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Root causes of conflict and conflict resolution mechanisms in public-private partnerships: Comparative study between Ghana and China

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ABSTRACT

Conflict is inevitable in public-private partnership (PPP) due to the long-term agreement and multiplicity of stakeholders with varying beliefs and interests. However, a thorough understanding of the root causes of conflict beforehand helps to minimize conflict occurrence, thereby ensuring a smooth PPP process. This paper aims to explore and evaluate the root causes of conflicts in PPPs through a comparative study between Ghana and China. Further, the most suitable conflict resolution mechanisms are explored from the Ghanaian and Chinese perspectives. Results show that causes of conflict ranked higher in Ghana directly relate to poor governance and contract arrangement, whereas causes related to poor risk management and communication are ranked higher in China. Further, *arbitration* and *negotiation* are the most suitable conflict resolution mechanisms for PPPs in Ghana and China respectively. The outputs of this study inform international private investors interested in PPPs in Africa and China of the possible sources of disputes and resolution mechanisms in PPPs. This will enable international investors to develop strategic measures before entering into the PPP markets of both regions.

1. Introduction

In the construction industry, conflict is inevitable and remains a key risk because of the multiple players with different interests and values (Ejohwomu, Oshodi, & Onifade, 2016; Mitkus & Mitkus, 2014). As defined by Gardiner and Simmons (1992), conflict is any divergence of interests, objectives or priorities between individuals, groups or organization; or non-conformance to requirement of a task, action or process. Essentially, conflict arises when there are serious differences in two or more beliefs, interests and perceptions (Acharya, Dai Lee, & Man Im, 2006). Gorse (2003) put conflict into two categories; functional and dysfunctional. Functional conflict is natural, and it occurs when there are challenges and disagreements on tasks, roles, process and functions. On the contrary, dysfunctional conflict is considered unnatural and results from personal insults and criticisms that boost self-ego instead of improving task performance (Gardiner & Simmons, 1992; Gorse, 2003).

Although, all construction projects are prone to conflict, public-private partnership (PPP) projects are more susceptible to conflict compared to any other construction project arrangement including the traditional-bid build system (Osei-Kyei & Chan, 2015; UNDP, 2017). This is because PPP projects involve a long-term arrangement with myriad of complex legal arrangements and a large number of stakeholders with multifaceted interests, beliefs and objectives (UNDP, 2017; Zheng, Roehrich, & Lewis, 2008). In addition, the multiplicity of external stakeholders of PPP projects exposes them highly to conflict problems (Zou, Kumaraswamy, Chung, & Wong, 2014). These notwithstanding, many past studies including Ameyaw and Chan (2013); Osei-Kyei and Chan (2017a); Ke, Wang, Chan, and Cheung (2011); Ke, Wang, Chan, and Lam (2010); Ibrahim, Price, and Dainty (2006) and Chan et al. (2014) have pointed out that conflict between parties remains a critical risk factor in PPPs. Essentially, in spite of the fact that conflict is critical in PPPs and have caused the distress and failure of many past projects including the Ghana National Housing Project (Ghana); Bangkok Elevated Transport System (BETS) (Thailand); West Cultural Kowloon District (Hong Kong) and The Ngone bridge project (Lao PDR), knowledge and empirical evidence on the root causes of conflicts in PPPs have largely been anecdotal and remain thin on the ground. In this regard, there is the need for a holistic and in-depth investigation into the root causes of conflicts in PPPs so that practitioners and implementers will be informed beforehand the possible conflicting factors in PPPs. This will certainly help to avoid a possible poisoning of the PPP process, which could lead to lengthy legal battles, poor value

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for money, distrust and reputational damage.

During, the last couple of decades, a significant amount of studies on the causes of conflicts have been conducted (e.g. Acharya et al., 2006; Awakul & Ogunlana, 2002; Carmicheal, 2002; Ejohwomu et al., 2016; Fenn, Lowe, & Speck, 1997; Gardiner & Simmons, 1992; Gorse, 2003; Harmon, 2003; Kumaraswamy, 1997; Mahato & Ogunlana, 2011; Mitkus & Mitkus, 2014), however, the majority of these studies have focused on the traditional bid-build projects. In fact, very few, if any, have comprehensively investigated the root causes of conflicts within PPP context. Considering the uniqueness and distinct characteristics of PPP projects, it is therefore imperative to explore the root causes of conflicts in PPPs. Against this backdrop, the paper aims to identify and assess the root causes of conflicts in PPPs through a comparative study between Ghana and China. In addition, the conflict resolution mechanisms for PPPs are also explored and evaluated.

The basic reason for conducting a comparative study is because PPP has become an international concept; it is being implemented and practiced by almost every country or government globally (Osei-Kyei & Chan, 2017b). Thus, it will not be considerably beneficial to explore a critical area such as causes of conflicts from a country's perspective/context. A comparative study is deemed to be more appropriate and essential because it expands the international best practice framework for PPPs and more importantly, international private investors and developers will be informed of the strategies to adopt when entering into different PPP markets. Furthermore, Ghana and China are used for the comparative study because; in recent years the collaboration between Africa particularly Ghana and China in terms of trades, cultural and academic exchanges and private infrastructure investments is growing. Many Chinese investors are entering into African's PPP market and vice versa. In fact, the Sino-African relation has been projected to strengthen in the next decade following the launch of the Chinese Belt and Road policy (Alessi & Xu, 2015). Therefore, a comparative study between Africa and China on a critical issue in PPP such as conflict is worthy. This will expand knowledge on PPP practices and implementation approaches between Africa and China.

It is hoped that the outputs of this study will inform international developers who are interested in PPP in Africa and Asia of the strategies they should adopt to avoid potential conflicts in PPPs. Further, the findings of this study set a solid foundation for the formulation of hypothesis for future empirical investigations in conflicts in PPPs.

2. Literature review

2.1. Causes of conflicts in construction

The causes of conflict have been extensively covered in the normative literature. Importantly, they have been explored from different countries' perspectives, stakeholders' perceptions and construction stages (Mitkus & Mitkus, 2014). Acharya et al. (2006) by means of a questionnaire and interviews on construction professionals identified six critical conflicting factors in the Korean construction industry. These factors include public interruption, differing site condition, differences in change order evaluation, design errors, excessive contract quantities variation and double meanings of specifications. Awakul and Ogunlana (2002) investigated into the causes of conflicts in Thailand using a case study. They came out with four broad categories of the causes of conflicts; these include physical resources, ecological resources, human use and quality of life. Also, these four categories consist of 28 sub-factors, which lead to conflict in large construction projects. From the Nigerian perspective, Ejohwomu et al. (2016) identified 64 causes of construction conflicts; the top three factors are poor financial projections on the client's side; poor public relationship between the project people and the public and lack of funds.

