Analysis Life Cycle Cost for Government Assets

CAPSTONE PROJECT

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PRESENTATION OUTLINE

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INTRODUCTION

- Life Cycle Cost is a systematic method to obtain the total acquisition costs and ownership for the entire lifespan of the asset.

- Life Cycle Cost taken into account starting from the phase of planning, design, procurement, construction, commissioning, acceptance, operation and maintenance, assessment, renovation and upgrades and final phase of the disposal.

- It may help designers making choices and to give decision is made based on the alternative with lowest life cycle cost.

PROBLEM STATEMENT

The following problems often arise due to non-performance asset management practices in Government

- Waste costs in project management
- Project capital costs low but operating and maintenance costs, renovation and upgrading of assets is high and a low value asset disposal resulting in losses over the life of the asset
- Value of the assets to be low
- Short lifespan of the asset
- Not achieve optimal benefit asset

AIM AND OBJECTIVES

The aim of study is develop analysis LCC to process for new projects and existing assets.

The objectives of this study are follows:

- To identify all the relevant cost elements LCC for movable assets;
- To determine life cycle cost to calculation for movable assets;
- To establish process of LCC calculation for movable assets.

SCOPE OF STUDY

- Surveys all movable assets and special buildings and infrastructure assets under the responsibility and control of government agencies.
- It start from product design until disposal framework for the development of LCC.
- Each phase of the systems life-cycle has a set of unique cost drivers that the cost analyst must evaluate.

LITERATURE REVIEW

Author	Paper Presented
Hwang and Bae (2007)	A performance model for manufacturing facility design considering systems configuration, and the LCC. The LCC presented takes into account acquisition cost, maintenance cost, breakdown repair cost and logistic support cost.
Xu and Chen (2006)	A framework of product LCC that helps a product designer to obtain LCC of a product at early product development stage.
Enparantza and Revilla (2006)	A life cycle cost calculation and management system for machine tools. The LCC model takes care of acquisition cost, operation cost, maintenance cost and turnover or scrap cost.
Carpentieri and Papariello (2006)	A LCC calculation model for automotive production line. The model has two supporting databases for maintenance analysis, preventive maintenance and corrective maintenance database.

