TESTING THE VALUE OF BEST VALUE: EVIDENCE FROM EDUCATIONAL FACILITIES PROJECTS.

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1   BACKGROUND AND IDENTIFICATION OF PROBLEM/KNOWLEDGE GAP

Selecting the most appropriate contractor is significant to the success of a construction project. There are two strategies involved with selecting contractors: one is the lowest priced, the other is called best value or the Most Economically Advantageous Tender (MEAT). Using the lowest bid strategy is straightforward; the latter strategy would involve scoring the contractors' bids on price and quality and ranking them. There have been various models developed in order to help with selecting contractor on best value such as simple weighting, Analytical Hierarchy Process (AHP), Analytical Network Process (ANP), and multi-utility theory. The perception is that the lowest bid strategy is bad for the construction industry, however we are still none the wiser as to whether the best value strategy would lead to successful outcomes. Yu and Wang (2012) say that the market should dictate what strategy to go for; meaning that there are times when it is best to for the lowest bid strategy. Therefore if the client selected the best value contractor for a project whose submitted price is not the lowest price, a model was developed to show how the lowest priced contractor would have fared had he/she been awarded the contract instead. This was done by using historic data and analyzing how they have performed in the past, to predict how they will likely perform in the future. Up to date there has been no quantitative assessment of the frequency distribution of the final outcome cost and duration of either selection method. The client may want to know not just the expected outcome cost of a particular strategy but also what would be the probability of a strategy leading to an extremely high final cost. In other words, is there a chance that one selection criteria would give the lowest cost on average but could, on occasions, give to outcome costs so high that bankruptcy may occur?

2   RESEARCH AIM AND METHODOLOGY

The main aim of the research:

- To provide a quantifiable method of assessing the risk of choosing different contractor selection strategies.

The Building Cost Information Service of RICS (BCIS) database was used to conduct this study. A total of 120 Educational facilities projects, all of which was awarded to the lowest bidder, were analysed.

The developed simulation model for assessing how the lowest priced contractor would fare if he/she is awarded the contract simulated the correlation from the dataset. This model provided the frequency distribution of all the possible final costs and duration that a project could incur.

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The model was developed using MATLAB R2014b to create a Monte-Carlo simulation of the tendering process.
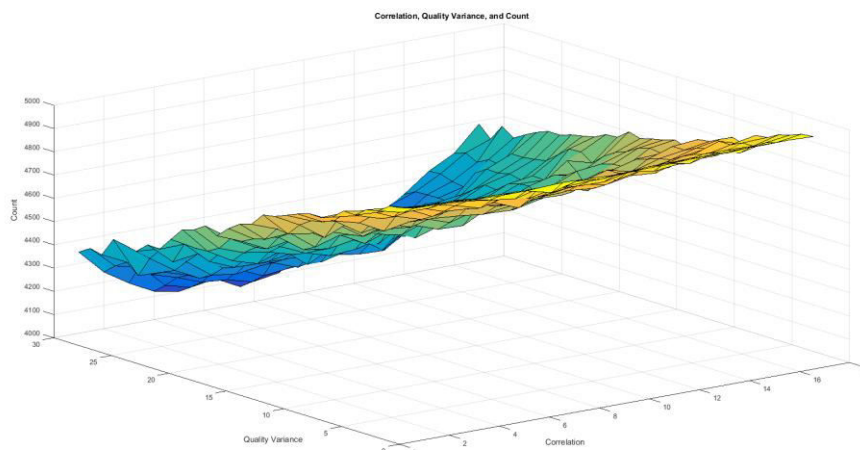
3   RESEARCH FINDINGS

The study shows how the lowest tender would have fared on a project that has already been awarded to the best value tender. The model was originally tested on 3 contracts that selected the lowest tender to validate the procedure. 20,000 simulations were run and the frequency distribution of total outcomes determined. The actual project outcomes were well within the envelope of simulated results. Once this test was passed, the model was then run for another set of 3 real educational facilities projects that selected the best value tender. In this case, the actual outcomes of the best value tender were.

Table 5: Outcomes P4, P5, P6

	Minimum	Maximum	Mean	Actual	Actual-Max	Actual-Mean
FC	£4,291,400	£4,328,600	£4,309,000	£4,371,596	+£42,996	+£62,596
Time	225	364	297	292	-72 days	-5 days
Diff	-£8,254.40	-£28,947	£9,370	£0.00		
FC	£2,069,300	£2,120,100	£2,095,600	£2,123,918	+£3,818	+£28,318
Time	73	205	139	134	-71 days	-5 days
Diff	£2,511.70	£23,712	£28,839	£0.00		
FC	£288,980	£343,820	£317,660	£343,200	-£620	+£25,540
Time	51	155	94	89	-66 days	-5 days
Diff	£27,202	£82,043	£55,884	£29,374		

A sensitivity analysis was done using one of the projects to see how many times the lowest bid would still be the best overall bid in terms of cost if the correlations between the Bid Price (lowest tender) and the variance of the Overrun cost to see what the effect of these two parameters had on the selection. At its worst the lowest tenderer still had an 84% chance of being the best overall bid in terms of cost.

- **Preliminary Conclusion: The lowest tenderers perform better in Educational facilities project in terms of final cost. However, there is a risk of them incurring time overruns.**