In Lithuania, Mitkus and Mitkus (2014) strongly opined that unsuccessful communication between the client and the contractor is the major cause of construction conflict. Further, they pointed out that factors such as unfair behaviour of parties and psychological defense mechanism are likely to cause construction conflicts in Lithuania. Kumaraswamy (1997) through a questionnaire survey of construction professionals found that inaccurate design information, inadequate design information, inadequate site investigation, slow client responses and poor communication are among the critical root causes of conflicts in the Hong Kong construction industry. Mahato and Ogunlana (2011) by means of a case study approach indicated that the lack of effective environmental impact assessment, public participation and mutual consultation, on timely basis and accurate information from the early stages of projects are the major cause of conflicts in dam construction projects in Nepal.

Gardiner and Simmons (1992) studied the causes of conflicts at different stages of construction projects. Some of the key conflicts identified at the inception, design, construction and project management stages include; low recognition and lack of authority, design error, design omission, design not meeting specification, cost overrun, quality of work, running late, operational faults, conflict of loyalty and bypassing a ‘single’ point of contact. Jaffar, Tharim, and Shuib (2011) also identified three major sources of conflicts which are eminent in the construction industry; they include behavioural problems, contractual problems and technical problems. Cheung, Ng, and Sin (2001) put the major causes of conflicts in the construction industry into six broad categories; they are budget overrun, outstanding payment, different percentage of claim submission, number of days behind program, liquidated damages and percentage change of original design. Also, Cheung and Yiu (2006) explained that construction conflicts could occur as a result of differentiations, task interdependency, communication obstacles, tensions and personality traits. Lastly, Chan and Suen (2005) categorized construction conflicts into three groups; contractual, culture and legal. These categories consist of several sub-conflicting factors.

2.2. Conflict resolution mechanisms in PPPs

As the saying goes “prevention is better than cure”, thus, it is always prudent for practitioners to prevent conflict by knowing the root causes of conflicts. However, when conflict occurs, there are mechanisms that could be used to resolve it. The major types of resolution mechanisms for conflicts in PPPs include negotiation, mediation, arbitration and litigation (Kerf et al., 1998; UNDP, 2017; World Bank Group, 2018). As explained by UNDP (2017), the type of conflict resolution mechanism adopted in PPPs depends on several factors. They include the nature of conflict/dispute; the relationship between the two parties; the sensitivity of the issues involved and likely outcome, and cost.

Negotiation is where by parties engage in direct dialogue and consultation to resolve the conflicting issue (Chan & Suen, 2005; UNDP, 2017). Generally, negotiation is the first step in resolving conflict in PPPs and it is normally preferred because it offers the opportunity for a peaceful resolution to the conflict (UNDP, 2017). As a matter of fact, negotiation preserves working relationship and also deepens the bonding between parties. Another benefit of using negotiation is that it is less expensive and does not involve any formal proceedings compared to other methods. One of the major disadvantages of negotiation is that the final negotiation decision or agreement is not legally binding. This means that parties can choose to comply with the final agreement; and also, the negotiation decision cannot be enforced by the courts (Chan & Suen, 2005). Mediation is like negotiation but in this one, a mediator is appointed to guide parties' discussion so that a mutually agreed solution could be reached. The mediator is usually a neutral person and he/she does not have the authority to impose a settlement (UNDP, 2017).

Arbitration is a method where by a neutral third party, usually called an arbitrator is appointed to decide or award after the parties involved in the conflict have argued their cases out (UNDP, 2017). Unlike other methods, in arbitration, the parties involved in conflict do not work towards a mutually agreed solution but rather present their

Table 1
Root causes of conflicts in PPP arrangements.

Codes	Root causes of conflicts in PPP arrangements	Ibrahim et al. (2006)	Chan, Yeung, Calvin, Wang, and Ke (2011)	UNDP (2017)	Acharya et al. (2006)	Tang, Shen, Skitmore, and Cheng (2012)	Babatunde, Perera, Zhou, and Udeaja (2015)	Cheung and Chan (2011)	Ng et al. (2012)	Kumaraswamy (1997)	Osei-Kyei and Chan (2017c)	Carmicheal (2002)
C1	Unfair risk allocation	x	x									
C2	Absence of proper communication channel			x								
C3	Double meanings in output specifications				x							
C4	Lack of understanding on the roles and responsibilities of parties			x		x						
C5	Unexpected tariff changes						x					
C6	Excessive contract variations							x				
C7	Political interference			x							x	
C8	Ambiguous goals and objectives								x			
C9	Incomplete transfer of risks	x								x		
C10	Personality clashes			x						x		
C11	Unrealistic time targets									x		
C12	Delay in decision makings by parties				x							
C13	Delay in rectifying defects during service delivery										x	
C14	Reluctance to seek clarification											x
C15	Inadequate compensation to displaced persons										x	
C16	Unreliable service delivery										x	

Table 2
Conflict resolution mechanisms for PPPs.
Sources: Chan and Suen (2005); UNDP (2017); Kerf et al. (1998); World Bank Group (2018); Marques (2018).

Conflict resolution mechanism	Brief description
Negotiation	This is whereby parties engage in direct consultation to resolve any conflicting issues
Litigation	This is where conflicting issues are settled in court and the final outcome is often win-lose scenarios
Mediation	In this mechanism, a neutral third party is appointed to sit down with the two partners and guides the discussion to a mutually agreed solution
Arbitration	This form of resolution is competitive and imply a binding decision usually taken by an arbitrator

cases, of which a final decision is made by the arbitrator. In fact, the final decision by the arbitrator is legally binding and should be complied by both parties (Marques, 2018). Many countries have laws and regulations governing the use of arbitration and these laws may vary. Nonetheless, there is an international arbitration which allows foreign investors to seek redress if they do not trust the domestic arbitration (Kerf et al., 1998). One key advantage of arbitration is that it allows conflicts to be resolved privately and in confidential manner (Chan & Suen, 2005). Also, it preserves the relationship existing between parties. On the contrary, arbitration could be very expensive and take time particularly international arbitrations (Kerf et al., 1998).

Litigation is often regarded as the last resort to resolving conflicts in PPPs and other construction conflicts (UNDP, 2017). Litigation is a way of resolving conflict among parties using the court system (Chan & Suen, 2005). The final decision in litigation is binding and it could be a win or lose situation. Essentially, litigation damages working relationships and takes a lot of time and resources. In addition, the court may lack technical knowledge and expertise for the conflict issue in question (Kerf et al., 1998).

It should be mentioned that the above resolution mechanisms are mostly used to resolve conflicts existing between the contracting authority (government) and investor. They are not used to resolve conflict between external stakeholders such as users/civil group societies and the project parties. For such conflicts (i.e. interface/border conflicts), consultation and coordination are the appropriate resolution methods (UNDP, 2017).

