

# Implementation of Collaborative Procurement Method to Sri Lankan Construction Industry

PM Hettige<sup>1#</sup>, PG Fernando<sup>2</sup>, KPSPK Bandara<sup>3</sup> and DMS Jayasuriya<sup>3</sup>

<sup>1</sup>*acs Integrated (Pvt) Ltd, Sri Lanka*

<sup>2</sup>*JITF-KDESH JV, Sri Lanka*

<sup>3</sup>*Faculty of Built Environment & Spatial Sciences, General Sir John Kotelawala Defence University, Sri Lanka*

#piumali1515@gmail.com

**Abstract**— Construction procurement methods have developed for decades under four main categories to address different financial arrangements, different relationships between parties, different project delivery methods and to suit the client's requirements. The joint venture, partnering, alliancing and voluntary agreement were developed as sub-categories of Collaborative Procurement Methods (CPM). Currently, these methods are being practised all over the world considering the benefits it provides whereas less practice in Sri Lanka (SL) due to plenty of barriers. This study explored the current procurement practices in SL, implementation possibilities and barriers for successful practising of CPMs in the country. Further, proposals for mitigating the identified barriers are also recognized through this study. To achieve this aim, a comprehensive literature review, a questionnaire survey and a semi-structured interview survey were conducted. Less awareness of the concept and associated benefits, the government's promotion of traditional procurement method, and issues in trust-building among parties were identified as the foremost barriers for the successful implementation of CPMs. Moreover, the findings implied the requirement of cultural changes in Sri Lankans to experience these new procurement practices, challenges and to develop trust between parties within the construction industry.

**Keywords:** *Collaborative Procurement Methods (CPMs), construction industry, joint ventures*

## I. INTRODUCTION

Construction industry counts as a cornerstone of any country's economy (Rameezdeen and De

Silva, 2002). Solomon and Byung-Soo (2018) stated that the complexity of the construction industry gradually increases due to its extensive nature, involvement of high number of stakeholders and multifaceted newer projects, contractual relationships, distribution of responsibilities and authorities between parties, scope of allocated duties, and uniqueness of the construction products.

According to Naoum and Egbu (2016), construction procurement methods have been developed regularly to manage growing challenges in the industry and thus it can be identified as a systematic mechanism of linking parties together in means of functionally and contractually, to deliver a successful construction project. Additionally, Solomon and Byung-Soo, (2018) argued that the selection of a suitable procurement method helps to avoid problems and leads to a successful project through the achievement of project specific goals.

Rameezdeen and De Silva (2002), Solomon and Byung-Soo, (2018), Wijewardena et al. (2013), recognized traditional, design and built, management-oriented and collaborative methods as four main types of construction procurement methods. According to the studies, the worldwide construction industry has shifted its focus away from traditional methods and toward alternative procurement methods, which take into account changes and challenges in the economy, time constraints, project complexity, and fund-raising issues, among other factors (Naoum and Egbu, 2016; Rameezdeen and De Silva, 2002; Ratnasabapathi et al., 2005; Wijewardena et al., 2013). Morledge and Smith (2013) explained that requirement to change supplier and customer relationship between

employer and contractor under traditional process in terms of avoiding confrontation and disputes lead to developing Collaborative Procurement Methods such as Partnering, Joint Ventures and Alliancing. Naoum and Egbu (2016) described the major advantage of collaborative method as technical and human resources, provision for parties to share their finance, which they cannot afford as a single party. Accordingly, it is evident that the use of collaborative procedures ensures that both parties involved in a contract benefit.

Despite the fact that the separated procurement method has a monopoly in the Sri Lankan (SL) construction industry due to government regulations, socio-cultural background, economic growth, and diverted clients' requirements, several other procurement methods such as design and build and joint venture arrangements have been partially established between 1977 and 2003. (Ratnasabapathi et al., 2005). According to Wijewardena et al. (2013), it is emphasised that practice of CPM is rare in Sri Lankan construction industry. the main reason for the unpopularity of CPM in SL has been identified as lack of awareness in construction industry and lack of standard contract conditions (Ratnasabapathi et al., 2005; Wijewardena et al., 2013).

