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Commercial Processes and Cost Management

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1.0 Introduction

1.1 Overview of estimation

Throughout this task, I am to assume the role of an estimator/ quantity surveyor. Estimation in the construction industry is a crucial component as it is a way to anticipate the expense of building a structure. Therefore, it aims to predict as accurately as possible the expenditure of a project. This, in turn, allows clients to assess the feasibility and affordability of the overall project and aids in determining whether the project is worth the risk. Along with outlining a set budget and determining risks involved. There are several methods involved estimation, it is usually in client interests to use a range of methods in order to evaluate a projects expenditure before proceeding.

1.2 Types of estimation

1.2.1 Cube method

This technique is based on a single rate method, which depends on the cubic content of a structure. The costs per cubic meter are specific for each project.

1.2.2 Conference estimate

Often used for the preparation of the earliest price, this method relies on analyses and knowledge from individuals with relevant experience in order to get an estimate for a project.

1.2.3 Approximate Quantities

The function of an approximate estimate is to produce a projection of detailed costs for the overall project. This is before the project has been put out for tender, this allows the client to assess financial risk before the construction is undertaken. (I.H.Seeley, 1996)

1.2.4 Cost model

This method is a more modern approach to estimation. It can be used to forecast an estimated cost of a proposed project by using models, previous statistic and research techniques that can be applied to the overall cost. This isn't an accurate cost, although it can allow a client to form a rough idea of the financial expenditure.

1.3 Aim of the report

The aim of this report is to establish a building cost estimate for a proposed semi-detached property for a client, this report aims to aid the client in determining the feasibility of the project. I also aim to factor in the labour costs for 4 craftsmen over 50 weeks, taking into consideration overheads. To also discuss costs date and their limitation. I aim to achieve these objectives by splitting up each task and outlining any assumption that I have made.

1.4 Assumptions

Due to the nature of the task and a limited description of certain aspects of the project, I will outline any assumption that I have made that may affect the project. The aim of these assumptions is to clear up any factors that may cause confusion and to provide a more accurate estimate.

Before the calculations of estimations being, I am to assume the following:

- Site clearance has already been completed
- No contaminants found in the soil
- Mains Services, gas, water electric already laid
- Assume no Greenland or conservation area on or nearby the land
- No Archaeological Discoveries
- Geotechnical Ground Report Conducted

1.4.1 Assumed dimensions

(Note: These dimensions are per structure and dimensions used, aim to represent floor plans provided in the assignment brief)

Gross internal floor area:

Ground floor	Dimensions	Area m ²
Hall	1.59 x 3.11m	5
Lounge	5.27 x 3.79m	19.9
Dining	3.16 x 3.15m	10
Kitchen	3.15 x 4.59m	14.5
WC	1.19 x 1.78m	2.1
		51.5 m²

(Turnberry Homes Detail, 2019)

First Floor	Dimensions	Area m ²
Bedroom 1	3.22 x 2.90m	9.3
Bedroom 2	2.99 x 2.86m	5.9
Study	3.39 x 2.54m	8.6
Bathroom	1.76 x 2.05m	3.6
En-suite	1.83 x 2.20m	4
		31.4 m²

Second floor/loft	Dimensions	Area m ²
Bedroom 3	3.07 x 3.87m	11.9
WC	1.76 x 2.05m	3.6
		15.5 m²

Gross internal floor area = 98.4

1.5 Estimation

In order to prepare an accurate estimate, I have used BCIS as a benchmark for cost per m². I have also used the NRE 1 Order of Estimate to calculate estimations. All result have been rebased to Swansea and set them to the current date. BCIS is a good way to compare and inform a client of expected overall costs, it also provides a breakdown cost of each element to the building. I have chosen to use the average price search for cost per m², as this reflects a more accurate and fair estimate. It is very important to show a fair and accurate estimation as this will affect the client's decision, it will determine whether the project is feasible. The cost per m2 on the screenshot below has been used to estimate the cost of the project. Below I have highlighted cost per m² used for estimation. I have attached a PDF to this report in order for better viewing. It is also important to note that this is just a rough estimate and in order for pretender, a bill of quantities will need to be produced along with an accurate set of plans. The benefit of BCIS is that you can get a rough idea of the cost of a project without investing considerable time and money on design fees before you are sure of a decision.

In order to estimate the cost per m² for GIFA, I have used BCIS as a guide.

