REFERENCES

- Abu Shaban, S. (2008). Factors Affecting the Performance of Construction Projects in the Gaza Strip, Islamic University of Gaza, Gaza Strip.
- Adedokum,O.A., Ibinonke,O.T. and Babatunde,S.O. (2013). Assessment of competitive tendering methods of procuring educational building projects in Nigeria. *Journal of Facilities management*. 1(12).pp.8194, https://doi.org/10.1108/14725961311301484
- Akintoye, A. S. &Skitmore, M. R. (1990). A Conceptual Model of Construction Contractors' Pricing Strategies. In Baxendale, A., Eds. Proceedings 6th Annual Conference, Association of Researchers in Construction Management, pages pp. 31-47, Salford University.
- Anderson, J., Huhn, M., Rivera, D. M., &Susong, M. (2006). Phases of the construction project. In M. Klinger & M.Susong (Eds.), *The construction project: phases, people, terms, paperwork, processes* (pp. 4-40). Retrieved from American Bar Association database.
- Andrew, B., McCaffer ,R. and Sherif,O. (1995). International bidding case study. Geneva: International Labour Office.
- Brook, M. (2004). *Estimating and tendering for construction work* (3rd ed.). London: Butterworth-Heinemann.
- Builders Association of Eastern Connecticut, (2013). Connecticut builder. Retrieved from :http://www.connecticutbuilder.com/pdf/past-issues/full/Winter-Spring2013.pdf
- Business.com. (2014). *Construction project bidding companies*. Retrieved from: http://www.business.com/construction/construction-project-bidding/
- Chao, L.C &Kuo, C.P. (2016). Probabilistic approach to determining overhead-cummarkup rate in bid price. *ProcediaEngineering*,164(2016),243-250. doi:10.1016/j.proeng.2016.11.616
- Chappell ,R. (1991). Sampling design of multiwave studies with an application to the Massachusetts health care panel study. *Statistic in medicine*.10(*12*):pp.1945-1958.Doi: 10.1002/sim.4780101209

- Cheng, M. Y., Hsiang, C. C., Tsai, H. C., & Do, H.L. (2010). Enhancing bid decision making in the construction industry: A new multi-criteria prospect model. In *Proceedings of theInternational Symposium on Automation and Robotics in Construction*, (pp. 410-419). Retrieved from http://www.iaarc. org/publications/fulltext/Enhancingbid_decision_making_in_the_construction_in dustry_a_new_multi-criteria_prospect_model.pdf
- Cheng, M. Y., Hsiang, C. C., Tsai, H. C., & Do, H. L. (2011). Bidding decision making for construction company using a multi-criteria prospect model. *Journal of Civil Engineering and Management*,17(3),424-436. doi: 10.3846/13923730.2011.598337
- Cheng, T., Wang, Y., & Sun, Y. (2012). Development and application of tender evaluation decision-making and risk early warning system for water projects based on KDD. *Advances in Engineering Software*, 48(1), 58-69. doi: 10.1016/j.advengsoft.2012.02.003
- Cheng, L. M. and Lee, S., (2004). *Bid-Markup Determination for Micro tunneling Projects*. Retreived from http://worldcat.org/issn/08867798
- Cook, A. E. (1991). *Construction tendring:Theory and practice*. London: B.T.Batsford Ltd.
- Dagostino, F. R., & Peterson, S. J. (2011). *Estimating in building construction*. New Jersey: Pearson Education Drew, D., Skitmore, M., & Lo, H. P. (2001). The effect of client and type and size of construction work on a contractor's bidding strategy. *Building and Environment*, 36(1), 393-406. doi:S0360-1323(00)00009-3
- Dawson, C. (2002), Practical Research Methods. United kingdom: How to book Ltd.
- De Valence, G. (2010). Innovation, procurement and construction industry development. *Australasian Journal of Construction Economics and Building*, 10(4), 50-59. Retrieved from http://epress.lib.uts.edu.au/journals/index.php/AJCEB/article/viewFile /1883/1962
- Doloi, H.K. (2008). Understanding stakeholders' perspective of cost estimation in project management. *International Journal of Project Management*, 29(5), 622-636. http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.els evi erfb9cb0da-9326-3c18-b78e-96924e36324a

