Issues in Construction and Quantity Surveying

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IIUM PRESS INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA Published by: IIUM Press International Islamic University Malaysia

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Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

.

Bibliography p. Includes Index ISBN

ISBN: 978-967-418-031-7

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM (Malaysian Scholarly Publishing Council)

Printed by : IIUM PRINTING SDN. BHD. No. 1, Jalan Industri Batu Caves 1/3 Taman Perindustrian Batu Caves Batu Caves Centre Point 68100 Batu Caves Selangor Darul Ehsan

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BILLS OF QUANTITIES: Raison d'etre?

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ABSTRACT

There was a call for more research to be focused on core areas of quantity surveying including research concerning the state of BQ in Malaysia. This paper seek to respond to the call by presenting important points from literatures concerning research undertaken under the theme of BQ, in order to support and justify the need to conduct research within the ambit of Malaysian construction industry. Objectives of this paper are: (1) To examine in detail the purpose, functions, BQ format and types identified from the literatures, and (2) To provide a snapshot summary on researches undertaken on BQ related issues. The ultimate aim of this paper is to reintroduce the basic of BQ with support of literatures and finally suggest 'immediate' research directions towards BQ related issues in Malaysia. The paper has employed an extensive literatures review and concludes that research into BQ in Malaysia is feasible and of utmost needed.

Keywords: bills of quantities (BQ), quantity surveying (QS), research.

INTRODUCTION

Bills of Quantities (BQ) are undoubtedly one of the most important documents used in construction industry throughout Malaysia and always be associated with quantity surveying profession. This document has existed in one form or another for over 300 years (Miliken, 1996) and is a meticulous product of Quantity Surveyors (QS) basic service. BQ is a document which contain invaluable data pertaining to a project planned to be constructed and it itemizes the work involves in the construction project (Davis et. al., 2009). BQ is designed primarily as a tendering document, but also provides valuable aid to the pricing of variations and computation of valuation for interim certificates (Seeley, 1997).

According to Brook (1998), BQ has two primary uses: (1) Pre-contract: BQ assist contractor in the formulation of their tender, (2) Post-contract: BQ assist in the valuing of progress payment and variation works. During post-contract stage BQ will facilitate variation orders management by providing a sound, common basis for the valuation and assessment of variations (Ramus and Birchall, 1996). The function of a BQ can further be expanded in enabling the creation of price database which proof to be useful for future estimating (AIQS (Australian Institute of Quantity Surveyors), 2001) and can be interrogated as a financial management tools in construction. Though BQ seems to be somewhat important document within the construction industry, studies have shown that the usage rate is a matter of current concern. A study by Wood and Kenley (2004) in Australia, using data made available by The Construction Economics Committee of Victoria (CECV) show that the use of the BQ in Australia has been declining for thirty years. Both authors also presented findings made by Royal Institution of Chartered Surveyors (RICS) between 1984 to 1989, the use of BQ in the UK has declined by nine percent. In more recent study by Oyegoke, Dickinson, Khalfan, McDermott and Rowlinson (2009) who commented extensively on RICS survey on contracts in use in the UK between 1985 to 2004, presented a fluctuating evidence on the use of the lump sum (firm BQ) traditional route which indirectly reflect the usage of BQ. The study mentioned that there was a substantial decline in the use of the lump sum (firm BQ) traditional route by about 30 percent from the 1985 survey before reversing to 20 percent in 2001 and plummeting again by 10.7 percent in 2004.

Findings from the literatures therefore, raise a vital question of the very survival of BQ in Malaysia. One should ask whether the current existence of BQ in Malaysia is due to its benefit in construction business or due to *raison d'etre* which sees BQ as a customary tradition of Malaysia quantity surveying practice. There was a serious 'wake-up' call made by the Dean of Kulliyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia (IIUM) during the 10th Management in Construction Researchers (MiCRA), who, call for more research to be conducted in the core areas of quantity surveying (*see* Khairuddin, 2011). One of the most important point highlighted besides the issue of BQ effectiveness, is the amount of research work dedicated to answer numerous questions and criticism directed at BQ and the availability of empirical evidence to support the same. The paper concludes with an invitation to researchers to conduct research concerning BQ and to focus in core areas concerning quantity surveying.

