

ANALYSIS OF CONTRACTORS' HEAD OFFICE OVERHEAD ON COMPENSABLE DELAY EVENTS

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ABSTRACT

Contractors' claims for extension of time and/or cost reimbursements could result in disagreements that may not be amicably resolved by the parties concerned. Consequently significant additional costs are incurred in construction projects due to disagreements over these claims. A major criticism of the Sri Lankan construction industry is persistent delays in project delivery. A contributory factor to those delays is disagreements over certain percentage of business' overhead expenses that are unrecoverable by the contractor. This unrecovered head office overheads (HOOH) is an actual loss to the contractor and the contractor could make a claim for the actual costs incurred during the delay. The selection and application of the most suitable recovery or calculation method is critical for both clients and contractors.

As an aspect of a larger study which develops a HOOH claim process model, the current study focuses on the review of the methods currently being practiced to recover HOOH claims internationally as well as within the Sri Lankan construction industry. The preferred methods used within Sri Lankan construction industry to evaluate contractors' claims are the formula approach and actual method by contractors and clients respectively. This study shows that salaries and wages of head office human resources and transporting and travelling costs contribute significantly to the contractors' HOOH.

There are a number of issues with the quantification approaches used during the HOOH claim stages that result in conflicts. The research therefore suggests that there needs to be pre-established claim-tracking processes for claim initiation, quantification and evaluation. The pre-established process would provide a clear understanding of HOOH claims and positively direct claimants to agreed claim records, HOOH cost data and quantification approaches.

Keywords: Claim, Compensable Delay Events, Construction, Head Office Overhead, Sri Lanka.

INTRODUCTION

Increase in number and frequency of claims have become significant concerns in the construction industry due to increase in size and complexities of projects (Iyer, Chaphalkar, and Joshi, 2008). Kumaraswamy (1997) indicates that contractors' claims mostly result from project delays and disruption, and are contractual in nature. Contractors' claims for extension of time and/or additional cost as a result of disruptions are often not amicably resolved, resulting in even more costly disagreements (Abdul Malak et al., 2002).

Amongst several delay costs, contractors' overhead costs, both at site and head office, seem significant (Ibbs and Nguyen, 2007). Overhead costs are generally divided into two categories: job or site overhead costs and general or head office overheads (Peurifoy and Oberlender, 1989). The head office overhead costs are not associated with any particular project while the site overheads are confined to individual projects (NCHRP synthesis 315, 2003). Head office overheads (HOOH) are usually posted to accounts that are not project related, and lumped together into the head office overhead 'pool' (Irwin, 2005). In normal practice, the collection in the pool is distributed among the projects using some basis which varies from contractor to contractor. If a project is delayed, no work is performed and no income from billings is received during the month. Additional expenses are incurred when the completion of a project is prolonged beyond its scheduled completion date thus certain percentage of the business's overhead expense is unrecovered and could presumably be attributed to the delay. This unrecoverable expense is referred to as the 'unrecovered head office overheads of contractors' (Gregory et al., 1997).

In compensable delay events, the contractor has the right to claim head office overhead loss or overburdens as per most of the standard contract conditions such as the JCT, ICE 5 and FIDIC. The recovery of head office overheads in compensable delays is therefore not a new concept. Zack (2001) indicates that as far back as 1941 in United States its Federal courts awarded recovery of head office overhead to a contract for delay caused by government. Damayanthi (1994) indicates that the Sri Lankan construction contractors adopt the traditional direct mode or formula methods to prepare unrecovered head office overhead claims. According to Damayanthi, in most of the instances, unrecovered head office overhead claims end up in deadlock. There is anecdotal evidence to suggest that the absence of standard acceptable method for calculating HOOH claims is the cause of most of these deadlocks.

The research therefore reviews the different approaches available to quantifying HOOH claims. It also analyses HOOH claims and its composition by contractors with operational bases in Sri Lanka.

