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ENGINEERING ECONOMICS - REAL ESTATE VALUATION – A STUDY ON COST (to) THE CAPACITY METHOD (C_2C)

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Abstract:

- Real Estate field is a major business spread all over the world in sub-sects namely Commercial/Residential Buildings, Hospitality & Tourism Development, Infrastructure, and all commercial trading assets of millions of dollars annually
- The scale of growth of infrastructure determines signals of economic development of the nation
- In this fast-moving world, time plays a crucial role in the decision-making process
- Sooner the completion of any decision-making process push the asset into operational or utility mode
- Several tools are available ready reckoning, but few of them must follow a scientifically proven basis
- Normally current cost computation is an immediate requirement to extend negotiations in trading
- Cost to capacity is an old concept following mere interpolation of assets of similar capacity in different brands makes it easier to presume the precedent/succeeding pricing according to the case
- In absence of data, for example, 3 BHK market value can be determined by the available 1 BHK cost, not by interpolation
- Cost based capacity method of estimation of an asset's current cost is an organised scientific tool based on certain assumptions justifiable with reasoning thereon managing all drawbacks using technical supporting services for infrastructure growth
- This is a somewhat older technic but followed as a thumb rule which is an approximate computation
- Despite this, capacity factor estimates can be quite accurate and are often used to support decision-making at the pre-design stage of a project
- IVSC 2022 mentions some basic notes related to Machines whereas attempts made to adopt THE same ideology as applicable to building & other infrastructures

Objectives:

- This article deals with the valuation of Assets of different sizes of BHK units simply without laborious calculations
- IVSC 2022 mentions some clauses relevant to Plant & Machines
- Same aspects can conveniently be modified for better utilization concerning Building infrastructures or similar infrastructures
- This study aims to find out all parameters considering the merits and demerits of a certain phenomenon to evaluate an error-free and acceptable format of cost estimation based on similar apartments prices & capacities
- Capacity includes built-up area, quality of construction, elevation level of flat, the nomenclature of flat, location benefits, nearness to amenities, etc
- Amenities refers to nearby development of Hospital facilities, comfort zone, pollution free environment, green area, etc
- The necessity was felt in recent days that the value computed should be close to real-world problems

Keywords:

Nomenclature of Dwelling Units
Real Estate Market
Scale of Economics
Cost to capacity
Amenities & Inflation

Introduction:

- Scale factor or Cost to the capacity method is a scientific tool in which the cost of a new high-end apartment can be derived from the cost of a known low-order apartment
- Mere interpolation between the costs not entertained, which does not cogent with reality
- The above method is an effective tool that can be used to quickly perform required cost estimates for both Building portions/overall industrial facilities and individual spare parts of industrial machinery and equipment.
- The concepts, equations, ideologies, etc about P & M can be well matched with Apartment units now popularly sold in open markets in different locations and prices
- In the early days, simple interpolation was done to find approximate prices of any two

assets ignoring other deviations positive or negative, but failed to resemble the actual cost when computed after laborious steps of mathematics

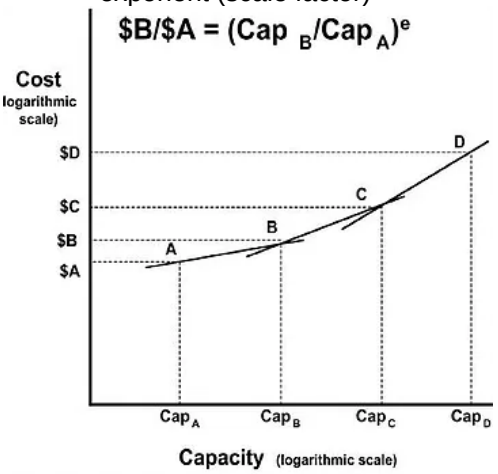
- The whole idea is to find a suitable method and its associated factors for a quick appraisal of the current value of any asset at its current status either for 100% construction completed or the under-finished asset or even used assets disposed under insolvency liquidation
- When using this method, features of both the new and existing known Building/plant should resemble technically similar and size also
- The scale factor estimating method provides a relatively quick and sufficiently accurate means to prepare early estimates during the concept screening stage of a project.
- The Scale factor can be deduced relatively nearer to the actual value and there should be narrow edging with the known value provided if the asset is having a close configuration of known assets cost
- Locational advantage, terrain condition, groundwater potential, labor force, pollution-free, urban culture, demography, regional importance, material costs, green forestry, hills resorts, etc need to be considered while determining scale factor in the equation mentioned below
- Adjustments also involve the design of different configurations, on-site or off-site, material specifications, the latest pollution controls of Governments, other norms to be made
- Under a situation, where the scale factor could not be assessed, then the figure can be 0.60
- In such cases, keeping a capacity factor of 0.60, the cost of the asset increases by 50%, by doubling capacity
- In the meantime, the asset cost increase by 100% by tripling the asset capacity, 0.60 as the capacity factor

