Influence of partnering on 'stakeholder's behavior in construction mega-projects

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Abstract: Construction mega-projects are typically associated with cost overruns and time delays due to conflicts of interest between diverse stakeholders. This research investigates the influence of the partnering approach and the adoption of Design and Build (D&B), also known as Design-Build (DB), contracts on the behavior of stakeholders on mega-projects in Qatar. Through a case study, the significant factors that influence stakeholder management are appraised, such as cooperation, developing trust and lack of communication. The research concluded that mutual trust, transparency, leadership, well-defined scope of work, a clear definition of responsibilities, collaboration, and training are the main success factors of partnering projects. The research also concluded that the State of Qatar is a leader in the implementation of partnering approaches and the adoption of D&B contracts, with a proven record of successful delivery using this procurement method. '"Trust' and '"collaboration' among stakeholders have been found to be the critical success factors of partnering projects in Qatar.

Keywords: partnering; stakeholders; contract; procurement; construction; mega-projects, organization behavior; culture; design and build; DB, D&B; Qatar

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1. Introduction

Qatar is one of the 'world's largest exporters of liquefied natural gas, with its economy expected to grow by 3.1% in 2019. 'Qatar's expenditure for the 2019 fiscal year is set at USD56.6bn; ('Qatar's 2019 Budget Report, MOF), with major construction projects being allocated 43.3% of total expenditure.

The FIFA 2022 World Cup™, and the Qatar National Vision 2030 (QNV) are dominating activity in the construction and project sector in Qatar. The principal focus is on completing projects for the FIFA 2022 World Cup™, with many mega-projects on the brink of completion. Qatari Diar is the client of the mixed-use Lusail City project, including the Lusail LRT. The Doha Metro and the Msheireb Downtown Doha Regeneration Project are nearing completion. Other mega-projects include the FIFA World Cup 2022 stadia, the extension of the Hamad International Airport, the New Doha Port projects, expressways and road drainage projects run by the Public Works Authority (Ashghal), and development of free zones.

This study focusses on the Design-Build contracts in the State of Qatar. The Design-Build Institution of America (DBIA) defines Design-Build as a method of project delivery in which one entity (the Design-Build Entity) forges a single contract with the owner to provide the architectural, engineering and construction services DBIA (2019). The objectives of this research are to identify the critical success factors for partnering a project through D&B contracts in Qatar and to investigate the influence of partnering on the behavior of stakeholders on mega construction projects in Qatar.

The project's delivery systems (PDS) in Qatar include the traditional method of procurement, where the owner employs a consulting firm to design a project and then

awards the construction contract to the main contractor to construct the project following that design. The traditional method is most common for local, small-scale projects, whereas the most popular procurement scheme for large-scale, mega-projects are those based on either D&B, or on an Engineering, Procurement and Construction (EPC), Turnkey, approach. In a D&B contract, the contractor is responsible for both the design of the construction project and executing the construction to meet the contractual specifications (Mashali et al., 2019; Mashali et al., 2020b). In EPC contracts, a single contractor is responsible for all the engineering design, construction, and procurement of a project on a turnkey basis. Qatar is widely adopting D&B contracts on its mega-projects. Collaborative procurement approaches have been gaining momentum in several developed countries (Hamzeh et al., 2019; ; Mashali et al., 2020a).

Mega-projects, also known as mega construction projects, are commonly associated with cost overruns and time delays. Mega construction projects can be defined as ""large-scale, complex, ventures with typically a cost of USD 1 billion or more, involving multiple public and private stakeholders"" (Flyvbjerg, 2014). International Construction Mega Projects (ICMPs) complexity and the scope of work involves various stakeholders such as international consultants, multinational contractors, joint-ventures, together with several design and construction teams. The Project Management Institute PMI (2017) defines the stakeholder as: ""an individual, groups, or organizations who may affect, be affected by, or perceive themselves to be affected by a decision, activity, or outcome of a project"".

ICMPs require good coordination for success. However, the construction industry has been usually characterized as fragmented, leading to poor performance, and frequently accompanied by adversarial relationships between project stakeholders

(Eriksson and Laan, 2007; Kadefors, 2004). In the traditional project procurement method, a competitive tendering process, where the 'client's main selection criterion is based on the bid price, is used to award the contract, typically to the lowest bidder. This situation results in a lot of pressure on the construction 'projects' key stakeholders, such as the contractor, for numerous reasons; for instance, the unbalanced risk allocation in contract provisions. The method in itself establishes conflict between owner, consultant and contractor as each stakeholder tries to minimize their risk and maximize their benefits. The competitive and price-driven mechanism was considered the major cause of project failure (Larson and Drexler, 1997). Conflict of interest among the industry stakeholders typifies the negative aspects of the industry relations, such as lack of mutual trust, imperfect cooperation, ineffective communication, and spreads a ""win-lose"" culture (Chan et al., 2004; Cheung et al. 2003). Resulting outcomes are cost overruns, poor quality, less productivity, lack of earned value, substandard workmanship, low satisfaction among stakeholders, schedule delays, and mostly litigations (Egan, 1998; Eriksson and Laan, 2007; Naoum, 2003; Ng et al. 2002). Therefore, alternative delivery systems have evolved to cater for this need.