As an immediate respond to the 'wake-up' call, this paper seek to present important points from literatures, concerning research undertaken under the theme of BQ, in order to support and justify the need to conduct research within the ambit of Malaysian construction industry. There are two objectives for this paper: (1) To examine in detail the purpose, functions, BQ format and types as found from the literatures, and (2) To provide a snapshot summary on research undertaken on BQ related issues. The ultimate aim of this paper is to re-introduce the basic of BQ with support of literatures and finally suggest an 'immediate' research direction towards BQ related issues in Malaysia. This paper has employed an extensive literatures review as a methodology in deriving its findings.

BILLS OF QUANTITIES – A RE-INTRODUCTION

The BQ is a document which represent a breakdown of construction works into components parts such that their sum equates with the whole (Hughes, 1978). This particular document was first develop in the mid-1800s and was based on the best practice of the day which consisted of measuring and valuing work after it was completed. Initially, this document was based on variety of different practices which created inconsistencies that lead to misunderstandings (Jaggar, Ross, Love & Smith, 2001). Eventually, the Standard Method of Measurement was introduced in 1922 in the UK and it formalized the fragmented measurement approach into standard document known today.

All BQ, irrespective of format, will contain some, or all, of the following items (Wilcox and Snape, 1980): (1) Preliminaries, (2) Preambles, (3) Measured quantities, (4) Provisional quantities, and (5) Prime cost and provisional sums. 'Preamble' should be a preface or introduction, should not contain priceable item, should not contain instructions to tenderers which are of no contractual sequence and describe the standards of workmanship and materials to be incorporated into the works (Hughes (1978), Kodikara, Thorpe and McCaffer (1993). 'Preliminaries', on the other hand, should consist of nothing but definitive matters capable of being priced - either particular items of temporary work or specific obligations which it would help tenderers to be given the opportunity to price (Hughes, 1978). Other than that, it may also include the form of contract to be used, access to site, any temporary accommodation required. health and safety requirements, financial details, insurances etc. (Kodikara, Thorpe and McCaffer, 1993). An important part of a BQ will be its bills which contain the measured items of construction works. It comprises three major components i.e. work description, units and quantities (Kodikara, Thorpe and McCaffer, 1993).

As a general rule, BQ must be capable of being construed easily and without ambiguity. It should have regard to the needs of the estimator and the real economic interests of the employer (Hughes, 1978). Therefore, general order of items in the bill should take into consideration the following sequence (Willis and Trench, 1998):

- 1. Work section as in SMM Consideration on locational sections such as substructure or external works may be required;
 - 2. Subdivision as required by the SMM For example, internal and external paintwork or different types of materials;
 - 3. (Within item number '2') in the order of cubic, square, linear and enumerated;
 - 4. (Within item number '3') Labour only items should precede labour and material items.

a a methodokany in daiyuna in m

- 5. (Within item number '3' and '4') Least expensive first;
 - 6. Preambles, Prime Cost and Provisional Sum usually form a separate bill.

BILLS OF QUANTITIES – PURPOSE AND FUNCTIONS

BQ is prepared to translate the requirements depicted and described on the drawings and specification into the form of quantified items and descriptions (Hughes, 1978). It is however, not merely just a process of quantifying and writing descriptions. The process must follow certain standard (for example SMM) and it needs to be done in such a way that a contractor is able to affix a price to the items in preparing an estimate for tendering purposes (Willis and Trench, 1998).