Review of literature:

- In 1947, Roger Williams Jr. developed equipment cost estimates based on this method
- In 1950, C.H. Chilton further extended the applicability of total chemical plants using a scale factor adopting 0.60, called: Six-tenths rule
- In 1974, “Process Plant Estimating Evaluation and Control” by Kenneth M. Guthrie for scale factors
- In 2013, the United States of America, Department of Energy released “Quality Guidelines for Energy System Studies, Capital Cost Scaling Methodology”

Methodology:

- The exponent “e” used in the above equation is the slope of the curve (tangent) drawn to reflect the change in the cost of a facility as it is made bigger or smaller.
- Therefore, the ratio of **costs** of two similar assets of different Plinth areas equals the ratio of the **Plinth areas** multiplied by an exponent (scale factor)



$B = ($A) * (CapB / CapA) ^ e, where:
$B is the cost of the facility being estimated,
$A is the known cost of a similar facility,
CapB is the capacity of the facility being estimated,
CapA is the capacity of a similar facility, and
“e” is the exponent or proration factor.

- Based on data about the costs of finished apartments collected from websites, the curve is drawn for different nomenclatures
- Also, when plotted in a log-log sheet will appear as a straight line.
- When e =1, then the relationship is a straight line

Nomenclature of Apartment dwelling units: The nomenclature for BHK is only based on the number of Bedrooms available in that particular dwelling unit, even if it has two or more toilets

- Normally, 1 BHK apartment has a bedroom, a hall, and one kitchen, refer to the number of rooms allotted
- Normally, composite rates are available commonly for 2 BHK units in web portals
- For other computations about 1 BHK, 3, BHK, 4 BHK & 5 BHK or other such units can be rationally determined using cost-to-capacity-based interpolations using procedures laid in IVS 2022 stipulations
- Similarly 2 BHK means an apartment unit having 2 bedrooms, 1 hall, and 1 kitchen.
- Apartment unit designated as 3 BHK - 3 bedrooms, one hall, and one single kitchen.

0.50 BHK – Meaning

An apartment with a single tiny bedroom slightly smaller than a standard-sized one bedroom, one bath/toilet, and a kitchen. In Metro cities, due to the high demand for living spaces, our country's passion for 0.5 BHK apartments is growing. In some luxury apartments, this additional 0.5 BHK may be available as a supply to the low budget purchasers

1BHK – Meaning

- 1 BHK is designated as one standard-sized master bedroom, one hall, and one kitchen.
- There will be no Toilet cum Bathroom attached to Master Bed Room
- Available only common utilsation outside the master bedroom
- Normally, in any transaction, prices will be based on 1 BHK

1.5 BHK – Meaning

A 1.5 BHK refers to a normal carpet area master bedroom with an undersized one room. Also, such extra space in the apartment can be best used as a study room, store, library shelf, pooja room, or kids' playroom according to convenience. Ventilation will be an option. But air conditioning may be provided in absence of windows

2 BHK – Meaning

- One master room attached with toilet/bathroom
- One extra toilet will be located for a common purpose or guest usage
- Middle-class families with one kid may opt for this flat
- Definitely, it will be more convenient than one standard BHK unit.

