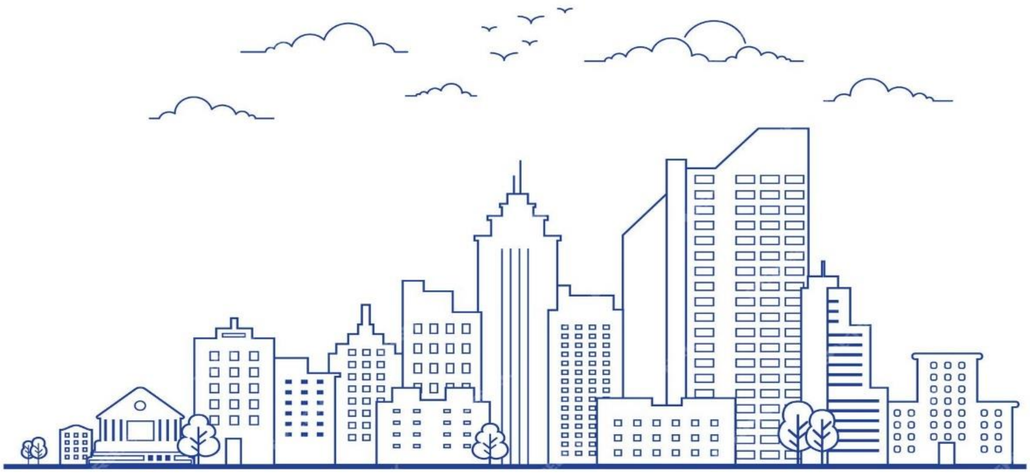
Vardhan Consulting Engineers

Financial Modelling and Analysis of 50 Flats Housing Project in Gurgaon, Haryana, INDIA

Project Finance Modeling and Analysis

Aditya Vairagkar



ACKNOWLEDGEMENT

The report has been prepared as a part of the module task of the **VCE- Internships**. It is based on the Financial Modeling and Analysis of 50 Flats Housing Project in Gurugram, Haryana. This is a report which is been prepared for the internship topic Project Finance and Modeling.

First of all would like to thank **Vardhan consulting Engineers**- Internships for providing a platform to learn about project finance & modeling and for doing virtual internship. This has given me opportunity to learn about project finance or analysing the project and have given me idea how to create a financial model.

Then, I would like to express my gratitude to my mentor **Mr. Ashish Kumar,** CEO, Vardhan Consulting Engineers, for providing guidelines throughout this project through video sessions which were really helpful.

I would like to thanks **Miss Swethana Chilla**, Sr. Manager - HR & Internship Coordinator, Vardhan Consulting Engineers for providing me opportunity to work as an intern at Vardhan consulting engineers.

I would also like to thank **Miss Celeste Lenka**, Asst. Manager- HR & Operations. Vardhan Consulting Engineers for helping me with the technical difficulties and clearing the doubts and queries during the internship program.

It's a pleasure to do an internship program at Vardhan Consulting Engineers. The knowledge and experience I gained during the project was great.

Aditya Vairagkar

EXECUTIVE SUMMARY

VCE is a consulting company founded by group of engineers who have strong academic background with decades of management experience while working in companies all across the globe. VCE is providing solutions to the complex engineering, management and financial issues of clients.

We provide engineering and project management consultancy to energy projects. Especially Solar PV power project (Utility Scale Large Sized Projects), Pyrolysis Projects (Plastic to Oil).

Our service includes;

- Feasibility Analysis, Detailed Project Report, Financial Analysis (IM).
- Financial Closure through Debt or Private Equity for Project Finance.
- On-site and Off-site Project Management and EPC-Management Services.
- Documentation and Transaction Services for Sale of Project.
- Project Development and Transfer of Rights at NTP.

Our lead consultants have 10+ years of experience in energy sector in India, Philippines, UK, Cambodia and Thailand. We are specialist in Solar PV projects, we provide tailored made engineering and management solutions for the client's needs VCE have different business horizons and revenue sources such as;

- Engineering and Management Consulting.
- Importing and Branding Pearl Jewellery.
- Stock Market and Cross-Currency Trading.
- Insurance and Investment Advisory.

In this internship "Project finance – Modelling and Analysis", I have worked from home as physical internship is not possible due to pandemic COVID-19 lockdown. The project title of my internship is Financial Modelling and Analysis of 50 Flats Housing Project in Gurgaon, Haryana IN. I have prepared the financial model of 50 Flats Housing Project in Gurgaon, Haryana.

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Vardhan Consulting Engineers

Vardhan Merit Scholarship

In this initiative, we pay scholarship to poor under-privileged girls and pay their entire educational expense till class 12th. So that, financial burden never be the reason for them to drop out from schools. It also encourages the kids to study with more focus. Currently, we grant **Rs. 50,000 (Fifty Thousand Rupees)** per year for this. We believe, this amount is going to increase in future. (Amount Spent so far, **Rs. 3.00 Lakhs+**).