A need has arisen to change the negative culture among construction industry partners and to improve the relationship between key stakeholders as an attempt to enhance the overall performance of the construction industry. Egan (1998) and Latham (1994) in the UK, as well as the Construction Industry Institute (CII, 1991) in the US addressed many stakeholder conflicts and construction industry problems and recommended the adoption of more collaborative working approaches, stakeholder management strategies that integrate the project delivery supply chain and resolution of the conflicts of interest between stakeholders that are primarily contractual type

conflicts. New approaches, such as partnering, were introduced to overcome problems that arise from traditional procurement and to improve performance. Partnering, sometimes referred to as alliancing, can be defined as ""a long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each 'participant's resources"" (CII, 1991). Partnering has been successfully implemented in some other industries before being introduced into the construction industry (Wood and Ellis, 2005; Larson, 1995).

2. Literature review

Partnering in construction has been investigated considerably in the last two decades. Two areas of partnering that are directly relevant to stakeholder management in construction projects are critical success factors (CSFs) and the critical failure factors (CFFs). Black et al. (2000) specified a set of potential success factors based on a critical review and used these factors to survey construction industry experts in the UK. Their study concluded that the CSFs affecting partnering in construction projects are 'relationship ' factors'; that is, mutual trust, commitment from senior management, and effective communication. Related research by Chan et al. (2004) in Hong Kong, indicated that the five most frequent CSFs were (1) communication of conflict resolution strategies; (2) establishment; (3) clear definition of responsibilities; (4) regular monitoring of partnering processes; and (5) readiness to share resources among project stakeholders. Ng et al. (2002) highlighted further success factors - training and preparation, equity, understanding of each 'stakeholder's expectations and limitations, the inclusion of appropriate parties, development of mutual goals, leadership, use of relevant tools and procedures, and 'stakeholders' empowerment for efficient problem-

solving.

Chan et al. (2003) investigated problems impeding the successful application of partnering projects in Hong Kong. Their survey outcomes suggest that the leading causes of partnering failure were lack of 'stakeholder's experience in partnering, erroneous attitudes towards commercial difficulties and misunderstanding of the partnering commitment. Ng et al. (2002) examined factors leading to partnering failure in Australia from the 'contractors' viewpoint. Key reasons identified were the lack of leadership, inefficient problem resolution processes, lack of transparent and honest communication between stakeholders, the absence of adequate training, and insufficient commitment to the partnership arrangement.

Bresnen and Marshall (2000b) agreed that partnering might not always be the right solution to the construction 'industry's problems as it did not necessarily remove the conflict of interest between stakeholders at the source. Dulaimi et al. (2010) documented various factors contributing to the failure of public-private partnership projects in the UAE using three case studies; the factors were the lack of appropriate skills in the consortium, high project values, high risk, high participation costs, lack of credibility and contacts, poor communication between private partners, demands on management time, and long procurement and negotiation processes.

Brown et al. (2001) considered two problems leading to partnering failure. The first matter was partners maintaining their adversarial stance. The second issue was the 'one-'off' nature of the many 'stakeholders' relationships, such as the client and main contractor relations: the one-off nature contradicts the long-term ethos of partnering. To achieve the optimum performance, long-term relationships and trust between the stakeholders are required. They also argued that many construction stakeholders only

pay 'lip 'service' to partnering principles. Hawke (1994) found that mistrust is "deep-seated and 'longstanding' in the construction industry and that trust is difficult to establish between stakeholders, mainly because of adversarial relationships and disputes between stakeholders.

Wood and Ellis (2005) blamed clients for adopting a cost-driven schema and for maintaining a win-lose attitude when dealing with main contractors: both of these actions contradict partnering principles. In his review of the progress report prepared by Wolstenholme (2009), Sir Michael Latham indicated that as market conditions deteriorate, some clients are led by their cost-oriented consultants to abandon partnering arrangements and return to traditional competitive tendering. Bresnen and Marshall (2000a) highlighted the gap between intentions and decisions at the organization level and behavior at the project level.

