AN EFFECTIVE PARTNERING IMPLEMENTATION FRAMEWORK FOR MANAGING ENGINEERING PROJECTS

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Abstract- Partnering has gained attention from both practitioners and academia since its development in the 1980s. This paper aims to supplement the literature by shedding light on the issues and processes of implementing partnering. Based on the findings of a research study on partnering application in the utility business in Hong Kong, this paper proposes a framework for an effective partnering implementation, covering commercial, managerial and implementation perspectives. The proposed framework essentially sketches the tools and practices required for an effective partnering implementation.

Keywords- Partnering, Implementation, Framework, Hong Kong

I. INTRODUCTION

Partnering, being a member under the umbrella of Relational Contracting (Chan et al. 2009), had been evolving from its first development in the UK (Bennett and Jayes 1998) and US (Cowan et al. 1992) in the 1980s. In the last two decades, partnering had also attractedincreasing research effort (Hong et al. 2011), since it has been regarded as the solution for the long-lasting problem of low performance and lack of customers' satisfaction in the construction industry (Hughes et al. 2012). Partnering is commonly implemented along with application of various tools such as "Economic Incentives" (Yeung et al. 2007), "Partnering Workshop" (Nystrom 2005) and "Partnering Charter" (Cheng et al. 2003). However, Eriksson (2015) asserted that such application of partnering tools do not guarantee project success, it actually requires managerial attention on the team working process. This paper aims to shed light on the issues and processesof implementing partnering. Thispaperpresents aframework for an effective partnering implementation. The development of the framework is based on the findings of a research study on the utility business in Hong Kong (Chan et al. 2011). This paper will first introduce the common partnering elements and tools, followed by the benefits and barriers of implementing partnering. A framework demonstrating how partnering can be implemented in an effective manner will then be presented.

II. DEFINITION OF PARTNERING

The definition of partnering by the Construction Industry Board(1997, p.1), which is commonly referred in the literature is adopted in this paper, by which partnering is defined as a structured management approach aiming to facilitate team work across contractual parties :

"Partnering is a structured management approach to facilitateteam working across contractual boundaries. Its fundamental components are formalized mutual objectives, agreed problem resolution methods, and an active search for continuous measurable improvements"

III. BACKGROUND OF PARTNERING

In the UK, the development of partnering was driven by several industry-wide reports, including the Constructing the Team, also named as Latham Report (Latham 1994), Trusting the Team (Bennett and Jayes 1994), Rethinking Construction, also named as Egan Report (Egan 1998), and The Seven Pillars of Partnering (Bennett and Jayes 1998).

The Egan Report (Egan 1998), incorporating comments from private sectors in the UK, further highlighted the impacts of partnering to the future development of the UK construction industry. The report of "The Seven Pillars of Partnering" (Bennett and Jayes 1998) has put forward the development of partnering by introducing seven interrelated essential pillars leading to successful implementation of partnering, which includes strategy, membership, equity, integration, benchmarks, feedback and project process. These reports have fostered and shaped the development of partnering in the UK and other countries since 1990's (Hartmann and Bresnen 2011).

One of the pioneers applying partnering in construction projects in 1980's was the USA Army Corps of Engineers (Cowan et al. 1992), who applied partnering management approach between its construction contractors, designer firms and other governmental departments. With the encouraging results from partnering, various departments in the US, such as Naval Facilities Engineering Command (NAVFAC) (Schmader 1994), California Department of Transportation (Caltran) (Abudayyeh 1994) and Arizona Department of Transportation (ADOT) (Warne 1994) started to adopt partnering concepts in the late 1980's and early 1990's. Since then, the concept of partnering had been further developed and

adopted in the USA, the UK, Australia and Hong Kong (Bresnen and Marshall 2000a; b)

IV. PARTNERING ELEMENTS AND TOOLS

Partnering elements in this paper refer to those characteristics or components that are required or emphasised under partnering arrangement as compared with the conventional contracting approach, whilepartnering tools refer to those management mechanisms or special arrangements that are adopted in the course of implementing partnering.

The common partnering elements reported in the literature include "Trust" (Yeung et al 2007), "Mutual objectives/understanding"(Nystrom 2005), "Continuous evaluation /improvement of performance" (Lu and Yan (2007),"Equity" (Yeung et al 2007), "Management commitment/support" (Scott (2001)and "Good communication/Openness"(Nystrom 2005),

The common partnering tools reported in the literature include "Shared risk/Economic Incentives" (Yeung et al 2007), "Conflict/ Problem resolution processes" (Erikson (2010), "Partnering workshop"(Nystrom 2005), "Regular review meeting" (Yeung et al 2007) and "Partnering Charter" (Cheng et al (2003).