2.5 BHK – Meaning

- 2.5 BHK refers to a dwelling unit - two bedrooms & one tiny room can be used as a store/ servant room.
- As usual there will be One Hall & one kitchen
- Middle-class families comprising 4-5 members (with one or two kids) may opt for this flat type
- Definitely, it will be more convenient over a 2 BHK unit.
- But relatively, comfortable resembling a 3BHK @ affordable price

3 BHK – Meaning

- A 3 BHK denotes a dwelling apartment unit that has three bedrooms with attached toilets and one for outside common guest use.
- As usual there will be One Hall & one kitchen
- Middle-class families comprising more than 5 members (with one or two kids) may opt for this flat type
- Definitely, it will be more convenient over a 2 BHK unit.

Nomenclature for dwelling units:

Under Standard norms for sizes & facilities			
Classification	Bed Rooms	Hall	Kitchen
1 BHK	1	1	1
2 BHK	2	1	1
3 BHK	3	1	1
4 BHK	4	1	1
5 BHK	5	1	1
0.5 BHK	0.50 (Smaller size than standard single BHK)	1	1
1.50 BHK	One Standard Bed Room plus 0.50 (Smaller size than standard single BHK)	1	1
2.50 BHK	Two Standard Bed Room plus 0.50 (Smaller size than standard single BHK)	1	1
1 RK	One Living Room	-	1
2 BHK 2 T	Two Standard Bed Room plus (2 Toilets- one common & one master bedroom attached)	1	1
3 BHK 2 T	Three Standard Bed Room plus (2 Toilets- one common & one master bedroom attached)	1	1
3 BHK 3 T	2.00 Standard Bed Room plus (3 Toilets- one common & two master bedrooms attached)	1	1

1RK- Meaning

- One Room & One Kitchen, being an economical unit
- One Toilet/Wash/Bath room available
- Hall is missing
- Very Low Budget with an affordable unit.
- Travelers can stay for a while and transition from place to place frequently.
- Long stays will not be preferred by such persons making travel often and don't like to spend on hotel stays, in such cases, a 1RK is a comfortable unit for such persons and small families.

Reasons behind the purchase of 2BHK flat at top priority

- Locational attribution, comforts, amenities, facilities, promoter, future needs concerning the expansion of the family, affordable budget, secured lending funds, and procedures are all some of the factors for the selection of a BHK flat
- The purchase cost depends on various parameters such as property price, location, space, builder, future family requirements, etc.
- For newly wedded couples one BHK flat is sufficient
- When the Family starts expanding, the additional space will be compulsory
- But budget constraint is also a factor when selecting a flat since the loan amount sanctioned by the banks will not suffice the credibility of the loanee. Ex. CIBIL Score

Futuristic plans:

- For a fresh or first-time Flat buyer, a 1 BHK is the best-combined reason for affordability and convenience for repayment at his earnings.
- But for investment reasons, and rental motives, 2 BHK is reliable since the open market for such flats are more than 3 BHKs, because of cost
- Normally one BHK dwelling Flat may be enough at the life start of a wedded couple, but when the family expands with new births, that apartment may not be enough.
- To augment the needs, the selection of 2 BHK might be the correct choice for a newly wedded couple.

Real estate market:

- In the market, 2 BHK is slightly higher than the demand for a single/ bachelor
- But they will also be ready to select only 2 BHKs even though high end because salability is more than 1 BHK and Developers prefer to create 2 BHKs for mid-class families with complete facilities.
- The number of Buyers of either fresh or used apartments is more at affordable pricing.

Investment purpose:

- Since 2 BHKs have higher potential markets and wide market response, it is worth investing in such types than 1 BHK
- Customers may be a little reluctant to opt for 1 BHK since its compatibility

The purchase cost of the apartment:

- Also, prices and budget constraint plays a major role in the selection of BHKs
- When analyse both 1 BHK & 2 BHK located in a particular location, the difference may be of ignorable one
- Therefore preference resorted to 2 BHK apartments among other options
- Hence developers prefer always to configure their projects consisting more of 2 BHKs which have potential fast sales in the market

Budget and prices:

- Usually, buyers get confused to select the appropriate decision going for a new purchase of a dwelling unit or taking a tenement, in megacities
- This dilemma leads to various calculations about whether affordable and sizable lending and consequent repayments through EMIs or unnecessary dumping of huge capital by way of such purchases may be worth buying
- Even that capital when deposited in Nationalised bank may yield a higher monthly interest return than that likely to be spent on accommodating rented premises
- Decision will be taken when the sum incurred is to be spent as a minimum on either of the case
- Normally around 25 % of one's salary can be the EMI which will be an affordable limit
- Therefore, when buying apartments and monthly installments may divert a considerable share of the salary
- The better opt for rented premises
- But for persons, already in the tenancy which is far off than the EMI level expected can pursue a new purchase of Flat

Flexibility:

- For some reason urged to vacate rented premises, he can vacate and settle at some other convenient place nearby
- This is greater flexibility available for Tenants
- That option is not that much easy for the owners of 2BHK/3BHK/4BHK apartments.
- This point also be analyzed before going for any investment in flats or tenements

Restrictions:

- For rented flats, there are so many restrictions in terms of late night arrivals and early morning exits binding for any reasons
- Condominium owners impose more restrictions – Do's & Dont's
- In the case of 2BHK/3BHK/4BHK flat owners, these restrictions do not affect

Interiors:

- In rented premises, the tenants have limited freedom to carry out interior works such as Modular kitchens, cupboards, handrailings, etc
- This is not the owners of apartments, who can carry out interior works according to desire without any limitation

Tax benefits:

- For rented premises, 2BHK/3BHK/4BHK flats, the tenant can only avail of tax benefits on the rental amount paid.
- There are tax deduction concessions on earnings for 2BHK/3BHK/4BHK flat owners.
- These tax benefits were further increased 2019 -2020 Budget, up to Rs 2.00 lakhs
- If the value of the Stamp duty exceeds Rs 45 Lakhs, this may even raise to Rs 3.50 lakhs per financial year

What is the C_2C method of valuation of assets?

International Valuation Standards [Effective 31 January 2022] stipulates under IVS 300 Plant and

Equipment - Valuation Approaches and Methods
70 – Cost-to-Capacity Method

70.4. Under the cost-to-capacity method, the replacement cost of an asset with an actual or required capacity can be determined by reference to the cost of a similar asset with a different capacity.

70.5. **The cost-to-capacity method is generally used in one of two ways**:

(a) to estimate the replacement cost for an asset or assets with one capacity where the replacement costs of an asset or assets with a different capacity are known (such as when the capacity of two subject assets could be replaced by a single asset with a known cost), or

(b) to estimate the replacement cost for a modern equivalent asset with capacity that matches foreseeable demand where the subject asset has excess capacity (as a means of measuring the penalty for the lack of utility to be applied as part of an economic obsolescence adjustment).

70.6. This method may only be used as a check method unless there is an existence of an exact comparison plant of the same designed capacity that resides within the same geographical area.

70.7. It is noted that the relationship between the cost of the asset and the capacity of utility is often not linear, so some form of exponential adjustment may also be required.

- The relationship between the Costs of Facilities of various types of assets but with technically similar specifications seems to be non-linear
- More specifically, the cost is a function of size raised to an exponent or scale factor
- Under the cost (to) capacity method, the replacement cost of an asset with an actual or required capacity can be determined by reference to the cost of a similar asset with a different capacity.

Case Study: David & Peter are two sons of their parents. David is continuing his job in Singapore. With his earnings, he requested to buy a 2 BHK apartment in Anna Nagar in Dad's name

Peter doesn't know this arrangement

Their Dad purchased one BHK & one 2 BHK under his ownership during 2002

The sudden demise of that father and last-minute arrangements made a will to impart all ownership to Peter

After, 5 years, David understood that he has not been apportioned the apartment block

In the meantime, Peter made both apartments as one 3 BHK unit with few modifications

The case was referred to the Court of law, where, after thorough investigation adjudicated whether that 2 BHK portion can be re-stored to David or the equivalent value of the amount can be transferred

Peter accepted to pay the equivalent amount to be paid provided the value as of 2002 will only be paid

The matter has been referred to a Valuer/Conciliator to be sorted

Data available

Peter Portion: 600 sqft
David Portion: 1000 sqft
The rate of Construction as of 2002 was Rs 1200 per sqft with complete facilities

Facts: 1. The mere interpolation of the rate of construction and plinth area is incorrect and not acceptable
2. The cost computed must be checked with some other suitable alternative methods also