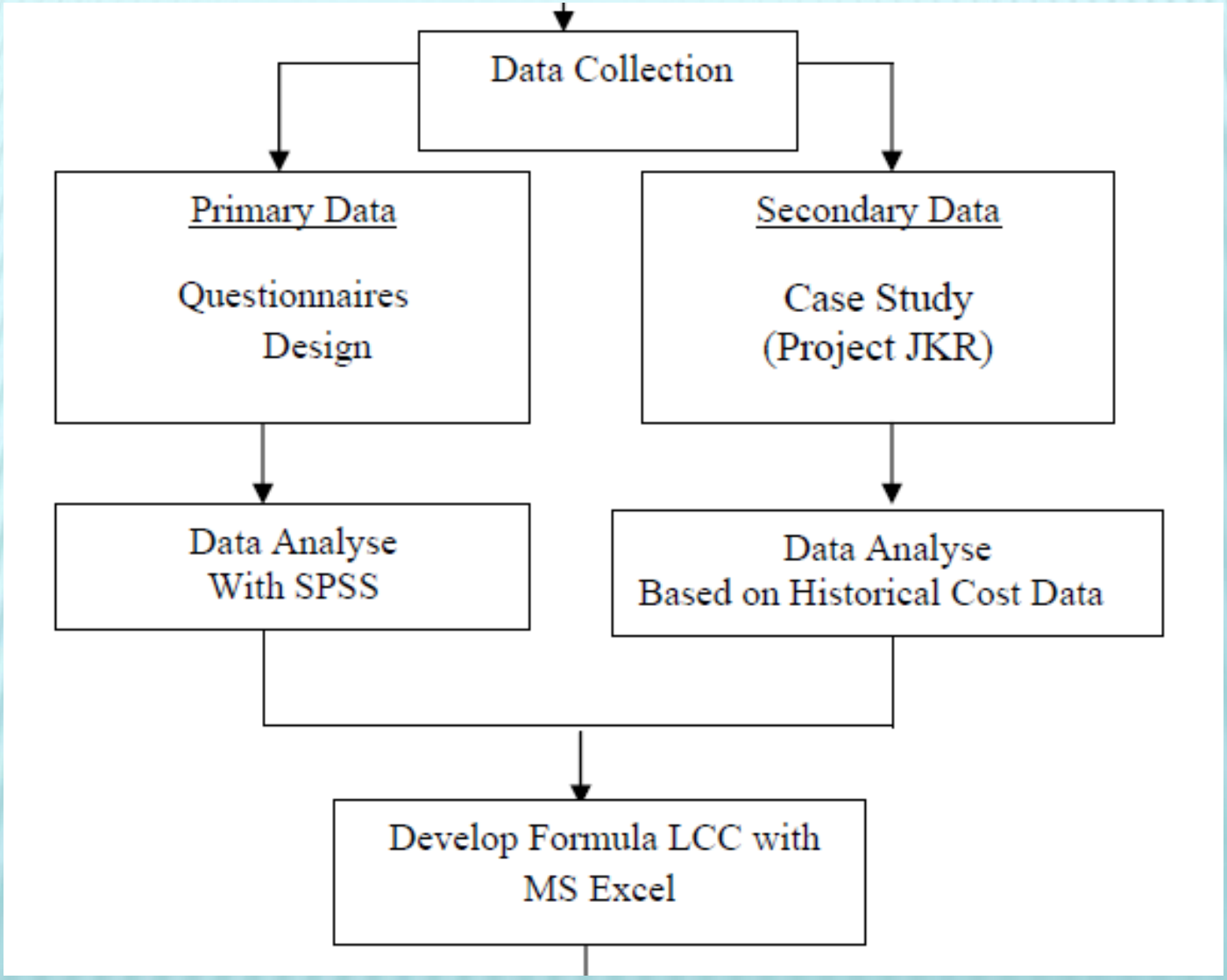
RESEARCH METHODOLOGY

- Survey questionnaire will be distributed to collect information regarding current practice of strategic stakeholder management in JKR. Analysed using software of Statistical Package Social Sciences (SPSS).

- Data collection based on historical data and current data which practice of stakeholder management in JKR.

- The calculation method will be calculated a formula by developed in Microsoft Excel.

