Journal of Financial Management of Property and Construction (JFMPC)
(Final Accepted Manuscript), Volume 12, Issue 3, December 2007, Pages 139-149

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SUMMARY

- Guaranteed maximum price (GMP) and target cost contracting (TCC) with a pain-share/gain-share arrangement have been adopted to integrate the construction delivery process and motivate service providers to seek continuous improvements in project outcomes. However, there is still a lack of research evidence to evaluate the levels of success and lessons learned from these innovative procurement strategies.
- Based on the analysis of a series of in-depth interviews on the perceptions of various relevant experienced industrial practitioners, this paper aims to explore the key attributes of GMP/TCC including the underlying motives, perceived benefits, potential difficulties, critical success factors, key risk factors involved and optimal project conditions for adopting GMP/TCC.
- The research findings are useful in assisting key project stakeholders in minimising the detriments brought about by potential difficulties in and maximising the benefits derived from implementing GMP/TCC concepts. The study is also significant in contributing to new knowledge and practical information of GMP/TCC applications and implementation, in both a national and international context.

Keywords: Guaranteed maximum price, target cost contracting, procurement strategies, interview survey, Hong Kong.

INTRODUCTION

The construction industry has long suffered from a lack of co-operation, limited trust and ineffective communication, often resulting in an adversarial working relationship amongst all project stakeholders, and eventually inducing poor project implementation in terms of time, cost and quality (Construction Industry Review Committee, 2001). Strong alarms have been raised because of the tendency to award contracts to the lowest bidders, which has resulted in low profit margins. Both consultants and contractors have little incentive to do more than just meeting the minimum contractual requirements.

Novel procurement methods have been developed in construction since the 1990s to satisfy the changing needs of clients and to improve project performance (Masterman, 2002). In particular, incentivisation measures have been successfully implemented in the United Kingdom and Australia, to integrate the construction delivery process and to motivate service providers to seek continuous improvements in project outcomes (Construction Industry Review Committee, 2001). Previous overseas triumphant cases indicated that the guaranteed maximum price (GMP) and target cost contracting (TCC) procurement approaches can accrue considerable mutual benefits to all of the parties involved, provided they are properly structured, implemented and managed (Trench, 1991; Walker et al, 2000).

Hence, GMP and TCC approaches have appeared to be innovative alternative procurement strategies for clients to mitigate risks, reduce claims, integrate the diverse interests of a complex construction project and offer incentives to provide "value added" services. However, the conventional design-bid-build procurement approach to project delivery still dominates the Hong Kong construction industry (Chan and Yung, 2003). Since the completion of the first commercial development of 1063 King's Road in Quarry Bay, Hong Kong introducing GMP in August 1999, a review of this successful project has revealed that the GMP approach can be an effective means of motivating contractors to achieve better value and project performance by aligning their own financial objectives with the overall objectives of the project (Construction Industry Review Committee, 2001). The project was completed on time and the final

out-turn cost is 11%–38% less than similar buildings using the traditional procurement system (Ho, 2000).

Since then, the GMP arrangement based on a target cost concept has been gaining popularity amongst the prospective private property developers, public housing department, quasi-government mass transportation service provider and major international construction contractors in Hong Kong over the past few years. Table 1 lists some of the GMP/TCC construction projects in Hong Kong.

[Insert Table 1 here!]

RESEARCH OBJECTIVES

Although GMP and TCC have been practiced in the United Kingdom and Australia for several years, and a number of construction projects are employing the concept, not all these projects have been equally successful. In addition, there is very limited empirical research to evaluate the levels of success and lessons learned from those GMP/TCC projects, especially in the Hong Kong context. Therefore, by means of some in-depth interviews and analysis on the opinions of relevant experienced key project stakeholders, this paper aims to investigate the key attributes of the GMP/TCC procurement approach including: (1) the underlying motives; (2) perceived benefits and potential difficulties; (3) critical success factors; (4) key risk factors involved; and (5) optimal project conditions suitable for adopting GMP/TCC form of procurement. GMP/TCC is relatively new in Hong Kong and therefore such a comprehensive investigation in relation to Hong Kong conditions is valuable and timely. The research findings could also form a solid foundation for a subsequent comparative study of GMP/TCC practices between the United Kingdom, Australia and Hong Kong in order to explore their implementation processes for achieving construction excellence.