LITERATURE REVIEW

Overhead costs in the construction industry

Cilensek (1991) describes overheads as costs associated with actual work which are not a component of the actual construction work, but are incurred by the contractor to support work. Total overhead costs may vary from 8 to 30% of the sum of materials, labour, and equipment costs or alternatively 12 to 50% of the labour costs, depending on the project characteristics (Pulver, 1989). Although overhead costs constitute a significant percentage of the total construction costs, they are easily overlooked. Generally overhead costs rise continuously during work execution and could lead to higher production costs (Snodgrass, 1999).

Overhead costs in construction are mainly classified into two to include site office overheads (SOOH) and head office overheads (HOOH). The two categories are depicted in Figure 1.

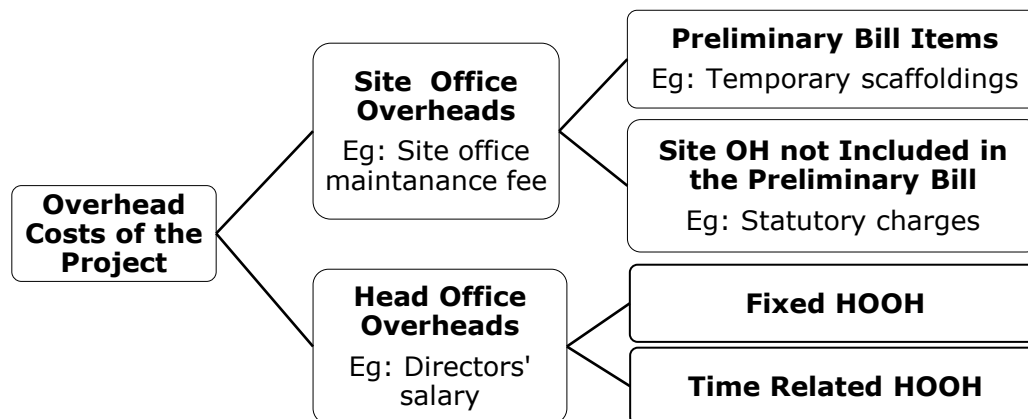


Figure 1 - Components of overhead costs

SOOH costs include items that are attributed to a particular job/project but excluding materials, labour, or production equipment while HOOHs are general administrative overheads. HOOH includes all costs incurred by construction firms in maintaining the business and supporting the production process, but not directly related to a specific project (Adrian, 1982). Pulver (1989) explains that depending on the size, management efficiency, business diversity and operational branches, HOOH costs range from 8 to 15% of the total construction volume. HOOH costs normally comprise fixed costs and time related costs for operating a head office.

HOOH Recovery Techniques

Many contractors attempt to manage the HOOH claim effectively and quantify unrecovered HOOH during any project prolongation that is caused by clients. As reported by Trauner (1990), some contracting firms like Cateret Work Uniforms (1954), Eichleay Corporation (1960), Manshul Construction crop (1981), Finnegan Ltd (1989), and Alfred McAlpine

Heads North Ltd (1995), have developed formulas to recover their HOOH losses. However some group of researchers (Fordham 1995; Zack 2001; Tamm and Singh; 2003) have indicated the difficulty with calculating HOOH costs to a reasonable level of accuracy. Thus the selection of most suitable recovery or calculation method is critical to both clients and contractors. The realistic choice of a quantification method will lead to fewer disputes over claims. On the other end, wrong quantification, may cause losses to one party and gains to the other party.

The literature reviewed show that the following are the different approaches used to calculate the HOOH claim costs within the construction industry.

1. Eichleay Formula
2. Hudson Formula
3. Manshul Formula
4. Carteret Formula
5. Canadian Method
6. Allegheny Formula
7. Burden Fluctuation Method
8. Ernstrom Formula
9. Total Direct Cost Allocation Method
10. Calculation Based on Actual Records
11. Specific Base Allocation Method (SBAM)

RESEARCH METHODOLOGY

An extensive literature review was carried out to understand the concept 'overhead cost', its components and to identify the different HOOH claim approaches used within the construction industry. This was followed by preliminary survey of five contractors to collect their views on unrecovered HOOH claim practices within the Sri Lankan construction industry. The study also undertook an analysis of contractors' HOOH costs and its components. Five contractors operating within the C1 grade classification in Sri Lanka participated in the study. The relevant cost data required for the analyses were obtained from the financial reports of these selected contractors.