RESEARCH METHODOLOGY



ANALYSES AND RESULTS

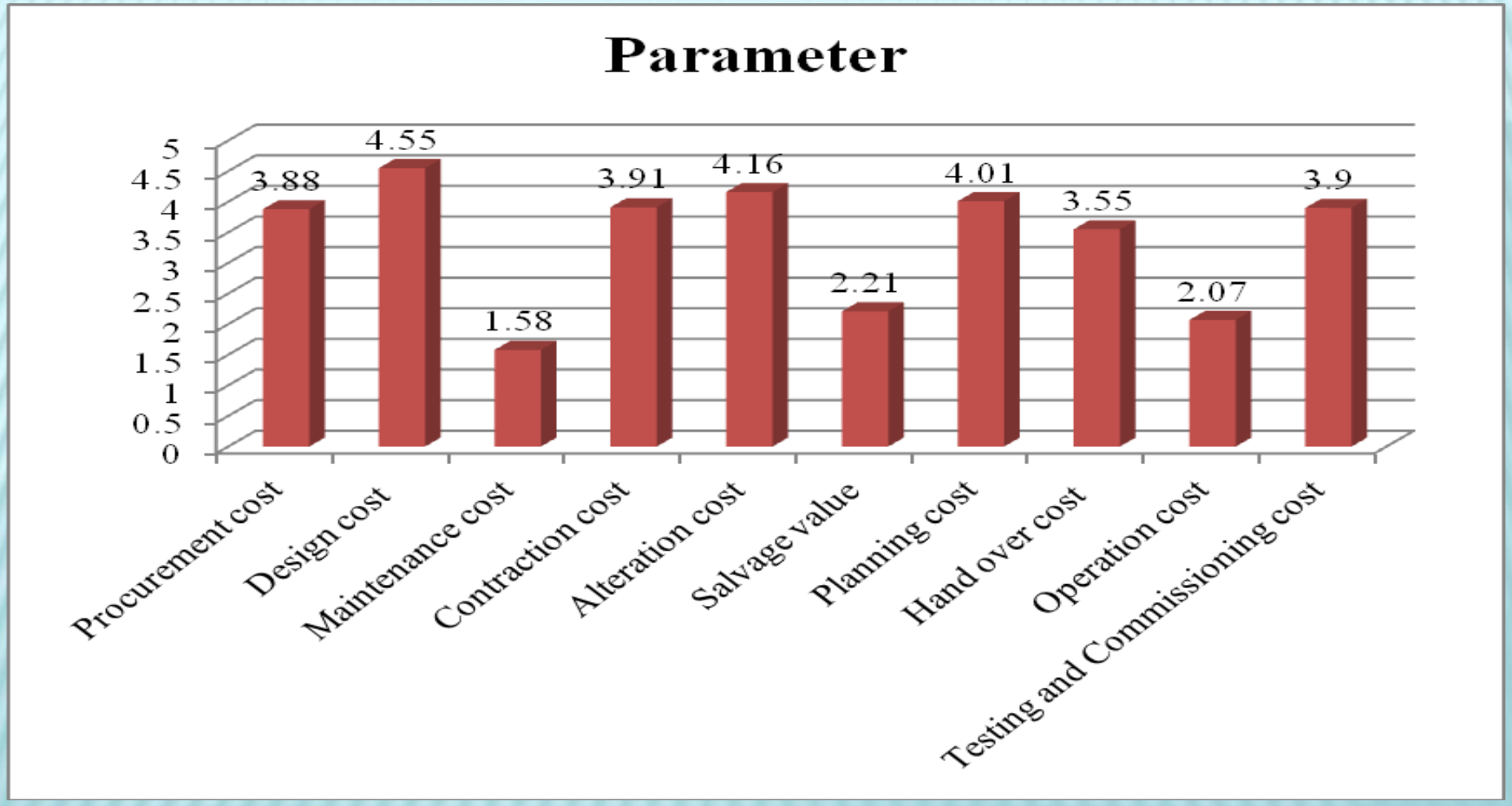
Primary Data

- Section A is the demography or the respondent's background.
- Section B is the awareness on life cycle cost asset in project of JKR.
- Section C is the parameters that are usually included calculation in project JKR.
- Section D is the use of life cycle cost in project JKR.