Thus, this paper aims to investigate the basic requirements needed to implement CPM in SL. This paper is accordingly formulated as follows. First, a thorough literature review on types of CPM, its practice and barriers to implementing CPM is presented. Next, the research process containing the methodology of research and data analysis is elaborated. This is followed by the findings and conclusions.

## II. LITERATURE REVIEW

### A. Collaborative Procurement

Ratnasabapathi et al. (2005) pointed out that sharing assets and investments, optimizing design and commitments of all parties towards the success of the project as the principle of collaborative procurement. CPM further has been categorized as Partnering, Joint Ventures, Alliancing and Voluntary Arrangements (Solomon and Byung-Soo, (2018), Wijewardena et al. (2013). Moreover, National building

specification (2019) added that collaborative working fulfils client's requirements by proportionately sharing responsibility, risk, reward and helps to eliminate possible disputes and possible cost and time overruns.

*1) Joint Ventures (JV):* Tetteh and Chan (2019) explained that construction joint ventures (CJV) are short-term and focus on resource collaboration to undertake procurement works, engineering, consulting, construction and construction management services. Badger et al. (1993, cited in Hong and Chan, 2014) stressed that the CJV differs from the alliance concept since it is a temporary, project-based agreement. With the support of the findings of Grab (1988); Sornarajah (1992); and Mohamed (2003), Hong and Chan (2014) stated that CJV can be classified either as (i) Integrated CJV (Parties agree to perform as a single entity having several stakeholders), and (ii) Non-integrated CJV (Parties manage separately and take-over their respective portions of the work distinctly) or (i) International CJV (JV agreements forming with multinational partners) and (ii) Domestic CJV (JV agreements forming with parties from a single country).

*2) Partnering:* Eriksson (2010) stated partnering as a method which incorporates multiple parties towards the success of a project through cooperative decision-making which focuses on admitting feedbacks for the development of the project. Challender et al. (2019) described partnering as business relationships formed among contract organizations aiming at achieving common objectives and benefits. There are two types of partnering namely project partnering and strategic partnering, which have been differentiated considering the depth of partnering applicability (Ashworth and Perera, 2018).

*3) Alliance:* Ingirige and Martin (2006) stated that alliances provide opportunities for individuals, teams and firms to gain mutual benefit from sharing skills and resources, combining insights and understanding to reduce uncertainties and accelerate learning. an Alliance is a willingly initiated cooperative agreement between two or more firms who perform business activities. The Alliance is referred to

strategic partnering in the United Kingdom (UK) (Ingirige and Martin, 2006).

### *B. Global Practice of CPM*

According to MohammadHasanzadeh et al. (2014) practicing partnering over a decade has significantly affected on performances of Iranian construction industry. Partnering practice in Iran is continuously increasing as construction clients implement CPM considering the conformity and benefits. Chan et al. (2004) showed that cultural and economic needs have paved the way to the adoption of partnering in the Chinese construction industry of Mainland China. Adding to that, Samantha and Singla (2019) stated that Indian government assists in implementing collaborative systems especially the CJV aiming at operational efficiencies and solutions to construction related problems.

Currently, contractors of the UK tend to engage with the CPM with the hope of high financial savings through reduction of risks and development costs. Clients also preferred to enter in to CPM considering the high response to customer needs, enhanced market opportunities and reduced construction development risks (Akintoye and Main, 2007). Accordingly, literature elaborates that the CMP has become a trend in the global construction industry considering its easy adoptability and highly benefited nature.

### *C. CPM Practice in Sri Lankan*

Rameezdeen and De Silva (2002) had researched and concluded majority of public works procured under traditional method due to the barriers created through financial regulations and administration regulations, accountability aspects and transparency aspects. Due to the promotion, private sector had also practiced the same over that period, which made a barrier towards development of alternative procurement practices.