V. BENEFITS OF PARTNERING

Abudayyeh(1994) studied the partnering case of The California Department of Transportation (Caltran) and pointed out that partnering can bring various benefits including reduced cost in litigation and claims, improved productivity, improved cost and schedule control, lower risk of cost overrun and delays and increased financial success.

Similarly, the United States Army Corps of Engineers (Weston and Gibson 1993) studied 16 partnered and 39 non-partnered projects, and concluded that partnering has great effect on the claims issues, which matches the primary objective of employing partnering in government agency - reducing claims or reducing litigation.

In addition, Warne (1994)studied the partnering case of Arizona Department of Transportation (ADOT) and revealed that ADOT achieved benefits in the areas of claims, construction time, construction administration, value engineering, budget reduction, and indirect benefits. Schmader(1994) investigated the benefits from partnering at the Naval Facilities Engineering Command (NAVFAC) and concluded that partnering has significant impact on litigation, value engineering and schedule adherence.

Partnering is not only beneficial to the government bodies.Private sectors can also get benefits from partnering. Larson (1995)produced a representative report by investigating 280 construction projects in Canada and United States with surveying among members of Project Management Institute. Research results show that partnering has impact on both hard and soft sides of project management. Specifically, partnering elements like problem solving and provision of continuous improvement intent can contribute to improvement of cost control and meeting schedule. In general, partnering activities can be positively related to satisfying customer needs, avoiding expensive litigation and overall results. Larson (1995) also asserted that structured partnering approach can yield more superior results than informal partnering, especially in terms of cost control, achieving technical performance, meeting customers' requirement and overall project results. This implies that structured partnering approach is more promising than informal partnering regarding effectiveness improving project results.

Another country-wide study on benefits of partnering was carried out by the Construction Industry Institute Australia; 32 construction projects in Australia were investigated in 1996 (Lenard et al. 1996). The study concluded that partnering can reduce claims, disputes, schedule deferral and reworking. Apart from that partnering can also improve safety and profit margin, and foster innovation.

Partnering can be beneficial to different organisations in a project environment. Chan et al. (2003) conducted a survey in Hong Kong with representatives from client, consultant and contractor organizations. The study concluded that the ranking of perceived benefits of partnering are generally aligned. The most significant benefits from partnering rated by clients is faster construction time while the consultant and contractor rated improved relationship among project participants as the most significant benefit. Both groups rated improved communication among project participants are the most significant benefits from partnering. This study implies that partnering can result various benefits satisfying the clients, consultant and contractor.

VI. BARRIERS OF IMPLEMENTING PARTNERING

Partnering can bring mutual benefits to contracting parties but implementing partnering is not problem-free. Chan et al.(2003)identified nine main barriers of implementing partnering in Hong Kong. The main hurdles impeding partnering success include misunderstanding of partnering concept, relationship problems, culture barrier, uneven commitment, communication problems, lacks of continuous improvement, inefficient problem solving, insufficient efforts to keep partnering going and discreditable relationship.

Likewise, Glagola and Sheedy(2002) conducted an empirical study on public partnering projects in the US to determine the goals of adopting partnering and the corresponding barriers preventing attaining the defined goals. The top three goals identified were 'Develop working relationships", "Dispute

Resolution" and "Claims Avoidance", while the most significant barriers were top management commitment, ego/personality indifference, low-bid mentality, working level commitment, lack of common goals, lack of understanding the principles and past adversarial experiences.Ng et al. (2002) conducted an empirical study on barriers of implementingpartnering in the public sector of Australia. The identified barriers included "Lack of continuous open and honest communication", "Stakeholders not developing a "win–win" attitude", "Commercial pressures compromising the partnering attitude", and "Key subcontractors are not included in the partnering process".

The partnering case

The case study is based on the research findings under a Teaching Company Scheme (TCS) between a University and a UtilityCompany in Hon Kong (Chan et al 2011).The research adopted a case study approach with the combination of structured interview, surveys and review workshops. The utility company (The Company) adopted partnering approach for a series of sub-station projects for a 5-year timeframe. Conventional form of contact was adopted, and partnering agreement was a top-up arrangement. The projects involved both civil and electrical main contractors forming a multi-party partnering relationship. For the civil aspect, the sub-station projects involved pilling, foundation and superstructure works, which were covered by the conventional Design and Build contract. The respective civil main contractorneeded to manage the Designer, Consultant, Architect and Electrical & Mechanical consultants. For the electrical aspect, the sub-station projects involved design and construction of high voltage electrical equipment. The respective electrical main contractor,needed to manage the other equipment suppliers and erection works, as well as working with the civil main contractor in developing detailed civil design to match with the major electrical equipment under the tri-party partnering arrangement. The overall contractual and partnering relationship of the three parties are shown in Figure 1. Although there was no contractual relationship between the electrical and civil main contactors, they were encouraged to work with each other to attain project success through closer collaboration under the partnering approach. The overall contractual and partnering arrangement is shown in Figure 1.