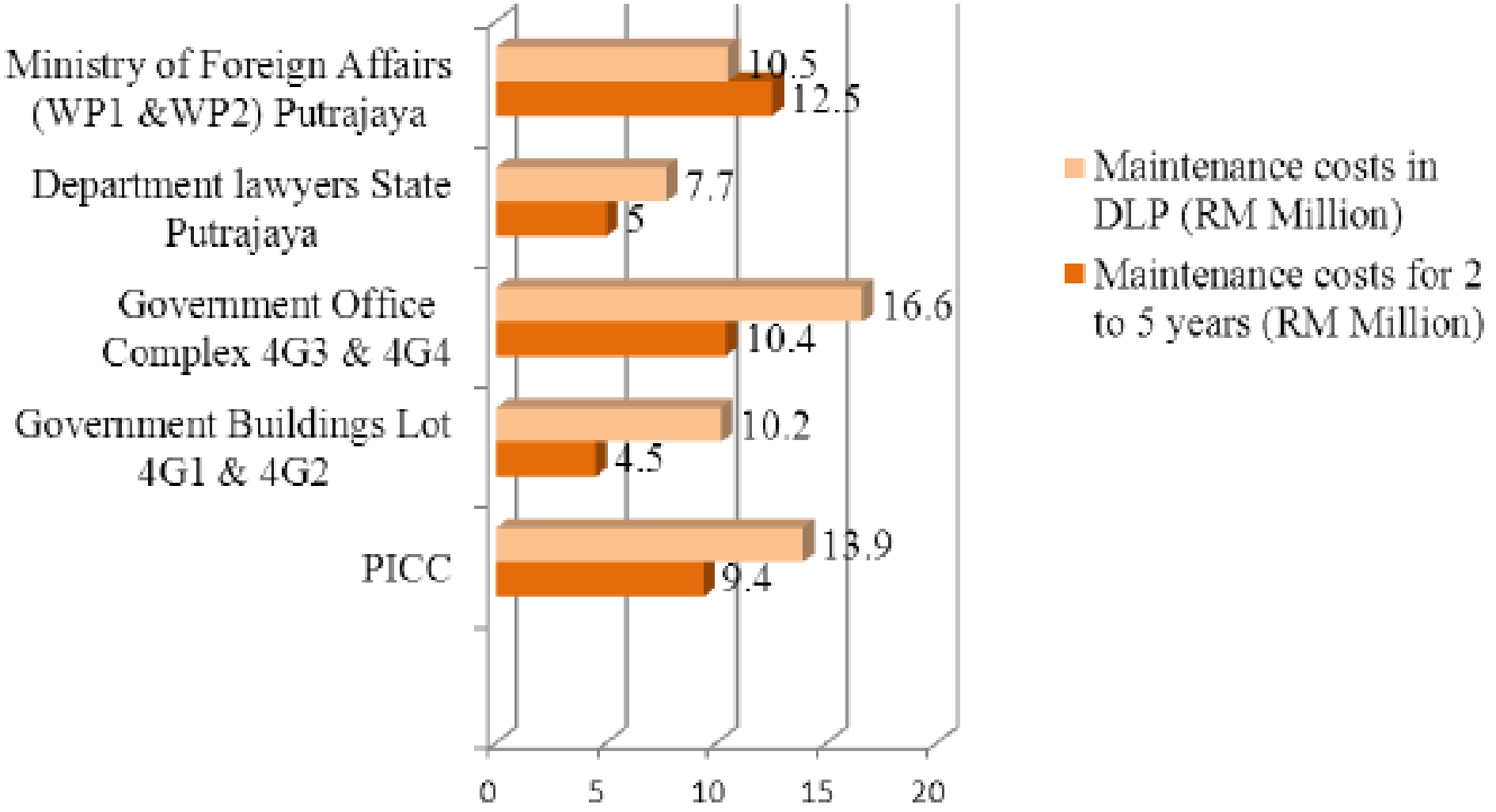
Secondary Data

- The historical data and current data collected through government project

PRIMARY DATA



SECONDARY DATA



Summarizes the Results Of Data Analysis

YEAR	FOCUSES	KEY FINDINGS	SAMPLE/ KEY INFORMANTS
JKR 2013	• To outline LCC analysis methods and parameters included LCC calculation in order to identify those that are being employed by project management practicing in government.	There do not have any practice use the life cycle cost method to apply in JKR project.	Survey of 107 population JKR
	• To define awareness of life cycle costing among architects in order to establish the importance of LCC	• The parameters that are usually included in LCC calculation are acquisition cost and alteration cost	

	• In which phases they use LCC calculation,	• LCC calculations are usually performed in the idea phase of projects.	
	• What constraints prevent them to use LCC.	• LCC for lack of significant input data related to new material or new operating system.	
		• In theory, project management have the basic concept but in real practice, they generally do not apply LCC in occupation,	
		• The lack of information and experience appears to be the most important constraints for the usage of LCC analysis.	
	• To collect the historical cost data of project JKR	• The government expenses a lot of money in operation and maintenance cost to the project already handover to the client.	Historical cost data of several project JKR

Finding

LCC analysis is use to determine the lowest cost to complete the project once the project was decided to be constructed or implemented. Project manager can determine which alternative has the most cost efficient by use LCC to compare the total cost of the design.