However, the SL construction industry abled to experiment with alternative procurement due to the economic growth of the country. Design and build became popular along with industrial growth, while CPM emerged with the involvement of international contractors in SL. Recent studies show an increasing tendency of local practitioners to enter joint venture/

partnering agreements with foreign contractors. (Ratnasabapathi et al., 2009; Wijewardana et al., 2013)Rameezdeen and De Silva (2002) had researched and concluded that alternative methods had been practiced in low profile while traditional method maintained a monopoly for years in local context. Further they added that majority of public works procured in measure and pay system due to the barriers created through financial regulations and administration regulations. Traditional procurement had widely applied for public projects by government up-to 2013, highlighting accountability and transparency aspects. Due to the promotion, private sector had also practiced same over that period, which made a barrier towards development of alternative procurement practices.

However, SL construction industry abled to experiment alternative procurement due to economic growth of country. Design and build became popular along with industrial growth, while CPM emerge with the involvement of international contractors SL. Recent studies show increasing tendency of local practitioners to enter joint venture/ partnering agreements with foreign contractors. (Ratnasabapathi et al., 2009; Wijewardana et al., 2013)

### *D. Advantages Collaborative Procurement*

Challender et al. (2019) highlighted that consultants and contractors tends to practice partnering considering the workflow security and trust, when client continues different construction projects. Probable benefits of collaborative methods may contain an increase in profits brought by shared expertise, efficiencies and improvements in decision-making through shared knowledge, cost reduction through sharing best practice, and increased levels of innovation (Hansen and Nohria, 2004). In addition, Wu and Udejaja (2008) showed lower transaction costs can be achieved through repeat tendering, earlier appointments, and general familiarity between partnering organizations. Furthermore, they explained that external forces may encourage greater collaboration between organizations where uncertainty, competition, program, and budgetary pressures are prevalent on projects.

Table 1. barriers to implement CPM

	<b>Identified Barrier</b>	Akintoye and Main (2007)	Angliger and Jenk (2004)	Bresnen and Marshall (2003)	Eriksson et al. (2008)	Kadefors et al. (2007)	Hasanzadeh et al. (2014)	Naoum (2003)	Wijewardana et al. (2013)	Zuo et al. (2013)
01	Lack of trust	x								x
02	Lack of commitment									x
03	Lack of training and experienced staff		x				x			x
04	Poor communication practice among team/ Poor consultation between parties	x								
05	Traditional construction process and procurement procedures				x			x		x
06	Laws and regulations				x				x	x
07	No specific guidelines and policies implemented by authorities					x			x	
08	Undefined roles and responsibilities	x								
09	Adversarial attitudes/ failure of individual relationships	x		x	x					
10	Focus on projects instead of processes				x					
11	Short-termism				x					
12	Delay in decision making							x		
13	Differences in partner's organization direction/ aim and goals		x							
14	Differences in partner's cultures	x					x			
15	Stakeholders not developing win-win attitude				x		x			x
16	Risk or rewards were not shared directly						x			
17	Integrity, ethics and cultural aspects				x					x
18	Lack of planning/ poor management	x								x
19	Lack of belief in the system	x								x
20	Lack of uniform implementation procedure									x
21	Integrity, ethics and cultural aspects				x					x
22	New competence requirements				x					

It could possibly explain why in challenging environments, companies may be more inclined to share information and achieve higher performance levels through partnering. Risk management under traditional procurement is

problematic, especially when complex projects create greater risks for project teams, delays, cost overruns, and disputes. (Chan et al., 2004 and Challender et al., 2019). CPM could be applied to comfort such situations. Moreover, it enables

parties to improve their efficiencies by sharing knowledge, enhancing trust, reduce cost via best practice and sharing risk.

*E. Barriers to Implement CPM Practice*

Even though there are plenty of advantages, owing to barriers of implementing CPM, this procurement mode is not become more popular in some countries (Zuo et al., 2013). Lack of experience, lack of trust, lack of commitment by parties, lack of awareness in industry, consolation, cultural issue, higher risk, restrictions imposed by existing regulatory frame and lack of standard contract conditions were identified as obstacles for the development of CPM (Akintoye and Main, 2007). Table 1 summarised the identified barriers to implement CPM.

