involved in problematic JVs the opposite may be true in that they carry adversarial baggage. The participants all agreed that in order for a culture of working positively together to be instilled, it has to be present from the start of the venture, and it was suggested that this could be started by operating under the same brand name. One participant suggested using the same JV logo on all clothing, signage, advertising etc. to ensure the message that it was operating as one organisation was firmly embedded.

The Use of Key Performance Indicators on Joint Venture Projects

The views expressed by participants generally supported previous research by Constructing Excellence (2017), in that KPIs were set at the forefront of a changed focus within the construction industry, and provided the benefits of monitoring targets, achieving goals and obtaining continual improvements. However, some conflicting views were expressed with regard to the effective use of KPIs within JVs. It was acknowledged that KPIs were useful in JVs, provided stakeholders developed them jointly, with a shared vision and that they were relevant and beneficial to the project. The findings agreed with Beamish (2010), and Roberts *et al.* (2016) that this was often not the case, and KPIs were used mainly to reflect on individual businesses' performance, representing a one-sided approach, and not effective as indicators within a JV. It was evident from the data that predefined performance measurements were sometimes not available at the selection stage of a project, and that organisations were not focussed on common goals, resulting in KPIs not being realised. There was some recognition of the use of 'soft' performance indicators such as the effective sharing of information and management decision-making as identified by Jelinek and Pettit (2012), however, they were strongly related to individual organisations and not regarded as effective within joint organisations, expressed as "*it is the way we do things around here*", further leading to a one-sided culture. Participants stated that they could see the potential of KPIs within JVs; however, they explained that in their experience they were not used appropriately and were viewed as being more of a schedule to hit, or an incentive to speed up work, which could drive a company "*to cut corners*". It was also stated that KPIs were incentives to reward positive performances, "*formulas to get paid*", and were "*not used in a proper way*". It was stated by one seemingly confused participant that there were "*no KPIs on JVs, because the parties involved were equal partners*", and that they were only "*included within the main contract*".

Other views expressed referred to organisations looking at 'accreditations' rather than 'benchmarking', emphasising that organisations are not currently looking to see how successful companies are at hitting goals, but are focusing more on achieving awards and accreditations. Some participants expressed their dislike of KPIs stating that they would need to be "*fully compliant with the contract*", whilst others stated that there are "*other measures to make JVs work*"; however, did not elaborate on what the measures could be. Participants recognised that there are benefits in using KPIs; however, in their experience, they were not used effectively, and often resulted in dispute, generally over the performance measurements used within the projects. It was also stated by the participants that in their experience KPIs caused conflict between individual organisations personnel, resulting in a culture of blame increasing divergence of the JV partnership. Importance of performance measurement after a project was complete was acknowledged; however, not all participants agreed that there should be a joint measurement, and questioned the effectiveness of using another organisations data with their JV business partners. It was stated that there was a lack

of interest in the data produced by other organisations, and that organisations were generally unwilling to be open and share information. It was stated that JVs were normally one off endeavours, so they could not be used to improve upon, which was the view of Hung *et al.* (2002) who stated that JVs have limited life spans. However, this view was not supported by Toor and Ogunlana (2010) who see the potential of KPIs as a performance measurement instrument in order to benefit future JVs.

CONCLUSIONS

As the usage of JVs is set to increase then it is of paramount importance that they are established appropriately to avoid resultant disputes and encourage collaborative working for building competitive advantage. The research shows a resistance to communicate between partner organisations at operational level due to organisational, personality or cultural differences is one of the main problems, largely due to the management team not being collaboratively set up at the start of the venture. The importance of using KPIs to measure performance over the JV rather than for the individual organisations is clear within the literature. However, the findings show that KPIs are used mainly to reflect on individual businesses' performance rather than to appraise JVs and encourage potential of partners. Some venture partners have a lack of interest in the data produced by partner organisations, with an unwillingness to be open and share the information. There is also evidence from the research that the need for a mutual understanding of abilities and expertise within a JV is not apparent. The research shows that KPIs caused tension and conflict between JV partners, resulting in mistrust and a culture of blame. It is clear that although KPIs are used within CJVs they are not being developed jointly or used effectively. The evolving relationship between JV partners in the construction industry should lead to a refinement in the use of KPIs, which would help to alleviate the issues and problems highlighted within this research.

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