Results
 > Rebased to 1Q 2019 (321; forecast) and Swansea (85; sample 17) Edit

element cost per m2

Description: Rate per m2 gross internal floor area for the element Cost excluding prelims. ⓘ
Last updated: 16-Feb-2019 02:43

Maximum age of results: Default period ▼

Building function (Maximum age of projects)	Mean	Lowest	£/m ² gross internal floor area Lower quartiles	Median	Upper quartiles	Highest	Sample	Unpriced excl
New build								
820.2 'One-off' housing semi-detached (3 units or less)								
01 Substructure (15)	198	162	162	169	221	288	6	0
02.01 Frame (15)	18	-	-	-	-	-	1	4
02.02 Upper Floors (15)	49	22	35	51	59	76	5	0
02.03 Roof (15)	145	101	132	138	142	213	5	0
02.04 Stairs (15)	27	15	17	22	35	47	5	0
02.05 External Walls (15)	267	179	201	232	300	422	5	0
02.06 External Windows and Doors (15)	92	61	72	77	105	147	5	0
02.07 Internal Walls and Partitions (15)	61	40	47	62	74	80	5	0
02.08 Internal Doors (15)	43	27	40	43	46	61	5	0
02 Superstructure (15)	660	521	581	686	741	763	6	0
03.01 Wall Finishes (15)	51	31	-	48	-	77	4	0
03.02 Floor Finishes (15)	58	18	-	68	-	78	4	0
03.03 Ceiling Finishes (15)	31	28	-	31	-	36	4	0
03 Finishes (15)	123	44	101	128	151	184	6	0
04 Fittings, Furnishings and Equipment (15)	32	26	-	31	-	40	4	0
05.01 Sanitary Installations (15)	17	13	-	16	-	23	4	0
05.03 Disposal Installations (15)	9	8	-	-	-	10	2	0
05.04 Water Installations (15)	33	25	-	-	-	41	2	1
05.05 Heat Source (15)	39	-	-	-	-	-	1	2
05.06 Space Heating and Air Conditioning (15)	34	31	-	-	-	38	2	0
05.07 Ventilating Systems (15)	22	20	-	-	-	23	2	1
05.08 Electrical Installations (15)	53	36	-	45	-	80	3	0
05.09 Fuel Installations (15)	9	-	-	-	-	-	1	4
05.12 Communications and Security Installations (15)	10	-	-	-	-	-	1	2
05.14 Builder's Work in Connection with Services (BWIC) (15)	11	10	-	-	-	11	2	3
05 Services (15)	189	122	159	205	219	234	6	0

PREVIOUS
Define - 1. Basic parameters

NEXT
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Element	Cost per m2 (Median)	Unit	Total cost
Substructure	£169	98.4 m ²	£16,629
Superstructure	£686	98.4 m ²	£67,502
Finishes	£128	98.4 m ²	£12,595
Fittings, Furnishings, and Equipment	£ 31	98.4 m ²	£3,050
Services	£205	98.4m ²	£20,172
	£1219		

1.5.1 Summary

Price per building

Location: Town hill, Swansea

Building Cost: £119,948

Cost/m²: £1,219

Floor Area: 98.4m²

The total price of the project: £239,896

1.6 Labour costs

1.6.1 Assumptions

For this task, I am to assume that:

- 4 craftsmen of various trade: plumber, electrician, bricklayer and labour
- All have taken a 14 day holiday: 9 national and 5 days
- All craftsmen are over the age of 18
- Are all fully qualified
- All craftsmen work 39 hours and have weekends off.

All figure for craftsmen were provided by BCIS.

	Plumber	Electrician	Bricklayer	Labour
Basic Pay	£603.72	567.45	499.98	471.9
Hourly Rate	£15.48	£14.55	£12.82	£12.10
Holiday pay (14 days)	£1,690	£1,588	£1,399	£1,321
Pay over 50 weeks	£30,186	£28,372	£24,999	£23,550
National insurance per weekly (13.8%)	£83.31	£78.31	£68.99	£65.12
Total National Insurance	£4,165	£3,915	£3,449	£3,256

(BCIS, 2019)

The table above shows the estimated labour costs of four craftsmen. Holiday pay has been included as separate from gross pay over 50 weeks and 13.8% national insurance has also been applied.