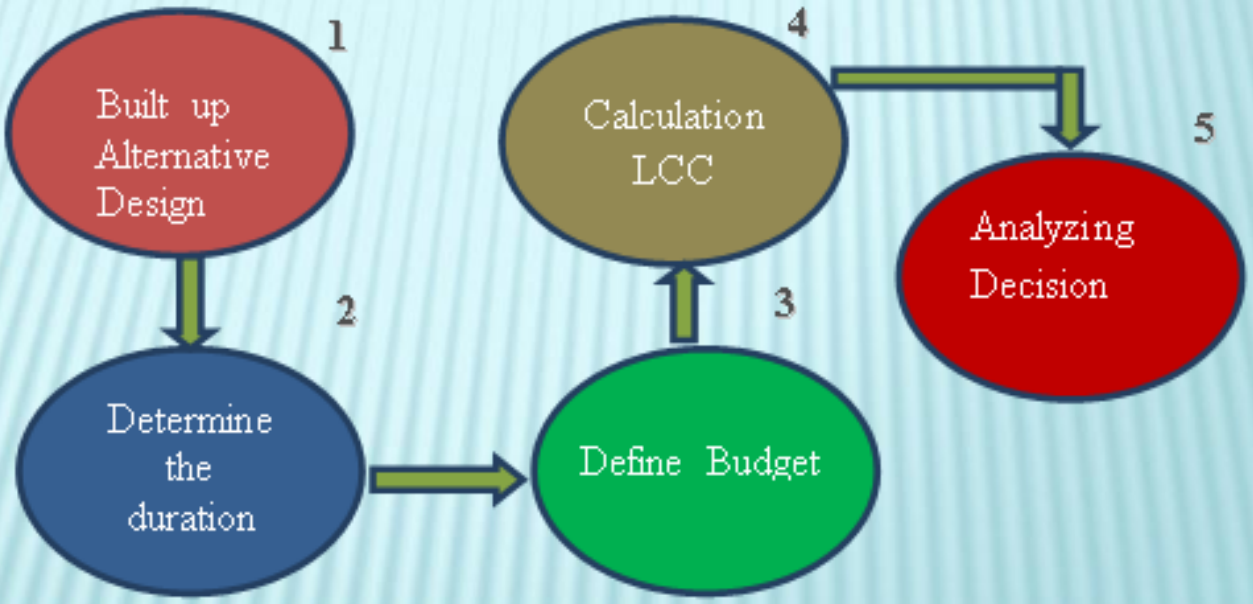


Figure : Process analysis LCC of project

RECOMMANDATION

Develop a Model Formula LCC

Net Present Value (NPV)

NPV = Pip + Prd + Ppr + Pco
+ Ptc + Pho + Pe + Po
+ Pm + Pge + Pre + Pas
+ Pd

Pin = Investment cost
Pip = Planning costs
Prd = Resecah, development and design cost
Ppr = Procument cost
Pco = Construction cost
Ptc = Testing and commissioning cost including training
Pho = Handover cost
Pe = Enviroment costs
Po = Operation costs
Pm = Maintenance and repair costs
Pge = Green enviromental cost
Pre = Retrofitting cost
Pas = Assessment cost
Pd = Disposal costs

RECOMMANDATION

$P + Pi....+ Pn = P (1+i)^n$ ..... (i)

$F = P (1+i)^n$ ……(ii)

$P = F / (1+i)^n$ ..... (iii)

F can be attributed to a series of consecutive (A) of the same value in each period:

$F = A [(1+i)^n - 1] / [i]$ .....(iv)

$A = F [i] / [(1+i)^n - 1]$ ..... (v)

From equation (iv) and (v) we will obtain:

$P = A [(1+i)^n -1] / [i (1+i)^n]$ ..... (vi)

$A = P [i (1+i)^n] / [(1+i)^n -1]$. ..... (vii)

Element-Element LCC COST

Element-element LCC Cost

Acquisition Cost

1. Investment
2. Planning
3. Design / R &D
4. Procurement
5. Construction
6. Testing and Commissioning
7. Hand over

Ownership/Sustaining Cost

1. Operation
2. Maintenance
3. Environment
4. Green environmental
5. Alteration / Retrofitting
6. Assessment
7. Salvage / Disposal

CONCLUSION

- LCC calculation process can be conducted with good will and can achieve the desired goal.
- Assets will have a longer shelf life and at the same time have a low cost.
- This will optimize government resources while providing financial value and value for money to the government.

BENEFIT

- Provide a viable option and optimal cost
- Cost-effectiveness in the implementation of the project
- Reduce the cost of asset utilization phase
- Saving Operational Expenditure (OPEX)
- Towards the status of Green Building & Energy Efficiency (EE) Building
- Value for money and return on investment (ROI) is high
- Making the decision for the selection and recommendation of the best assets with the lowest cost optimal.
- Produce a sustainable project management, high-value and value for money
- Quality of life improved

FURTHER RESEARCH

- Use the survey instrument developed, including some modifications based on region, to sample a larger population.
- Create the software online system and the data collection online which can give input and output with integrate other system exist for use worldwide

THANK YOU