2.3. Knowledge gap

Although many prior studies have discussed the potential causes of conflicts, majority of the studies focused on the traditionally procured construction projects. In fact, few studies, if any, explored and discussed into details, conflicting factors within the context of PPP project arrangement, which is distinct and different from the traditional build-bid projects. In addition, conflict resolution mechanisms in construction particularly for PPPs have received very little attention despite the increasing occurrence of conflicts in PPP arrangements. Furthermore, past studies were country-specific and therefore had very little practical implications from the international perspective particularly between Africa and China.

Therefore, this paper aims to fill these knowledge gaps by exploring the root causes of conflicts and the appropriate conflict resolution mechanisms within the context of PPP arrangement from an international perspective using Ghana and China as cases. Essentially, this study will contribute to establishing more international best practices for PPP arrangements. Further, considering the rapid increase in trade between Africa and China following the launch of the Chinese Belt and Road Policy, the outputs of this study will inform potential Chinese and African investors of the effective measures which need to be considered to ensure a stable economic relationship.

3. Research method

3.1. Prior literature and experts review

A thorough review of both institutional and academic literatures was conducted to identify the relevant causes and resolution mechanisms of conflicts in PPPs. From the review, 16 factors believed to be the causes of conflicts in PPPs and four conflict resolution mechanisms were identified. In order to establish the appropriateness and adequacy of the lists within the Ghanaian and Chinese contexts, six experts from both jurisdictions with > 10 years of industrial and/or research experience in PPP were invited for pre-testing and review. Specifically, the experts consisted of two academics and one industrial practitioner from Ghana, and two industrial practitioners and one academic from China. Experts from each country confirmed the suitability and applicability of the causes of conflicts and conflict resolution mechanism within each jurisdiction. However, experts from China suggested some minor changes in the phrasing of two causes: C1-Unfair risk allocation and C3-Double meanings in output specifications. The final lists of the causes of conflicts and resolution mechanisms are shown in Tables 1 and 2 with their relevant literature sources.

3.2. Selection of respondents

In construction management research particularly PPP, the process adopted in selecting appropriate respondents is very crucial because it determines the reliability and genuineness of the research findings (Osei-Kyei & Chan, 2017a). Essentially, over the years, many PPP studies have adopted non-probability sampling methods such as snowballing and purposive sampling to select qualified and experienced respondents (Cheung & Chan, 2011; Ke et al., 2010; Ng, Wong, & Wong, 2012). This is quite understandable considering the fact that the PPP concept is still emerging particularly in many developing countries; therefore, it has become extremely difficult to obtain an official list of PPP experts (Osei-Kyei & Chan, 2017b). Against this backdrop, this study adopted purposive sampling with two pre-defined criteria. The criteria included 1) having in-depth knowledge on the general practice of PPP and have very closely followed PPP development in China or Ghana; and 2) having adequate direct hands-on (at least one project) and/or research experience in PPP in Ghana or China (Chan, Lam, Chan, Cheung, & Ke, 2010; Ke et al., 2010).

Given these criteria, 170 potential respondents in China were identified and invited to participate in the study. Importantly, the prospective respondents (i.e. both academic and industrial practitioners) identified in China were from cities that are rapidly developing their infrastructure and have more vibrant PPP markets (Cheung & Chan, 2011).

The cities include Beijing, Chengdu, Qingdao and Yibin. In Ghana, 150 potential respondents were identified from dedicated private sector organizations, public institutions that are actively involved in PPPs (i.e. Ghana Highways Authority, Ghana Ports and Harbour Authority, Urban Roads Department and PPP Advisory unit) and publications in conference proceedings and journals.

3.3. Data collection

An empirical questionnaire survey was conducted in both China and Ghana to examine and compare the criticality of the causes of conflicts and the most suitable resolution mechanism in PPPs. Respondents were asked to rate the significance of the causes of conflicts within their jurisdiction based on a five-point Likert items (i.e. 1 = least critical/important and 5 = extremely critical/important). For conflict resolution mechanisms in PPPs, respondents were requested to indicate the most suitable method for resolving conflicts in PPPs as applied in their respective countries. Given that many of the respondents from China were not fluent with the English language, the list of causes of conflicts and conflict resolution mechanisms were translated to Chinese (PRC).

Questionnaires were sent to the targeted respondents by email and/or face-to-face meeting. Questionnaires distributed in China specifically in Chengdu and Yibin (Sichuan Province) were through face-to-face meetings, whereas questionnaires distributed to respondents in other cities (i.e. Beijing and Qingdao) were by emails. For Ghana, questionnaires were sent to all prospective respondents through emails. In total, 84 valid replies were received; 52 from Ghana and 34 from China. These represent response rates of 34.67% and 18.82% for Ghana and China respectively. Although the response rates are considerably low, the samples are considered satisfactory for further analysis when compared with similar comparative studies in PPP. For example, Liu, Wang, and Wilkinson (2016) obtained 32 and 25 responses from China and Australia respectively, whereas Chan et al. (2010) obtained 53 and 34 responses from China and Hong Kong respectively. Also, Cheung, Chan, and Kajewski (2009, 2012) compared PPP practices in Hong Kong and Australia using 34 and 11 responses respectively. Moreover, the samples from Ghana and China are > 30, indicating that the central limit theorem holds; therefore, statistical techniques could still be performed to draw meaningful conclusions (Hwang, Zhao, See, & Zhong, 2015; Hwang, Zhu, & Tan, 2017). Notwithstanding these, the industrial and/or research experience and diversity of PPP sectors of respondents (Table 3) from both countries render the reliability and genuineness of the survey responses for further comparative analysis. The detail background of respondents from both countries is shown in Table 3.

From Table 3, approximately 78% and 79% of respondents from China and Ghana are industrial practitioners; thus, the majority of respondents from both jurisdictions are exposed to the actual intricacies of PPP projects, which enriches the responses and enhances the reliability of the research outcomes. Furthermore, almost 66% of the respondents from China have > 10 years of industrial and/or research experience in PPPs compared to from Ghana. This implies that more respondents from China have more PPP experience than their Ghanaian counterparts. This is quite unsurprising considering the fact that since 2000s there has been a tremendous increase in PPP investments in China (Osei-Kyei & Chan, 2017d; World Bank, 2015). Specifically, as at 2016, PPP investments in China has increased to a total of US$ 11.5 billion (World Bank, 2017). Therefore, it is likely that more practitioners have become experienced in PPP. Nonetheless, considering the fact that PPP is still developing in Ghana, the fairly high number of respondents with > 10 years of experience suggests that opinions received from Ghana are credible, thus statistical analysis can be performed to draw meaningful conclusions and for future reference.

