

Understanding of elemental cost analysis construction essay



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The analysis is actually done to be used by the designer and the client for future project and therefore, comparison between two or more buildings can be made.

This is brief project cost information gathered from bills of quantities.

Apart from the cost analysis, information such a brief project specifications and the overall project information are also included in the ECA.

Purpose for ECA

To show the cost relationships between several sections/ parts of the building, if there are any.

To allow comparisons of cost with other different projects.

The cost that is obtained from the cost analysis is insufficient to determine the actual price. It has to take into account the conditions and the details of the project and the quality and quantity of work involved. The cost analysis has been introduced to provide cost information especially for the process of cost planning.

The cost analysis is prepared by examining the information of a project which has been planned or constructed in which the bills of quantities have been priced. Therefore, the cost analysis is prepared based on the data received from the successful tender and is not based on the ' actual' sum of the project. However, there are several reasons as to why the cost analysis is not prepared based on the ' actual' cost:

The final account is often complex and requires much time to analyze the changes in the account. This would result in the decreasing interest of the individual preparing the cost analysis.

The preparation of the final account is time consuming due to several reasons and this could result in the cost analysis that is published to be out-dated

The historical data for cost planning may not be accurate especially during high inflation (although there are procedures to update this by using indices).

It is difficult to make allocations for the increase in cost and contractual claims, which are tailored to the individual elements.

Uses of ECA

Appreciation

It enables clients and designers to know and appreciate how cost is distributed among the functional components of a building and compared to the overall cost of a building.

Judgment

It enables clients and designers to develop ideas as to how element costs could have been allocated to obtain a more balanced design. This judgement is important to gauge the effectiveness of cost and quality of a building.

Belated remedial action

Allows remedial action to be taken on receipt of high tender, by revealing the sources of over-expenditure that is by making comparisons between estimated costs and tender price. This will enable belated remedial action to be taken.

Planning

The cost analysis could be used as a source of cost information to help with the cost planning of future building projects.

Abbreviations of forms

To simplify the elaboration the author will use the following abbreviations for each form.

Form 1 – F/1

Form 2 – F/2

Form 3 – F/3

FORM 1 – Information on total project and analyzed building

This form is divided into two sections; the first section provides overall information on the project including the location, the client, type of contract etc. The second section provides information and analysis of a single building. Each separate building in the project has a different analysis.

The main purpose for the information in Form 1 is to inform the user of the analysis the background of the project and the condition of its price level.

This will enable the user to make the necessary adjustments to cater for differences in location, market condition, type of contract, size of contract and specifications of the project.

Building type and Code :

There are ten classifications on types of building based on (C1/SfB

Classification – Table 0):

0 : Land, Planning, Landscape

1 : Civil Engineering Work

2 : Transport, Industrial Buildings

3 : Administrative Buildings

4 : Health and Welfare Buildings

5 : Refreshment, Recreation Buildings

6 : Religious Buildings

7 : Educational, Cultural, Scientific Buildings

8 : Residential Buildings

9 : Buildings, Spaces in general

Residential Buildings for this project shall be classed under category 8: –

Buildings, Spaces in general

Construction Classes:

Construction classes are divided into:

A : Reinforced concrete framed construction

B : Steel framed construction

C : Timber framed construction

D : Light framed steel or reinforced concrete construction

A – 2 – 321

A 2-storey reinforced concrete framed construction with Gross Floor Area of 321m² is expressed as follows:

The combination of a 2 storey hall building made of reinforced concrete framed construction with Gross Floor Area of 321m² is expressed as follows:

A – 321

3- Residential Buildings

3) Job Title: Cadangan Membina Sebuah Banglo 2 Tingkat

4) Location: Daerah Melaka Tengah, Melaka

5) Client: State the type of client whether government, private or semi government-Private

6) Tender date: Date fixed for close of tender- 7/1/2007

INFORMATION ON TOTAL PROJECT

7) Project details and site condition:

Explanation shall include the following:

Project description

Accessibility to site

Proximity of other buildings

Site topographical and geological conditions

Weather

Any omission or exclusion from project

Example of elaboration: The project comprise the construction and completion of 2 storey banglo and associated ancillary building and external works. The purpose site is flat and in good condition.

8) Contract: Type of contract used – Standard PAM Form of Contract (with quantities)

9) Market Condition: Brief report on market condition shall be provided with regard to availability of materials and labour, keenness and competition – Market condition is competitive and price of labour and materials are stable.

10) Tender List:

List of tenders received. If the number is too many, state at least the lowest five, arranged in descending order. The highest tender value is listed last in

the table. Indicate whether tenders were from local builders (L), by international builders (INT), or by joint venture between the two (JV). Refer to tender report.

