

Joint Venture versus Non-Joint Venture Projects in the UAE Construction Industry: A Comparison of the Usage of Project Management Practices and Performance

Abstract

The purpose of this paper is to report on a study comparing joint ventures and non-joint venture projects in terms of their performance and usage of project management practices. Data were obtained from project managers at 99 contracting organizations in the United Arab Emirates (UAE) construction industry. The results show an agreement between the two types of projects in the usage level of 35 out of 40 different practices associated with the ten knowledge areas articulated in the Project Management Institute (PMI) *Project Management Body of Knowledge (PMBOK) Guide* (PMI, 2017). However, joint venture construction projects had higher usages of four cost-and procurement-related practices compared to non-joint venture construction projects. The results also show that although they are associated with increased risks due to the involvement of partners, generally the overall performance of joint venture construction projects is comparable with that of non-joint venture construction projects. The findings of this study could be of value to organizations that are planning to form joint venture projects in the UAE and other countries with similar environments.

Keywords: Project Management Practices; Performance; Joint Ventures; Non-joint Ventures; Construction Industry

1. Introduction

Many organizations in different industries have little or no choice but to enter formally or informally into one or more forms of strategic alliance to survive today's intensely competitive environment. Forms of strategic alliance include licensing, research and development consortia, supplier relationships, and joint ventures (Holt et al., 2000; Kazaz and Ulubeyli, 2009; Rezgui and

Miles, 2009). Of particular interest in this study are joint ventures, which are defined as the pooling together of resources by two or more organizations into a shared legal entity (Kogut, 1988). Arguably, joint ventures can be represented as a hybrid organizational form of economic activity in construction. When successful, joint ventures as other forms of strategic alliances have the capability, through the optimization of capabilities against costs, to increase engineering productivity (Nuese et al., 1998). Although a relatively recent concept in construction (compared to, for example, the oil and gas industry—see Hong and Chan, 2014), joint ventures remain a popular means of collaboration in that field, attracting the attention of numerous scholars (Park et al., 2010; Xue et al., 2010; Hong and Chan, 2014; Almohsen and Ruwanpura, 2016; Hwang et al. 2016).

As a form of construction collaboration articulating how firms may engage in business transactions, the literature has construed joint ventures as particularly well suited to cost-effective transfer of not-so easily transferable but well-embedded organizational knowledge (Kogut, 1988; Lam, 1997; Inkpen, 2000). Joint ventures also create the opportunities for firms to pool their resources and share risks and combine expertise and knowledge (Hlavacek and Thompson, 1976; Katz et al., 1996, Walker and Johannes, 2003; Ingirige and Sexton, 2006; Hwang et al., 2016). Put together, the literature suggests that when projects are delivered by joint ventures, the project delivery's quality noticeably improves and cost and project delivery timescales decrease (Cheng et al., 2004).

Although they are usually larger and more complex than non-joint venture construction projects, the performance of both project forms (joint venture and non-joint venture) can be influenced by similar factors. These factors include the nature of governance structures (Ho et al., 2009; Klijn et al., 2017; ul Musawir et al., 2017), the quality of team relationships (Scott-Young and Samson, 2008; Ozorhon et al., 2010), national cultural fit (Li et al., 2001; Chipulu et al., 2014) and project team member congruence (Ojiako et al., 2015; Wong et al. 2017). However, in addition to the common factors, the performance of joint venture projects can be affected by unique circumstances, such as cultural differences, differences in management style, and delays in decision-making because of

disputes, unclear agreements, and poor communication and cooperation among partners (Lu, 1998; Chan et al., 2004; Merchant, 2005; Parry et al., 2008; Famakin et al., 2012; Shu et al., 2017; Wong et al., 2017). Therefore, achieving success in joint venture construction projects is more challenging than non-joint venture construction projects (Ping Ho et al., 2009).