**III. METHODOLOGY**

*A. Research Approach*

There are three main types of research approaches as qualitative, quantitative and mixed methods. Saunders et al., 2016 stated that the quantitative approach employs to find solutions for a social/ human problem based on theory/ hypothesis, measured and analysed with numerical values. while Naoum (2007) stated qualitative approach emphasized on meanings, experiences and descriptions. Case study research, ethnography, action research and grounded theory approach are coming under qualitative approaches. the mixed approach is a combination of quantitative and qualitative data collection techniques and analytical procedures. This utilizes the strengths of both qualitative and quantitative studies and this combination provides a wider understanding of the research questions. Therefore, this study used the mixed approach as research method.

*B. Data Collection*

This research had gathered pertinent primary data initially through a questionnaire survey and secondarily conducted semi-structured interviews based on questionnaire survey results. A sample always represent and express the population. Hence it has to ensure that the research sample contains characteristics similar to its population (Naoum, 2007). To get a worthwhile response, the questionnaire had

been circulated among 45 people. Subsequently, five persons were interviewed. The target population was professionals working under contractors, consultants and clients who have experience of more than 03 years in the field.

*C. Data Analysis*

There are two methods to analyse the findings of research quantitatively; the descriptive statistics method provides a general overview of results, and the inferential method which focuses on the nature of relationship between two variables. Data collected through the questionnaire survey has been analysed using the frequency distribution method and presents through graphs, tables and figures. Data collected through interviews were recorded and analysed by content analysis and cross case analysis.

**IV. DISCUSSION**

*A. Data Analysis of Questionnaire Survey*

The questionnaire was circulated among forty-five (45) numbers of selected professionals and received thirty-five (35) responses. Table 2 displays respondents' experience in the construction industry. Out of the responses, fifty-seven percent (57%) was quantity surveyors, twenty percent(20%) was engineers, twelve percent (12%) was project managers and eleven percent (11%) was architects.

Table 2. Respondents' demographic profile

Category	Type	Responses	Percentage
Years of experiences	3-5 years	13	37%
	5-10 years	16	46%
	10-20 years	5	14%
	over 20 years	1	3%

Gathered data was analysed through the frequency distribution method under descriptive statistics. Two professionals among the thirty five (35) respondents were not aware about procurement practices in construction industry.

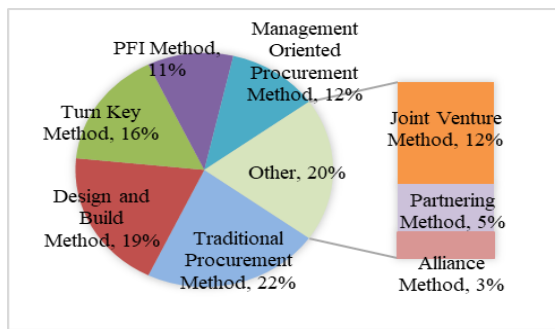


Figure 1. Current procurement practice in SL

Survey result for procurement methods which respondent experienced are illustrated in figure 1. Findings proved that integrated procurement methods including design and build method, turn key method and PFI methods are practiced in SL than the traditional procurement method. Moreover, it confirmed CPM methods are practiced in a low profile in the local context.

However, survey results showed only fifty one percent (51%) of the respondents had experience in CPM.

Table 3. Awareness about benefits of CPM

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Traditional procurement systems are timely effective than CPM systems.	-	21%	33%	42%	3%
CPM allow to share assets and investments only.	3%	18%	39%	39%	-
CPM could apply for projects where integration of modern technology requires.	15%	55%	27%	3%	-
Integrated Procurement systems allows to share knowledge and experiences of professionals than CPM does.	39%	42%	18%	-	-

Requirement for an alternative procurement method in SL has been highlighted through the findings. Majority of the respondents deliberated building projects procured under traditional method do not fulfil financial, functional, and technical requirements of the client when completed. Further, they added that contractors do not have enough own resources to do the construction work in required quality within allocated time period.