- Dozzi, S.P, Abourizk, S.M & Schroeder, S.L. (1996). Utility- Theory Model for Bid Markup decisions. *Journal of Construction engineering management*, *122*(2),119-124. Retrieved fromhttp://ascelibrary.org/doi/abs/10.1061/(ASCE)07339364(1996)122%3A2(119
- Drew, D., & Skitmore, M. (1997). The effect of contract type and contract size on competitiveness in construction contract bidding. *Construction Management and Economics*, 15(5), 469-489. Retrieved from http://eprints.qut.edu.au
- Drew, D., Skitmore M., and Hing Po Lo, (2001), The effect of client and type and size of construction work on a contractor's bidding strategy, Building and Environment, 36,393-406.
- Dulami, M.F, & Shan, H.G. (2010). The factors influencing bid markup decisions of large and medium size contractors in Singapore. *Construction Management and economic*, 20(7), 601-610. Retrieved fromhttp://dx.doi.org/10.1080/01446190210159890
- Eriksson, P.E. and M. Westerberg. 2011. "Effects of cooperative procurement procedures on construction project performance: A conceptual framework." International Journal of Project Management 29 (2): 197-208.
- Fellow, R. & Liu, A. (1997). *Research method for construction*.(3 rd ed.). London:blackwell publising. Retrieved from http://www.amazon.com/Research-Methods-Construction-Richard-Fellows/dp/140517790X#reader _140517790X
- Fu, W. K., Drew, D. S., & Lo, H. P. (2002). The effect of experience on contractors' competitiveness in recurrent bidding. *Construction Management & Economics*, 20(8), 655-666. doi: 10.1080/0144619022000014060
- Gul,P., Seyda ,B.,& Eray, E. (2015). Mark-up size estimation in railway projects using the integration of AHP and Regression Analysis Techniques. Creative Construction Conference.(pp.317-322) . Retrieved from http://2015.creative-construction-conference.com/CCC2015_proceedings/ CCC2015_49_Polat. pdf
- Hatush, Z.; Skitmore, M. 1998. Contractor selection using multi-criteria utility theory: an additive model. *Building and Environment*. 33(2/3): 105–115
- Hillebrandt, P. M.(1984). Analysis of the British Construction Industry. London: MacMillan Publishers.

- Holt, G. D., Olomolaiye, P. and Harris, F. C. (1996) Tendering procedures, contractural arrangements and Latham: The contractors' view. *Engineering, Construction and Architectural Management*, 3 (1/2). pp. 97-115. ISSN 0969-9988 Available from: http://eprints.uwe.ac.uk/20006
- ICRA Management Consulting Services Limited. (2011). *Industry report on Sri Lanka*. Retrieved from http://www.icralanka.com/Sri%20 Lanka%20 Construction%20-%20Sept%2015%20final.pdf
- Jha, K. N. (2011). Contractors 'estimation of cost and bidding strategy. Retrieved from http://www.cidc.in/new/support/caceq/K.%20N.%20Jha.pdf.
- Kothari, C. R. (2004), Research Methodology: Methods and Techniques, (Second Edition), New Age International Publishers.
- Kwakye, A. A. (1997). Understanding tendering and estimating. London: Gower
- Lemberg, J. (2013). Factors influencing the bid/no bid decision making and the success of contract bids in the telecommunication industry. (Master's thesis ,University of Twente). Retreived from http://www.utwente.nl/en/newsevents/2013/11/229824/announcement-colloquium-ba-msc-jaakko-lemberg
- Lin, C. L., Lo, W., & Yan, M. R. (2006). Exploring contractor's opportunistic bidding behavior and its impacts on construction market. In *Proceedings of the 2006 International System Dynamics Conference*, (pp.1-17).Retrieved from http://www.systemdynamics.org/conferences/2006/proceed/papers/LIN186.pdf
- Lin, Z. and Chen, F. (2004) An Empirical Study of Audit 'Expectation Gap' in The People's Republic of China . *International journal of Auditing*, 8(2),93-115. Doi: 10.1111/j.1099-1123.2004.00084.x
- Ling, Y.Y.F, & Liu, M. (2004). Factors considered by successful and profitable contractors in markup size decision in Singapore. *Building and environment*, 40(2005), 1557-1565. Doi:10.1016/j.buildenv.2004.12.001
- Liscum, C. (2010, December). Public Vs. private bidding. *Benchmark Perspectives*, 68(1),1-4. Retrieved from www. benchmar k- i nc. com
- Ma, H. (2011). Factors affecting the bid no bid decision process of small to medium size contractors in Auckland. (BSc thesis, Unitec New Zealand). Retreived from http://unitec.researchbank.ac.nz/handle/10652/1785