2. Problem statement and research questions

Although there is a growing body of research investigating issues related to project management practices and performance, only few studies have investigated issues of project management practices and performance exclusive to the construction industry (e.g., Ling et al., 2009; Cheng et al., 2012; Al-Hajj and Sayers, 2014; Attakora-Amaniampong, 2016; Demirkesen and Ozorhon, 2017). Moreover, these studies do not compare joint-venture construction projects with non-joint venture projects in terms of the usage of project management practices and their performance either in the UAE or other countries. Noting that the construction industry is fragmented and further challenged in terms of its management by the co-location of its delivery teams, it then becomes of particular interest to explore possible differences in the usage of project management practices and performance emanating from the use of joint ventures (as compared to their non-use) to deliver construction projects.

Within this context, this study seeks to compare between joint venture and non-joint venture projects in terms of the usage of project management practices and performance. Thus, our research questions are:

RQ1: Does the use of project management practices with joint venture projects differ significantly from those with non-joint venture projects?

RQ2: Are there significant performance differences between joint venture and non-joint venture projects?

To address these research questions, the following null hypotheses were developed:

- $(H_{0i})_1$: Usage of project management practice i by non-joint venture projects does not differ significantly from joint venture projects, $i = 1, 2, \dots, n$, where n is the number of considered project management practices
- $(H_{0j})_2$: There is no significant difference between the performance of non-joint venture projects and joint venture projects in terms of performance measures j , $j = 1, 2, \dots, m$, where m is the number of considered performance measures

3. Review of literature

Project Management Practices

The term ‘project management practices’ refers to codified observations from research in academia and industrial practice that have been formulated and disseminated since perhaps the 1960s with the objective of enhancing the project manager's practical knowledge of and competency in delivering projects successfully (Besner and Hobbs, 2006, 2008; Blomquist et al., 2010; Papke-Shields et al., 2010).

Practices as identified in project management practice manuals such as the Body of Knowledge produced by the Association for Project Management (APM, 2012), the Guide to the Project Management Body of Knowledge produced by the Project Management Institute (PMI, 2017) and the Code of Practice for Project Management for Construction and Development produced by the Chartered Institute of Building (CIOB, 2014) are generally considered applicable to most projects.

Various issues relating to project management practices have been empirically investigated in the literature. The investigated issues include assessing the link between the use of project management practices and project success as well as the association between the level of use and contexts of the project, including culture (see Fortune et al., 2011), industry type (Besner and Hobbs 2008, 2012a, 2012, Turner et al. 2009; Papke-Shields *et al.* 2010), organization size (Papke-Shields *et al.* 2010),

project size (Gowan and Mathieu, 2005, Besner and Hobbs, 2006, 2008, 2012b, Turner *et al.* 2009, Papke-Shields *et al.* 2010), and practitioners' characteristics (e.g., Ferreira *et al.*, 2013).

Table 1 provides a summary of the studies that were conducted either exclusively for projects in the construction industry (e.g., Ling *et al.*, 2009; Cheng *et al.* 2012; Al-Hajj and Sayers 2014; Attakora-Amaniampong, 2016; Demirkesen and Ozorhon, 2017) or inclusively for projects in different types of industries, including construction. The studies that adopted an inclusive approach can be classified into two categories. In the first category, the studies' findings were based on analysing an entire sample (using combined data collected from different industries, including construction) followed by analysing subsamples (each containing data from each type of industry) (e.g., Besner and Hobbs, 2008, 2012a, 2012b, 2012c; Ibbs and Kwak 2000; Crawford and Pollack, 2007). In the second category, the studies' findings were based on analysing combined data collected from different industries, including construction (e.g., Shenhar *et al.*, 1997; White and Fortune, 2002; Crawford, 2005; Zwikael *et al.*, 2005; Besner and Hobbs, 2006; Turner *et al.*, 2009; Papke-Shields *et al.*, 2010; Fortune *et al.*, 2011; Fernandes *et al.*, 2013).