The Conciliator started pursuing the case and started calculating the current scale factor at Anna Nagar

Sl No:	2 BHK [Rate] Rs/Sqft C1	3 BHK [Rate] Rs/Sqft C2	2 BHK [Plinth Area] Q1	3 BHK [Plinth Area] Q2	$\ln\left(\frac{C_2}{C_1}\right)$	$\ln\left(\frac{Q_2}{Q_1}\right)$	Scale Factor $\frac{\ln\left(\frac{C_2}{C_1}\right)}{\ln\left(\frac{Q_2}{Q_1}\right)}=x$
Magic bricks	10000	11397	1210	1462	log(11397/10000) =0.0567	log(1462/1210) =0.0822	0.689
99 acres. com	9255	12500	886	1200	log(12500/9255) = 0.1305	log(1200/886) = 0.1317	0.991
Sulekha	9004	11539	900	1250	log(11539/9004) = 0.1077	log(1250/900) = 0.1427	0.755
						Averaging	0.812

Therefore, the value of the 2 BHK portion can be derived by (applicable to the current year)

$$\frac{C_2}{C_1} = \left(\frac{Q_2}{Q_1}\right)^x$$

C_2 = Cost of Facility 2 to be estimated (or Piece of M&E 2), with known capacity Q_2
C_1 = Known cost of Facility 1 (or Piece of M&E 1), with capacity Q_1
Q_2 = Known capacity of Facility 2 (or Piece of M&E 2)
Q_1 = Known capacity of Facility 1 (or Piece of M&E 1)
x = Scale factor for technology of Facility 2 and 1 (or Pieces of M&E 2 and 1)

This value has been indexed to the year 2002, As per Notification No. 2336(E) [No. 73/2021 (F.No. 370142/10/2021-TPL)], Dated 15-6-2021 following table should be used for the Cost Inflation Index:

Sl. No.	*Financial Year*	*Cost Inflation Index*			
(1)	*(2)*	*(3)*			
1	2001-02	100	11	2011-12	184
2	2002-03	105	12	2012-13	200
3	2003-04	109	13	2013-14	220
4	2004-05	113	14	2014-15	240
5	2005-06	117	15	2015-16	254
6	2006-07	122	16	2016-17	264
7	2007-08	129	17	2017-18	272
8	2008-09	137	18	2018-19	280
9	2009-10	148	19	2019-20	289
10	2010-11	167	20	2020-21	301
			21	2021-22	317

C_1 = Peter Portion: 600 sqft
C_2 = David Portion: 1000 sqft
Q_1 = 600 x 1200 = Rs 7,20,000/-
Q_2 = ?
X, Scale Factor **= 0.812**

Q_2 x (Initial Value) = $\frac{C_2 \times Q1^x}{C_1}$ = $\frac{1000 \times 720{,}000^x}{600}$

$Q_2 = \sqrt[0.812]{(1.67 \times 720{,}000^{0.812})} = \sqrt[0.812]{}$
95,251.20 = Rs 13,53,985/-

Therefore, the Original value to be settled as of the year 2002 = Rs 13,53,985/-

Using the Cost Inflation Index, we can compare,
= [317 x Rs 13,53,985/-]/105 = Rs 40,87,745/-

Therefore, an interest rate of 6% per annum accounted, and an amount of Rs 13,53,985/- x $[1 + 0.06]^{20}$
= Rs 43,42,413/-

Therefore, The Valuer/ Conciliator recommends paying an amount of Rs 43.50 lakhs to David, and the issue got resorted

Computation of Scale Factor

- Adjustment factors related to dwelling units of the different plinth areas with similar amenities
  - Locational attribute
  - Additional facilities or amenities
  - Additional constructed portion
  - Measurements or additional constructed area
  - Scope of marketability
  - Project completion period
  - Floor space index
  - Verticality of asset ie on which floor
  - Additional uncertainty and potential error to the estimate.

