



An Awareness of Life Cycle Costing among Residential Building Contractors in Jaffna District

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ABSTRACT

The life cycle costing is a management accounting tool which can be used to evaluate all the construction related cost. Even though this technique has a number of benefits for the construction industry, the application of this method is weak in Sri Lanka. The main aim of the study is to create awareness and importance of life cycle costing among contractors in Jaffna district. The present study has been conducted by the quantitative method to explore awareness. The entire population of the study covers the Jaffna district. The twenty small residential contractors in Jaffna district have been selected using random sampling method for the purpose of the study. The questionnaire was used to collect the data from contractors. The questionnaire consists of ten questions in relation to basic information regarding the contractors and further questions given to the contractors to know the awareness of this tool and the parameters included in their life cycle costing. The statistical techniques such as frequency and percentage were used for the analysis of the data. The results reveal that the most of the contractors are with the HND qualification and few years of experience in the field of constructions. The study concluded that the awareness of the concept of life cycle costing are comparatively poor and the knowledge on the traditional methods such as pay pack and accounting rate of return in the investment cost. The study recommended to provide the entire knowledge through the investments' banks and board of investment in Sri Lanka.

Keywords: Life cycle costing, contractors, modern methods

1. Introduction

Most of the investors are concerned about the operation costs, maintenance cost rather than focusing entirely on capital cost. The LCC analysis is widely used to determine the costs associated with each stage of a building's life and understand how the costs are distributed among the stakeholders (Samani, et al., 2018). The LCC is defined as a management accounting tool for evaluate all the costs over a specified period of time. The main inspiration for the implementation of this techniques in the construction industry is LCC being identified as a tool for decision making (D'Incognito, et al., 2015). Many professionals use LCC technique for different applications leading to different purposes. Decision making at the design stage, to determine the performance impact throughout the life span of buildings, selection of most cost-effective project from a series of alternatives and assessment of new installation services against existing installation services can be recognised as some generic purposes of the application of LCC techniques in the construction industry (Dale, 1993).

The main objective of this paper is to create the awareness of the life cycle costing in investing investment project using the technique of life cycle costing. Havlicek (2014) is confirmed that the scope of project is dependent on the company size, its investment planning and financial or other resources. There are several methods available to evaluate the investments is based on cost of capital, risk and repayment period. The study mainly focuses on the awareness and knowledge of the different traditional and non-traditional methods among the contractors in Jaffna district.

According to the discussion made with the Mr.K.Tisokaran who is the contractor and the managing director of Euro homes development Pvt ltd, the problem was identified that they are facing challenges to determine the prices of the investment projects specially after the COVID 19 pandemic situation. Further, interview have done on this issue, it is confirmed that the cost of constructing the semi-luxury houses nearly Rs6,000 per square feet to be charged. The prices of the materials are increasing day by day and the labour charges also comparatively. Even though increase the prices per square feet sometimes not able to get profitability and create the demand for the new construction.

Kunaseelan and Perera (2011) revealed that Sri Lankan building construction consultant does not fully consider LCC techniques for their designs. Further, it was stated that the awareness of LCC should be improved in the local context (Kunaseelan and Perera, 2011). It is clearly indicated that the application of the above tool is important to our country. Hence, it is important to investigate the applications of LCC technique by contractors in Jaffna district.

Importance of Research

- Study about the benefits of the LCC in Sri Lanka

- The use of LCC is successful if it is used correctly by the contractors
- The use of LCC will affect the progress of the projects in a good way and to minimize the delay in the implementation of projects.
- The use of LCC will improve the economy of the country.
- The study also aims to spread awareness among the contractors.

Objectives of the Study

The objective of the study is to measure the awareness of the life cycle cost analysis among the contractors in Jaffna district and prove the importance of LCC in the cost reduction process.

1.2. Review of Literature

LCC was defined as a technique that can use to measure all costs related to construction, operation, and maintenance of a construction project over a particular timeframe (Heralova, 2017). Further, the LCC technique provide the total cost approach consumed during the acquisition of a capital cost of the project.

Heralova (2017) conducted case studies to investigate the role of LCC analysis in the early stage (feasibility stage) of construction projects, in the public sector. The study identified the public sector investors' characteristics, such as they want to meet the sustainable dimensions within projects, fund limited financial resources and very strict procurement system. Hence, it is necessary to find the most financially efficient solution, in the feasibility stage to attract public investors (Heralova, 2017).