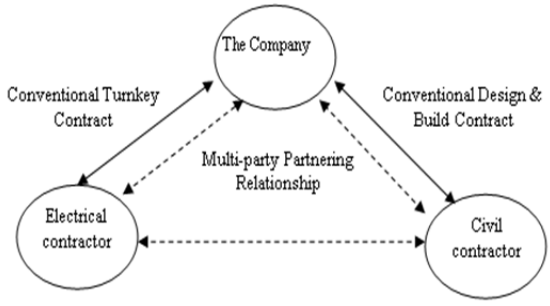


Figure 1. Overview of the Contractual and Partnering Arrangement of the Company (Adapted from Chan et al (2015)

Proposed Partnering Implementation framework

Based on the research findings, an effective partnering implementation framework was developed, which consists of three key elements, namely Commercial Arrangement, Management Structure, and Implementation Process as shown in Figure 2. The three key elements will be discussed in turn.

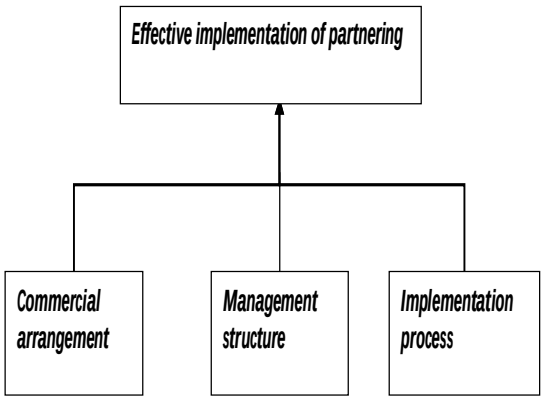


Figure 2. The proposed effective partnering framework

VII. COMMERCIAL ARRANGEMENT

Business objectives of different organisations are different, for example, the business objectives of utilities are providingreliable service to the general public and reliability and quality are of the utmost importance, however, the business objectives of a typical construction contractor is to complete the project as soon as possible with the least cost and commence another project, by which higher profit margin and revenue can be obtained. If organisations with diverse or even contradicting underlying business objectives work together for a particular project, it would lead to conflicts between the parties. It may be one of the reasons why the relationship between clients and contractors in the construction industry has been regarded as adversarial and the behaviour is confrontational. One of the key to a successful partnering implementation is to make it commercially sound to both parties involved, providing the parties a compelling reason to commit to partnering.

The research study found that performance-based incentive scheme can act as a vehicle fostering win-win mentality by creating tangible motivations for each party to act cooperatively towards a common goal set out by incentives. A performance-based incentive scheme operates on a principle that the higher the performance rating, the more incentive the contractor can get and vice versa. The client can tie up the business objectives, like cost, time, quality or safety, with the contractor's performance assessment, such that a common goal can be created under the performance-based incentive scheme. Essentially, the achieving the established common goals can satisfy the inherently different business objectives of the parties involved. Figure 3 demonstrates the concept of incentive scheme.

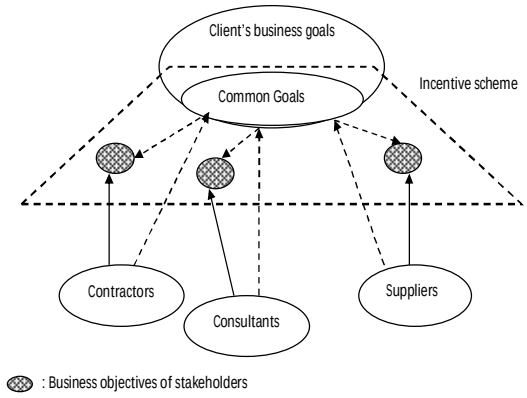


Figure 3. Aligning the diversified business objectives by incentive scheme. Source : The authors' interpretation.

Equity and long-term relationship are the key elements of partnering. Realising these elements in practice is key to the success of partnering implementation. Partnering advocates long-term business relationship, rather than one-off arrangement. Under a loner-term business relationship, say 5 years or even more. Both parties may need to bear a higher risk from the market dynamics, for examples, fluctuation of materials and labour cost over the contracting period. To align with partnering principles, a certain price adjustment mechanism for dealing with market dynamics over the contracting period is required. The mechanism can allow contract price adjustment of some selected items. The adjustment can link up with some objective indices published by government or other authorities. Such that the risk of market dynamics over the longer contracting period can be reasonably shared by both parties. It can also help relieve commercial pressure which hinders the development of partnering attitude among the contacting parties.