1.7 Cost Data/Information and limitation

1.7.1 Cost Data

Cost analysis is required during the inception stage of, it provides clients with a proposed cost indication for the overall project. This helps to inform the client about possible costs that are associated with the project and aids them in deciding a budget. (A, Ashworth, 2010)

1.8 Types of Cost Data

1.8.1 Forecasting of Cost

In order to manage the overall cost of a project, it is crucial to plan ahead in order to avoid shortfalls that can result in the overspending on a project. Therefore, forecasting costs is a useful application when trying to decide the required expenditures at different stages of a project.

1.8.2 Cost comparison

Allows comparison between projects, which in turn aids in decision making. This method allows for comparison on projects costs, therefore allowing the client to take into consideration which project would be more financially beneficial, and the route that would allow for less expenditure and more financial gain.

1.8.3 Cost balancing

This allows for the breakdown of overall cost into smaller sections. By breaking the cost down into sections it allows money to be spent in accordance with the budget. By allocating money to numerous components it allows for clients and professional to determine where overspending may occur and allocated budget based on that information. Using data from past projects and professional experience can also aid in the balancing of cost.

1.8.4 Analysis of cost trends

This is data that allows the estimator to analyse cost fluctuation and aid in the prediction of cost trends for future estimation. An example being cost percentages of materials are likely to increase by the time the project has reached the end of its life cycle. This aids the estimator to predict more accurately what the market price at a future date. So they can adjust for when the project goes out for tender.

1.9 Limitations

1.9.1 Accuracy & Consistency

Although cost data analysis can be a very useful tool, there are limitations. The accuracy can be one factor that highlights its limitation, as none of the main sources claim their information to be accurate. On the other hand, these prices are just guidelines and can be useful when trying to calculate the cost, which during the feasibility stage can aid in decision making. Therefore, the following example should be considered. The consistency of cost data may vary from source, this could result in estimates being considerably more expensive in comparison to other projects. Figure 1.2 provides a list of items and their prices, this information is taken from three different sources of cost information.

No.	Item	Source A	Source B	Source C
1	Trench excavation/m ³	4.10	4.50	5.50
2	Earthwork support/m ²	1.10	2.00	1.60
3	Hardcore filling/m ³	18.00	27.50	25.00
4	Concrete in foundations/m ³	52.50	47.00	55.00
5	Fabric reinforcement/m ²	2.30	2.20	3.10
6	Wall in commons (HB)/m ²	20.20	21.70	26.50
7	Block partition (100 mm)/m ²	12.60	16.00	15.50
8	Hessian-based DPC/m ²	7.20	8.50	7.00
9	Floor joist (50 × 100 mm)/m	2.00	2.80	2.20
10	Clay pantiles/m ²	21.50	24.00	19.00
11	Roofing felt (3 layers)/m ²	12.50	16.00	15.00
12	Plasterboard (12.5 mm)/m ²	4.90	4.50	5.00
13	Blockboard (12 mm)/m ²	13.20	11.00	14.50
14	Standard flush door/No.	21.00	18.50	20.50
15	Float glazing (4 mm)/m ²	14.50	12.50	15.00
16	Lightweight plaster/m ²	6.10	6.50	7.60
17	Emulsion paint (2 coats)/m ²	2.20	2.80	3.50
18	KPS and 3 oils/m ²	4.50	4.90	6.00
19	UPVC rainwater pipe/m	6.80	6.00	7.50
20	Vitreous clay drain pipe/m	5.80	5.50	6.00

(Figure 1) (A, Ashworth, 2010)

From the figure above, one can see that cost data for works varies through each source. Therefore, finding an accurate price can be relatively complicated. Therefore, estimators usually place greater reliance on their own generated data.

It should be noted that the following points below are just some limitations cost data can have.

- The estimator cannot predict the error contained within the successful contractor's own estimate (Ashworth, 2010)
- Small items on bills of quantities are not priced carefully. (Ashworth, 2010)
- There are many different sources of cost data, which provide different types of information to the profession.
- Unless a practice is very large, the data available are generally insufficient in number or too diverse to provide a satisfactory database.

1.10 Conclusion

There is a frequent hierarchy in cost data and information, guides are simply there to provide guidance on a project at the early stages. Personal preference, contract, and third-party professionals should always be a more important source of information. Therefore, it is reasonable to agree that cost data provides helpful aid in budgeting and to the determined the financial feasibility of a project at the early stages. However, later stages would need more accurate estimation as the nature of the project gets more complicated.

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