DEFINITION OF TARGET COST CONTRACTING (TCC)

The National Economic Development Office (1982) defined TCC as:

"Target cost contracts specify a best estimate of the cost of the work to be carried out. During the course of the work, the initial target cost will be adjusted by agreement between the client or his nominated representative and the contractor to allow for any changes to the original specification. Differences between target cost and actual cost at completion are shared between the parties to the contract."

Both Trench (1991) and Mass Transit Railway Corporation (2003) also shared the same view.

DEFINITION OF GUARANTEED MAXIMUM PRICE (GMP)

Carty (1995) regarded GMP as:

"The contractor and owner agree that the contractor will perform an agreed scope of work (defined as best as possible) at a price not to exceed an agreed upon amount, the guaranteed maximum price (GMP)…… if these costs and the agreed upon contractor's profit are less than the GMP, the owner and contractor will share the savings in cost based upon an agree upon formula. If the costs exceed the GMP without any changes to the defined scope, the contractor must solely bear the additional cost."

Both Boukendour and Bah (2001) and Masterman (2002) also provided similar definition of GMP. Hence, GMP can be considered as one of the forms of TCC with the sharing arrangement limited only to the gain (Perry and Thompson, 1982).

Figure 1 graphically illustrates the definitions and the operational mechanisms of GMP and TCC. A ceiling price and a gain-share/pain-share mechanism are established in the construction contract under this agreement (Clough and Sears 1994; Patterson 1999; Cantirino and Fodor, 2003). The contractor usually includes a sum for future design development in the form of GMP/TCC allowance and for any unforeseeable risks (Gander and Hemsley, 1997).

[Insert Figure 1 here!]

FEATURES OF GMP/TCC

GMP/TCC is considered to be a crossover of traditional lump-sum and design-and-build contracts (Fan and Greenwood, 2004). Figure 2 compares the characteristics amongst the three procurement approaches. GMP/TCC offers clients the possibility of retaining greater control over the design process and project cost, at the same time bringing in expertise in building designs and innovations in construction methods or materials from the contractor. In addition, the guaranteed maximum price or target cost is estimated based on preliminary design documentation provided by client and his team of consultants. Tender documents for GMP contracts usually comprise: (1) cost for main contractor's direct works; (2) domestic subcontractor's works packages; (3) provisional quantities; (4) provisional sums; and (5) design development allowance (Hong Kong Housing Authority, 2006). Table 2 summarises the key features of the GMP/TCC procurement strategy.

[Insert Figure 2 here!]

[Insert Table 2 here!]

RESEARCH METHODOLOGY

In order to explore the application of GMP/TCC practices in the local context, a series of semi-structured in-depth face-to-face interviews were launched with relevant industrial practitioners in the Hong Kong construction industry. Since the GMP/TCC approach is relatively new in the local industry, application and experience are confined to a limited number of construction organisations. Senior professional staff from the leading property developers and major construction companies having gained abundant hands-on experience in using the GMP/TCC strategy in Hong Kong were targeted for this study. In all, eight individuals at the managerial level from eight different construction-related organisations (including clients, contractors and consultants) were interviewed between January and April of 2006. As all of the key active players in adopting GMP/TCC had been included in the interviews, it was considered that the opinions and findings could substantially represent the GMP/TCC project pool in Hong

Kong over the past decade of 1997-2006. The details of the interviewees are shown in Table 3. Copies of relevant materials including the project's scope of work, contract terms and letters of award on GMP/TCC, in-house guidelines or best practice framework for implementing GMP/TCC scheme, case reports, as well as website materials, were obtained as secondary source of evidence to support primary opinions and information gleaned during the interviews.

[Insert Table 3 here!]

Since the interviewees were all senior personnel with sufficient experience in delivering GMP/TCC projects, the interviews were flexibly structured to facilitate free flow of ideas. The following open-ended questions were asked to convey a general idea of the information solicited, while the interviewees were encouraged to express on the subject, without being restrained by the pre-determined questions:

1. What are the motives behind the decision to implement GMP/TCC?
2. What are the major benefits and difficulties of GMP/TCC approach?
3. What are the key potential risks involved in implementing GMP/TCC contract?
4. What are the essential elements for successful GMP/TCC scheme in construction?
5. What are the project conditions most suitable for adopting GMP/TCC?