Awareness of the benefits of CPM identified through literature survey was surveyed and

illustrated in table 3. The table shows that the majority believe CPM methods are timely more effective than traditional methods. Further, they confirmed the necessity of trust among parties, commitment for work and communication within the parties towards successful CPM.

Furthermore, thirty-nine percent (39%) of respondents feel that CPM simply provides for the sharing of assets and investments, whereas eighty-one percent (81%) believe that integrated approaches allow for the sharing of professional knowledge and experiences. CPM helps parties to enhance decision-making, reduce production costs, boost creativity, and many other advantages by sharing corporate objectives, best practices, risks, resources, technologies, costs, information, and ideas, according to Akintoye and Main (2007) and Challender et al. (2019). CPM, according to Munns et al. (2000, quoted in Hong and Chan, 2014), provides for information communication, social interaction, effective knowledge sharing, and uncertainty sharing. The disparity between survey findings and literature reveals SL professionals' lack of grasp of the CPM concept.

A survey was undertaken to determine the most significant hurdles to CPM implementation in Sri Lanka. According to the findings displayed in Figure 2, lack of awareness was recognized as the primary obstacle to CPM implementation in SL, accounting for twenty-one percent (21%) of the total, while a lack of trust and prior experiences was cited as the secondary cause. Barriers included legal history, existing rules and regulations, a lack of communication and lack of commitment.

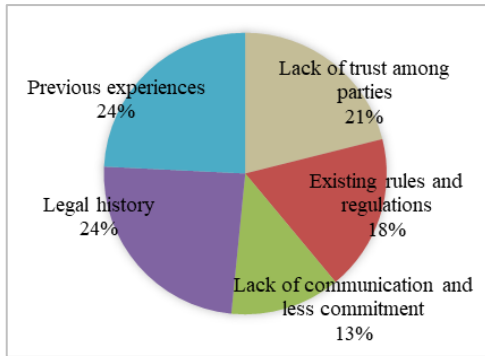


Figure 2. Barriers for implementation of CPM in SL

### B. Data Analysis of Interviews

Subsequently, five semi-structured expertise interviews had been conducted on barriers of CPM identified through literature survey and questionnaire survey analysis. Data collected through interviews were analysed using coding method. Table 4 displays respondents' demographic profile. Forty percent (40%) had 10-20 years experiences in construction industry while sixty percent (60%) had over 20 years. Eighty percent (80%) of them had engaged with local CPM projects whereas the rest had foreign experience.

Table 4. Respondents' demographic profile

Category	Type	Responses	Percentage
Years of experiences	10-20 years	02	40%
	over 20 years	03	60%

All interviewees had recognized CPM as a suitable practice for an upper middle-income country like SL assuming that CPM will allow opportunities to bring in much-needed investments and financing. Further, they proposed that CPM would be ideal for building projects which exceed LKR 100Mn cost.

Further, they confirmed all barriers identified through the questionnaire survey are highly influencing factors. They added that lack of standard contract conditions, lack of experience, lack of awareness with in clients/investors, cultural issues, limitations in sharing internal data with partners, transparency and clarity in public sector projects and promotion of

traditional procurement by public sector were recognized as barriers towards implementation of CPM in SL. The utmost significant factor is cooperating partners' failure to contribute to the partnership needs, goals and objectives as predictable. This is tracked by deficiency of trust among the cooperating partners and lack of frequent consultation between them.

It has been suggested barrier overcoming strategies to implement CPM in SL, such as improving public awareness through promotion campaigns/ workshops, reinforcing client resources, framework agreements, establishing clear legal procedure/ form of contract to CPM, promotion among subcontractors and suppliers and adopt necessary changes to legal arrangements and preparing framework to encourage alternative procurement methods in public sector projects. Additionally, they have recognized several barrier overcoming techniques practicing worldwide which could be applied to SL context, such as conducting frequent training sessions for involved parties, clearly defining responsibilities of both parties, and enhancing trust through high relevant competence. Collaboration amid construction project contributors necessitates mutual trust, involvement, common targets, commitment, joint problem and solving good communication. The attainment of long-term collaboration is highly reliant on cultural and attitudinal factors displayed by the participants.