Table 3
Profile of respondents from China and Ghana.

Demographics	Ghana		China	
	No. of replies	Percent (%)	No. of replies	Percent (%)
Sector of PPP				
Research/academic	11	21.2	7	21.9
Public sector organizations	24	46.2	13	40.6
Private institutions	17	32.7	12	37.5
Total	52	100	32	100
Years of experience				
≤10	27	51.9	11	34.4
11–20 years	24	46.2	20	62.5
≥21 years	1	1.9	1	3.1
Total	52	100	32	100

3.4. Tools for data analysis

Data analysis was conducted using the IBM statistical package for social science (SPSS). The analysis conducted included reliability test using the Cronbach's alpha, Kendall's Coefficient of Concordance, mean significance analysis, one-sample *t*-test, Mann-Whitney *U* test and quartile grouping analysis.

First internal consistency (reliability analysis) was conducted using the Cronbach's alpha model. Cronbach's alpha values range from 0 to 1, where a value close to 1 indicates a high level of reliability of the survey instrument (Chan et al., 2010). However, 0.70 has been recommended as the threshold for strong internal consistency of a set of data (Cheung & Chan, 2011). Second, because different respondents from different sectors of PPP (i.e. academic, public and private) participated in the study, the level of agreement on the rankings of factors within each jurisdiction was measured using Kendall's W (Siegel & Castellan, 1988). Kendall's Coefficient of Concordance analysis was conducted at a significance level of 0.05, with the null hypothesis that there is no consensus on the rankings of the causes of conflicts in PPPs among respondents. In this case, a significance test value < 0.05 rejects the null hypothesis, suggesting a strong agreement in the rankings from respondents within each group (i.e. China and Ghana) (Osei-Kyei & Chan, 2017b).

Mean significance analysis was conducted to ascertain the relative importance and rankings of the set of causes of conflicts within each jurisdiction. However, to determine the critical/significant causes of conflicts in PPPs in each jurisdiction, the one-sample *t*-test was conducted. The one-sample *t*-test is a tool used to determine whether the sample mean is statistically different from a hypothesized population mean (i.e. test mean). This statistical test was conducted at a significance level of 0.05, with the null hypothesis that a factor (i.e. cause of conflict) is not critical (i.e. H_0: $U = U_0$). The null hypothesis is rejected, if the significance test value of a factor is below 0.05, suggesting that the factor is significant and critical (Ahadzie, Proverbs, & Olomolaiye, 2008).

The Mann-Whitney *U* test is a non-parametric test used to ascertain the significant differences on the rankings of a set of variables among two independent groups (Osei-Kyei & Chan, 2017d). This statistical test was conducted to identify whether there was any significant difference (s) in the rankings of the causes of conflicts in PPPs in Ghana and China. This test was crucial because PPP practices vary among jurisdictions, thus there was the need to ascertain the differences on the rankings of the causes of conflicts in Ghana and China. Similar to other statistical tests, the Mann-Whitney *U* test was conducted at a significance level of 0.05, with a null hypothesis that there is no significant difference(s) in the rankings of the causes of conflicts among respondents from Ghana and China. Essentially, a significance test value of a factor (s) below 0.05 indicates that respondents from the two countries have varying views on the criticality of that factor (s).

Last, quartile grouping analysis was used to identify the similarities on the rankings on the causes of conflicts in PPPs in Ghana and China (Osei-Kyei & Chan, 2017b). The mean scores of the causes of conflicts were grouped into upper and lower quartiles for each country. From the groupings, the causes of conflicts ranked similarly at the top and bottom were identified (Osei-Kyei & Chan, 2017b).

Table 4
Results of Kendall's concordance analysis.

Characteristics	Ghana	China	Ghana and China
Number of survey respondents (N)	52	32	84
Kendall's Coefficient of Concordance (W)	0.332	0.335	0.194
Chi-square	258.846	160.803	244.001
Degree of freedom (df)	15	15	15
Critical value of chi-square	24.996	24.996	24.996
Asymp. sig.	0.000	0.000	0.000

4. Results and discussion

4.1. Reliability and consistency tests

The internal consistency (reliability analysis) of the survey data is calculated using the Cronbach's alpha model. For responses from Ghana, the alpha value is 0.759, whereas an alpha value of 0.746 is obtained for responses received from China. For the overall responses (i.e. both Ghana and China), an alpha value of 0.701 is obtained indicating a high level of reliability and internal consistency of the survey data.

Table 4 shows the results of the Kendall's Coefficient of Concordance test within each group. The computed Kendall's *W*, are 0.332 and 0.335 for Ghana and China respectively. Further, both groups of respondents obtained a significance test value of 0.000; thus, the null hypothesis is rejected for each jurisdiction. This indicates that there is a strong homogeneity of responses furnished by the respondents in Ghana and China. This reaffirms the validity and reliability of the survey data for further comparative analysis.

4.2. Analysis of difference (s) in ranking of causes of conflicts in PPPs between Ghana and China

The mean scores for the causes of conflicts in PPPs are presented in Table 5. As shown in the table, the mean values range from 2.83 to 4.62 and 2.66 to 4.44 for Ghana and China respectively. These outcomes suggest that the Ghanaian respondents rated the set of causes of conflicts slightly higher than their Chinese counterparts. To determine the critical causes of conflicts within each jurisdiction, the one-sample *t*-test was conducted. The test was conducted with the hypothesized value (U_0) set at 3.0; of the 16 causes of conflict, 13 and nine emerged critical in Ghana and China respectively. Essentially, the mean values of the significant causes of conflicts in Ghana fall between 4.62 and 3.27, whereas those in China range from 3.50 to 4.44. The large number of causes of conflicts in PPPs emerging as critical in Ghana was anticipated because since the PPP concept became operationalized in 2011, several projects have been distressed and failed due to many misunderstandings and disputes between stakeholders (Osei-Kyei & Chan, 2017e). On the other hand, China has practiced PPP for quite a long time; therefore, they have rationalized their PPP process, which is very crucial in minimizing conflicts.

Hence this may have contributed to the low number of causes emerging as critical.

The test results on the significant differences between Ghana and China is shown in the last column in Table 5. The test was conducted using the Mann-Whitney U statistic at a significance level of 0.05. According to the table, eight causes of conflicts in PPPs have significance test value below 0.05. This suggests that respondents from Ghana and China have different views and opinions on the rankings of the eight causes of conflicts. Essentially, this research outcome reinforces assertions that different countries have different features and conditions in their PPP markets, thus it is essential for PPP practices to be explored and compared among different countries/cultures in order to enrich the international best practice framework (Cheung et al., 2012; Osei-Kyei & Chan, 2017b).

