

IMPACT OF DECISION MAKING ON THE CREDIBILITY OF BILL OF QUANTITIES (BOQ)

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Abstract - There is a strong statement of the society that the estimated cost in Bill of Quantities is very less than the actual cost incurred. Further, it means that there is a significant gap between the estimated cost and the actual cost which cannot be accepted. The argument is that the trustfulness of the clients on the BOQ has been understated and the BOQ is prepared for the documentation purposes. Therefore, this study was aimed to find the reasons for the gap arisen between the estimated value of BOQ and the actual value incurred. Data collection method was done through interviews by taking a sample of 50 people who have been involved in preparing and using the BOQ in the construction field. The main dimensions were focused on the role of a quantity surveyor in this regard, types of procurement strategies, defects of cost estimating methods and the parameters of cost estimations. One of the main findings was that the clients have added extra cost to the estimated cost which has not been specified at the point of BOQ preparation. Some of the quantity surveyors believe that the rate adjustments should be more practical by addressing them to the modern complex market. Further, it seems that the accountability of both quantity surveyors and the clients should be enhanced to avoid the misinterpretation of the said statement regarding the BOQ. Then the credibility on the BOQ can be enhanced up to the expected level.

Keywords: BOQ, Credibility, Decision Making

I. INTRODUCTION

According to Seeley and Winfield (1999) Bills of quantities (BOQ) is a document which consists of schedule of items of work that has to be done under the contract with quantities entered for each item which is prepared under

the Standard Method of Measurement of Building Works. Currently we are using SMM7. According to Ramus and Birchall (2003) BOQ's are completed by a Quantity Surveyor on behalf of the Client with the use of detailed drawings and specifications which are drawn up

by an Architect. Also according to them the BOQ's, the drawings and the specifications are then sent to the contractors to decide price for the project. Then the contractors allocate a unit price for each item in the BOQ and when all items are totalled the result is the total cost of the bills for that particular project and thus the tenderer's price (Turner 1995).

The ups and downs of the bills of amounts have been calculated on for a long time and have created firmly held and varying perspectives. According to Davis, P.R., Peter, E.D., Baccarini, D. (2009) the arguments against the use of the BOQ is that it can only be used to price the materials, labour of a project at a given specific time accurately. Outside of materials and labour, there are added costs of preliminaries which consist of insurances, site mobilization, and items of plant etc. These costs according to Davis et.al. (2009) are priced on the percentage of the total material and labour costs. Phung and Ming (1997) state the uncertainty of the ability to price items such as preliminaries accurately as a con of the bill of quantities. According to Brewer (1998), the rules on which a bill of quantities is, does not allow items to be measured accurately, thus creating an uncertainty in the bill of quantities.

According to Duncan Cartlidge (2009) : "during the recent past the bill of quantities has been much maligned as out-dated and unnecessary in the modern procurement environment. Indeed it is undeniable that on the face of it the number of contracts based on a bill of quantities has

declined sharply over the past 20 years or so". Usefulness of the BOQ when obtaining bids and as a post contract cost control tool have been documented and has been researched before but the decision making credibility of the BOQ has not been researched before in building project procurement. In this study we attempt to study the credibility and usefulness of the BOQ.

II. LITERATURE REVIEW

According to FIDIC (International Federation of Consulting Engineers) Bills of Quantities (BOQ) comprise a list of items of work which are briefly described. The Bills also provide a measure of the extent of work and this allows the work to be priced. The work included in the item is defined in detail by the rules in the Method of Measurement. The shortened item descriptions are allowing the relevant rules of method to be identified. The measurements may be single item or number. Units may be length (leaner meter, square meter and cubic meter) time (hours, weeks) or weight. The Bills of Quantities may serve a number of functions as: The bill of quantities may help to analyse number of factors such as price breakdown without contractual status but giving information to selection from renderers. The revised contract price can be fixed with tender price. When actual quantities of works done are measured the tender price can be received by measure and pay basis. The measure and pay basis is the form of checking the contract, the schedule rates can used to measure variation of the work. This is basis to pay the interim payment for the value of the work done.

Millican states that (1996 cited in Bandi, 2012) BOQ is a document which used over 300 years as a one format safe and BOQ is most important document in construction industry govern by traditional procurement methods. Seeley (1997 cited in Davis et al.2009) started that if the work carried out without BOQs it leads to variations, risk in estimating and more difficult to come agreement in both parties. But now there is a doubt about the credibility of the BOQ. Difference of the estimated cost and actual cost affects the credibility of BOQ as well as profession of the quantity surveyor. Not only others, one aspect of a situation implement data and information. It can be very difficult to detect and prevent as well have inadequate understandings which bias our research. Data and information selected may not be relevant to the decision for which the information is required. Information for one decision-makers I time to be used in decision making. To identify some of the qualities requires of information which is useful in decision making.

Brook (2008) said "the BOQ has two primary uses. One is at the pre-contract stage where it assists the contractors in the formulation of their tenders. The other is at the post-contract stage where the BOQ assists contractors and quantity surveyors in the valuing of progress payment and variations among others. For more than 40 years, a lot of work had been done to examine the suitability of the BOQ in these two key phases of construction". Also Love et. al. (2006) mentioned "the use of traditional procurement is heavily reliant on the design documentation being completed and a detailed -BOQ being produced so that cost certainty can be provided to a client prior to construction commencing".