### V. CONCLUSION

The concept of CPM, its subcategories, advantages and disadvantages, worldwide implementation of CPM, barriers to implementing successful CPM and barrier overcoming techniques practicing in the world had been discussed through the literature review. Further, current procurement practices in the SL were also tried to identify using available literature. While modern procurement trends are developing in SL, alternative procurement methods have been developed for years. CPM has been introduced to infrastructure development projects, but so far, a minor percentage in practice.

It is imperative that alliances are sensibly deliberated to confirm that they fit interested in the commercial plans of the organisations which are allowing for arriving into partnerships. The barriers that the construction industry would contemplate cautiously and discourse already arriving into collaboration are opportunities to absence of trust; communication collapse; deficiency of confidence in the structure; clash of organisational principles; rigid approaches; deficiency of scheduling; fluctuating commercial goals; shortage of gratitude for contractual threats; client intervention; crash of characters; disputes not being determined; and absence of senior supervision provision. Certain aspects which are recognized to add to the attainment of partnerships in construction are a great level of commitment and reliance, capacity and enthusiasm to share possibilities among associates; reacting to clients requirements; worthy communication; appropriate properties; enhanced competence; and considerate singular characters of the companions.

CPM allows different parties/organizations to invest in a single development by sharing their resources, funds, technology, as well as risks while providing lots of benefits. Lack of awareness among public/ investors and industry practitioners about CPM concept has been identified as the key reason for less implementation of CPM. Lack of standard contract conditions, lack of trust among parties, cultural issues, lack of experiences and few other barriers are few other barriers identified. Professionals introduced industrywide promotional campaigns, framework agreements, establishing clear legal procedure to support implement successful CPM practice in SL.

## REFERENCES

Akintoye, A. and Main, J. (2007) Collaborative relationships in construction: the *UK contractors' perception*. *Engineering, Construction and Architectural Management*, 14(6), pp. 597-617. Available at: [www.emeraldinsight.com/0969-9988.htm](http://www.emeraldinsight.com/0969-9988.htm) [Accessed 2 November 2019].

Ashworth, A & Perera, S 2018, *Contractual Procedures in the Construction Industry*, Routledge, retrieved from <<http://dx.doi.org/10.1201/9781315529059>>.

Athapaththu, K. I. and Karunasena, G. (2018) Framework for sustainable construction practices in

Sri Lanka. *Built Environment Project and Asset Management*, 8(1), pp. 51-63. Available at: [www.emeraldinsight.com/2044-124X.htm](http://www.emeraldinsight.com/2044-124X.htm) [Accessed 22 October 2019].

Bygballe, L. T. and Sward, A. (2019) Collaborative project delivery models and the role of routines in institutionalizing partnering. *Project Management Journal*, 50(2), pp. 161-176. Available at: [www.journals.sagepub.com/home/pmx](http://www.journals.sagepub.com/home/pmx) [Accessed 5 November 2019].

Challender, J., McDermott, P. and Farrell, P. (2019). *Building collaborative trust in construction procurement strategies*. [e-book] Malden, MA: Wiley-Blackwell. Available at: <https://ebookcentral.proquest.com> [Accessed 2 November 2019].

Chan, A. P. C., Chan, D. W. M., Chiang, Y. H. 3., Tang, B. S., Chan, E. H. W. 5., & Ho, K. S. K. (2004). Exploring Critical Success Factors for Partnering in Construction Projects. *Journal of Construction Engineering and Management*, 130(2), 188-198. Doi: doi: 10.1061/(ASCE)0733-9364(2004)130:2(188)

Creswell, J. W. (2007) *Qualitative inquiry and research design: Choosing among five approaches*, 2nd edn. California: Sage publications.

Creswell, J. W. (2014) *Research design: qualitative, quantitative, and mixed methods approaches*, 4th edn. United States of America: Sage publications.