Life cycle costs of analyzed assets (modified from Langdon (2007)).

Category of Costs	Costs
Investment costs	<ul style="list-style-type: none"> a. cost of design and survey works, project cost b. cost of operating files c. additional investments cost d. related cost associated with the placement of buildings / machinery / equipment other cost e. other investments
Operation Costs	<ul style="list-style-type: none"> a. cost of energy supply b. cost of water and waste water c. waste disposal cost d. service fees, insurance e. cost for security and safety f. cost of cleaning g. administrative charges
Maintenance Costs	<ul style="list-style-type: none"> a. services general inspection b. warranty inspections c. plan of maintenance d. downtime e. breaktime
Renewal Costs	<ul style="list-style-type: none"> a. repair services b. depreciation
Disposal costs	<ul style="list-style-type: none"> a. cost of disposal of the building/ machinery / equipment b. cost of recycling materials or raw materials

1.3. Methodology

This research will be an explanatory study. The emphasis here is studying a situation or a problem in order to explain the relationship between variables.

According to Creswell (2014), there are three research approaches as quantitative, qualitative and mixed-method approaches. After considering the characteristic of this research, the quantitative approach to the research was identified as the best-suited approach. The present study has been conducted by the quantitative method to explore the awareness and knowledge of LCC. The entire population of the study is covering the 64 numbers of registered

contractors in northern province. The twenty small residential contractures in Jaffna district have been selected using random sampling method for the purpose of the study. It was nearly thirty percent of the target population considered as a sample for this study.

Given the nature of the present study, the data was collected from the primary and secondary sources. Primary data was collected through the questionnaire. Secondary data was collected from research studies, books, journals, newspapers and ongoing academic working papers. The collected data were processed and analyzed in order to make the study useful to the practitioners, researchers, planners, policy makers and academicians.

The questionnaire was used to collect the data from contractors and the questionnaire consists of ten questions. The questionnaire consists basic information regarding the contractures, six methods of life cycle costing to reach the contractures use and knowledge of the tool. The last question is to test the knowledge about the parameters of life cycle costing. The statistical techniques such as frequency and percentage were used for the analysis the data.

1.4. Results

The data is obtained from the questionnaire for the purpose of analysis. The questionnaire started with the basic information such as name, company name and your position. After that information, the first three questions are in relation to managerial experience, academic qualification and the classification of the company. 80% of job position are project manager or contractor. The 60% of the same have experience 0-5 years and the 40% of the same have more than 5 years of experience. Further, 80% of the sample have HND and 20% of the participants have bachelor degree.

Further questions are discussed on the knowledge of the contractors regarding the methods of life cycle cost analysis.

Q.no	Question	Yes %	No%
04	Do you have any knowledge about simple payback?	100%	0%
05	Do you have any knowledge about Accounting rate of return?	60%	40%
06	Do you have any knowledge about net present value?	40%	60%
07	Do you have any knowledge about equivalent annual cost?	0%	100%
08	Do you have any knowledge about internal rate of return?	0%	100%
09	Do you have any knowledge about net saving?	40%	60%

Finally, the question was raised regarding the parameters that are usually included in life cycle cost analysis. For the purpose of the study, the specific question used: Do you consider life cycle costing in initial investment cost of building construction. All the samples were answered "No" for the above question. It's clearly indicated that they have poor knowledge on the life cycle cost concept.

1.5. Conclusion

All investor or owner expects his contract to be a cost-effective in construction. The major barriers of the contractors are to identify the benefits and the real cost of a particular construction. In response to such a barrier, LCC techniques are often used to determine the most cost-effective construction development pathways in the construction industry (Cole & Sterner, 2000).

The main aim of the study is to measure the awareness among contractors in Jaffna district. The life cycle cost concept is heard and applied in several industries and sectors. The study concluded that the knowledge and awareness of the concept of life cycle costing are comparatively poor and have the knowledge on the traditional methods such as pay pack in the investment cost. The study recommended to provide the entire knowledge through the investments' banks and board of investment in Sri Lanka. Even though the category of life cycle cost is investments cost, operating cost, maintenance cost, renewal cost and disposal cost, this study only considered the investment cost. All the areas of the life cycle costing and the application of the techniques for the different sectors can be studied in the in the near future.

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