The review process was undertaken by the first and second author and encompassed literature from Keyword searches undertaken in four academic databases – SCOPUS, Web of Science, EBSCO and JSTOR. The keyword search was run using 'management practice', 'project management practice', and 'project practice'. Where duplicate publications were found, they were removed. Review commenced with the two authors reading through the abstract of each paper independently. The papers with abstracts that both authors agreed were relevant were selected to be part of the reviewed papers. Where disagreements emerged following reading of a particular paper, further reading – mainly introduction and conclusion of the paper was undertaken. Where disagreements on relevance still existed, the specific paper was discarded.

“Insert Table 1 about here”

The results of the various studies show widely varying usage of different project management practices, and there have been contradictory conclusions about the association between the usage of project management practices and the project context. For example, some studies report that there is no evidence to suggest that differences in the use of project management practices depend on organization size (e.g., Papke-Shields et al., 2010); however, Turner et al. (2009) and Besner and Hobbs (2012b) have not found such an association. Likewise, the literature contains contradictory conclusions on the association between the usage of project management practices and performance. For example, Crawford (2005) found that the usage of commonly accepted project management practices did not make a significant contribution to project performance, while Papke-Shields et al. (2010), Besner and Hobbs (2012c), and Demirkesen and Ozorhon (2017) found that they had a positive impact on performance.

One possible explanation for these contradictory findings might be the heterogeneity of the data used; as mentioned earlier, the findings of several previous studies were based on analysing combined data collected from different industries and even from different countries, ignoring that the characteristics of projects in different industries are incomparable in terms of size, uncertainty, degree of innovation, project managers' characteristics, etc. (Besner and Hobbs, 2012a). For instance, compared to other types of projects, engineering and construction projects are generally larger, more complex, and better defined, but less innovative and carried out for external customers. For these reasons, the usage of PM practices can vary considerably according to industry type (Cooke-Davies and Arzymanow, 2003; Crawford and Pollack 2007; Besner and Hobbs, 2008, 2012a, 2012c; Papke-Shields et al., 2010; Turner et al., 2009) and between projects and the organizations that they are embedded into (Bresnen *et al.* 2004; Sydow et al. 2004). In addition, the usage of PM practices can vary significantly depending on the unique characteristics of the construction industry in a specific country (Zwikael et al., 2005; El-Sayegh, 2014; Corvello et al, 2017). The contextual details that

require structural differences among projects yield many other imperatives (such as governance), and the ensuing implications for project management practices has led Besner and Hobbs (2006, 2008, 2012a,b,c, 2016) to argue that project management practices must be adapted to the specifics of individual projects to deliver the desired performance. Besner and Hobbs also allude to significant differences in practice among project types. Such project types may include joint and non-joint venture projects.

Project Performance

The literature suggests that there appears to be no academic consensus on a generally acceptable definition of “project performance” (Ozorhon et al., 2007; Ozorhon et al., 2010). However, scholars such as Ozorhon et al. (2010) and Lei et al. (2017) have in prior studies construed performance from the perspective of the “generic” triple constraints of time, cost and quality. At the same time, we acknowledge that academic scholarship has long shown that the notion of a triple constraint is very restricted and in fact represents an unrealistic approach to assessing the performance of projects (see Atkinson, 1999; Shenhar et al., 2001; Barclay and Osei-Bryson, 2010). Despite these claims, as Barclay and Osei-Bryson (2010) point out, these measures of project performance continue to dominate project management practice. On recognition of the unrealistic and restricted nature of the triple constraint measures, more recent research has sought to expand the ways of measuring project performance. Because of the increasing recognition that the performance of projects is primarily multi-dimensional (Shenhar et al., 2001; Ojiako et al., 2008), more recent project performance measures have sought to incorporate wider measures that are stakeholder driven (Ogunlana, 2010; Davis, 2014; Ojiako, et al. 2015; Nederhand and Klijn, 2018).