Eriksson, P. E. (2010) Partnering: what is it, when should it be used, and how should it be implemented?. *Construction Management and Economics*, 28(9), pp. 905-917. Available at: <https://doi.org/10.1080/01446190903536422> [Accessed 4 November 2019].

Eriksson, P. E., Nilsson, T. and Atkin, B. (2008) Client perceptions of barriers to partnering. *Engineering, Construction and Architectural Management*, 15(6), pp. 527-539. Available at: [www.emeraldinsight.com/0969-9988.htm](http://www.emeraldinsight.com/0969-9988.htm) [Accessed 3 November 2019].

Grey, D. E. (2014). *Doing research in the real world* (3rd ed.). London: Sage

Harris, F., McCaffer, R. and Edum-Fotwe, F. (2013). *Modern Construction Management*. [e-book] 5th edn, Hoboken, MA: Wiley-Blackwell. Available at: <https://ebookcentral.proquest.com> [Accessed 14 November 2019].

Hong, Y., and Chan, D. W. M. (2014) Research trend of joint ventures in construction: a two-decade taxonomic review. *Journal of facilities management*, 12(02), pp.118-141. Available at: [https://ascelibrary.org.ezproxy.bcu.ac.uk/doi/pdf/10.1061/%28ASCE%](https://ascelibrary.org.ezproxy.bcu.ac.uk/doi/pdf/10.1061/%28ASCE%28)