The study reported in this paper relied on the fundamental concepts of 'content analysis' research method in designing the survey component and analysing the interview dialogues. Content analysis classifies textual materials, reducing it to more relevant, manageable bits of data (Weber, 1990). It is applied to obtain information and understanding of issues relevant to the general aims and specific questions of a research project (Gillham, 2000). The information and data acquired from the interviews was first audio-recorded and later transcribed in written dialogues. The interview dialogues were forwarded back to corresponding interviewees afterwards for verification via email transmission. A systematic account of information and data obtained from in-depth interviews was archived for subsequent analysis.

Opinions on a set of common questions collected during the eight face-to-face interviews were then properly organised and analysed using the method of 'content analysis' in a matrix table format (i.e. each question posed against answers from each interviewee) to capture any similarities and differences for comparisons. This approach can help identify the most commonly perceived factors for each GMP/TCC attribute under study as adopted by Chan et al (2003) in determining the perceived partnering benefits identified from the reported literature and Yeung et al (2007) in digging out the key elements of project alliancing and strategic alliancing in construction. Outcomes derived from the analysis of interviews were cross-referenced to the published literature and to complement each other for validation.

INTERVIEW SURVEY RESULTS AND DISCUSSION

The key findings of the interview survey on the aforesaid research questions are summarised in Table 4. Implications on these findings are discussed in this section.

[Insert Table 4 here!]

Motives to adopt GMP/TCC

One of the interviewees from a client organisation (Client 6) expressed that the performance of traditional fixed-price lump-sum contract was far from satisfactory, and usually the fixed price was not the ultimate price at project completion. The target cost contracting concept were thereby introduced which offered a price ceiling and reduced cost variations for client. In addition, the majority of the interviewees mentioned that the gain-share/pain-share mechanism of this procurement strategy may provide financial incentives for contractors to save cost and work efficiently, which also echoes the Boukendour and Bah's (2001) conclusion.

Another important motive to adopt target cost contracting is its capability of integrating contractor's expertise and innovation in design and construction in a better and more efficient way. With the early involvement of contractor in the design development, not only construction activities can be launched before the entire project design is finalised,

but also the enhancement of buildability and environmental issues can be incorporated into the design. This intention of adopting GMP/TCC has also been highlighted by the local largest public housing provider (Hong Kong Housing Authority, 2006). Advanced works and early programme planning particularly in early materials purchase and logistics management may also be facilitated due to early commencement of site construction.

Additionally, clients adopted the GMP/TCC procurement approach for improving the traditional adversarial working relationship amongst the project team members. Under the GMP/TCC umbrella, a set of common goals are developed for the client, consultants, main contractor and trade subcontractors through a series of partnering workshops. This shared vision and the 'open-book' accounting regime cultivate a sense of partnership and a degree of mutual trust between project stakeholders. One of the interviewees (Client 4) emphasised that the previous TCC style of procurement in conjunction with the partnering approach resulted in unnecessary conflicts and intractable arguments. Hence her organisation regards GMP/TCC as an effective procurement strategy for conflict mitigation and resolution.

Perceived benefits of GMP/TCC

The gain-share/pain-share mechanism of the GMP/TCC approach generated an enormous impetus for contractor to innovate, save cost and solve problems as highlighted by Boukendour and Bah (2001). In particular, the contractor interviewee (Contractor 1) stressed that early participation of the contractor could not only enhance the buildability by integrating the design and construction, but also allow advanced programme planning for faster construction. These contributed to the overall improvement in terms of time, cost and quality performances (Wong et al, 2006).

Interestingly, all of the eight interviewees mentioned that GMP/TCC could be conducive to better working relationship within the project team because this procurement approach together with the partnering spirit promoted deeper collaboration between the client and the contractor. Periodic partnering review meetings and the adjudication committee operated under the GMP/TCC umbrella also established a solid platform to discuss any difficulties encountered and resolve any confrontational issues

(Chan et al, 2003). Both client and contractor stated that the GMP/TCC arrangement also provided a fairer procurement system and more equitable risk allocation amongst various project participants. Ting (2006) also opined that the incentivisation can create a more proactive, co-operative working relationship between the contracting parties and reinforces the cultural shift away from traditional, adversarial approach to contracting.