In the same manner that project management research has sought to expand how project performance is measured, research on joint venture performance in construction, although vague (Gale and Luo, 2004), has increasingly focused its attention on articulating a multi-dimensional perspective

of performance (Ozorhon et al., 2010; Ozorhon et al., 2011; Larimo et al., 2016), finding that the performance of joint ventures can be measured against a combination of objective and subjective measures.

Joint Venture Theory

Because the construction industry is fragmented and further challenging to manage because of the co-location of its delivery teams, it is particularly interesting to explore possible differences in project management practices and performance between construction projects that use joint ventures and those that do not. The justification for such a comparison is that to an extent, many empirical studies focused on joint ventures in non-construction industries suggest that such an organizational form may lead to increased performance, while few empirical studies have compared joint venture performance to other organizational forms, such as non-joint ventures. Where such studies exist, the literature is not conclusive on whether the performance of joint ventures is superior or inferior to non-joint ventures. For example, Kent (1991) found that although joint ventures in the petroleum industry enjoyed significantly more operational advantages than non-joint ventures, their overall performance was significantly lower than non-joint ventures. Yiu and Makino (2002), by contrast, found that in home-electronic and automobile industries, joint ventures out-performed non-joint ventures in foreign markets. Similarly to Kent in the aforementioned 1991 study, Beshears (2013) concluded that the overall performance of joint ventures in the petroleum industry was significantly *higher* than non-joint ventures. These various studies lead us to posit that (i) the literature is not conclusive on whether the performance of joint ventures is superior or inferior to non-joint ventures, and (ii) there are different theoretical perspectives available to explain construction companies' decision to enter into a joint venture (Kogut, 1988, Harrigan and Newman 1990, Eisenhardt and Schoonhoven 1996, Büchel 2000, Xia et al. 2018) and/or explain the comparative performance between joint ventures and non-joint ventures.

4. The study

To address the two earlier research questions and in the process achieve the earlier stated aim of this study, data were acquired from a questionnaire of project managers involved in the delivery of construction projects in the United Arab Emirates (UAE). In 2016, the share of the construction industry in the UAE's gross domestic product was 10.3 percent. Compared with 2012, this share has increased by 25.6 percent (Annual Economic Report 2017). Moreover, in this country, expatriates account for more than 88 percent of the population and more than 99 percent of the workers in the construction industry are migrants from different countries, including India, the Philippines, Indonesia, Egypt, China, and many other countries (GMI 2018). Therefore, multiculturalism is a common characteristic among all construction projects regardless of the type of ownership (joint venture or non-joint venture).

The framework implemented in the questionnaire was developed from an earlier study undertaken by Papke-Shield et al. (2010), who considered only the first nine knowledge areas and four process groups (initiating, planning, executing, and monitoring and controlling) articulated within the *PMBOK Guide* (PMI, 2017). The draft questionnaire was then piloted against five project managers from different organizations. The responses received from these project managers were then used as a guide to further refine the questionnaire prior to the main survey being undertaken.

The questionnaire consisted of three sections. The first section contained general questions such as respondent's job title, name of organization (optional), name (optional), ownership type, average number of employees in the projects, average value of the projects, and their average duration in months. In the second section, respondents were asked to indicate how often cost, time, technical specifications, quality requirements, client satisfaction, and business objectives had been met over the past five years, using the following scale: 1 = *never*, 2 = *seldom*, 3 = *sometimes*, 4 = *frequently*, and 5 = *always*. These measures were selected to compare the performance of non-joint venture projects to