RESULTS AND DISCUSSION

HOOH Structure in Construction firms

HOOH items of the selected contractors were identified with reference to standard categorisation of HOOHs. The MAC Model Contract that was applied, clusters HOOH items into eight major categories (MAC, 2008). Table 1 presents the mapping of contractors' HOOHs with the standard

HOOH items as per the MAC model. Most of the items in Table 1 comply with standard HOOHs. However Sri Lankan contractors consider some of the standard HOOHs as site overheads while some others are not applicable in the Sri Lankan context. All contractors surveyed are of the view that the allowance for working in special circumstances, payments for obtaining samples and tests, and supply chain are site overhead items. According to two of the five contractors, payment related to health and safety, and legal costs belong to the site overhead group.

The contractors are in agreement that relocation charges and medical expenses of head office staff, and compensation for loss of crops and buildings are not recognized as head office overheads by contractors in Sri Lanka. A few contractors have discarded standard overhead items from their overhead structure such as: costs involved on research and development, entertainment, training, head office building rental, leasing, and overtime claims for head office staffs and workers.

Table 1 - Standard overhead components

No.	HOOH Items	Contractors				
		A	B	C	D	E
1.0	Head office staffs and labours					
1.1	Wages and Salaries	H	H	H	H	H
1.2	Payments for					
	<i>Bonuses and incentives</i>	H	H	H	H	H
	<i>Overtime</i>	NA	NA	H	NA	NA
	<i>Allowance for working in special circumstances</i>	S	S	S	S	S
	<i>Other special allowances</i>	H	H	H	H	H
	<i>Absence due to sickness and holidays</i>	H	H	H	H	H
	<i>Statutory severance</i>	H	H	H	H	H
1.3	Payments in relation to employees					
	<i>Travel</i>	H	H	H	H	H
	<i>Subsistence and lodging</i>	H	H	H	H	H
	<i>Relocation</i>	NA	NA	NA	NA	NA
	<i>Medical examinations</i>	NA	NA	NA	NA	NA
	<i>Passports and visas</i>	NA	NA	NA	NA	NA
	<i>Death benefit</i>	H	H	H	H	H
	<i>Occupational accident benefits</i>	H	H	H	H	H
	<i>Medical aid</i>	NA	NA	NA	NA	NA
	<i>Vehicle</i>	H	H	H	H	H
2.0	Plant and Equipment					
2.1	Equipment Maintenance	H	H	H	H	H
2.2	Unallocated plant	H	H	H	H	H
2.3	Equipment damage / repair costs	H	H	H	H	H
2.4	Depreciation and maintenance of equipment	H	H	H	H	H
3.0	Materials					
3.1	Material yard maintenance	H	H	H	H	H
3.2	Payments for					