Yueshui, L.I., Jinhai, F.A.N, (2006) said 'current construction market environment remains imperfect, so the process control must be strengthened during valuation with bills of quantities'. The paper presents an emergency computer aided valuation appraisal technique for verifying design and quantifying the material cost components contained within BOQs. This technique has the potential of closely verifying the accuracy of presented BOQs, Opeyeolu, T.L., Samuel, B.A.(2014) British Journal of Applied Science and technology 4(27),3956. According to Gunathilaka, A.A.U.S, Indunil, L.D., Senevirathna, P, (2013) It is necessary to illustrate that if there is any error in BOQ, that would directly affect the base of the construction projects. As a result all the stakeholders involved in a project have an extremely higher concern on those three expects, as having an error free BOQ is vitally important. Errors can occur during preparation stage and pricing stage of the

BOQ. According to Srinath Perera, et al (2009)" in traditional procurement where traditional bills of quantities are used, there are deviations between the budgeted cost in the BOQ and final account figures.

III. RESEARCH METHODOLOGY

This study was carried out primarily through the use of secondary data. Data were obtained from past bills of quantities of building projects recently completed in different areas in Sri Lanka. The data related to the estimated cost and the actual cost after the completion of the different project types are investigated. The aim of the research was to evaluate the impact of decision making on the credibility of Bill of Quantity (BOQ). Collection of data was done by providing a questionnaire to the Industry Experts who have been involved in preparing and using the BOQ in the construction field.

The questions which are used for the survey are based on the type of construction which is done by the client. It may be building construction, road and highway construction, irrigation construction, bridge construction, steel construction or water supply and drainage construction. To determine the preparation of BOQ for the construction has done or not also focused. To include the purpose of the BOQ, the reasons are also determined.

According to the construction industry the BOQ is used for many reasons such as to get general idea about construction, obtaining bank loans and getting funds, to measure construction works for tendering purposes, evaluation of progress, engineer's estimate etc. Checking the variance between actual cost and estimated cost also aimed in this survey. And focus on the solutions of the variance such as unforeseen site conditions, market price fluctuation, design changes etc. are included. The data analysis was carried using frequency table and getting percentage of the purpose of use of BOQ. Two further analyses were carried out by the percentage of getting variation between estimated cost and actual cost and the reasons for the mentioned variations. The analyzed data will be represented in a pie chart.

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IV. ANALYSIS

In this we compare and contrast the results which we have obtained through this research.

Fig 1. Presents the BOQ data for the project we have studied. An investigation of percentage difference between the tender sum and the final account figures give us an implication of the budgetary credibility of the BOQ. Through the research we have found that the percentage difference between the budgeted cost and the final account ranges between the budgeted cost and the final account ranges between 5% and that is the range which has been stated as the acceptable accuracy range between the quantity surveyor's estimate and the accepted tender by Morrison(1984).

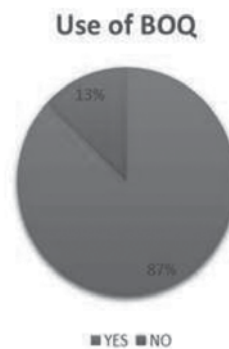


Figure.1 Use of BOQ

According to Cooke and Williams(2009), one of the risks and the most serious effects for the client is the failure to keep within the cost estimate. We have observed that some of the reasons for these fluctuations between the sums were different site conditions, design change, weather conditions. The site which has been chosen for the construction might not be suitable for the specific building

work so might need to go beyond the budget and make it suitable for the project, the employer might change his decision and may want something else entirely, when that happens we may need to change everything in order to cater to his need. The design changes will also make the project estimated amount to go up. And we might get unforeseen weather conditions and we may be not prepared for it and the damage which it has caused might not be enough to be compensated by the contingency sum. In that case the project actual cost would get higher than the estimated sum.

Some of the other reasons for the gap between the two sums are the unpredictability of some work in the tendering stages. (De watering, cofferdaming cost, underground excavation and underground rock excavation etc..) And these unknown factors may be stated in different ways by different people but however the estimate for them should be within 10%, if it has been done properly. Market price fluctuations, tendering process unexpected wastage lack of supervision might also cause for the gap between the sums. Practical constraints due to change of material price, lack of materials, material cost variations when project implementing labour costs and overhead costs can be varied, transportation and machinery charges may increase, the taxes may go up and the project scope may change and power failures can happen. Because of all these reasons the gap between the estimated cost and the actual cost can go up. From the graph below you can see how the variation has happened.

Mostly the variations have happened due to unforeseen site conditions and secondly due to market price fluctuations and thirdly due to design changes. Further analyses were carried out to state the budgetary reliability of the BOQ and we have analyzed how the Clients were hoping to use the BOQ. In the graph above we can observe how the Client was planning to use the BOQ and for what purposes they have used it. They have used it to get a general idea about the cost which would be needed to obtain bank loans which would be needed to gain financials which would be needing for the project, to prepare bid documents, to make the engineers estimate and to reduce rework. Mostly they have used this to get a general idea about the project and how much it would cost and secondly, they have used the BOQ to measure construction works. Fig 2.

Figure 3 suggests that where clients are interested in cost certainty, quantity surveyors and project managers need to qualify the price they give to clients with an indication of confidence limits. This is very essential because the

deviations are observed with an indication of confidence limits. This is very essential because the deviations are observed as a result of risk factors that are inherent in construction.

V. CONCLUSION

This paper has examined the fiscal reliability of Bill of Quantity (BOQ) using secondary data from completed building and other works. We have employed the survey method with the help of a series of questions that have been given to industry experts. The problem that we have faced was the gap between the estimated cost and the actual cost and the reason behind it. By doing this survey we were able to determine the reason behind it. While doing the research we have found out that almost every single reason behind the gap was not the quantity surveyors fault but they were due to the unforeseen site conditions and market price fluctuations. BOQ still exists as a budgeting tool even though the common awareness of the defects. Even though there are deviations it acts as a useful tool in the overrun.



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