- Mugunthan, S. (2012). *Management of financial risk in road construction project*. (Unpublished undergraduate dessertation). University of Moratuwa, Moratuwa, Sri Lanka.
- Nagulan, S. (2001). A survey of current contractors' cost estimating practices in Sri Lanka (Unpublished undergraduate dessertation). University of Moratuwa, Moratuwa, Sri Lanka.
- Naoum, S.G.,(2013). *Dissertation research & writing for construction students*. (3 rd ed.). Oxon: Routledge. Retrieved from http://www.amazon.co.uk/ Dissertation -Research-Writing-Construction-Students/dp/ 0415538440 /ref=dp_ob_title_bk#reader_0415538440
- New South Wales Government. (2011). Annual report. Retrieved from: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0005/55517/NSW-T-and-I-Annual-report-2010-11-final.pdf
- Ofori, G. (1990). The Construction Industry: Aspects of Its Economics and Management. Singapore University Press, Singapore City.
- Oo, B. L., Drew, D. S., & Lo, H. P. (2007). Applying a random coefficients logistic model to contractors' decision to bid. *Construction Management and Economics*, 25(4), 387-398. doi: 10.1080/01446190600922552
- Palaneeswaran, E., &Kumaraswamy, M. (2001). Recent advances and proposed improvements in contractor prequalification methodologies. Building and Environment, 36(1), pp. 73-87.
- Queensland Department of Housing and Public Works .(2012). Anual report . Retrieved from https://www.google.lk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjsj5G_sLrVAhUBLI8KHdcQDZYQFggmMAA&url=http%3A%2F%2Fwww.hpw.qld.gov.au%2FSiteCollectionDocuments%2FHPWAnnualReport2012-13.doc&usg=AFQjCNH2F1FafG9RALMfR-w6sETtI0KeoQ
- Rameezdeen R and De Silva S (2002) "Trends in Construction Procurement Systems in Sri Lanka." Built Environment Sri Lanka 2(2): 2-9
- Rameezdeen,R. (2006). Construction sector in Sri Lanka. COWAM Seminar. Retrieved from http://cowam.tec-hh.net/060419_Construction_Sector_SL.pdf.

- Ravanshadnia, M., Rajaie, H. and Abbasian, H.R. (2011), A Comprehensive bid/nobid decision making framework for construction companies. *Transactions of Civil and Environmental Engineering*. 35(1):pp. 95-103
- Royal Institute of British Architects. (2013). *RIBA plan of work 2013*. Retrieved from https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work
- Shash, A. A. (1993). Factors considered in tendering decisions by top UK contractors. Construction Management & Economics, 11(2), p111-118. Retrieved from http://www.tandf.co.uk/journals/titles/01446193.asp
- Tan, H.T., Robert, L., & James, E.H., (2002). When do analysts adjust for biases in management guidence track record and analysis incentives. *Contemporery Accounting Research*, 27(1), 187-208. doi: 10.1111/j.1911-3846.20 10.01006.x
- Tang, W. H. (2004). *Bidding strategy: The consultants' perspective*. (Master's thesis, University of Hong Kong). Retrieved from http://hdl.handle.net/10722/30787
- Wanous, M., Boussabaine, A. H., & Lewis, J. (2003). A neural network bid/no bid model: the case for contractors in Syria. Construction Management and Economics, 21, 737 744.
- Yin, K.R. (2003). Case study research. (2nded.). United States: Sage publishing
- Zhu, C. (2008). Rationality in bidding theory: a construction industry. In *Proceedings* of the BuHu 8th International Postgraduate Research, (pp.257-264). Retrieved from http://eprints.qut.edu.au/14103/1/14103.pdf

APPENDICES

- APPENDIX A Preliminary Interview Guideline
- APPENDIX B Questionnaire
- APPENDIX C Case study interview guide line

APPENDIX – A PRELIMINARY INTERVIEW GUIDELINE

Name:	
Organization:	
Designation:	

The following factors were identified as factors affecting the bid markup decision through literature review. Please comment on this and add if any additional factors which are not here. Selected factors will be used in the questionnaire survey to find critical factors to propose guidelines to Sri Lankan contractors.

No	Factors	Expert comment about factors for the questionnaire survey to propose guidelines
01	Estimated direct cost	
02	Project duration	
03	Type of work/ project type	
04	Location of the project	
05	Labour reliability	
06	Labour availability	
07	Market condition	
08	Competition	
09	Future projects	
10	Historic profit	
11	Historic failure	
12	Current workload	
13	Required rate of return	
14	Market share	
15	Overhead recovery	
16	Home office work load	
17	Project size	
18	Owner's special requirements	
19	Other risk	