	<i>Purchasing Materials</i>	H	H	H	H	H
	<i>Delivery to yard and removal from the yard</i>	H	H	H	H	H
	<i>Samples and tests</i>	S	S	S	S	S
4.0	Charges					
4.1	Payment for					
	<i>Leasing costs</i>	H	H	H	H	NA
	<i>Compensation for loss of crops or buildings</i>	NA	NA	NA	NA	NA
	<i>Inspection certificates</i>	H	H	H	H	H
	<i>Advertising, leaflet drops and the like in connection with the services</i>	H	H	H	H	H
4.2	Payment for Specialist services (advices etc)	H	H	H	H	H
4.3	Payment for					
	<i>Head office building rental</i>	NA	NA	H	H	H
	<i>A/C, sanitation, power, lighting and water</i>	H	H	H	H	H
	<i>Depreciation and interest of capital assets</i>	H	H	H	H	H
	<i>Supplies and consumable stores</i>	H	H	H	H	H
	<i>Cleaning and maintenance</i>	H	H	H	H	H
	<i>Telephone, telex, fax, post and electronic mail</i>	H	H	H	H	H
	<i>Security</i>	H	H	H	H	H
	<i>Copying</i>	H	H	H	H	H
	<i>Computing</i>	H	H	H	H	H
	<i>Stationeries</i>	H	H	H	H	H
	<i>Recruitment and training of staff</i>	H	H	H	H	H
	<i>Marketing and other external expenses</i>	H	H	H	H	H
	<i>Refreshments and food</i>	H	H	H	H	H
5.0	Insurance					
	Head office related resources (including employee, equipments, assets etc.) – premiums	H	H	H	H	H
6.0	Fee Schedule Constituent					
6.1	Payments for					
	<i>Franchises, Royalties, Licences</i>	H	H	H	H	H
	<i>Accounting and Auditing</i>	H	H	H	H	H
	<i>Research and Development</i>	H	H	H	NA	NA
	<i>Publicity, Marketing</i>	H	H	H	H	H
	<i>Entertainment</i>	H	H	NA	NA	NA
	<i>The amount of any excess borne by the Contractor in respect of any claims under Employer's liability</i>	H	NA	NA	H	H
	<i>Finance and Interest Charges</i>	H	H	H	H	H
	<i>Quality Assurance</i>	H	H	H	H	H
	<i>Health and Safety</i>	H	H	H	S	S
	<i>Training</i>	H	H	H	NA	NA
	<i>Tendering</i>	H	H	H	H	H
	<i>Supply Chain</i>	S	S	S	S	S
	<i>Legal Costs</i>	S	H	S	NA	NA
7.0	Vehicles and travelling expenses					
7.1	Vehicle maintenance	H	H	H	H	H
7.2	Vehicle damage and repair	H	H	H	H	H
7.3	Fuel charges	H	H	H	H	H
7.4	Parking charges and fines	H	H	H	H	H
8.0	Miscellaneous Items	H	H	H	H	H

- Head office overhead -H; Site overhead – S; Not applicable - NA

The HOOH costs of the contractors surveyed were extracted from their financial reports. Figure 2 shows the trend of contractors' HOOH costs for the last three years. It is apparent from the figure that the contractors' HOOH costs are increasing over the period at a fairly steady rate.

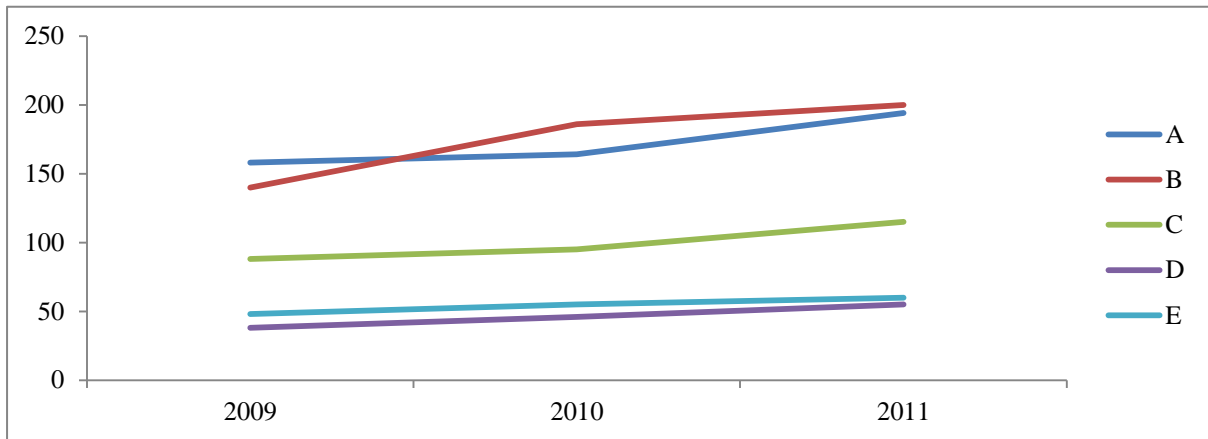


Figure 2 - Trend of contractors' HOOH costs

The HOOH costs of individual contractors are further analysed in terms of their allocation of costs among each of the standard overhead items. An overall distribution of HOOH costs for all the contractors surveyed is illustrated in Figure 3. On average wages and salaries of head office staff and labour is responsible for 30% of their total HOOH while another 29% are expenses related to vehicles and travelling expenses of the contractors. Another 12% and 11% of total overhead costs is associated with head office charges, and fee schedule and constituents respectively. Material related cost is another significant overhead component which accounts for 7% of total HOOH. A small percentage (3-4%) of total cost is attributed to plant and equipment and insurances related charges.