VCE Internships and Training

In this initiative, we select students from various engineering and management colleges and provide them internship and training. Our internships and training are very unique in nature and its specially for the students of Core Engineering Sector (Electrical, Mechanical, Civil and Energy Engineering) and Finance Management for preparing them to corporate / industry ready. We provide them mentor from the industry. All this is done without taking any fee / favor from the students. Currently. we grant **Rs. 60,000 (Sixty Thousand Rupees)** per year for this. Majority of the amount will be paid as stipend to the best interns as encouragement. (Stipend Paid so far, **Rs. 1.50 Lakhs+**).

The internship opportunity provides by VCE has given all its interns a chance to improve their skills and to gain theoretical as well as practical knowledge as per the individual specific project titles and internship requirements. My topic of my internship is Project Finance and Modeling. The modules and tasks that were provided in the project are very helpful and knowledgeable. The initial tasks were so basic they helped interns or me to gain the basic knowledge of the project finance and the idea of preparing a financial model and to do financial analysis. It helps us to know the terminologies and different aspects of project finance. While, completing this internship with VCE, I have learned many new things and gained many things and skills. This last module of this internship is very helpful in learning how to make analysis and prepare a financial model. This is a very helpful tool in field of finance. This report will be helpful in knowing the structure of residential and housing industry in India, the scope for investing in residential projects, schemes and policies, and overall analysis of residential; growth in India and state of housing in Gurgoan, Haryana, IN.

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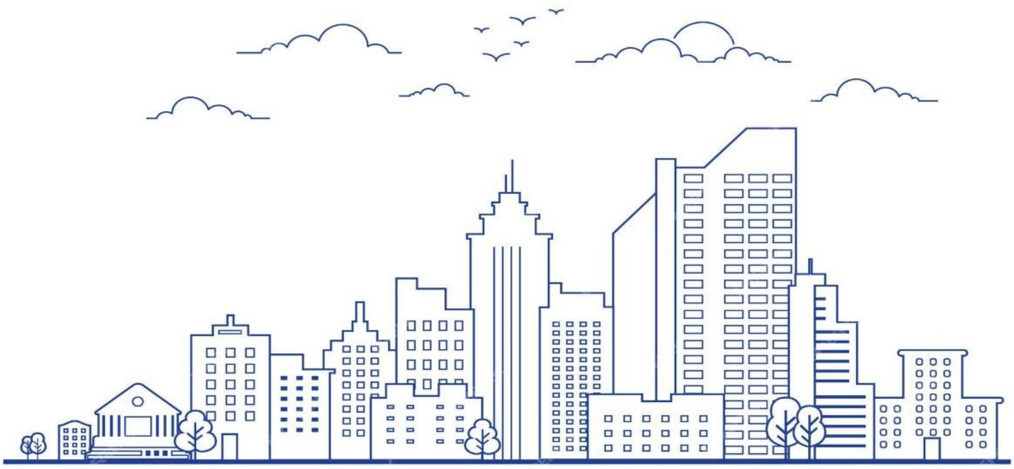


1.1- PROJECT FINANCING-

Project finance is financing of a long-term infrastructure or industrial project using a non-recourse financial structure, which relies only on the project's cash flows for debt repayment, with the project's assets held as a collateral.
In other words, "Project finance involves a corporate sponsor investing in and owing a single purpose, industrial asset through a legally independent entity financed with non-recourse debt ".
Project finance repayment is not based on sponsoring company's assets or balance sheet, but on the basis of revenues that the project will generate once it is completed.
Corporate finance cannot demonstrate that revenue stream from completed project will be sufficient to repay the loan that's why it can't put Project finance under corporate finance.

Project financing incorporates-

- Financing of long-term infrastructure, industrial projects, and public services.
- Non-recourse/limited recourse financial structure.
- Payment from cash flow generated by the project.

Methods of the Project Financing-

There are three methods in Project Financing

1. Cost Share Financing or Low interest loan financing.
2. Debts Financing.
3. Equity Financing.

The types of projects for which project finance is suitable for are-

i. infrastructure projects, such as government buildings and transport systems;
ii. oil and gas exploration projects;
iii. sports stadia; and
iv. Liquefied natural gas development projects.
v. Mining
vi. Building
vii. Construction
viii. Real estate
ix. Healthcare
x. Education