No	Factors	Expert comment about factors for the questionnaire survey to propose guidelines
20	Project complexity	
21	Cash flow requirements	
22	Estimate uncertainty	
23	Quantum of liquidated damage	
24	Completeness of the tender	
	document	
25	Need of work	
26	Contractor involvement in	
	design phase	
27	Portion of nominated sub	
	contractors	
28	Portion of domestic sub-	
	contractors	
29	Competitiveness of other	
20	tenders	
30	Overall economy (availability	
31	of work) Quality of labours	
32	Availability of other projects for the tender	
33	Payment record of client	
34	Size of client	
35	Type of client (Private/public)	
36		
30	Relationship and past experience with client	
37	Consultant characteristics	
38	Relationship with consultant	
39	Character of consultant	
	- C	

No	Factors	Expert comment about factors for the questionnaire survey to propose guidelines
40	Season in which the work is	
	done	
41	Time available for bid	
	preparation	
42	Material availability and cost	
43	Insurance and fringe benefits	
44	Availability of supervisory	
	talent	
45	Method of performing work	
46	Contractors risk attitude	

Additional opinion of experts about the research and factors:

APPENDIX – B **QUESTIONNAIRE**

<u>CRITICAL FACTORS AFFECTING THE MARKUP DECISION IN</u>

INFRASTRUCTURE PROJECTS IN SRILANKA

Dear Sir/ Madam,

To start, I would like to present my appreciation and thanks to you for spending of

your time and effort to complete this questionnaire.

This questionnaire's aims are to identify the model to determine the bid markup in

construction projects in Sri Lanka. This is a part of partial fulfillment of the

requirements for Master of Science in Project management from University of

Moratuwa, Sri Lanka. We hope that the result of this questionnaire will improve the

ability of Contractors in their bid markup decision.

Information in the questionnaire:

The information collected through the questionnaire will be used for academic

research and it will be treated with complete confidentiality.

Content of questionnaire:

This questionnaire is divided into two sections as:-

Section (1): Respondents' general information.

Section (2): Contractors' estimation practice.

The Objectives of the research are as follows:

1. Identifying the importance of bid markup decision

2. Identifying factors affecting bid markup decision

3. Identifying the critical factors affecting bid markup decision.

4. Investigating the relationship between markup and critical factors.

Yours faithfully

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Section One	Respondents' General information
1.1.Name of the Org	anization (optional):
1.2.Name of the Resp	pondent (optional) :
1.3 Type of Works	
Contractor (Priva	te) Contractor (Government)
1.4 Position	
Project Manager Other (Mention ple	Managing Director Engineer Quantity Surveyor
1.5 Years of experier	nce in the field
□5-10 years [11-15 years 16-20 years More than 20 years
1.6 Are you satisfied	with the current bid markup decision?
Very satisfied	Satisfied Neutral Not satisfied Dextremely not satisfied
1.7 Is there an estima	ating unit in your organization /firm? \square_{Yes} \square_{No}
1.8 Who takes bid ma	rkup decision in your Organization:
1.9 How many bids do	o you estimate per year:
1.10 How many bids	do you win per year:

Section Two

Critical Factors Affecting The Markup Decision In Infrastructure Projects In Sri Lanka

From the literature and preliminary survey, it was found that, following the factors mainly influence on bid markup decision in Sri Lankan construction industry. Please express your opinion about how the degree of importance of these factors in your current Markup decision.

Please mark the level of importance of the steps in your current estimation practice in Sri Lanka on the scale 1- 5. Under the Two categories as follows

1. Significance of Factors affecting bid markup decision

5-Very Important 4 – Important	3 – Somewhat Important	2 – Less Important	1 - Not important
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No:	Factors affecting the bid markup decisions	Significant Level of factors				
NO:		1	2	3	4	5
1	Estimated direct cost					
2	Project duration					
3	Type of work/ project type					
4	Location of the project					
5	Labour availability					
6	Competition					
7	Future projects					

NT.	Factors affecting the bid markup decisions	Sig	Significant Level of factors				
No:		1	2	3	4	5	
8	Historic profit						
9	Historic failure						
10	Current workload						
11	Engineer estimate						
12	Estimate uncertainty						
13	Need of work						
14	Number of bidders						
15	Overall economy (availability of work)						
16	Relationship and past experience with client						
17	Time available for bid preparation						
18	Contractors' risk attitude						
	Please specify if anything you want to mention and rank it below						

Thank you

APPENDIX – C CASE STUDY DATA SHEET

Name:				
Organization:				
Designation:				
Case Identification	n:			
Role in Contract :	Contractor		Sub- Contractor	
Project Category :				
Location:		Project Du	ration :	
Type of Contact:		Bidding Ye	ar:	
Bid Value : LKR		Markup Pe	rcentage :	
Brief Description :				
 Number of Bid 	ders:			
Competition L	evel in this Project :	Low	Average	Medium
• Need of work of	of this Project:	Low	Average	Medium
Estimate Unc	ertainty: 1%			