Challender et al. (2019) explored the concept of trust in construction procurement strategies, it examined to the extent of trust influences, within collaborative working arrangements, on the success of collaborative working practices, covered the effect of trust-building mechanisms has on collaborative working and partnerships. Challender et al. (2019) also discussed the constitutes best practice and how trust in collaborative procurement practices influences the success of construction projects.

While there is no literature concerning the influence of partnering on the stakeholders in construction projects in Qatar, there is a little literature about partnering in the UAE (Qatar's closest neighbor), and only limited research papers about PPP projects in the UAE such as Dulaimi et al. (2010) and Alhashemi (2008). These papers highlighted that influence, at the time of the research, were very few but still immature;

there is no research that investigates the influence of partnering on stakeholders in mega construction projects in Qatar.

This paper investigates the influence of the partnering approach and the adoption of D&B contracts on 'stakeholders' behaviours on the mega-projects in Qatar. The overall goal is to examine the contractual setting in Qatar and explore the extent of the impact of partnering procurement delivery, represented by the D&B contract, on construction project stakeholders. This study contributes to the growing international body of knowledge addressing the application of partnering in construction. The results of this study will be useful for clients, contractors, project and contract managers when considering future implementation plans for D&B projects in Qatar, developing more '"trust' and '"collaboration' among the 'project's stakeholders.

The paper is organized into five sections. Section 1 introduced the topic. Section 2 presents a review of the literature on partnering, an overview of the Qatar construction industry and the point of departure of this research. Next, the adopted research methodology is explained in Section 3. Section 4 presents the results, findings, and discussion of the results in reference to existing knowledge. Finally, Section 5 presents the conclusion of this research.

3. Research methodology

This case study enabled the exploration of critical themes, understandings, attitudes, and behaviours of various key stakeholders within the environment of a partnering project in Qatar. One case study was selected to represent partnering in a mega infrastructure project in Qatar. The challenges in the project are explored, allowing potential improvements to be identified for application in a broader construction context. The

study involved a questionnaire in which the questions were based on the findings of the literature review and focused on achieving the objectives of the research Farrell et al. (2016). The questionnaire was split into four sections: the first involved the background of the company and the case study, the second was concerned with the 'contractor's organization, the third focused on the project execution phase, and the last section was focused on the 'interviewees' personal perception and evaluation of the partnering experience.

Semi-structured in-depth interviews were held with eight construction experts from different construction industry disciplines: a 'client's project manager, 'consultant's project manager, lead architect, construction manager, contract manager, planning manager, resident engineer civil and engineering manager. The lead researcher used expert judgment to select professional stakeholders with experience in many different types of industry disciplines, including partnering, and representing clients, main contractors and consultant organizations. However, beyond these two criteria, the sample represented partnering procurement through a D&B contract, and the sample case study was large enough to represent all D&B contracts in Qatar. Consultations between industry experts and the academic researcher were carried out to plan and formulate the format and structure for the interviews. A "'pilot' interview was conducted to acquire feedback on the data collection tool, and tease out any deficiencies with the way it was designed and administered.

Case study description

The case study was an infrastructure mega-project in Qatar. The project comprises more than 30 km of infrastructure works, with an estimated cost of more than U$ 5 billion. The planned construction period was five years divided into multiple

design packages and construction phases. The State of Qatar is a leading country in partnering procurement and has a respectable record of delivered projects using DB contracts. An agreement was signed between the client and a consortium led by the contracting company to Design and Build the infrastructure mega-project. The contractors provided all the resources required for the proper execution and timely completion of the studied projects. The contractual relations between the different parties involved in the D&B contract are shown in Figure 1.

Qualitative coding is the specific option of individual words or short phrases to brief large sections of text; consequently, the codes become the sorting basis. Throughout the sorting process, coded sections of text are brought jointly to enable the researcher to explain and condense the raw data. Code examples comprised 'informal ' engagement', "trust", "collaboration', 'closer 'interaction', 'good team ' working', 'ineffective 'communication', "leadership", "transparent', "disputes", "honest', 'stakeholder and 'effective 'communication', while examples of the significant themes involved factors that born trust and potential obstacles to collaborative working. Codes that can be concerning are given umbrella "'theme' titles; example, themes included 'factors that inspire ' trust', 'influence of economic ' prosperity', and 'potential obstacles to collaborative 'working' As stated by Taylor and Bogdan (1998), the raw data were summarized in tables, codes were listed, matters developed, presented the content analysis data, significant literature sources identified, data uniformity and discrepancies observed and presented suggestions. Currently, the tables became a practical plan to develop a narrative to build an up-to-date picture of partnering and collaborative working in Qatar. Table 1 represents a sample of the data analyzed; it was prepared to

contextualize the qualitative data in an organized and presentable way to provide the basis of the findings and discussion narrative.