Client found that contractor was more willing to accept project variations and additional works because of the 'open-book' accounting arrangement. The assessment of variations was transparent and clear which allowed the contracting parties to observe fairness towards the subcontractors. This helped reduce potential claims and disputes for the entire project. The 'open-book' accounting strategy also brought early settlement of final project account. Gander and Hemsley (1997) also revealed that the preparation of and consensus on the final account under GMP/TCC tend to be completed earlier than for the conventional fixed-price contracts, primarily because a wide variety of possible variations are pre-agreed and pre-defined in the construction contract between the client and the contractor which resulted in the reduction of disputes and claims.

Potential difficulties of GMP/TCC

Despite the above-mentioned benefits, the interviewees have expressed the potential difficulties in implementing the GMP/TCC approach. Some argued that it was not easy to develop harmonious working relationship and build up mutual trust amongst the project stakeholders due to misalignment of their own financial objectives under the traditional procurement arrangement. The representative from the public sector (Client 6) stated that it would be difficult for them to secure long-term working relationship due to the public accountability. Another difficulty comes from the limited understanding of GMP/TCC concept. A number of interviewees described that consultants and subcontractors might not fully understand and accept the GMP/TCC arrangement, which might adversely affect the proper implementation of GMP/TCC strategy and might consequently lead to failure of the whole project.

In addition, it would be quite difficult to determine whether Architects/Engineers Instructions constitute GMP/TCC variations or design development variations. Under

the conditions of GMP/TCC contracts, design development variations would not trigger a re-calculation of the GMP or the target cost because they are deemed to have been included in the fixed lump-sum price of main contractor's direct works, but GMP/TCC variations can arise due to changes in the scope of work. This also echoes the commentary made by Fan and Greenwood (2004). Besides, the extent of design development variations would also be difficult to define. Poor handling on these issues may therefore cause intractable disputes and weaken the mutual trust among the project participants (Sadler, 2004).

Risks in implementing GMP/TCC

Interviewees from client and contractor organisations discerned that one of the major risks in adopting the GMP/TCC approach is the financial risk towards both client and contractor as there is uncertainty related to the scope of work. Compared with the conventional procurement method, not only that the contractor has to bear risks in both the design and construction processes, the risks from the contractor side are further inflated for a GMP project due to the absence of pain-share mechanism. A TCC contracting provision clearly involves the contractor in increased risk exposure and design development, of which he would be fully aware of and prepared for (Perry and Barnes, 2000; Fan and Greenwood, 2004). The contractor would raise his tender price to cover any potential risks, as additions or changes in the scope of work can only be claimed if they are categorised to be GMP/TCC variations. Hence, assessment and negotiation to reach an achievable, mutually agreed GMP or target cost and provisional sum is essential to project success.

Furthermore, one client interviewee (Client 6) voiced out that if a contractor were to be claim-conscious, the grey area between design development variations and GMP/TCC variations would offer possible opportunities for contractor to seek extra costs from the client due to claims. The project team might then become more aggressive leading to complaints from the contractor. Disputes might arise due to the changes in the scope of work (Tay et al, 2000; Tang and Lam, 2003). The performance of the project is really driven by the successful team building and mutual trust established amongst the project stakeholders. Besides, the tender briefing and the dispute resolution mechanism should also be comprehensive, transparent and fair to minimise this risk.

Several interviewees also expressed their concerns over the risk induced by statutory procedures and constraints. Although contracts may have stated that statutory conditions would not be considered as part of the Employer's Requirements, it is suspicious whether the GMP or the target cost is still applicable or not if substantial changes induce significant cost escalations. It is thus risky to adopt the GMP/TCC approach on those contracts where many changes are expected (Trench, 1991). Another risk that interviewees raised was related to the changes of market, such as the mismatch of the prevailing demand of real estate market. This may lead to enormous changes in Employer's Requirements and thus imposing financial risks on both client and contractor. These risks are also primarily derived from the inherent uncertainties with the GMP/TCC approach.