Scale Factor for various locations around Chennai

Kodambakkam

Sl No:	2 BHK [Rate] Rs/Sqft C1	3 BHK [Rate] Rs/Sqft C2	2 BHK [Plinth Area] Q1	3 BHK [Plinth Area] Q2	$\ln\left(\frac{C_2}{C_1}\right)$	$\ln\left(\frac{Q_2}{Q_1}\right)$	Scale Factor $\frac{\ln\left(\frac{C_2}{C_1}\right)}{\ln\left(\frac{Q_2}{Q_1}\right)}=x$
Magic bricks	8774	12589	714	1111	log(12589/8774) =0. 1568	log(1111/714) =0.192	0.817
99 acres. com	10356	15040	869	1968	log(15040/10356) = 0.1621	log(1968/869) = 0.355	0.457
No Broker.com	6303	11142	825	1795	log(11142/6303) = 0.2474	log(1795/825) = 0.3376	0.733
						Averaging	0.669

Saidapet

Sl No:	2 BHK [Rate] Rs/Sqft C1	3 BHK [Rate] Rs/Sqft C2	2 BHK [Plinth Area] Q1	3 BHK [Plinth Area] Q2	$\ln\left(\frac{C_2}{C_1}\right)$	$\ln\left(\frac{Q_2}{Q_1}\right)$	Scale Factor $\frac{\ln\left(\frac{C_2}{C_1}\right)}{\ln\left(\frac{Q_2}{Q_1}\right)}=x$
Magic bricks	8791	13053	910	1277	log(13053/8791) =0.1717	log(1277/910) =0.1470	1.168
99 acres. com	8210	12271	950	1808	log(12271/8210) = 0. 1743	log(1808/950) = 0. 279	0.626
Housing. com	5600	10300	750	1375	log(10300/5600) = 0. 2646	log(1375/750) = 0. 2632	1.005
						Averaging	0.933

Triplicane

Sl No:	2 BHK [Rate] Rs/Sqft C1	3 BHK [Rate] Rs/Sqft C2	2 BHK [Plinth Area] Q1	3 BHK [Plinth Area] Q2	$\ln\left(\frac{C_2}{C_1}\right)$	$\ln\left(\frac{Q_2}{Q_1}\right)$	Scale Factor $\frac{\ln\left(\frac{C_2}{C_1}\right)}{\ln\left(\frac{Q_2}{Q_1}\right)}=x$
Magic bricks	8800	11111	1250	1800	log(11111/8800) =0.1013	log(1800/1250) =0.1584	0.64
99 acres. com	9255	12500	886	1200	log(12500/9255) = 0.1305	log(1200/886) = 0.125	1.044
Sulekha	9004	11539	900	1250	log(11539/9004) = 0.1077	log(1250/900) = 0.143	0.753
						Averaging	0.812

Nungambakkam

Sl No:	2 BHK [Rate] Rs/Sqft C1	3 BHK [Rate] Rs/Sqft C2	2 BHK [Plinth Area] Q1	3 BHK [Plinth Area] Q2	$\ln\left(\frac{C_2}{C_1}\right)$	$\ln\left(\frac{Q_2}{Q_1}\right)$	Scale Factor $\frac{\ln\left(\frac{C_2}{C_1}\right)}{\ln\left(\frac{Q_2}{Q_1}\right)}=x$
Magic bricks	13510	16000	926	1580	log(16000/13510) =0. 0735	log(1580/926) =0.232	0.317
99 acres. com	6711	16999	745	1444	log(16999/6711) = 0. 4036	log(1444/745) = 0.2874	1.404
Sulekha	7667	11539	1000	1250	log(11539/9004) = 0.1077	log(1250/900) = 0.1427	0.755
						Averaging	0.825

Mylapore

Sl No:	2 BHK [Rate] Rs/Sqft C1	3 BHK [Rate] Rs/Sqft C2	2 BHK [Plinth Area] Q1	3 BHK [Plinth Area] Q2	$\ln\left(\frac{C_2}{C_1}\right)$	$\ln\left(\frac{Q_2}{Q_1}\right)$	Scale Factor $\frac{\ln\left(\frac{C_2}{C_1}\right)}{\ln\left(\frac{Q_2}{Q_1}\right)}=x$
Magic bricks	16055	19444	985	1800	log(19444/16055) =0.0832	log(1800/985) =0.2618	0.318
99 acres. com	15000	16999	1200	1753	log(16999/15000) = 0.0543	log(1753/1200) = 0.1646	0.330
Housing. com	13890	19720	828	1709	log(19720/13890) = 0.1522	log(1709/828) = 0.3147	0.484
						Averaging	0.377