4. Research findings and discussion

The case study findings give an overview of how partnering is practiced in construction mega-projects in Qatar, that is in line with numerous of the characteristics success and failure factors identified in the literature. Findings reveal an agreement between the interviewees that D&B contracts improve the performance of project stakeholders and the quality of the work. This is attributed primarily to the required strict compliance with specifications and because, in a D&B contract, it is in the 'contractor's interest to assure that the quality of work done during the construction phase guarantees the optimum performance. This, by default, improves client satisfaction. It was also agreed that a D&B contract helps to optimize the use of resources and maintains guaranteed long-term profits for the parties involved. The positive outcomes can also generate more business opportunities for the contractor with the client.

Participants also reported that the gap between the perceptions of those who have no partnering experience and joined the project. And the behavior of members that experience the D&B contract at a project level as one of the problems affecting the proper implementation of partnering principles on construction projects. This issue could be resolved by conducting appropriate inductions and continuous training and education about the difference between partnerships and traditional projects and encouraging the new team members to enjoy better relationships with their 'partners' counterparts. If this knowledge and behaviour were not adequately transferred to the project teams and they continued to act in the usual confrontational behavioral styles of traditional projects, project performance will be negatively affect the mutual trust and

collaboration between the project stakeholders. Thus, middle and top management should continuously monitor the behavior of team members and remove any member who is not adaptable to the D&B contract environment or insists on behaving in the confrontational behavioral styles of traditional projects.

Management has to change the organizational culture of the client, contractors, consortium, consultant, and subcontractors before entering into the partnership. For example, it has to be agreed to reinforce the teams by recruiting staff with partnering experience. Instead, the management exercised more flexibility over team behavior and decisions by increasing their autonomy and decision-making authority, while the management focused on leadership. This approach, although it helped to resolve disputes among stakeholders amicably at the managerial level (one of the claimed partnering success factors in the case study), it did change team behavior and improve relations at a project level. Furthermore, the project managers were satisfied with their role and reduced authority compared to traditional projects.

Interviewees agreed that the well-defined scope, clear split of scope, and clear definition of responsibilities, eliminated the conflicts and improved collaboration at project level. Thus, it improved the performance of project teams and increased the 'client's satisfaction.

The interviewees all agreed that the importance of management commitment to partnering principles and emphasized the importance of training, workshops, and pre-meetings. Participants also reported that these are partnering success factors aiming to raise their awareness of partnering, and educate personnel to maintain appropriate behavior on a D&B contract. Participants also emphasized the importance of mutual

trust among the stakeholders as the main success factor and its positive effect on the relationship between partners.

The participants reported that a D&B contract has major differences from traditional projects, which change the nature of the interrelationship and interactions between contract parties. The D&B arrangement renders the client-contractor relationship much less confrontational compared with traditional projects as the contractor is responsible for the design and construction. At a managerial level, the traditional client (e.g., developer, government authority, or semi-government) exists but entirely relies on partners (the consortium partners) to manage the design and construction works. The mutual interest of all parties, together with the strict monitoring of the works by the various stakeholders e.g., Project Management and Construction Management (PMCM), Independent Checker Engineer (ICE), Design Verification Engineer (DVE), and investors and lenders, ensures that the works will be fully compliant with standards and specifications and increase the level of trust and collaboration between all parties.

Interviewees reported that risk-sharing and fair risk allocation between partners was a success factor of partnering. In D&B contracts, the public client transfers all the risk to the main contractor (consortium or Joint Venture (JV)). The consortium is then held responsible for the timely completion of the D&B project in compliance with the design, contract, and specifications. The majority of interviewees were of the opinion that risk on contractors in D&B contracts can be managed because of the long lead time before commencing construction and because contractors are involved early in the investigation and design stages. Hence, the D&B contractor should be able to anticipate and manage the majority of the risks at the outset.