Critical success factors for GMP/TCC

Interviewees hold a consistent perception that the partnering spirit should be implemented hand-in-hand with GMP/TCC to make the project a success. It is crucial for all project participants to have a collaborative opportunity from a communication point of view to express their concerns and potential problems. Partnering can greatly facilitate communication, enhance mutual trust and improve working relationship amongst the project team members (Chan et al, 2004). This helps solve problems and disputes effectively and eventually makes GMP/TCC work. Without an open-minded attitude towards the other parties' opinions, GMP/TCC is difficult to be implemented (Tang and Lam, 2003). The mutual aim of adopting the GMP/TCC approach is always to accomplish the project with team efforts and achieve the target price. An open-book accounting arrangement and the partnering spirit behind laid down by the GMP/TCC procurement approach are therefore indispensable.

Selection of the right team is also considered to be a critical success factor for GMP/TCC projects. Client needs to constitute a project team who is receptive to innovative ideas. The commitment and capability of the contractor are particularly important. The main contractor has to be proactive and willing to communicate with other project participants based on the partnering concepts. However, the client is required to be fair to work with all the contracting parties, such as dealing with the

'grey area' on variations and risk sharing (Mills and Harris, 1995). The client should state clearly the Employer's Requirements, details of design development and the contract specifications at the outset because any ambiguous terms and specifications on contracts will lead to unnecessary arguments and claims. Tay et al (2000) also emphasised that there must be genuine willingness to achieve co-operation between the right parties to achieve a successful GMP/TCC project.

Most of the interviewees also stressed the importance of early adoption of GMP/TCC. If the contractor is involved more at the pre-construction stage, it helps advanced works and programme planning particularly in materials procurement. Experienced industrial practitioners suggested introducing GMP/TCC at the early design stage because early engagement of the contractor helps enhance the buildability of project design and thereby reducing the construction risk. In practice, one of the client interviewees (Client 1) found that a private commercial building project was successfully completed and the initial GMP was initiated when the basic schematic/outline design (about 20%) was completed. The Senior Project Manager of this project highlighted that the earlier GMP was introduced, the better the overall project performance would be and the more contributions the contractor could make. The project members' hands-on experience and their technical knowledge are also crucial in problem solving and administering this type of contract (Ho, 2000).

Suitability to adopt GMP/TCC

The interviewees considered that the GMP/TCC procurement approach is suitable for large scale and technically complex projects which contain uncertainties and unclear situation at feasibility stage and design stage. The GMP/TCC arrangement can properly cope with this 'high-risk' project type by setting not only common goals but also an agreed ceiling price of the project at main contract award for the Employer (National Economic Development Office, 1982). Through retaining greater control over consultants, contractors and subcontractors, client may achieve a better risk allocation and value for money for a complicated construction project.

The GMP/TCC contracting method is also appropriate to be adopted for a project which requires contractor's contributions to design and improvement on buildability.

GMP/TCC offers clients the possibility of retaining greater control over the design process and project cost, at the same time bringing in expertise in building designs and innovations in construction methods or materials from the contractor. The gain-share/pain-share mechanism of the GMP/TCC arrangement also provides a strong incentive for contractor to innovate and save cost. Moreover, interviewees suggested that GMP/TCC would be applicable for long-term cash flow projects, especially those with a limited design period. Industrial practitioners may consider applying the GMP/TCC strategy to future construction projects meeting the above project conditions to enhance the level of project success.

CONCLUSIONS

The traditional design-bid-build procurement approach for delivering construction projects beset with fragmented working culture and non-value-adding multi-layered subcontracting may be the culprits of poor quality of constructed facilities (Construction Industry Review Committee, 2001). Hands-on experience derived in the local context indicates that the guaranteed maximum price (GMP) and target cost contracting (TCC) approaches can accrue considerable mutual benefits to all of the parties involved.

This paper has reported based on an opinion interview survey on GMP/TCC procurement strategy with various key project stakeholders via a series of face-to-face interviews in Hong Kong. The key issues related to the GMP/TCC discussed cover the underlying motives behind adopting GMP/TCC, perceived benefits and potential difficulties, critical success factors, key risk factors, together with project conditions suitable for adopting the GMP/TCC approach.