Four of the eight causes of conflicts with significant differences are ranked higher in Ghana and lower in China. They are political interference, delay in decision makings by parties, unrealistic time targets and inadequate compensation to displaced persons. These causes directly relate to poor governance and contractual arrangements. Political interference is ranked second by the Ghanaian respondents whereas, their Chinese counterparts ranked it 12th. Political interference in PPPs is very common in many underdeveloped countries such as Ghana, therefore is not surprising that it is ranked very high by the Ghanaian respondents. Essentially, Ghana has a multi-party democratic system (Rosenthal & Bogner, 2009); therefore, there is often a frequent change of government. Interestingly, when a new government assumes office, it hardly continues the projects/contracts of previous governments particularly if the past government was the opposition political party. This political gymnastic is largely seen in PPP contracts (Osei-Kyei & Chan, 2017a). When a new political party is in administration, it tries to review all past contracts (including PPP arrangements) signed or agreed by the previous government, if it was the opposition party. In the

Table 5
Mean analysis and significant test results for the causes of conflicts in PPPs in Ghana and China.

Codes	Causes of conflicts in PPP	Ghana			China			Mann-Whitney *U* test		
		Mean	Rank	One sample *t*-test (sig.)	Mean	Rank	One sample *t*-test (sig.)	U statistics	Z	Sig.
C1	Unfair risk allocation	3.46	11	0.00	4.44	1	0.00	338	−4.865	0.00*
C2	Absence of proper communication channel	3.83	5	0.00	4.31	3	0.00	549.5	−2.898	0.00*
C3	Double meanings in output specifications	3.73	6	0.00	3.84	6	0.00	774	−0.572	0.57
C4	Lack of understanding on the roles and responsibilities of parties	4.38	3	0.00	4.41	2	0.00	800.5	−0.324	0.75
C5	Unexpected tariff changes	3.27	13	0.03	3.94	5	0.00	504.5	−3.179	0.00*
C6	Excessive contract variations	4.00	4	0.00	3.78	7	0.00	736	−1.020	0.31
C7	Political interference	4.40	2	0.00	3.09	12	0.54	224	−5.871	0.00*
C8	Ambiguous goals and objectives	3.54	10	0.00	3.56	8	0.00	785	−0.475	0.64
C9	Incomplete transfer of risks	3.19	14	0.11	4.25	4	0.00	339.5	−4.757	0.00*
C10	Personality clashes	2.83	16	0.18	2.97	13	0.88	749	−0.798	0.43
C11	Unrealistic time targets	3.60	8	0.00	2.94	15	0.69	496.5	−3.239	0.00*
C12	Delay in decision makings by parties	4.62	1	0.00	3.13	11	0.44	170.5	−6.471	0.00*
C13	Delay in rectifying defects during service delivery	3.65	7	0.00	3.31	10	0.17	685	−1.411	0.16
C14	Reluctance to seek clarification	2.88	15	0.29	2.94	14	0.69	799.5	−0.322	0.75
C15	Inadequate compensation to displaced persons	3.56	9	0.00	2.66	16	0.08	462	−3.611	0.00*
C16	Unreliable service delivery	3.40	12	0.00	3.50	9	0.00	723	−1.119	0.26

* Significance level (0.05).

process of reviewing, many contract terms are modified, and this usually infuriates the private partner, which results in long-term dispute with the government or eventually an abrogation of the PPP contract. A typical example is seen in the Build-Own-Operate Transfer (BOOT) Power Plant agreement signed in 2015 between the Government of Ghana and the Africa & Middle East Resources Investment Group LLC (AMERI). In this project, the incumbent government has ordered a review of the deal, with a notion that the contract amount (i.e. US$510 million) was bloated by the previous government, although, the Project Company has asserted that a fair deal was agreed by the previous government (Adogla-Bessa, 2017). Essentially, the interference of the incumbent government has resulted to misunderstandings and the distress of the project. Unlike Ghana, China is a one-party state, and as one government holds the power and authority of the country, the level of political interference which mostly arises from the change of government as observed in Ghana is very low. Although, there could be some political interference in the Chinese PPP market, it does not certainly lead to the persistent review of contracts and renegotiations which could cause conflicts and distress of PPP projects.

"Delay in decision makings by parties" is ranked first and 11th in Ghana and China respectively. It has a large mean difference of 1.49 (i.e. 4.62 in Ghana and 3.13 in China). Throughout the life-cycle of PPP projects, there are many critical decisions which need to be approved or made by both the public and private sectors to allow the progress of the PPP process. Essentially, lengthy delays in approving or making critical decisions could result to conflicts and disputes (Acharya et al., 2006). In Ghana, the lengthy delay in decision makings in PPPs usually originates from the public sector; and the major cause of the delay is extensive political debate (Osei-Kyei & Chan, 2017a). Usually, PPP contracts in Ghana require the assent of Parliament because of the amount involved (MOFEP, 2011). Unfortunately, when these PPP contracts are sent to Parliament for approval, they are subjected to lengthy debates and excessive bureaucratic process, which could last for several months. An example was seen in the Ghana National Housing Project, which was initiated in 2009 but unfortunately failed. When this project was sent to Parliament for approval, it was subjected to excessive scrutiny and was rejected by Parliament several times due to technical irregularities. In fact, the lengthy delay in decision making on the part of the government contributed to the failure of the project (Osei-Kyei & Chan, 2017a). Emphatically, when public authorities delay in making decisions or obtaining approvals for PPP contracts, it increases the revenue and financial risks of the private partner, and this could result into misunderstandings and disputes, especially when negotiations have been agreed and require approval from a higher authority. Unlike Ghana, decision-making process in PPPs in China is not lengthy and complicated. As reported by Ke et al. (2011), public officials in China often quickly finalize negotiations and approvals either based on their personal interests/preferences or career achievement. Further, they asserted that decision makings are easily reached and finalized especially when local government authorities are in dire need of funding for their projects. Nonetheless, because of the political system in China (i.e. centralized government); government officials are able to make decisions and approve PPP contracts without necessarily engaging in political debates or going through tough bureaucratic process (Wang, Ke, & Xie, 2012). These reasons therefore contribute to the low ranking of this cause of conflict in China compared to Ghana.