BQ functions can be summarized as follows (Hughes, 1978; Wilcox and Snape, 1980; Ashworth, 2004):

u ud	Function	Explanation	
(1)	To obtain competitive tenders	Bills should be as standardized as possible in method of measurement, format and layout. BQ should fully describe and accurately represent the works to be executed, including the obligations required of the contractor, and so provide a uniform basis for the preparation of competitive tenders.	
(2)	To serve as a contractual document	This is the most important function as it sets a standard of verbal precision and quantitative reliability without which none of the other functions would have a satisfactory basis.	
(3)	To provide a basis for tendering	A bill common to all tenderers ensures comparability of tenders and is more economical of time and effort (both of which, ultimately, have to be paid by the employer).	
(4)	To provide basis for interim certificates and valuing of variations	These two being direct extensions of the contractual functions of a BQ which come into action during post contract stage of a project.	
(5)	To assist the contractor in the organization of his work	In fact what the contractor needs is the information from which the bill has been prepared i.e. re-arranged in terms of location/time to facilitate the organization of labour, the supply of plant, the temporary works and any repetition of operations. This function however, is still a fallacy within the construction industry.	
(6)	To facilitate financial control by the employer	Employer total financial commitments are divided into bill items/sections which details, quantity and amount are visible depending on bill format adopted. The bills however, did not	

	Function	Explanation
igal Wi ereik e Brance	nites attention Scheduling and Scheduling Scheduling and Scheduling	indicate time dimension on when the works will be executed. Employer normally depends on contractor's work programme for such information.
(7)	To provide basis for feedback of information for the contractor	BQ is the basis of project information from the consultants/employer to the contractor. Information must be in unit of physical construction, recognizable from one job to another and capable of being costed separately.
(8)	To provide a source of data for quantity surveyor's estimating	BQ and work schedules are a major source of cost information. Data from BQ can be summarized as follows: (1) Individual rates for measured items, (2) Overall costs for use
	linen, etteski (Bacijense bi Konstaŭ ditanită giti cen vir deskinaconstitut nive	with the single price methods of approximate estimating, e.g. unit, square meter, cubic meter. (3) Elemental format analysis. (4) Basic price list of materials, if available.

BILLS OF QUANTITIES – FORMAT

BQ can be prepared and presented in many notable formats, which includes:

	Format	Features
(1)	Trade order bill (Wilcox and Snape, 1980)	Bills of this type are presented in trade sections and sub- sections in the sequence listed in the SMM. Trade presentation is an important factor facilitating the submission of competitive tenders. This bill is also referred to as Conventional SMM based bill (Kodikara and McCaffer, 1993) and SMM-based bill (Jaggar, Ross, Love and Smith, 2001).
(2)	Elemental bill (Willis and Trench, 1998; Ashworth, 2004)	Bill is divided into sections each of which is an important element in the building (external walls, roof, floors etc.). BQ prepared in Elemental basis make the preparation of the cost analysis very straightforward. The elements have already been identified, so it is the case of allocating each bill item to the correct element. This bill however, is very unpopular with contractors and their estimators. In theory, they prefer to see the work in a site operations context, since they claim that this
		helps them to price the work more realistically and correctly. Operational bill, although supposedly preferred by the contractor, have not been used to any large extent in practice.

	Format	Features
(3)	Sectionalized trades bill (Wilcox and Snape, 1980)	Capable of presentation as a trade order bill or as an elemental bill. Within each section items are grouped in elements billed in trade order sequence. The separate elements always commence at the top of a sheet so that a 'loose leaf' form is obtained allowing the bills to be re-arranged as elemental bills for use in contract management.
(4)	Operational bills (Wilcox and Snape, 1980; Ashworth, 2004)	Divide the works into site operations as distinct from trades or elements. Materials are shown separately and labour is described in terms of its operation necessary for the construction of the building. An operation is regarded as the work done by a man or gang of men at some definite stage in the building process. Governing principle - The description of the building work required shall follow the building process itself. Building operation on site and the estimating, purchasing and planning in the builder's office can thus be related to the way the costs are incurred. Operational bill, although supposedly preferred by the contractor, have not been used to any large extent in practice. This type of bill does not make elemental analysis easy to carry out. Study done in Sri Lanka indicated that the proposal of preparing bill in
		operational format was not welcomed (Kodikara and McCaffer, 1993). The contractor's need a shorter and simpler BQ for direct pricing. Contractor adds that preparation of