joint venture projects because said measures are associated with short- and mid-term success (Shenhar et al., 1997; Papke-Shields et al., 2010) and they are applicable to all types of projects, irrespective of the type of ownership (joint venture or non-joint venture). The final section contained a list of 40 items of project management practices in the form of outputs of processes derived from the standards set forth in the *PMBOK Guide* (PMI, 2017). As shown in Table 2, these items cover the ten knowledge areas (integration, scope, time, cost, quality, human resources, communication, risk, procurement, and stakeholders) and represent outputs of the five processes (initiating, planning, executing, monitoring and control, and closing). These items are an extension of those used by Papke-Shield et al. (2010), who considered only the first nine knowledge areas and four process groups (initiating, planning, executing, and monitoring and controlling). In addition to Papke-Shield et al. (2010), several studies opted to use practices based on the *PMBOK Guide* (e.g., Zwikael et al., 2005; Crawford 2005; Crawford and Pollack 2007; Besner and Hobbs 2008; 2012a, 2012b; Ling et al. 2009; Attakora-Amaniampong, 2016). In this final section, the respondents were asked to indicate how often each of the project management practices were created for projects that they had managed during the past five years, using the following Likert scale: 1 = never, 2 = rarely, 3 = occasionally, 4 = often, and 5 = always.

The questionnaire was sent to a random sample of 150 construction-contracting organizations out of 713 active construction contracting organizations operating in the United Arab Emirates. The organizations were contacted in a variety of ways, including electronically (via emails) and with manually delivered hard copies. We received responses from a total of 99 (out of the 150) organizations we sampled, representing a response rate of 66 percent. The respondents had managed 430 projects over the past five years, 22 percent of which were joint venture projects and 78 percent of which were non-joint venture projects. The sample size was considered acceptable since the computed margin of error for this sample at a confidence level of 95 percent is nine percent.

5. Results and discussions

Table 3 summarizes the main characteristics of projects that were managed by the respondents over the past five years. This table clearly shows that joint venture projects are generally larger in terms of revenue, number of employees, and duration as compared to non-joint venture projects. This finding indicates that one possible reason for entering joint ventures was to combine resources to carry out large projects.

“Insert Table 3 here”

In addition to the median, which was used for ranking purposes, two statistical tools were used for analysing the collected data: the Mann–Whitney U test and the Spearman’s rank correlation coefficient. The Mann–Whitney U test is a hypothesis test used to compare the medians of two independent samples, whereas the Spearman's rank correlation coefficient is used to discover the strength of a link between two sets of data. The aforementioned tests were selected because they are suitable for analysing Likert scale responses and cases in which the normality assumption is unjustified (Montgomery, 2005).

Table 4 shows the computed medians for the use of each project management practice across the two categories of projects: non-joint venture and joint venture projects. The results show high usage of project management practices associated with all knowledge areas, and there was an agreement between the two types of projects in the level of use of most project management practices, although these projects are not comparable in size. This observation simply indicates that the levels of use of project management practices do not depend on the projects’ size. This finding is inconsistent with those of Besner and Hobbs (2006, 2012b), Turner et al. (2009), and Papke-Shields et al. (2010), which concluded that as the project size increases, so does the need for formal deployment of practices. In addition, finding high usage of project management practices across all knowledge areas is inconsistent with the study by Papke-Shields *et al.* (2010), which found that project management practices

associated with time, scope, and cost were more widely used compared with those associated with other knowledge areas.

“Insert Table 4 here”

Since the studies by Besner and Hobbs (2006), Turner et al. (2009), and Papke-Shields et al. (2010) were conducted years ago, one possible explanation for the aforementioned inconsistencies is that project managers have recognized the importance of using project management practices related not only to time, scope, and cost, but also to other knowledge areas. Therefore, our study results can be considered an update to the current practice of project management in the construction industry. Another possible explanation for inconsistencies between the findings of this study and previous studies is that project management practices related to time, scope, and cost are applicable to any type of industry, including construction, whereas project management practices related to other knowledge areas are more applicable to the construction industry, irrespective of the type of project ownership or size.

Another useful conclusion that can be drawn from Table 4 is that work performance information, risk register, and quality checklists were the least widely utilized project management practices—again, irrespective of the type of project ownership. The performance information consists of the data collected on the project’s status from various controlling processes. A checklist is a tool used to verify that a set of required steps has been performed. The risk register is used to record the results of risk analysis and risk response planning.