The research findings are essential in mitigating the hindrances caused by potential difficulties in and maximising the benefits accrued from applying the GMP/TCC form of procurement. This study is significant in contributing to new knowledge and practical information of novel contracting strategies for the Hong Kong construction industry. It also provides sufficient groundwork for further research in the field and for client bodies and contracting organisations to develop a best practice framework for implementing successful GMP/TCC scheme in future construction projects.

A follow-up empirical questionnaire survey to solicit various opinions on the key issues mentioned above from those project team members who had gained hands-on experience in participating GMP/TCC construction projects had also been launched between May and June of 2006 in Hong Kong. The key survey findings will be collated and disseminated towards the research community and construction industry through subsequent refereed publications in the form of journal articles, conference presentations and research monographs.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the organisations and interviewees who participated in the interview survey for providing their opinions and necessary project information to facilitate this study. The authors also wish to thank The Hong Kong Polytechnic University for providing financial support to this research initiative (HK PolyU Faculty Internal Competitive Research Grants Allocation 2004/05 with Project Account Code: BRE-A-PG36). The helpful comments and valuable suggestions from the two anonymous referees are also respectfully acknowledged to improve the overall quality of this paper for publication.

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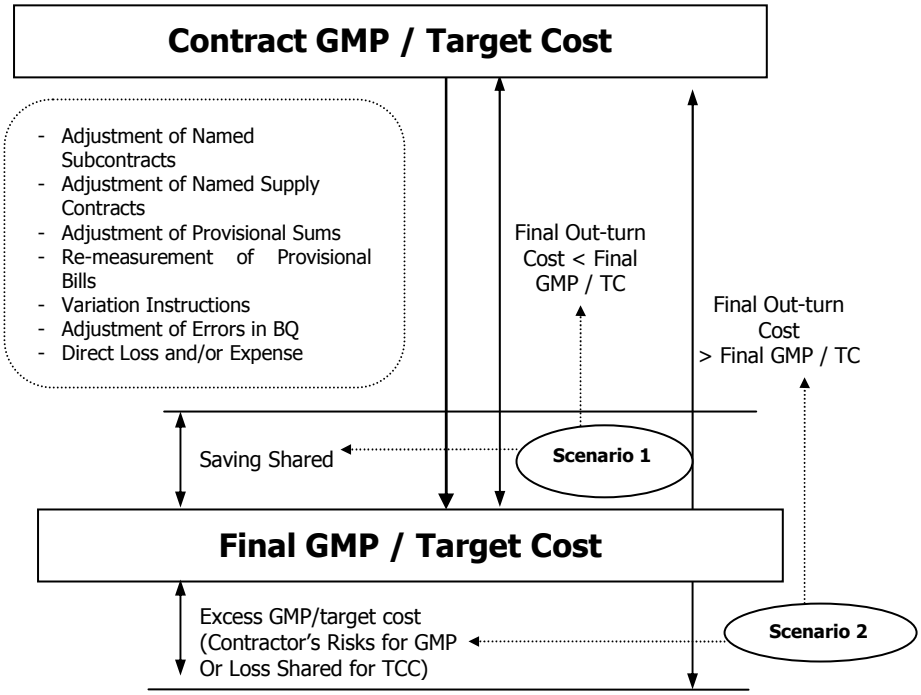

Figure 1: Gain-share/Pain-share mechanism of GMP/TCC procurement strategy [adapted from Cheng (2004)]