- (5) Activity bills(Wilcox and Snape, 1980)
 - (6) Annotated bills(Wilcox and Snape, 1980)
 - (7) Bill of Quantities -Operational Format (Kodikara and

An activity bill is measured in accordance with the SMM and the work is billed in sections which relate to activities (or operations) established by network analysis. This bill follow general line of the operational bill, however, no attempts is made to separate the measurement of labour from materials.

construction sequence using the items in conventional bill is

much easier than the preparation of an operational bill.

Sides notes are incorporated in the bill to indicate the location of the measured items within the building. This is of assistance to the estimator at the tender stage and to all concerned with the physical construction of the project.

Extension of 'Operational Bills' developed by Forbes and Skoyles in 1963.

Format	Features		
McCaffer, 1993)	Continue to be the first	and the second second	hat its charted back

 (8) BPF System Schedule of
 Activities (Jaggar, Ross, Love and Smith, 2001) Intended to produce documentation that was much more directly related to how costs were incurred on site. The BPF System proposed that the cost model represented in BQ were no longer relevant and that the contractor's programme of work should form basis of planning and control. The system was not well accepted by Royal Institution of British Architect (RIBA) and Royal Institution of Chartered Surveyor (RICS).

 (9) RSM-three dimensional model
 (Jaggar, Ross, Love and Smith, 2001) Developed by Research into Site Management group (RSM) to gain a better understanding of the design and construction process. The RSM explored the problem of linking design and construction. The three dimensional model based on the derivation of features analyzed at the lowest common denominator of on-site activity whilst retaining a link with meaningful design information. From RSM's work, a series of features, whose attributes were location, function and physical solution was developed. This provides valuable information to the designers and the constructors.

BILLS OF QUANTITIES – TYPES

The following are the types of bill contained in various format of BQ:

	Туре	Features	
(1)	Reduction bill (Willis and Trench, 1998)	Special bill prepared when the tender figure is too high and a reduction in price is obtained by altering the work in some way.	
(2)	Addenda bills (Willis and Trench, 1998)	Contain details of work required which is additional to the original design, determined after completion of the original bill.	
(3)	Specialist bills (Willis and Trench, 1998)	Required to obtain tenders for specialist work e.g. electrical installation, which is to form nominated sub-contract work.	
(4)	Approximate	Also known as provisional bill, is used when there is	

quantities bill (Willis insufficient information available to prepare an accurate bill

Trmo	Footwood
Туре	Features
and Trench, 1998)	of quantities. Suitable applications: (1) Where speed is of
	paramount important and the general design has been
	formulated, it may be necessary to select a contractor before
	production drawings can be completed. (2) Works below
	ground - the information is likely too imprecise for the
	preparation of accurate quantities. Perimeter of the building
	can be established but the depth of foundations and extent of
	soft areas will be uncertain. (3) Provisional quantities may be
	included in accurate BQ to cover work that is uncertain in
	extent and that is subject to remeasurement when the work is
	carried out e.g. excavation in rock, removal of underground
	obstructions, site with demolition works (Seeley, 1997).
	Complete re-measurement based on the completed design and
	completed work and complete re-pricing using the tendered
	unit rates to achieve the final account will have to be done
	(Khairuddin, 2011).
(5) Substitution bill	Prepared to substitute approximate quantities bill as

- (5) Substitution bill (Willis and Trench, 1998)
- (6) Accurate bill (Seeley, 1997)
- (7) Master bill (Ashworth, 2004)

Prepared to substitute approximate quantities bill as information becomes available. Price in approximate bill is used as a basis.

Firm bills of quantities as opposed to approximate quantities bill.