Mugappair

Sl No:	2 BHK [Rate] Rs/Sqft C1	3 BHK [Rate] Rs/Sqft C2	2 BHK [Plinth Area] Q1	3 BHK [Plinth Area] Q2	$\ln\left(\frac{C_2}{C_1}\right)$	$\ln\left(\frac{Q_2}{Q_1}\right)$	Scale Factor $\frac{\ln\left(\frac{C_2}{C_1}\right)}{\ln\left(\frac{Q_2}{Q_1}\right)} = x$
Magic bricks	6266	8777	820	1190	log(8777/6266) = 0.1464	log(1190/820) = 0.1184	1.236
99 acres. com	6181	6804	906	1646	log(6804/6181) = 0.0417	log(1646/906) = 0.259	0.161
Housing. com	7530	7610	996	1639	log(7610/7530) = 0.0046	log (1639/996) = 0.2163	0.0212
						Averaging	0.4727

Location	Scale Factor
Kodambakkam	0.669
Saidapet	0.933
Triplicane	0.812
Nungambakkam	0.755
Mylapore	0.377
Mugappair	0.472

Observations: specific

1. If the Scale Factor is 1.00, the linear relationship will exist between Values of various capacity-based flats like 3 BHK, 3 BHK, 4BHK, etc
2. Observed a steep variation in Saidapet & Triplicane areas, since scarce for potential lands.
3. In Mugappair, it seems a lower variation
4. The Value computed by the C_2C method is non-linear
5. The Value computed by C_2C and Capacity factor is very close to the value of C_2C appraised by Fair/Gilt edged interest rate, both found to be rational
6. The Value computed by C_2C and indexation is lower than the value of C_2C appraised by fair interest rate and dependable
7. The following common observations
    - Linear relationship exists when the scale factor figure (exponent “e”) is 1
    - If the scale factor (exponent “e”) is less than 1, indicates that economies of scale exist and the incremental cost of the next added unit of capacity will be cheaper than the previous unit of capacity, such that as facility capacity increases by a percentage (say, 20 percent), the costs to build the larger facility increase by less than 20 percent.
    - If the scale factor (exponent “e”) is more than 1, indicates that economies of scale do not exist; rather, diseconomies of scale exist and the incremental cost becomes more expensive for every added unit of capacity
    - The Scale factor (exponent “e”) normally lies between 0.5 and 0.85
    - Under a situation, where the scale factor could not be assessed, then the figure can be 0.60
    - In such cases, keeping a Scale factor of 0.60, the cost of the asset increases by 50%, by doubling capacity
    - In the meantime, the asset cost increase by 100% by tripling the asset capacity, 0.60 as the Scale factor

Conclusions:

Real Estate aspects:

- Real Estate Market is a large-scale business and needs quick decision makings
- Conventional method of quantity estimation is not necessary if data namely the Composite rate of 1 BHK is available in that particular zone, then it can be made easy to deduce other 2, 3, 4, and 5 BHKs by cost-based capacity appraisals
- The meetings of the potential buyers require sharp data on all features of the data
- Based on the resolutions, real estate assets transactions will move faster

Economic aspects:

- Real estate sector is a big business hub having high capital investment inflows for several market transactions and more traders gain business.
- Financial institutions need always a shortcut evaluation of cost (Current or Earlier) BHKs of different capacities
- To fund a secured loan or investment decisions, stakeholders require approximate value
- Infrastructure developments increase the GDP of our nation substantially

Valuation Criteria:

- This is a simpler way to evolve quick valuation for similar with the same facilities for different varieties of BHKs
- Composite rates are available in web portals published by 99 acres.com, Housing.com, Magic bricks.com, etc, and can be conveniently used for evaluation of asset cost
- This will create an idea for purchasing and selling prices of either new apartments as well as used apartments
- The valuation of tiny residential houses/apartments needs extra care while the appraisal process
- All amenities to be added without omission and suitable weightages to be assigned

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THANK YOU !!

Note : If any one willing to interest to publish article with IIV-RVF please do connect with us on

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