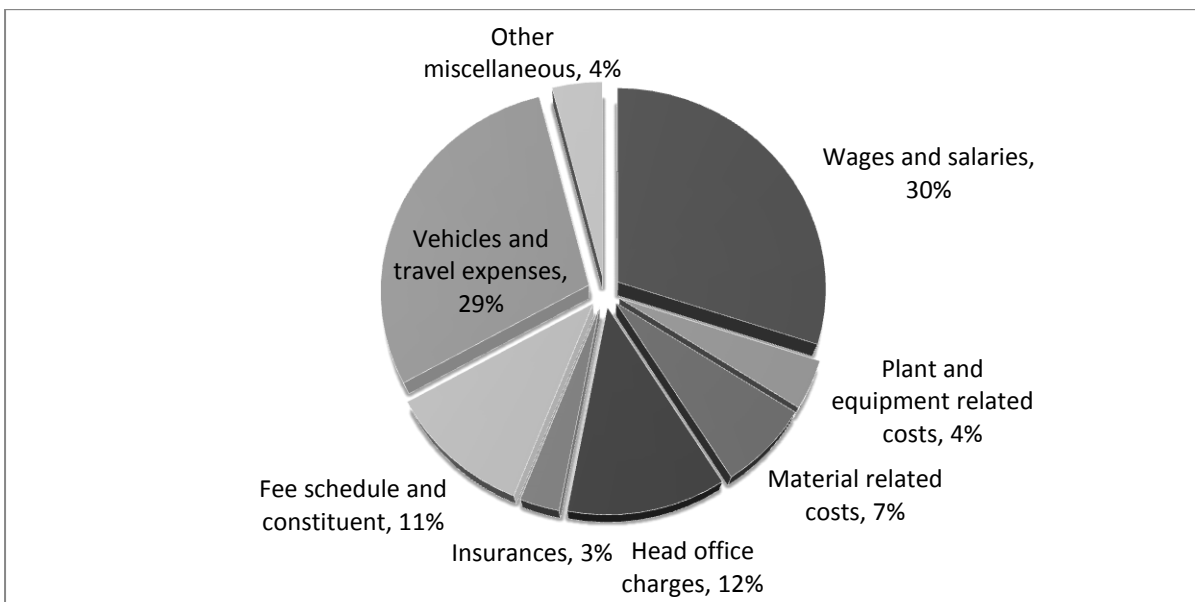


Figure 3 - Distribution of overhead costs among standard categories

Quantification of claims from the perspective contractors and clients/engineers

Two different HOOH claim situations were selected from each of the contractors surveyed. A total of 10 claims were analysed to identify the claim quantification approaches used by the contractors and clients and to know the status of contractors HOOH claims. Table 2 provides information about HOOH quantification approaches used by contractors and clients, claims submitted and approved by contractors and clients respectively. The result in Table 2 shows that contractors mostly (in 7 out of 10 situations) applied the Hudson formula to recover their HOOH costs while the rest of the claims were calculated using Emden and Eichleay formula. However, clients/engineers employed their own approaches, approach 1 and 2 described in the next paragraphs.

Approach 1 involves the following three steps to calculate the extended HOOH. Tender breakdown based HOOH percentage is applied. This HOOH calculation considers Bill of Quantities items (excluding variation) only.

Step 1 - Expected HOOH per day = (contract sum X HOOH %) / original contract period

Step 2 - Total recovered HOOH cost = Amount from step one X HOOH%

Step 3 - Recovery of extended HOOH = Recovered HOOH - Actual HOOH.

The approach 2 uses the audited records based on HOOH percentage. This includes the following steps to derive the HOOH percentage and it is then applied to the Hudson formula to find the HOOH recovery. The HOOH recovery amount from variation works is deducted and the actual under recovery is calculated.