(Not to be mistakenly identified as software bearing the same name) A type of bill devised to suit both surveyor and contractor. It can be prepared in elemental format and then shuffled to a trade presentation and back again quite easily. This bill is created since contractor prefer bill arrange in site operations. This type of bill is devised but only little used since both surveyor and contractor seem to use the same information differently.

PAST AND CURRENT RESEARCH DIRECTED TOWARDS BQ

Literatures reviewed thus far, have indicated substantial amount of research have been undertaken to address issues concerning BQ. Most of the research took place outside Malaysia and thus, it indicates the need and urgency to embark on the same locally. Literatures have indicated that BQ is either the main theme of the research or contributing factor of other major themes. 'Table 1' summarizes limited number of literatures which highlighted BQ as the major theme of the research work undertaken.

Writer/s	Issues highlighted	Explanation
inersiteningi pisi siteringi saresu u tuk	 Precise format of the BQ. Discrepancy between 	Whether it is desired to put emphasis on one or more functions or to fulfill the maximum number of functions within the limitation of a given format. Who should takes responsibility – if the bill
	drawings and quantity.	is deficient but nevertheless, the contractor is liable for the completion of the project without additional payment.
(2)	littleng-or alatymus-bes Ma	the second teach the second second second
Kodikara and McCaffer (1993)	1. The flow of estimating data in contractor's organization.	The study seeks to find out whether current BQ format need to be amended to improve efficiency. Rework towards estimating data at different management level was seen as the major cause for the inefficient flow of data.
	2. Changes to current BQ format.	Study concludes that changes to conventional format are welcome but mus within the limitation of conventiona practice.
na faile gatu ad a na royarini ilio na biilogamél i Ngas Gatyaringa Ngas Gatyaringa Ngas Gatyaringa	3. Proposed changes to current BQ format.	The preparation of breakdown illustrating resources requirements for each bill iten rather than allocating just a composite uni rate may reduce the complexity in contractor's data management.
(3)	bostval andid k epo h	ff Englistry
Kodikara, Thorpe and McCaffer (1993)	1. Uncoordinated information in BQ.	Aggregation of quantities on a 'simila material' rather than on an operation basi and measurement in quantities need fo further conversion.
		Site and trade supervisors devote a larg part of their time seeking information assembling it from numerous sources translating information from severa drawings into work sketches and re calculating dimensions and quantities int units which are required on site.

Table 1: Review of literatures concerning BQ (BQ as major research theme)

immetrat and the process design

Writer/s	Issues highlighted	Explanation
	3. Areas in BQ in need for improvement.	Critical areas where attention is required in order to reduce the repetition work in the post tender use of the BQ are the 'quantities', 'quantity units' and the 'unit rates' in BQ.
(4)	solution and a second second second	 Adapting on the second s
Love and Smith (2001)	-Qualitiziment tataler	BQ ended in a compromise with a loss of utility for the document during the construction process.
	failed to become a mechanism to	The main purpose of the SMM is to identify the end result or product construction. Therefore, the cost generators
	processes of	and resources are difficult to identify due to the divergence between the BQs role as a tender document and as a statement of the finished work.
		Of the local system of the
	3. Presentation of BQ data.	The data in BQ generally represent a theoretical assessment of project work in its completed state. It does not capture the process and decisions leading to this completed work, despite the fact that in assessing the work, the process may have
		been modeled conceptually by the measurer
		e.g. paint measured in square metre yet it is purchased in litre.
	4. Major criticism on SMM based BQ	An inappropriate device to achieve: (1) The failure to quantify the resources needed to carry out the process of construction on site and (2) The inability to provide a useful basis to provide a model of the contractors programme both as a means of planning and of control.
	5. BQ as device to	There is a need for professional's
	improve trust between parties in construction.	organizations to rethink the way they produce project information (BQ) so opacity is replaced with transparency thus moving adversarial/bargaining position to
		one that encourages a team problem-