VIII. MANAGEMENT STRUCTURE

Developing an effective communication and mutual understanding among the contracting parties at all levels, namely, senior management, middle management and font line, are essential for partnering implementation. The research findings suggested that a 3-layer governance structure with a well-defined role for each layer is critical in this regard. The top layer is the Project Leadership Team, consisting of the senior management of both the contracting parties. The team plays a leadership role throughout the course of the partnering implementation. Project Leadership Team is mainly responsible for providing necessary resources and guidelines for the project team, maintaining and developing inter-firm relationship, and exploring business opportunities. It also serves as the final point for issues resolution.

The middle layer is the Project Management Team, which consists of middle management from both parties, including project managers and senior engineers, who focus on resolving project issues and implementing follow-up actions derived from the Project Leadership Team. Apart from monitoring the partnering and project performance, the Project Management Team also acted as a role model demonstrating and promoting partnering spirit for the frontline as well as the internal stakeholders of the respective organisations. A team member with appropriate training and attitude of the Project Management Team should be appointed as Partnering Champion, who focuses on driving the development of partnering culture among the contracting parties and following up the action derived from the partnering workshop. The Partnering Champion should also be properly empowered to identify improvement areas and derive corrective actions for a better implementation of partnering.

The bottom layer is the frontline staff from both parties and it is termed as Wider Integrated Project Team, who is responsible for daily operation of the projects. The frontline should act in a "partnering" way guided by the Project Leadership Team and the Project Management Team. The members should be guided to adopt a proactive and collaborative attitude in identifying and resolving project issues. Any unresolved issue arising from the Wider Integrated Project Team should be escalated to upper level for a timely settlement. Figure 4 shows the overall arrangement of the 3-Layergovernance structure.

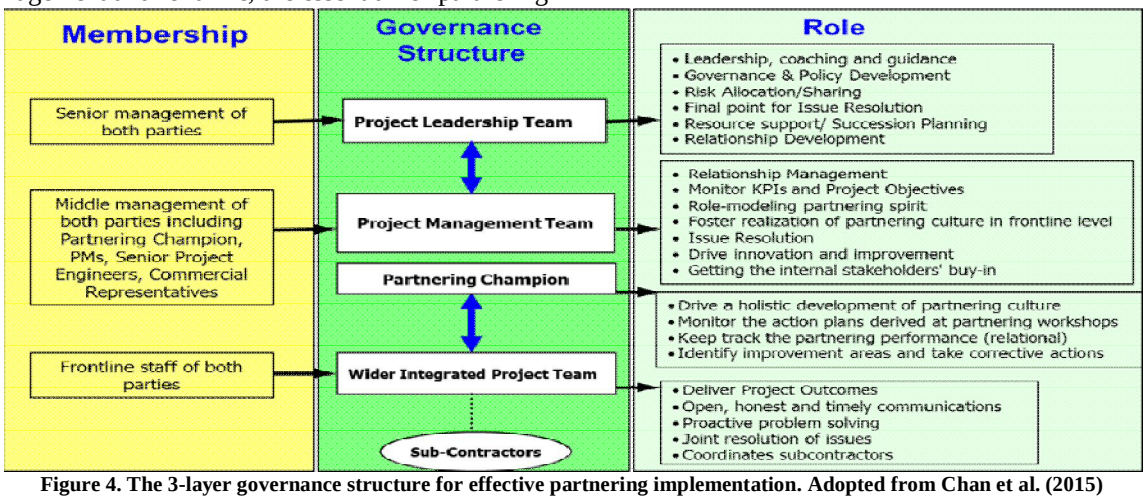


Figure 4. The 3-layer governance structure for effective partnering implementation. Adopted from Chan et al. (2015)

IX. IMPLEMENTATION PROCESS

The research findings suggest a structured process for effective partnering implementation. There are two main categories of process, namely, project-based and on-going process. The project-based process refers to the arrangement of facilitated partnering workshops within the cycle of each project. The initial workshop should be held at the very beginning and it aims to "set the scene" and make sure all the project stakeholders understand the partnering principles which requires a change of mentality. The middle or top management should also join the workshop as role models of exercising partnering attitudes.An interim partnering workshop should be held in the mid way of the project concerned, focusing on reviewing the partnering performance, correcting feedback from the participants regarding partnering implementation and identifying improvement areas. A final workshop should be held upon the completion of a project for an overall review and capturing the lesson learnt for the future projects. Both interim workshop and final workshop can also serve as initial workshop of another project.