"Unrealistic time targets" and "inadequate compensation to displaced persons" are related to poor contractual arrangements. Both causes are ranked higher in Ghana and lower in China. Specifically, "unrealistic time targets" is ranked 8th and 15th in Ghana and China respectively, whereas, "inadequate compensation to displaced persons" is ranked 9th and 16th in Ghana and China respectively. Generally, meeting time targets in PPP arrangements is crucial towards the successful performance of PPP projects and more importantly, it affects revenue collection (Osei-Kyei & Chan, 2017b). Essentially, the earlier the public facility is made available the faster revenue is generated. Due to the lack of experience of many Ghanaian public officials in PPP negotiations and arrangements, unrealistic timelines are often agreed, which in the end are usually not met by the private partners because of many unforeseen circumstances. In addition, because most PPP projects in Ghana are initiated based on campaign promises, very stringent time targets are given to private partners (Osei-Kyei & Chan, 2017a). In the end, when investors are not able to meet these time targets, users and the general public begin to agitate and protest against the government. This situation is same for compensation to displaced persons. As an international best PPP practice, displaced persons should be given compensations for the loss of their properties (particularly land), if it is due to the construction of the PPP project (World Bank, 2012). Preferably, compensations have to be equal to the value of the properties of the displaced persons; however, because feasibility studies are not sometimes conducted properly, Ghanaian public officials end up agreeing on compensations which are far below the value of properties of the displaced persons. This therefore triggers public protest and demonstration, which jeopardizes the progress of PPP projects (Acharya et al., 2006; World Bank, 2012). In worse cases, the displaced persons engage in lengthy legal battles with the project parties particularly the public authority. Essentially, the Ghanaian situation on the inadequacy of compensation is not different in China. In spite of the fact that China has implemented PPPs over decades, the issue of compensations has still not been properly addressed (Sachs, Tiong, & Qing Wang, 2007). Zhao (2009) pointed out that since mid-1990s many displaced rural and urban dwellers have strongly protested against the inadequacy of compensations for their properties (particularly farm lands). However, "inadequate compensation to displaced persons" is ranked lower by the Chinese respondents possibly because in recent years (beginning of 2011), the central government has stepped up the efforts to protect displaced persons by enacting new laws and policies and, establishing monitoring agencies (Faure, 2015; Simon, Feng, & Nelson, 2016; Zhao, 2009). These efforts by the Chinese government are helping in minimizing public grievances and disputes over compensations claims in PPPs.

The remaining four causes of conflicts in PPPs with significant differences are ranked higher in China and lower in Ghana. They include unfair risk allocation, unexpected tariff changes, incomplete transfer of risks and absence of proper communication channel. These causes relate to poor risk management and communication. This outcome supports the findings of Chan and Suen (2005), in which improper communication and risk misallocations are the major causes of conflicts in Sino-Foreign Joint Venture projects in China. Unfair risk allocation and incomplete transfer of risks are ranked first and fourth in China respectively, whereas in Ghana, they are positioned 11th and 14th respectively. Many past studies including Ke et al. (2010) and Sachs et al. (2007) have indicated that the misallocation and incomplete transfer of risks are critical in causing contractual disputes in PPPs in China, which often lead to project failure. Sachs et al. (2007) have asserted that many local government authorities hurriedly implement PPP projects, thus they are not able to conduct proper feasibility studies. As a result of this, they end up taking more risks as well as give unrealistic guarantees to the private partner. At the latter stage of the project development, the local government authorities are not able to fulfil their responsibilities considering the costs and this eventually leads to a breach of contract, resulting in lengthy contractual disputes (Ke et al., 2011). This situation is same for incomplete transfer of risks; usually, because feasibility studies are not thorough, extensive and reliable, a comprehensive risk register which explains how risk should be transferred and mitigated is not well developed (Ke et al., 2011; Sachs et al., 2007). It therefore becomes extremely difficult for local authorities and investors to appropriately transfer and mitigate risks, resulting in breach of contracts and potential distress of PPP projects. In Ghana, "unfair risk allocation" and "incomplete transfer of risks" are ranked lower not because contracting authorities are better in PPP risk management; however, many PPP projects have not been implemented as seen in

China, in fact, majority of PPP projects are at the feasibility stages. Therefore conflicts and disputes arising from the poor management PPP risks have not been experienced much as observed in China (Osei-Kyei & Chan, 2017e). This may have influenced the low rankings of these two causes of conflicts in PPPs.

"Absence of proper communication channel" is ranked 3rd and 5th in China and Ghana respectively. Although, the ranking seems to be quiet close, the mean difference is large (i.e. 4.31 and 3.83 for China and Ghana respectively). Chan and Suen (2005) pointed out that the lack of proper communication in relational contracts such as Sino-Foreign Joint Ventures and PPPs in China is mainly due to cultural and language differences. Importantly, a higher proportion of PPP investors in China are foreigners and these foreign investors have little information on the Chinese culture and language (Wang et al., 2012). Many local rules and regulations as well as contract documents are often written in Chinese, which pose serious language barrier (Chan & Suen, 2005). Although, some foreign investors engage translators, most of these translators do not have construction background; therefore, they are unable to properly interpret some very technical jargons in the contract documents (Chan & Suen, 2005). In addition, most translators do not have in-depth knowledge on the management of PPP arrangements. Because of these, the flow of information among stakeholders (including local residents) is always impeded, resulting in different interpretations, misunderstandings, and eventually a breach of contract (Chan & Suen, 2005; UNDP, 2017). Unlike China, Ghana follows the western style of procuring PPP projects; more essentially, English is the official language and all contract documents are written in it. In this regard, communication problems mostly resulting from language and cultural differences are not eminent in Ghana's PPP as seen in China.

"Unexpected tariff changes" is ranked 5th in China and 13th in Ghana. Its mean difference is 0.67 (i.e. 3.94 for China and 3.27 for Ghana). In the last few years, unexpected tariff change has become a major problem in the Chinese PPP market particularly in the water sector (Lee, 2010). Officially, it is the local authorities who are responsible for setting water tariffs for water PPP projects; however, because of unrealistic guarantees and the lack of accurate estimation of market demand, many water PPP projects end up having high operational and management costs (ADB, 2009; Lee, 2010; Sachs et al., 2007). In this regard, local authorities usually do not have any option than to increase tariffs to fully cover the water production costs. In fact, what mostly sparks conflicts, particularly between users/public and the project parties is the sudden increment of tariffs (ADB, 2009). Tariffs are increased without proper consultation with users; more importantly, there is no transparency in the tariff adjustments (ADB, 2009). These therefore enrage the users and tariff adjustments are generally met with negative public reactions. Tariffs are also adjusted for most PPP projects in Ghana particularly concession roads and water projects, however, before tariff adjustments become operative, they have to be approved by the Parliament of Ghana and also scrutinise by other regulatory bodies. Therefore, tariff adjustments are often not sudden and more essentially, they are done with convincing explanations compared to that of China. These may have influenced the low ranking of "unexpected tariff changes" as a cause of conflict in PPPs, particularly between users and project parties in Ghana.