If there are only a few tenders, the list is as follows:

RM

Int/JV/L

325060

L

320000

L

289500

L

255200

L

If the tender list is extensive, the list is as follows :

RM

Int/JV/L

325060

L

320000

L

289500

L

*255200

L

*The highest tender value

AREAS

11) Gross Floor Area:

Method of measurement:

Total of all enclosed spaces fulfilling the functional requirements of a building measured to the internal face of enclosing walls (or column, door and the like)

Enclosed spaces are defined as all spaces that have a floor and a ceiling and enclosing walls on all sides at full or partial height. Open balustrades, louvers, screens, columns and the like shall be deemed enclosing walls.

The gross floor area is measured gross without omission to areas occupied by columns, internal structures or party walls, etc.

Areas of lift rooms, tank rooms, engine rooms and the like above main roof are also calculated in GFA.

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Sloping surfaces such as staircases, galleries, tiered terraces and the like shall be measured flat on plan

Spaces that fulfill the functional requirements of building which are not enclosed spaces shall be shown separately under Unenclosed Spaces.

B & L: Measured gross without omission to areas occupied by columns, staircases and partitions.

GFA = 6156m²

Usable area 231

Circulation area 32

Ancillary area 48

Internal divisions 10

GFA 321

FORM 2 – Summary of element costs

In general, Form 2 shows the systematic breakdown of the costs of elements of a building. There are more than 20 elements in Form 2 and each element is grouped under six group elements (five building groups and one for each group element of external work and preliminary work). Form 2 provides information on the total cost of element, cost per m² GFA, element unit quantity, element unit rate, ratio of element per m² GFA, etc which could be used to make a realistic estimate and to prepare the cost plan for new projects. It could also be used to make cost comparisons to ensure cost does not exceed the estimate.

Total cost of element (RM):

This is the total cost of element and the cost shall follow the List and Contents of element in the Manual. If cost is not related to the said element, (-) shall be inserted. If costs of more than one element are group together, abbreviated notes shall be provided explaining where they are grouped. All the total cost made from Bills of Quantities or calculated by EUQ x EUR.

WBLFF : Total cost of element = EUQ x EUR

= 136 m² x 125

= RM 17000. 00

Cost/m² GFA (RM) :

Calculated by dividing Total Cost of element with GFA.

FRAME : Cost/m² GFA = Total Cost

GFA

= RM 255, 200

321 m²

= RM 795. 016/m²

Element Unit Quantity :

All areas shall be the net areas, for example, area for external walls shall omit area of windows and doors, etc. if the quantity is measured in volume (air conditioning spaces) volume is calculated by multiplying the net area

with the height of the space to be air conditioned. The abbreviation used is Tm3. All the amount according to taking off or measured through drawings.

Element Unit Rate (RM) :

Calculated by dividing Total Cost of Element with Element Unit Quantity. It is rounded off to the nearest ringgit.

UPPER FLOORS : Element unit rate = Total Cost

EUQ

= RM 8000. 00

185 m²

= 43. 24

Element Ratio /m² GFA :

Calculated by dividing Element Unit Quantity with GFA. It is stated to three decimal places.

ROOF : Element ratio/m² GFA = EUQ

GFA

= 204 m²

321 m²

= 0. 636

Reinforced Concrete (m³) :

Quantity of reinforced concrete in elements in m³.

Reinforcement (kg) :

Quantity of reinforcement in kg.

Formwork (m²) :

Quantity of formwork in m².

FORM 3 – Brief Specification

Form 3 provides brief information on project specifications based on each element. It briefly describes the various components in each element including the types and quality of materials used. This form provides a brief picture of the building standards and quality and this information is important for cost comparison purposes.

It can be refer to the list and contents of elements. Elaborate briefly the specifications according to the elements. All the specification had made from Bills of Quantities.

For example of the specification in the elemental cost analysis, in piling works, the specification must have all works related to foundation piling including sheet piling left in and also need to state the system used, whether it is consultants design or otherwise, number, average length and size of the pile.

BENEFIT OF ELEMENTAL COST ANALYSIS

ECA means the analyze of cost related to the elements, in construction industry a building or any kind of construction we can divide into number of elements, and price of which is related with that element is called as an elemental cost, elemental costs include material costs, labor costs, and sub-contractor overhead and profit.

ECA is also important and give benefits due to the companies that can intends to establish a cost information service by setting out goals and collecting information in a planned and systematic way in collecting and spreading information on a number of elemental cost plans available at the moment. These cost plans will further expanded and users will be able to select the database using a range of criteria, among others, type of building, floor area, date, client type, number of stories, location and method of construction.

ECA does help a quantity surveyor when it comes to similar projects that are gone to be built next due to its feature that act as a reference about the price or cost information that is useful to prepare a budget plan. Although it is roughly similar, the project that is being compared to previous project's ECA must be in the relevant range of time

CONCLUSION

The Elemental Cost Analysis (ECA) is relevant to used. The cost analysis is prepared by examining the information of a project which has been planned or constructed in which the bills of quantities have been priced. Therefore, the cost analysis is prepared based on the data received from the successful

tender and is not based on the actual sum of the project. That is the price quoted in the Final Account. There is a possibility for some to think that it would be better to analyse the actual cost as compared to the cost predicted in the tender.