To test the null hypotheses that project management practices do not significantly differ according to the type of project ownership ($H_{0i}, i = 1, 2 \dots 40$), the Mann–Whitney U test was conducted on each project management practice. As shown in Table 4, according to the Mann–Whitney test, at the 0.05 level of significance, evidence suggests that the level of usage of procurement documents, source selection criteria, cost baseline, and cost forecasts of non-joint venture projects is significantly higher

than that of joint venture projects. At the same level of significance, the evidence indicates that the level of usage of team performance assessments in non-joint venture projects is significantly higher than that of joint venture projects.

The computed medians for the performance measures and the p -values for the hypotheses ($H_{0j}, j = 1, 2, \dots, 6$) tests are presented in Table 5. According to the computed medians, the performance of both joint venture and non-joint venture projects in terms of achieving business objectives was the lowest compared with other performance measures, whereas their performance in terms of achieving client satisfaction was the highest compared with other performance measures. The low performance with respect to achieving business objectives might be an indication of a lack of alignment between business and project strategies. Moreover, at a significance level of 0.05, the Mann–Whitney U test results revealed that:

- There is no significant difference between the performance of joint venture and non-joint venture projects in terms of meeting time goals, meeting technical specifications, achieving client satisfaction, and achieving business objective goals.
- The performance of joint venture projects is significantly higher than that of non-joint venture projects in terms of meeting cost goals.
- The performance of joint venture projects is significantly lower than that of non-joint venture projects in terms of meeting quality requirements.

“Insert Table 5 here”

One possible explanation for these results is that contrary to the primary objective in non-joint venture projects, the objective of joint venture projects was to meet cost goals. Therefore, a significant amount of control over project costs was exercised by each partner. This possibility was reflected through the high usage of cost- and procurement-related practices - namely, procurement documents,

source selection criteria, cost baseline, and cost forecasts. To confirm the association between usage of these practices and meeting cost goals, Spearman's correlation coefficient was used. The researcher found a significant positive correlation between meeting cost goals and each of the related practices, i.e., the usage of procurement documents, source selection criteria, cost baseline, and cost forecasts. The computed coefficient values are 0.458, 0.408, 0.488, and 0.458, respectively. The correlation is significant at the 0.05 level between meeting cost goals and usage of source selection criterion, whereas it is significant at the 0.01 level between meeting cost goals and each of the other practices. These results provide evidence for the advantages of using procurement documents, source selection criteria, cost baseline, and cost forecasts as good practices for improving project performance in terms of meeting cost goals.

Procurement documents are used to request proposals from prospective sellers. They may include requests for information, invitations for bids, requests for proposals and quotations, tender notices, invitations for negotiation, and invitations for sellers' initial responses. The procurement documents include source selection criteria, which are developed and used to evaluate seller proposals either objectively or subjectively. The cost baseline is the approved version of the time-phased project budget; it is developed as a summation of the approved budgets for the different schedule activities. The cost forecasts are determined by comparing progress against the cost baseline and computed estimates to complete.

Finally, it is worth mentioning that there were similarities between the present study and that of Papke-Shields et al. (2010) in terms of the investigated practices and performance measures. In both studies, the practices were investigated in the form of the outputs of processes derived from the standards detailed in the *PMBOK Guide* (PMI, 2017). In addition, in both our study and the study by Papke-Shields et al. (2010), performance was assessed in terms of six measures - specifically, meeting cost goals, time goals, technical specifications, and quality in addition to achieving client satisfaction and business objectives. However, the study performed by Papke-Shields et al. (2010) was conducted

using data collected from a heterogeneous sample; only six of 142 respondents were from the construction industry, and the remaining respondents were from twelve other industries. The present study was carried out using data collected from a homogenous sample: all the respondents were from the construction industry in the UAE, which might explain some of the inconsistency in the findings reported in these two studies.

