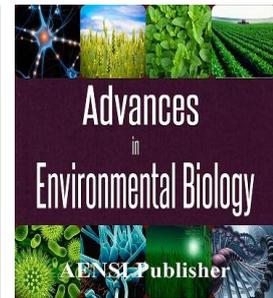




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### Nature of Works for Quantity Surveyors to Homeworking

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#### ABSTRACT

Homeworking has been implemented in various industries such as financing and banking, insurance, trading and manufacturing but there is very little research on homeworking in construction industry, particularly quantity surveying (QS) profession. Homeworking is known to serve better work-life style and gives many advantages to the company and employees. In QS profession, the work nature involves pre-contract and post-contract stages. There are certain task in this stages that is possible to homework. The purpose of this research is to explore whether homeworking can be implemented in the QS practices focusing on the QS's nature of work. The data were collected using two methods which were via online survey and postal questionnaire survey. The data were then analyzed using frequencies and weighted average analysis. The result shows that the QS profession is possible to homeworking.

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### INTRODUCTION

Homeworking is a common work style for most developed countries. Most developed countries have carried out the concept in their working life since in the 70s. What is more, homeworking is known to serve better work-life style and can give many advantages to the firm and employee. To homeworking, the work performed is generally done independently hence, it does not require team interaction or consistent communication. It also is more likely that the employee can live far from the actual location of the business for which he or she is working because face to face contact at the location may not be necessary. In Malaysia, particularly in construction industry, homeworking concept has been introduced by the Ministry of Public Works Malaysia in 2010. Similar to the homeworking terms, the "Work from Home Pilot Programs" has seen to gather many divisions i.e: Civil Engineering Branch, Structural and Bridge Branch, Architects and Quantity Surveying Branch and the work scope only involve with the use of computers and the internet [1]. The program participants finds that they are able to save or reduce the costs involved while homeworking such as traveling costs, daily costs such as breakfast, lunch, etc. and also the cost of their child care. Further to that, the participant's productivity increased and it is perceived that the program gives a positive impact to the participants involved [2].

The construction industry has a culture of long hours and weekend works. Hence, construction employees struggle to achieve a balance between their work and personal lives [3]. Construction employees are concerned that the combination of long hours and tight deadlines together with a unique characteristic of project-based work further increases their concern on their negative work impacts upon personal life [4]. The industry as a high-risk industry for work stress. Some of the stress faced by the professionals in construction is stress associated with external demands such as deadlines, time constraints and workload in construction estimators [5]. Nevertheless, female construction professionals experience higher levels of work stress than their male counterparts.

Quantity surveying (QS) is an amalgam of several other disciplines (such as economics, law, accountancy, management, measurement, information technology and construction technology) within a unique context of the built environment [6]. With the increasing number of QS firms in the nation, it shows that they play a significant role in the Malaysian construction industry. This is because it provides a growing share of total industry output

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and employment. QS firms have to embrace the organization's operating business culture [7]. Homeworking is seen as one of the new business cultures for QS firms to execute and presume to survive in construction industry. This is because the competitive industry directly influences QS firms in obtaining and bidding for projects. The scope of QS work involves preparation of documents such as cost estimate, cost plan, bill of quantities, tender document, interim valuation certificate, final account, etc.

Table 1 below shows the tasks and duties carried out by QSs in QS firms. This table was tabulated based on the basic services provided by QS firm [8]. QS works are divided into two (2) parts which is the pre-contract and post-contract. The pre-contract work starts from the initial stage which is the planning, designing and tendering. On the other hand, the post-contract work starts after the Letter of Award (LoA) was sign by the selected contractor for the project and ends after the project has closed the final accounts.

**Table 1:** Tasks and duties carried out by quantity surveyors

Contract Stage	Tasks and duties of QS
Pre-contract	Feasibility study
	Preliminary cost estimate
	Cost planning
	Elemental Cost Estimate
	Measurement/ Taking off
	Bills of Quantity Preparation
	Tender document preparation
	Cost analysis
	Tender evaluation
Post-contract	Preparation of Interim Valuation
	Preparation of Variation Order
	Preparing and compiling variation claim document
	Life-cycle costing
	Value management
	Risk management
	Payment Certificate
	Financial statement
	Final accounts

#### Methodology:

For the preliminary data collection, an interview session was carried out to explore the data on homeworking in QS firms. The data obtained will be used in the final questionnaire. The semi-structure question for the interview is exploratory in nature as limited information on homeworking gathered from the literature. The data obtained from the interview together with the literature review will be a basis to form a final questionnaire survey. There are two methods used in the final questionnaire survey, where the first method is using the online survey questionnaire via kwiksurveys. With this method, a total of 322 QS firms takes part and after two weeks, 17 replies were received via email. Due to the low response rate received using the first method, a postal questionnaire was carried out as a second approach. With the second method, 59 replies were received after one month, hence making up the total of 76 replies were received. After the data were collected, it were then analyzed using computer program which is SPSS and a minimal usage of Microsoft Excel. In this research the data were analyzed using frequency and weighted average. Weighted average is where an average in which each quantity to be averaged is assigned a weight.