Despite of the project-based workshops, some on-going processesare required throughout the whole contacting period. The Partnering Champion plays an important role of promoting partnering to all the project stakeholders at all the 3 layers of the proposed management structure, to nurture the partnering culture at a wider perspective and gaining more buy-in from the stakeholders. The issue resolution mechanism should be well maintained for resolving conflicts or problem at a timely manner. The partnering performance needs also be regularly monitored for deriving timely corrective actions or promoting those well-done areas. To enhance communication and build up relationship among the project stakeholders across different levels, regular meetings and social functions should be held consistently within the contracting period at each layer of the governance structure. Such arrangements with formal and causal interactions allow the stakeholders from various organisations to development mutual understanding at the personal level, facilitating the stakeholders to take each other's perspective, which is considered a key element to the success of partnering (Walker and Lloyd-Walker, 2014). Figure 5 shows the overall structured partnering implementation process.

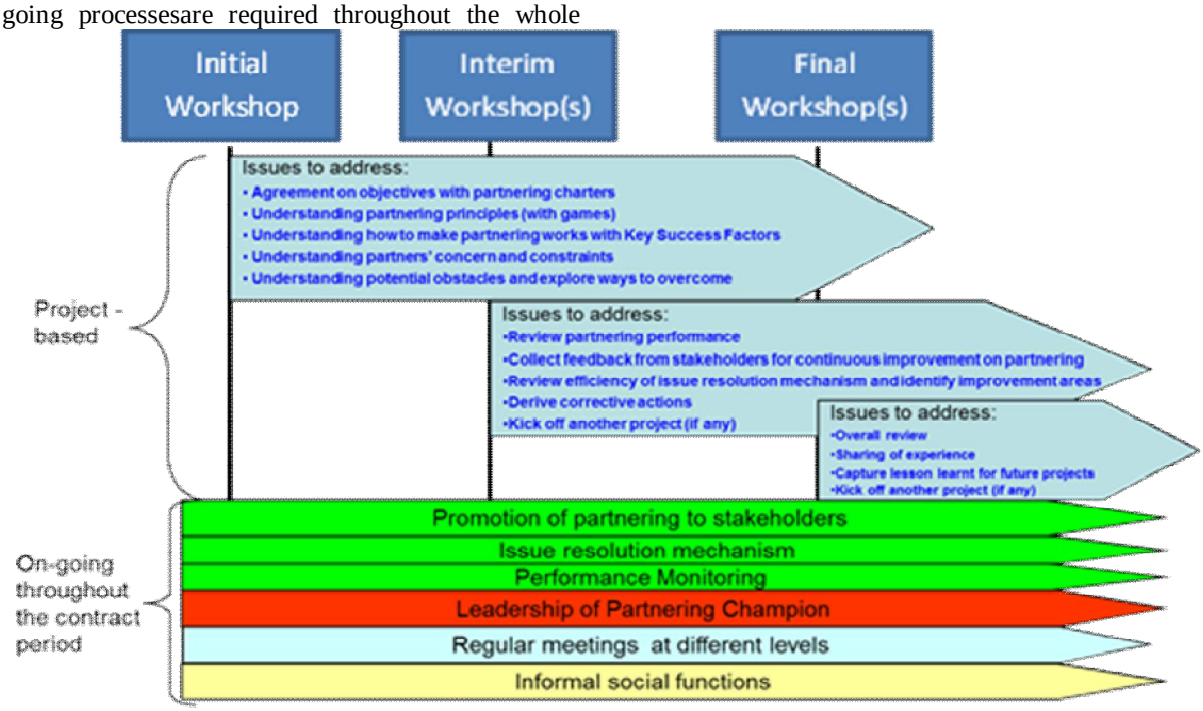


Figure 5. The structured partnering implementation process. Adapted and expanded from the Latham Report(1994)

CONCLUSION

This paper proposed an effective partnering implementation framework based on the research findings from a study of partnering implementation in the utility business sector in Hong Kong. The proposed framework provides valuable insights for the practitioners' reference by outlining a skeleton with three key elements, including commercial arrangement, management structure and implementation process, that need to be considered before implementing partnering in practice. It should be stressed that the three key elements and the associated partnering tools are complementary in nature. They should be implemented together so as to provide a partnering friendly business environment for nurturing partnering culture across the contracting parties and, more importantly, realizing the expected benefits from partnering.This paper also presents a brief review on background of partnering including

itscommon elements and tools, its benefits and barriers for increasing readers' understanding on partnering.

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