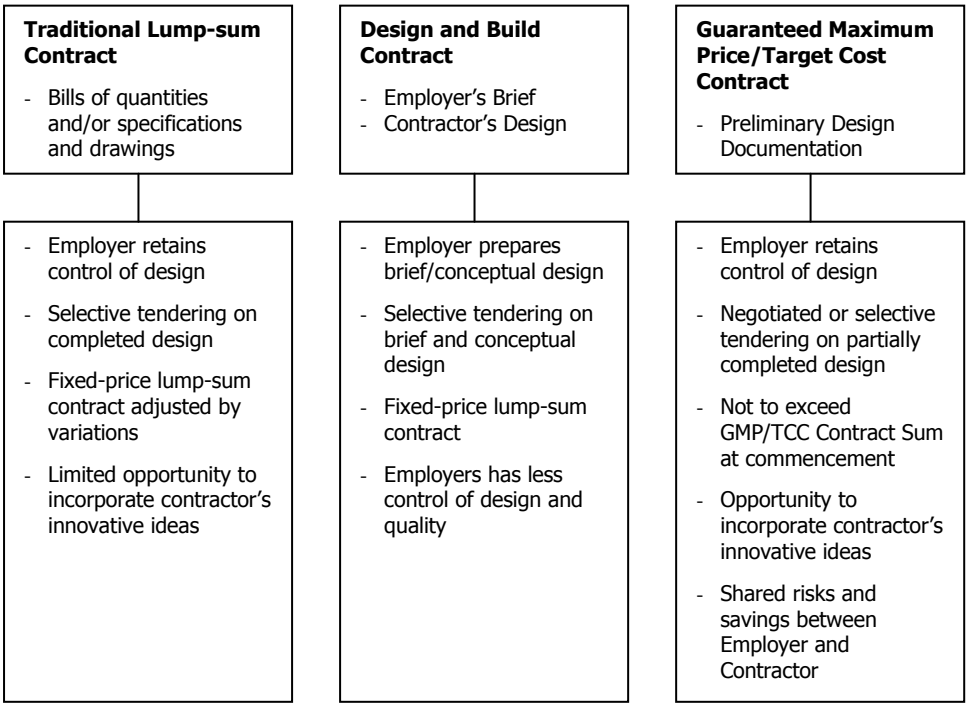

Figure 2: Comparison amongst alternative procurement methods [adapted from Hong Kong Housing Authority (2006)]

Table 1: List of GMP/TCC construction projects in Hong Kong

Project Name	Project Nature	Project Time-frame	GMP or TCC
Client Organisation – Hongkong Land Ltd			
1063 King's Road	A commercial development	Nov 1997 – Aug 1999	GMP
Chater House	A prestigious commercial development	Oct 2000 – Jul 2002	GMP
Alexandra House Refurbishments	A prestigious commercial development	Nov 2002 – Nov 2003	GMP
Tradeport Hong Kong Logistics Centre	A commercial logistics hub	Jul 2001 – Dec 2002	GMP
Landmark Redevelopment Phase 6 – York House	A commercial redevelopment	Jan 2005 – Oct 2006	GMP
Client Organisation – Swire Properties Ltd			
The Orchards	A twin tower residential development	Aug 2001 – Sep 2003	GMP
Three Pacific Place	A prestigious commercial development	Jun 2002 – Aug 2004	GMP
Client Organisation – Australian International School			
Australian International School	A private educational building	------	GMP
Client Organisation – Gammon Skanska Ltd			
Tseung Kwan O Technology Park	A private technology park	Nov 2001 – Dec 2002	GMP
Client Organisation – Hong Kong SAR Government and Hong Kong Jockey Club			
Hong Kong Park	A public recreational park		GMP
Client Organisation – DHL Aviation (Hong Kong) Ltd			
DHL Central Asia Hub	A private express cargo sortation and delivery terminal building	Feb 2003 – Jun 2004	GMP
Client Organisation – Hong Kong Housing Authority			
Public Housing Development	A public rental housing development	Jun 2006 – Jun 2009	Modified GMP
Client Organisation – Mass Transit Railway Corporation Ltd			
Tseung Kwan O Railway Extension	The sixth operational railway line with 5 stations	Mar 1999 – Sep 2002	TCC
Tseung Kwan O Railway Extension – Contract 609 A & B	Piling Works of Tseung Kwan O Depot – Areas A & B	------	TCC
Tsim Sha Tsui Metro Station Modification Works	Tsim Sha Tsui Metro Station Modification Works	Apr 2002 – Sep 2005	TCC
Tung Chung Cable Car Project	A sightseeing transportation facility including civil and building works	Jun 2004 – Dec 2005	TCC

Table 2: Key features of the GMP / TCC procurement strategy [Chan et al (2006)]