solving approach

191

and or permutation of the local of

Writer/s	Issues highlighted	Explanation
(5)	and the second second second	Language OH parameter A. J.
Wood and	1. Future contents and	Sub-contractors should have a greater input
Kenley (2004)	presentation of the	into the formulation of the next edition of
	rules of measurement	SMM (the case of Australian Standard
	for building works.	Method of Measurement or ASMM).
	2. Adequacy of	Advantageous to have drawings in lieu o
	information was found	words in certain areas of documentation
	to be in question by the	BQ should provide drawn information
	users of BQ.	Quantities need to be broken down to a
		level or levels below that currently given
		Breaking down may by location, level etc.
	3. Locational information	Respondents agreed that drawing numbers
	is not adequate for its	section and elevations to be included in
	purpose.	bills description.
	4. Tenderers access to QS	Respondents in support of more details to
	back-up dimensions.	be supplied with BQ quantities.
	5. Ineffective used of BQ.	Sub-contractors require intricate details to
		be pictorial rather words, even expression
		is used, locations are not stated – drawback
	enginat part in free	of effective utilization.
	6. Computerization of	Computer software to incorporate pictures
	taking-off process.	and architectural details are ignored
		Ability of taking-off software to sor
		information (according to end user's need
		has not been made available (or
		developed).
	7. Lack of advance made	No substantial difference in bills produced
	by QS in	now with what was produced 40 years ago
	computerization.	Current document (BQ) is efficient, but no
		addressing the need of the end users
		Production efficiency increase bu
		effectiveness (of the document) has not
	9 Duofarma d D.O. forma at	improved.
	8. Preferred BQ format	Streamlining the actual document -
	for more effective use.	creating items need less resorting and
		remeasuring, adding more relevant items of
		measurement and improving editorial
	0 PO to address the need	layout of the document.
	9. BQ to address the need	Whether BQ is produced to help contractor
	of end users.	executing the project during post-contract
		stage or just a document for tendering

Writer/s	Issues highlighted	Explanation
and unler by closed and the Elim - th if the property if the property the new the protect	stitute de s sociales stituterenti encommission contracti encommission denti en pilotheinporch	purposes. Post contract utilities are lost. BQ should helps to address issues pertaining contractor's need otherwise contractors will generate their own data which lead to loss in valuable post contract functions.
(6)		
Rosli, Muzani and Siti Nurhuda (2006)	1. Loss of BQ functions in post-contract stage due to information inadequacy.	The use of BQ comes to an end when contractor has been selected and the contract has been signed. It cannot be used for any other purpose other than tendering Information is not usable for contractor's post contract need.
	2. BQ were not fully utilized (John Ing (1984) in Rosli, Muzani and Siti	Self perpetuating because many were no able to relate BQ to the everyday projec development processes.
	 Nurhuda) 3. BQ functions have not changed very much since its introduction. 4. Factors affecting the usefulness and relevancy of BQ. 	BQ is used mainly for project costing and as part of tender document for soliciting competitive tenders from contractors. The type, nature, magnitude of the information that is needed for cos reporting and monitoring justify the usefulness and relevancy of BQ.
(7)	finiger relevant tit	had Minister 10 Mr. And and 10000
Baccarini	1. Purpose of BQ.	
	2. Limited empirical research that has addressed the role and effectiveness of BQ.	Questionnaire survey was develop from literatures (roles of BQ) and respondents were asked to rate the importance of roles in a scale of 1 to 5.
	3. Measurement method used to prepare BQ.	Abbreviated, ASMM or builder's quantities. Builder's quantities were the most popular method used by clients due to
		complexity of ASMM. Indicate desire for more efficient approach to measuring work that still achieve the objectives of facilitating the pricing of building work.
	4. Status of BQ in a contract.	BQ do not typically form part of a contrac and are provided for information only. This