## RESULTS AND DISCUSSION

#### (i) QS nature of works to homeworking:

The analysis that were used in this research are descriptive analysis i.e: frequencies and weighted average. These weightings determine the relative importance of each quantity on the average. Weightings are the equivalent of having that many like items with the same value involved in the average.

**Table 2:** Nature of Work

Nature of Work	Frequencies (%)		
	Yes	No	Maybe
Pre-Contract			
Feasibility Study	52.6	35.5	11.8
Preliminary Cost Estimate	67.1	21.1	11.8
Cost Planning	63.2	25.0	11.8
Elemental Cost Estimate	71.1	19.7	9.2
Measurement/ Taking off	81.6	9.2	9.2
Bills of Quantity Preparation	72.4	15.8	11.8
Tender Document Preparation	36.8	43.4	19.7
Cost Analysis	56.6	27.6	15.8

Tender Evaluation	22.4	72.4	5.3
Post-Contract			
Preparation of Interim Valuation	55.3	34.2	10.5
Preparation of Variation Order	65.8	21.1	13.2
Preparing and Compiling of Variation Claim Document	44.8	36.8	18.4
Life- Cycle Costing	50.0	28.9	21.1
Value Management	44.7	35.5	19.7
Risk Management	39.5	36.8	23.7
Payment Certificate	51.3	36.8	11.8
Financial Statement	51.3	32.9	15.8
Final Accounts	47.4	35.5	17.1

Table 2 above shows the nature of work that the respondents think that is suitable for the employees to carry out at home. Based on the table, the percentage of more than 50% were taken and feasibility study, preliminary cost estimate, cost planning, elemental cost estimate, measurement/ taking off, bills of quantity preparation, cost analysis are the types of work from the pre-contract stage that can be done by the employees who homeworking. On the other hand, for the post-contract stage, preparation of interim valuation, preparation of variation order, life-cycle costing, payment certificate and financial statement can be suitably done from home.

The data analysis has shown that, the pre-contract stage such as measurement/taking off and preparation of bills of quantities are the tasks most suitably carried out by the employees at home. It is also supported by the respondents who participated in the interview, where most of them agreed that the suitable task to be carried out by the employees who practice homeworking is on the measurement. Besides, estimation, progress payment, variation order, final account and preparation of tender document can also be done by them at home.

After the percentage of frequencies was obtained from descriptive analysis above, the data were then analyzed by using weighted average analysis. From the table 3 below, measurement/taking-off, preliminary cost estimate, elemental cost estimate, bills of quantity preparation and preparation of variation order have higher rankings than others, with a weighted average of 90 and 75. These work are also agreed by the respondents who participated in the interview session. It is mostly because the tasks such as the measurements are easy to be carried out at home, since the employees' only needs the drawings to execute the jobs.

**Table 3:** Weighted Average (W.A) for Nature of Work

Nature of Work	Level of Agreement	Frequency (F)	Weightage (W)	Total (F x W)	W.A [Total (F x W) / Total (F)]
Feasibility Study	Yes	40	60	2,400.00	60.00
Preliminary Cost Estimate	Yes	51	75	3,825.00	75.00
Cost Planning	Yes	48	65	3,120.00	65.00
Elemental Cost Estimate	Yes	54	75	4,050.00	75.00
Measurement/ Taking off	Yes	62	90	5,580.00	90.00
Bills of Quantity Preparation	Yes	55	75	4,125.00	75.00
Tender Document Preparation	No	33	40	1,320.00	40.00
Cost Analysis	Yes	43	60	2,580.00	60.00
Tender Evaluation	No	55	40	2,200.00	40.00
Preparation of Interim Valuation	Yes	42	60	2,520.00	60.00
Preparation of Variation Order	Yes	50	75	3,750.00	75.00
Preparing and Compiling of Variation Claim Document	Yes	34	50	1,700.00	50.00
Life- Cycle Costing	Yes	38	50	1,900.00	50.00
Value Management	Yes	34	50	1,700.00	50.00
Risk Management	Yes	30	50	1,500.00	50.00
Payment Certificate	Yes	39	60	2,340.00	60.00
Financial Statement	Yes	39	60	2,340.00	60.00
Final Accounts	Yes	36	50	1,800.00	50.00

#### Summary:

The result of this study shows that the quantity surveying profession is possible to homeworking. It is shown that QS natures of works are quite flexible in a ways that the employees can complete their work at home. There are many QS works that does not require the employee to always be at the office and the task mainly involves drawings and the usage of computer and internet. The equipments that were used to complete the task is a basic needs of an employee and this task does not require a constant supervision. Based on the weighted average analysis, QS works that are possible to homework are measurement/taking-off, preliminary cost estimate, elemental cost estimate, bills of quantity preparation and preparation of variation order.

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