4.3. Similarities on the ranking of causes of conflicts in PPPs between Ghana and China

The similarities in the top and bottom rankings by respondents from the two countries were analysed using quartile groupings (Table 6). The mean values of the causes of conflicts in PPPs are grouped into upper and lower quartiles. The upper quartile subset contains the 25% highest mean values, whereas the lower quartile contains the 25% lowest mean scores. The hinges (cut-off values) for the upper quartile subsets of Ghana and China are 3.96 and 4.17 respectively, whereas the cut-off values for the lower quartile subsets are 3.30 (Ghana) and 3.00 (China). According to Table 6, the upper and lower quartile subsets for each jurisdiction contain four causes of conflicts in PPPs. In the upper quartile, the mean values range between 4.00 and 4.62 for Ghana and 4.25 and 4.44 for China. Only one cause of conflict (i.e. Lack of understanding on the roles and responsibilities of parties) appeared in both countries' upper quartile subsets, indicating that in the top rankings of both Ghana and China, only one cause of conflict is more likely to have the same mean score and position.

"Lack of understanding on the roles and responsibilities of parties" is ranked 3rd and 2nd by the Ghanaian and Chinese respondents respectively (Table 5). It actually has close mean values of 4.38 and 4.44 for Ghana and China (Table 6). This finding is unsurprising because many past studies conducted in Ghana and China have indicated that the lack of adequate PPP skills and experience, particularly local government authorities often leads to poor and shallow understanding of the obligations of the public sector, thus resulting in many problems including conflicts (Chan et al., 2010; Ke et al., 2011; Lee, 2010; Osei-Kyei & Chan, 2017b, 2017c; Sachs et al., 2007; Song, Yibo, & Zhuo, 2018; Wang et al., 2012). Undisputedly, China has implemented a large number of PPP projects; however, most of these projects are seen in the big cities and provinces (Song et al., 2018). Essentially, many local government authorities in other municipalities do not have enough experience and skills in PPPs, therefore they often engage in PPP arrangements with skimpy understanding of their obligations and benefits (Chan et al., 2010; Wang et al., 2012). The situation is not different in Ghana; since PPP became a national policy in 2004, very few projects have been procured with many others at the preparatory stages (Osei-Kyei & Chan, 2016). There have also been projects which have failed. The reason for the slow progress is because of the lack of experience and skills on the part of Ghanaian public authorities and political leaders. Further, because of the lack of experience and knowledge, contracting authorities usually do not understand and perform their duties and obligations properly, leading to breach of contracts. In the end, projects become distress due to lengthy legal battle among project parties.

In the lower quartile section, "personality clashes" and "reluctance to seek clarification" appeared in both countries' subsets. "Personality clashes" is ranked 16th and 13th in Ghana and China, whereas, "reluctance to seek clarification" is positioned 15th and 14th in Ghana and China respectively. Respondents from both countries ranked these causes lower because they are interpersonal related conflict factors; therefore, they differ from person to person. In fact, interpersonal related conflicts are subjective and cannot readily be generalized in a country's context.

4.4. Most preferred conflict resolution mechanisms for PPPs in Ghana and China

Table 7 shows the results of the most suitable conflict resolution mechanisms for PPPs in Ghana and China. According to the table, the majority of Ghanaian respondents (i.e. 42.3%) suggest that arbitration should be used in resolving conflicts and disputes in PPPs in Ghana, whereas the majority of respondents (34.4) from China suggest negotiation. This finding is consistent with the outputs of Chan and Suen (2005), in which negotiation was found to be the widely used conflict resolution mechanism in relational contracts such as joint ventures and PPPs in China.

In Ghana, arbitration is seen to be more prudent because it has rapid proceedings, allows the project parties to have control over contents and the overall outcome, resolves conflicts in a more private and confidential manner. Furthermore, arbitration ensures that the business relationship between project parties is not lost and damaged (UNDP, 2017). Generally, arbitration in Ghana is governed by the Alternative Dispute Resolution Act 2010 (Act 798) which reflects most of the provisions in the UNCITRAL Model Law on International Commercial Arbitration 1989. In fact, Act 789 has made a provision for the

Table 6
Quartile grouping analysis of causes of conflicts in PPPs in Ghana and China.

Quartiles	Ghana		China	
	Causes of conflicts in PPPs	Mean	Causes of conflicts in PPPs	Mean
Upper quartile	Delay in decision makings by parties	4.62	Unfair risk allocation	4.44
$(Q_3)_{Ghana}$ = 3.96	Political interference	4.40	Lack of understanding on the roles and responsibilities of parties	4.41
$(Q_3)_{China}$ = 4.17	Lack of understanding on the roles and responsibilities of parties	4.38	Absence of proper communication channel	4.31
	Excessive contract variations	4.00	Incomplete transfer of risks	4.25
Lower quartile	Unexpected tariff changes	3.27	Personality clashes	2.97
$(Q_1)_{Ghana}$ = 3.30	Incomplete transfer of risks	3.19	Reluctance to seek clarification	2.94
$(Q_1)_{China}$ = 3.00	Reluctance to seek clarification	2.88	Unrealistic time targets	2.94
	Personality clashes	2.83	Inadequate compensation to displaced persons	2.66

Note: Quartile cut off values are calculated using the quartile function in MS Excel.

Table 7
Most suitable conflict resolution mechanism for PPPs in Ghana and China.

Conflict resolution methods in PPP	Ghana		China		Ghana and China	
	Frequency	%	Frequency	%	Frequency	%
Negotiation	19	36.5	11	34.4	30	35.7
Mediation	10	19.2	8	25	18	21.4
Arbitration	22	42.3	7	21.9	29	34.5
Litigation	1	1.9	6	18.8	7	8.3
Total	52	100	32	100	84	100

establishment of the Alternative Dispute Resolution Centre; therefore, it is anticipated that this centre will facilitate the practice of alternative dispute resolution in Ghana. Notwithstanding, the Ghana Arbitration Centre has over the years been the commonly used organization to administer arbitrations in commercial disputes. Currently, no PPP project has been referred to arbitration but as indicated by the respondents, arbitration will be the most suitable method of resolving conflicts in future PPP projects in Ghana.

Mediation and Negotiation are ranked second and third by the Ghanaian respondents. Their percentages are 19.2% and 36.5% respectively. Although mediation and negotiation are both important in preserving relationship of the parties involved, the Ghanaian respondents did not consider them suitable because the final decision from both mechanisms are not legally binding. Both parties can choose to comply or not and this is likely to escalate the unresolved existing conflict. In addition, in Ghana, decisions need to be legally binding before people act as many people fear the law more than any other rules.