- Set an agreed ceiling price of the project at main contract award for the Employer.
- Guarantee the project to be completed within contract period by allowing early start of construction before the design is fully developed.
- Employer retains greater control over design consultants, main contractor and subcontractors.
- Bring in expertise in building designs and innovations in construction methods and materials from the Contractor.
- Contractor takes all the risks likely to be incurred in design development under GMP allowance.
- Employer provides financial incentives for sharing cost saving with the Contractor in pre-agreed proportion by driving procurement process efficiently.
- Adjudication Committee is set up to facilitate the resolution of various issues, which includes representatives from client, architect, quantity surveyor and main contractor.
- Set common goals for project stakeholders under a partnering arrangement.
- Pre-agreement of price and time implications of any potential changes to the project leading to an early settlement of final project account.
- 'Open-book' accounting arrangement provides transparency of the project cost and variations.

Table 3: Details of interviewees participating in interview survey on GMP/TCC procurement strategy

ID	Sector	Organisation Type	Position of Interviewee
1	Private	Client	Executive Director (Projects) and Head of Quantity Surveying
2	Private	Consultant	Director
3	Private	Client	Project Manager
4	Private	Client	Project Manager
5	Private	Contractor	Head of Planning and Pre-construction Engineering and Construction Manager
6	Quasi-government	Client	Contracts Administration Manager
7	Quasi-government	Client	Chief Executive Officer
8	Public	Client	Senior Architect

Note: Names of the interviewees are not included in the interest of privacy

Table 4: Summary of the interview findings on GMP/TCC procurement strategy

	Areas of Interest	Client 1	Consultant 1	Client 2	Client 3	Contractor 1	Client 4	Client 5	Client 6	Total no. of hits
Motives to adopt GMP/TCC	To improve risk management and control	✓	✓	✓			✓	✓	✓	6
	To generate an incentive to achieve cost saving and work efficiently	✓	✓		✓	✓			✓	5
	To tap in contractor's expertise in design and construction methods		✓	✓		✓	✓		✓	5
	To develop better working relationship	✓			✓				✓	3
	To set an agreed ceiling price at main contract award	✓	✓	✓						3
Benefits of GMP/TCC	Provide financial incentives for contractor to achieve cost saving and innovate	✓	✓		✓			✓	✓	5
	Bring in expertise in building designs and innovations in construction methods from contractor to enhance the buildability of the project	✓		✓		✓	✓			4
	Conducive to improving partners' working relationship via partnering	✓	✓	✓	✓	✓	✓		✓	7
	Enable a more equitable risk apportionment amongst project participants	✓	✓			✓	✓	✓	✓	6
	Limit the entitlements for claiming variations by contractor	✓		✓	✓					3
	Early settlement of final project account	✓	✓	✓	✓				✓	5
Difficulties of GMP/TCC	Difficult to develop trust and understanding from contractor as a project team	✓							✓	2
	Unfamiliarity with or limited understanding of GMP/TCC concepts by project team members	✓		✓		✓	✓	✓		5
	Arbitrary to determine whether Architects/Engineers Instructions constituted GMP/TCC variations or were deemed to be design development	✓	✓	✓	✓				✓	5
Risks in implementing GMP/TCC	Client may carry more risks than the traditional procurement approach because of the unclear scope of work			✓	✓					2
	Contractor may not foresee design development risks thus taking more risks.			✓		✓				2
	Disputes may arise due to the changes in scope of work	✓	✓					✓	✓	4
	Market risk due to the mismatch of the prevailing demand of real estate market.	✓		✓						2
Critical success factors for GMP/TCC	Demonstrated partnering spirit from all contracting parties	✓	✓	✓	✓	✓		✓	✓	7
	Right selection of project team	✓							✓	2
	Well-defined scope of work in client's project brief			✓	✓				✓	3
	Reasonable share of cost saving and fair risk allocation	✓	✓	✓	✓	✓	✓			6
	Early implementation of GMP/TCC	✓	✓	✓	✓	✓			✓	6
	Familiarity with and experience of GMP/TCC methodology amongst project stakeholders	✓	✓	✓	✓				✓	5
Suitability to adopt GMP/TCC	Large and technically complex project that contains higher risks	✓	✓	✓	✓	✓	✓			6
	Client's requirements for buildability and innovation		✓	✓					✓	3
	Project with life cycle cash flow	✓	✓							2
	Project with tight schedule for design					✓			✓	2