Step 1- HOOH percentage for a particular financial year = Annual HOOH expenses / total turnover.

Step 2 - Normal HOOH rate of the contractor = Average of last three years

CONCLUSION

Different quantification approaches require different cost data for quantification of the HOOH. Therefore there are limitations in using them sometimes due to unavailability of cost data within the companies. For example some of the smaller companies do not have audited reports, typical HOOH pool and HOOH pricing base. Contractors' focus were more on the adequate level of HOOH recovery than the accuracy of the approach. Contractors therefore seek to apply the approach that enables them to claim more HOOH recovery than their actual loss. This often results in conflict between contractors and the clients.

The formula approach and actual methods are currently being used in the Sri Lankan construction industry, even though most contractors would like to use formulas to calculate their damage. Clients on the other hand

would like the actual damages quantified. The use of formulas is straight forward than the actual basis for HOOH quantification that requires detailed accounting and record keeping systems.

The study therefore recommends that contractors select the most reasonable and suitable HOOH quantification approach according to the claim situation and HOOH losses experienced (HOOH escalations, extended HOOH etc).

Contractors' HOOH capacities differ from one to another depending on the diversity of their operations, HOOH policies and concept. However in terms of sharing out the total HOOH costs among the major eight HOOH categories, an identical pattern is observed amongst the contractors surveyed. Salaries and wages of head office human resources, and transporting and travelling costs account for a significant percentage of the total HOOH, 30% and 29% respectively. The HOOH costs of all selected contractors are increasing in nature although the level of HOOH increase over time is not identical. The five contractors' HOOH pricing and recovering strategies are analogous even though the HOOH claim decision making depends on primary and the meta level causes which influence the contractors to adopt compliance or claim avoidance model.

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Table 2 - Quantification of HOOH claims from the perspective of contractors and clients

Description	Contractor A		Contractor B		Contractor C		Contractor D		Contractor E	
	Claim 1	Claim 2	Claim 3	Claim 4	Claim 5	Claim 6	Claim 7	Claim 8	Claim 9	Claim 10
Type of project	Civil Eng. Road	Civil Eng. Road	Civil Eng. Water Supply	Building	Civil Eng. Road	Building	Civil Eng. Water Supply	Building	Building	Building
Contract Sum (Rs.)	226,743,000	107,245,838	317,564,780	179,134,335	143,059,073	74,598,391	65,450,043	78,658,952	85,624,231	118,576,432
Contract Period (calendar days)	660	720	785	365	365	365	240	365	365	485
Applied HOOH	12%	13%	7%	7.20%	5.00%	5.50%	5.70%	6%	5.70%	5%
HOOH cost per day (Rs.)	41,226	19,363	28,317	35,336	19,597	11,240	15,544	12,930	13,371	12,224
HOOH claims quantification approaches used - Contractors										
Approach	Hudson	Hudson	Hudson	Eichleay	Hudson	Hudson	Emden	Emden	Hudson	Hudson
Delay Days(calendar days)	240	365	221	186	240	198	180	214	118	96
	9,894,240	7,067,799	6,258,251	2,000,546	4,703,312	2,225,689	2,797,989	2,767,071	1,577,832	1,173,540
HOOH cost per day (Rs.)	41,226	19,363	28,317	10,755	19,597	11,240	15,544	12,930	13,371	12,224
HOOH claims quantification approaches used - Clients										
Approach	Approach 1	Approach 2	Actual records based	Actual records based	Approach 1	Approach 1	Manshul	Actual records based	No Claim	No Claim
Claim Approved (Rs.)	3,452,542	2,875,265	3,546,852	1,845,756	2,351,656	2,023,354	1,359,725	852,545	0	0
HOOH cost per day (Rs.)	14,385	7,877	16,049	9,923	9,798	10,218	7,554	3,537	0	0
Difference	(26,840)	(11,486)	(12,268)	(832)	(9,798)	(1,021)	(7,990)	(9,392)	(13,371)	(12,224)