- 29CO.1943-7862.0001693 Byung-Soo [Accessed 8 February 2020].
- Hong, Y., Chan, D. and Chan, A. (2012) Exploring the applicability of construction partnering in Mainland China. *Facilities*, 30(13/14), pp.667-694. Available at: <http://www.emeraldinsight.com/0263-2772.htm> [Accessed 8 November 2019].
- Ingirige, B. and Sexton, M. (2006) Alliances in construction. *Engineering, Construction and Architectural Management*, 13(5), pp.521-535. Available at: <http://www.emeraldinsight.com/0969-9988.htm> [Accessed 7 November 2019].
- Kothari, C. R. (2004) *Research methodology, methods and techniques*, 4th edn. New Delhi: New age international (P) limited.
- Loosemore, M. and Reid, S. (2018). The social procurement practices of tier-one construction contractors in Australia. *Construction Management and Economics*, 37(4), pp.183-200. Available at: <https://doi.org/10.1080/01446193.2018.1505048> [Accessed 3 November 2019].
- Love, P. E. D., Skitmore, M. and Earl, G. (1998) Selecting a suitable procurement method for a building project. *Construction Management and Economics*, 16(2), pp. 221-233. Available at: <https://doi.org/10.1080/014461998372501> [Accessed 28 October 2019].
- MohammadHasanzadeh, S., Hosseinalipour, M. and Hafezi, M. (2014). Collaborative Procurement in Construction Projects Performance Measures, Case Study: Partnering in Iranian Construction Industry. *Procedia - Social and Behavioral Sciences*, 119, pp.811-818. Available at: <http://www.sciencedirect.com> [Accessed 8 November 2019].
- Morledge, R. and Smith, A. (2013). *Building procurement*. [e-book] 2nd edn. Chichester, West Sussex, U.K.: Wiley-Blackwell. Available at: <http://ebookcentral.proquest.com/lib/bcu/detail.action?docID=1120899> [Accessed 3 November 2019].
- National building specification (2019) *National Construction Contracts and Law Report 2018*. Available at: <https://www.thenbs.com/knowledge/national-construction-contracts-and-law-report-2018> [Accessed 15 October 2019].
- Naoum, S. G. (2007) *Dissertation Research and Writing for Construction Students*, 2nd edn. UK: Elsevier.
- Naoum, S. G. and Egbu, C. (2016) Modern selection criteria for procurement methods in construction. *International Journal of Managing Projects in Business*, 9(2), pp. 309-336. Available at: [www.emeraldinsight.com/1753-8378.htm](http://www.emeraldinsight.com/1753-8378.htm) [Accessed 22 October 2019].
- National Economic Development Council, (1991) *Partnering – Contract without Conflict*, HMSO; London.
- Rameezdeen, R. and De Silva, S. (2002) Trends in construction procurement systems in Sri Lanka. *Built-Environment Sri Lanka*, 2(2), pp.2-9.
- Ratnasabapathy, S., Rameezdeen, R. and Amaratunga, D. (2005) *Macro analysis of construction procurement trends in Sri Lanka*. [pdf] Manchester: university of Salford. Available at: <http://usir.salford.ac.uk/9936/> [Accessed 10 October 2019]
- Ratnasabapathy, S., Rameezdeen, R. and Gamage, I. (2009) *Macro level factors affecting the construction procurement selection: a multi criteria model*. [pdf] Available at: <http://www.irbnet.de/daten/iconda/CIB4438.pdf> [Accessed 6 October 2019]
- Ratnasabapathy, S. and Rameezdeen, R. (2007) A decision support system for the selection of best procurement system in construction. *Built Environment – Sri Lanka*, 7(2), pp. 43-53.
- Rowlinson, S. and McDermott, P. (1999) *Procurement systems*. [Print edition] London: E & FN Spon.
- Samanta, P.K. and Singla, H. K. (2019) Factors Affecting the Success of Joint Ventures in Indian Construction Firms. *The IUP Journal of Management Research*, XVIII(3), pp. 39-50.
- Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students* (7th ed.). Essex: Pearson Education.
- Snippert, T., Witteveen, W., Boes, H. and Voordijk, H. (2015) Barriers to realizing a stewardship relation between client and vendor: the Best Value approach. *Construction Management and Economics*, 33(7), pp. 569-586. Available at: <https://doi.org/10.1080/01446193.2015.1078902> [Accessed 5 November 2019].
- Solomon, S. and Byung-Soo, K. (2018) Development of an Expert System Tool for the Selection of Procurement System in Large-Scale Construction Projects (ESCONPROCS). *KSCE Journal of Civil Engineering*, 22(11), pp. 4205-4214. Available at: [https://link.springer-com.ezproxy.bcu.ac.uk/content/pdf/10.1007/s12205-018-0439-2.pdf](https://link.springer.com.ezproxy.bcu.ac.uk/content/pdf/10.1007/s12205-018-0439-2.pdf) [Accessed 20 February 2020].
- Wijewardana, C., Jayasena, S. J. and Ranadewa, K. A. T. O. (2013) Impact of government policies and regulations when adopting alternative procurement methods. *The Second World Construction Symposium 2013: Socio-Economic Sustainability in Construction*, Colombo, 14-15 June 2013. pp. 253-260.
- Zuo, J., Chan, A.P. C., Zhao, Z.Y., Zillante, G. and Xia, B. (2013) Supporting and impeding factors for

partnering in construction: a China study. *Facilities*, 31(11/12), pp.468-488. Available at: <http://www.emeraldinsight.com/0263-2772.htm> [Accessed 7 November 2019].

### AUTHOR BIOGRAPHIES



P. M. Hettige is a graduate of Quantity Surveying from Birmingham City University and reading for her Charter in Quantity Surveying. She is practicing as a Quantity Surveyor

under a private consultancy organization.



P.G. Fernando is a graduated Quantity Surveyor from University of Moratuwa and completed Masters in Construction Law and Dispute Resolution from same University

and corporate member of IQSSL and currently reading for Ph.D. Research Interest are on Construction Procurement, Dispute management and Construction Law.



Mr. K.P.S.P.K. Bandara is a Lecturer (Probationary) attached to the Department of Quantity Surveying at General Sir John Kotelawala Defence University. He is a Chartered Quantity Surveyor. He completed his first degree in Quantity Surveying at University of Moratuwa. His research interests include BIM, procurement, value management, building materials and sustainability.



Miss D.M.S. Jayasuriya is a Lecturer (Probationary) attached to the Department of Quantity Surveying at General Sir John Kotelawala Defence University. She completed her

first degree in Quantity Surveying at General Sir John Kotelawala Defence University. Her research interests include BIM, procurement, contract administration and green building concept.