Production of the second of the second secon	to avoid any possible claims from th contractors for errors in BQ by placing responsibility on contractors to determine
5. Confidence	in QS BQ creation does not form an integral par
prepared B	is there a need for clients to pay for BO production if they do not form part of
(8) (8)	deviation in product provide the document to advect
Khairuddin1. Current sce(2011)prevail with quantity sup profession	 in the quantity surveying. 2. The lack of focus in terms of formar style and method of preparing BQs. 3. The need for a firmer future direction in the style and method of preparing by the style and method o
	1 , , , , ,
2. Questions of the effective BQ.	eness of 2. Bills of quantities do not promote speed 'economy and 'buildability'.
	construction techniques and contractua
	approximate parameters of construction. 4. Bills of quantities are unnecessaril
	detailed.
	occur in bills of quantities leading t
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DISCUSSION AND SUGGESTIONS FOR RESEARCH

Eight literatures reviewed concerning BQ as major theme of research have indicated some commonality in term of issues addressed and discussed. Though it is too preliminary to suggest research should be directed towards that, it perhaps imperative to consider those as prevailing issues requiring current attention. In order to ascertain the actual issues concerning BQ within the Malaysian construction industry, a nationwide survey should be conducted to gather pertinent data concerning the real problems currently experienced by the industry. Without the crucial information from such a nationwide survey, studies will only confined to anecdotal, presumptuous and intuition which unlikely to address the real issues that are taking place. The following (Table 2) present an analysis of commonalities of issues based on eight literatures reviewed. It neither aims to comprehensively provide conclusive coverage on the whole issues of BQ nor provide immediate suggestion for research, but, it may be useful to dictate the next step in research concerning BQ in Malaysia.

Table 2: List of issues in group of commonality with corresponding writers

Proposed issues which require	Writer/s
immediate study (in group of	
commonality)	

Effectiveness and relevancy of BQ

BQ losing function

Inadequate BQ format (Appropriateness of BQ format and information provided to contractor and end users)

Responsibility on BQ error

Coordination of information in BQ

BQ and SMM related issues

BQ and computerization

Rosli, Muzani and Siti Nurhuda (2006); Davis, Love and Baccarini (2009); Khairuddin (2011).

Jaggar, Ross, Love and Smith (2001); Rosli, Muzani and Siti Nurhuda (2006).

Hughes (1978); Kodikara and McCaffer (1993); Wood and Kenley (2004); Khairuddin (2011).

Hughes (1978).

Kodikara, Thorpe and McCaffer (1993); Wood and Kenley (2004); Khairuddin (2011).

Jaggar, Ross, Love and Smith (2001); Wood and Kenley (2004); Davis, Love and Baccarini (2009).

Wood and Kenley (2004).

Proposed issues which require immediate study (in group of commonality)

Writer/s

BQ and construction procurement

Khairuddin (2011).

Base on 'Table 2', eight groups of issue have been identified and summarized with corresponding writers. It is not within the scope of this paper to justify the degree of which particular issue is more eminent compared to the others, but most likely, issues listed above are prudent to be considered as a feasible research into BQ in Malaysia.

CONCLUSION

This paper starts with a re-introduction to the purpose, functions, format and types of BQ based on literatures reviewed on the subject. It later presents an overview of the past and current research undertaken concerning BQ, with the purpose of identifying common issues discussed by scholars. Issues identified are: (1) Effectiveness and relevancy of BQ; (2) BQ losing function; (3) Inadequate BQ format (Appropriateness of BQ format and information provided to contractor and end users); (4) Responsibility on BQ error; (5) Coordination of information in BQ; (6) BQ and SMM related issues; (7) BQ and computerization, and (8) BQ and construction procurement. This paper agrees that literatures presented herein are rather limited and further detail examination is lauded for better understanding. Nonetheless, an important point has been highlighted in which research into BQ in Malaysia is feasible and of utmost needed. A nationwide survey on the status of BQ in Malaysia should be carried out by academics and practitioners alike so that the status can be firmly established. The findings of the survey should be channeled to answer whether BQ still survive in Malaysia due to benefits it carries or just a mere indication of QS *raison d'etre*.

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