In China, negotiation is considered by many as the fairest form in resolving conflicts. This is because preserving working relationship is ingrained in the Chinese culture, thus negotiation is always the first and major form of resolution for conflicts. Chan and Suen (2005) also further explained that negotiation is an important conflict resolution mechanism in China due to its low implementation costs. During negotiation, a 'middle man' is usually engaged to encourage the defaulting party (mostly the local government authority) to honour the terms of contracts or perform its obligations (Chan & Suen, 2005).

Mediation is the second most suitable conflict resolution mechanism in China and this is not surprising because keeping working relationship is deep rooted in the Chinese culture. In mediation, the parties involve submit their proposals to the mediator who suggests a solution based on the proposals. However, it should be emphasised that though the decision of the mediator is non-binding, many of the project parties in China do comply with the final decision.

As also shown in Table 7, litigation is indicated by both the Ghanaian and Chinese respondents as the least preferred mechanism for resolving conflicts in PPPs. This outcome is not surprising because litigation drains time and resources. More importantly, it is a win or loss scenario and it damages the relationship between investors and local government authorities (UNDP, 2017). In this regard, litigation is often the last resort for resolving conflicts in PPPs (UNDP, 2017).

It should be mentioned that the listed preferred conflict resolution mechanisms (Table 7) are used for conflicts occurring between the contracting authority (government) and private partner; as a matter of fact, they are not used to resolve conflicts or disputes between the users/general public and the project parties (i.e. both government and investor). Ideally, the best method of resolving conflicts between users and the project parties is coordination and consultation. In addition, transparency is critical in resolving disputes among users/general and the project parties (Osei-Kyei & Chan, 2017e).

5. Recommendations

5.1. Policy directions for governments

Conflicts are likely to occur in PPPs considering the myriad of objectives and large stakeholder interests; however, their occurrence could be minimized or completely avoided if governments institute clear and proper policy measures. Based on the outputs of this study, some policy measures for governments are proposed to minimize the occurrence of conflicts in PPPs.

Governments should institute good governance in PPP by providing good leadership and informed decision makings. This implies that local government authorities particularly those in developing countries including Ghana should comply with any existing PPP legal guidelines on external stakeholder engagement and ensure maximum transparency in decision makings on compensations to displaced persons (Reynaers & Grimmelikhuijsen, 2015). Further, an annual training program on negotiations should be introduced to enhance local government officials' knowledge on how to engage in effective competitive PPP negotiations. Certainly, this will enable government officials to agree on adequate compensations and favourable contractual terms on behalf of the public. Lastly, political interference at the contract award stage should be avoided. Specifically, governments in multi-party democratic system such as Ghana should desist from awarding PPP contracts to their political party members. In addition, governments should institute sanctions to public officials who attempt to award PPP contracts to their friends and cronies. This can help minimize the renegotiation of contract terms as well as eradicate the use of PPP contracts for political gymnastics.

5.2. Managerial implications for project parties

Both the public and private parties have a major role to play in minimizing conflict in PPPs. Therefore, some managerial implications for both the public and private sectors are discussed based on the outputs of this research.

Effectively managing risk is critical in avoiding potential conflicts in PPPs, therefore both the public and private partners should conduct thorough feasibility studies before engaging in a PPP deal. In the

feasibility studies, detailed risk assessment and allocation should be done. In fact, project parties should not depend on media sources to identify and assess project risks but rather consult external experts (i.e. academics) for more detail information.

Also, effective communication among project parties is crucial in ensuring a PPP process free of conflicts and disputes (Benítez-Ávila, Hartmann, Dewulf, & Henseler, 2018). Essentially, in jurisdictions where language differences among project parties could be a hindrance to ensuring proper communication, a single point of contact should be appointed to liaison with both parties. The person appointed will act as a translator for both parties. This will help minimize the misinterpretation of contractual terms and requests from any of the parties.

6. Conclusions

This paper has explored the root causes of conflicts by means of a comparative study between Ghana and China. In addition, the most suitable resolution mechanism for conflicts in PPPs is identified and evaluated from both the Ghanaian and Chinese perspectives. Through a comprehensive review of pertinent literature, 16 root causes of conflicts and four resolution mechanisms were identified. Experts from both Ghana and China were invited to evaluate the causes and identify the best resolution mechanism as applied in their respective jurisdictions. Results show that respondents from Ghana and China view the importance of eight causes of conflicts differently. Of the eight, four causes are ranked higher in Ghana than in China; they include: political interference, delay in decision makings by parties, unrealistic time targets and inadequate compensation to displaced persons. The other four with significance differences are ranked higher in China but lower in Ghana and they are unfair risk allocation, unexpected tariff changes, incomplete transfer of risks and absence of proper communication channel. Only one cause of conflict (i.e. lack of understanding on the roles and responsibilities of parties) is among the top rankings of Ghana and China. This output is unsurprising because Ghana is at the early stages of PPP implementation, thus many local practitioners do not have in-depth and adequate knowledge and skill in PPPs. For China, although PPP has been practiced for a very long time, this has been in the big cities such as Beijing and Chengdu. In fact, many other provinces and cities do not have enough exposure and experience to PPP practices, therefore their local government authorities engage in PPPs without properly understanding their obligations and roles, which often lead to breach of contracts. On the conflict resolution mechanisms, the Ghanaian respondents indicated that *arbitration* should be the preferred method, whereas their Chinese counterparts suggested *negotiation*. Moreover, respondents from both countries suggested that *litigation* should not be used to resolve PPP conflicts.

Indeed, the outputs of this study contribute significantly to the body of knowledge on PPP. First, it explores and consolidates a set of potential sources of conflicts for PPP arrangements. The checklist of the causes of conflicts could be used to formulate hypothesis for further empirical studies. Second, the study provides empirical evidence on the potential sources of conflicts and the most suitable conflict resolution mechanism from an international perspective considering Africa and China. The comparison between Ghana and China provides distinct theoretical knowledge and empirical evidence of PPP practice within the existing international PPP literature. Essentially, the research outputs will foster the existing economic collaboration between Africa and China, which is anticipated to rise after the launch of the Chinese Belt and Road policy.

On the practical implications of this study, the outputs provide adequate insights and understanding on the possible sources of conflicts in PPPs. Certainly, this will help international investors and local practitioners in both Ghana and China to develop proper strategies before engaging in future PPP arrangements. The outputs also open discussion and international debate on the effective ways of minimizing conflicts in PPP particularly in developing countries so that value for money and wider social benefit will be achieved.

Like any other research, this study also has some limitations which affect the generalizability of the research findings. First, the sample sizes of both countries (i.e. Ghana and China) are relatively low, thus, the responses may not represent the entire population of PPP experts in both countries. Second, the list of causes of conflicts is not exhaustive and this is because few studies have discussed into details the root causes of conflicts in PPPs. It is therefore suggested that future studies should adopt case studies and in-depth interviews to enhance the current checklist of factors.

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