6. Conclusions

The primary aim of this study has been to explore (and compare) the usage and performance of project management practices in joint venture and non-joint venture project. Such management practices are articulated in the form of the practices and knowledge areas articulated within a number of project management bodies of knowledge. An example being the *PMBOK Guide* (PMI 2017).

To meet this stated aim, a questionnaire survey of construction-contracting organizations in the United Arab Emirates was undertaken. The study findings suggests considerable differences between joint venture and non-joint venture project types. More specifically, the study found that usage of four *PMBOK* project management practices, namely; procurement documents; source selection criteria, cost baseline, and cost forecasts were significantly higher in joint venture than in non-joint venture project types. Joint venture projects were however found to exhibit significantly better performance in terms of meeting cost goals. Non-joint venture project types were also found to exhibit superior performance when compared to joint venture projects in terms of meeting quality requirements.

There is extensive research within the project management discipline that has examined the use of joint ventures as project delivery mechanisms. Among the numerous advantages of joint ventures as delivery mechanism is the pooling of resources and the sharing of knowledge. Both allow for multiple projects to be pursued and delivered at simultaneously. Managing project deliveries through joint ventures thus requires the development of broad project perspectives. For one, it entails departing from construing project deliveries as being undertaken by separate independent entities

(organisations). In a joint venture, the delivery teams will be able to call upon resources that normatively, would not have been available to them. This is because project organisations may not necessarily have the resources required to meet project needs. Instead of expending considerable administrative costs attempting to directly acquire (maintain and manage) such resources which due to the *temporarity* (Turner and Müller, 2003; Bakker et al. 2016) and ephemeral nature of projects (see Turner et al. 2015; Prado and Sapsed 2016), may be required only for a short period of time, joint venture project types allow for project organisations to gain access to target assets without the need to permanently acquire them. In sum, the use of joint venture project types allows project-based organisations (PBOs) to reduce the risks associated with valuing assets based on estimates. The findings that usage of four *PMBOK* project management practices (procurement documents; source selection criteria, cost baseline, and cost forecasts) were significantly higher in joint venture than in non-joint venture project types reinforces asymmetric information literature (see for example, Hennart and Reddy, 2000; Jandik and Kali, 2009; Kwok et al., 2018), which espoused within a project context will suggest a preference for joint venture project types in conditions where there is disparate information. It is therefore reasonable to assume that joint venture project types will emphasise project management practices (such as procurement documents; source selection criteria, cost baseline, and cost forecasts) that are able to facilitate not only the availability of information that will enable decision uncertainties to be overcome, but also trigger knowledge sharing between joint venture partners.

As expected with most studies, this study has a number of limitations. One of the main limitations being the relatively small sample size of the study sample. However, although comparing favourably with earlier reported studies, generalizability of the results will be improved not only by increasing sample size, but also by increasing the breath of the sample size to encompass a cross-national study. A number of such cross-national project studies have been undertaken (Ojiako et al., 2015, Chipulu et al., 2016). More recent discussion on the project management research agenda has also called for such studies (Geraldi and Söderlund, 2018). The authors however posit that undertaken

a cross-national study may in itself be associated with a number of theoretical challenges. For one, numerous studies do highlight that project management practices vary considerably not only across different industries (Cooke-Davies and Arzymanow, 2003), but also across countries (Zwikael et al., 2005; El-Sayegh, 2014; Corvello et al, 2017). Another limitation of the study is that although it is recognised (and acknowledged) that projects are temporal and ephemeral in nature, the impact of these key project characteristics was not necessarily taken into effect in the study's construction of 'joint ventures'. Future studies therefore needs to emphasise that the formation of joint ventures is not necessarily 'static'. Instead, it should be construed as a stage of project delivery that is in constant change. The implication of this is that future studies may need to emphasise the constant reshaping of joint venture initiatives in order to be capable of catering for what may be an evolving project delivery type. Accordingly, future studies may focus on exploring the operationalization of dynamic joint venture forms that may be required to attain the exploitative and explorative objectives of modern projects.

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