5. Conclusion

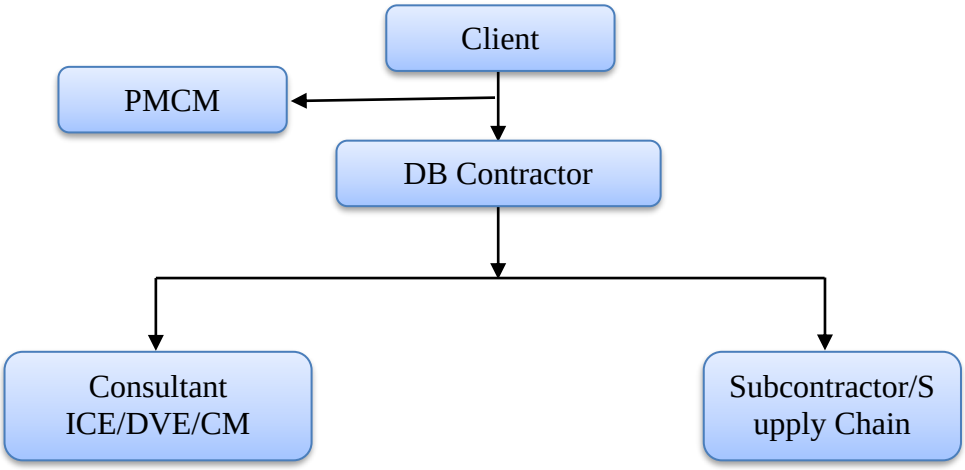
Qatar demonstrated an ideal example of the successful implementation of partnering through D&B contracts; Qatar has a strong record of the successful delivery of mega-projects using partnering. The two key success factors of partnering projects in Qatar are "'trust' and "collaboration'.

Partnering creates a less stressful and antagonistic working environment, facilitating better individual performance. The interviewees all agreed that a culture of "'trust' and "'collaboration' are the critical success factor of partnering on D&B contracts in Qatar, while the interviewees highlighted that the economic prosperity and the high Gross Domestic Product (GPD) in addition to the national budget surplus is the engine that pushed the construction industry forward. This relationship is mainly based on mutual trust, transparency, dedication to common goals, and an understanding of each key 'stakeholder's expectations and values.

It is therefore suggested that "'trust' and "'collaboration' can be generated within encouraging contexts, where the developmental nature of this collaborative process aligns with the long-term vision of integrated stakeholders. Thus, enhancing 'stakeholder's relationships reduces disputes, eliminates the conflict of interest, and allows sharing of knowledge, healthy interaction between project stakeholders, and improving problem-solving techniques.

Theme/element being analyzed	Observation or proposition from literature review	Data inconsistencies	Data similarities
Factors that instill trust in partnering arrangements.	▪ Shared ethics based on trust, justice, and fairness between partners is primary. ▪ Trust levels could grow between partners if trust reciprocated. ▪ The degree and quality of trust affected by social interaction, power, identities, and expectations. ▪ Some supply chain partners have potential lack of trusting more strong partners. ▪ Trust and collaboration may be undermined by negative, adversarial cultures and attitudes.	▪ Trust impacted by organizational position within the project team with less emphasis concentrated on relationships between client and contractor. ▪ Trust created from preceding relationships, especially at top levels within firms considered as significant.	▪ Unjust working relationship beside variance and abuse of power negatively affects the development of trust. ▪ Human factors, like communications, commitment, confidence, teamwork, and personalities, are significant factors for establishing trust in collaboration.
Influence of economic prosperity and budget surplus on partnering arrangements	▪ Traditional procurement arrangements based on the lowest cost is not perceived by some clients as the preferred option. ▪ Owners are not seeking to extend strategies to disadvantage partners in some cases. ▪ Not to resort to traditional procurement methods. ▪ More involvement of knowledge among partners. ▪ Concentrate on investment that aimed at supporting partnering.	▪ Turn to partnering options. ▪ Professional development, education, and training more increased in times economic prosperity; therefore, partnering is going to succeed.	▪ Not reversion to traditional procurement routes in times economic prosperity, national budget surplus, and the economic prosperity and the national budget surplus as best known to most construction professionals. ▪ Pleasant economic climate enhancing the partnering.
Observed partnering benefits	▪ Collaboration increasing is a significant factor to deliver successful construction projects. ▪ The growing need for increasing collaboration and supply chain integration. ▪ In complex projects, the risks can be identified earlier and managed more efficiently. ▪ Benefits of partnering have been over-valued in the past, and thus its present a no balanced view of its track record.	▪ Suspicion of realizable benefits by individuals and organizations in some cases. ▪ Experiences in involvement information and quick payment. ▪ Firms feel very vulnerable to exploitation during partnering practices in some situations.	▪ The better environment built. ▪ Partnering by improved teamwork, cooperation, and collaboration.

Table 1. Quantitative data to analyze partnering in Qatar.



Legend
PMCM: Project Management Construction Management Contract
DB Contractor: Design-Build main Contractor
ICE: Independent Checker Engineer
DVE: Design Verification Engineer
CM: Construction Management

Figure 1. Contractual relationship between parties in the DB contract.

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