Parties involved and Transaction Flow in Project Finance-

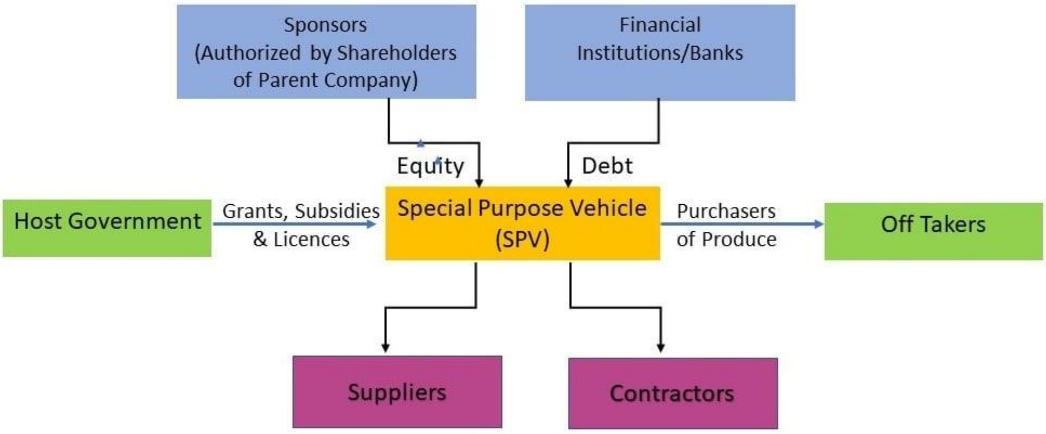


FIG. 1 Parties involved in Project Finance

1. **SPONSORS**
   Sponsors are usually the equity share capital holders of the parent company who wish to seek project finance. Two or more entities may also join hands to float an SPV. Instances of this phenomenon occur when two organizations create synergy for one another or are likely to mutually benefit from the underlying SPV. They are the equity providers of the SPV. Before floating an SPV, they must obtain authorization from the shareholders of the parent company via a shareholder's agreement (SHA).

2. **BANKS/FINANCIAL INSTITUTIONS**
   It may be a single lender or a consortium of financial institutions. They are the providers of senior debt and hold precedence over debt extended (if any) by the sponsors. The loan is secured strictly against the cash flows and assets of the SPV only. Therefore, sufficient due diligence is performed before the grant of any credit.

3. **SPECIAL PURPOSE VEHICLE (SPV)**
   It is a separate legal entity floated by the sponsors of the project. The project finance obtained is directed exclusively only towards this SPV. The SPV acts as a corporate veil between the lenders and the parent company preventing seepage of credit and attachment of property between the two parties.

4. **HOST GOVERNMENT**
   Refers to the government of the home country where the SPV is located. The SPV must be incorporated in accordance with the government's rules and regulations. It also often acts as a guardian angel in providing various tax concessions, subsidies, and rebates.

5. **OFF TAKERS**
   Off-takers are bound via an off-take agreement to mandatorily purchase a certain minimum quantity of produce from the selling party. An off-take agreement is a frequently resorted to in mining, construction and other industry of mass significance.

The vendor (SPV) incurs a huge amount of capital expenditure. An off-take agreement ensures the seller of the existence of a market upon completion.

6. **SUPPLIERS & CONTRACTORS**
   As in any construction job, suppliers and contractors are necessary for the execution of a contract. They are the key suppliers of raw material. They also perform crucial functions such as design and build (D&B), operations and maintenance (O&M), etc.

1.2- NON-RECOURSE LOAN AND MEZZANINE DEBT-

A. Non-recourse debt/ loan-

1. **Nonrecourse debt** or a **non-recourse loan** is a secured loan (debt) that is secured by a pledge of collateral, typically real property, but for which the borrower is not personally liable.
2. If the borrower defaults, the issuer can seize the collateral but cannot seek out the borrower for any further compensation, even if the collateral does not cover the full value of the defaulted amount.
3. A non-recourse debt does not hold the borrower personally liable for the loan.

B. Mezzanine finance-

a. **Mezzanine financing** is a hybrid of debt and equity financing that gives the lender the right to convert the debt to an equity interest in the company in case of default, generally, after venture capital companies and other senior lenders are paid. In terms of risk, it exists between senior debt and equity.
b. Mezzanine debt is subordinated debt, and close to being the last to be paid off. It is senior only to equity shares. Hence, it is high-risk debt and carries a very high rate of interest, as compared to any other debt.

1.3- FACTORS THAT NEED TO BE CONSIDERED TO ASSESS A NEW VENTURE AS PROJECT FINANCE-

New venture is being assessed in terms of many factors in order to qualify as project finance. As the lenders always want to invest in a venture which is capable of paying them off. These are the important factors that are needed to be considered in order to assess a new venture:

1. **Project credibility: -**
   If lenders or investors decide to put money in your project, its because they hope the investment will pay off. They'll make sure your provision is based on verifiable facts are realistic.

2. **Business environment risks: -**
   Lenders make sure that your is not perceived to be subject to inordinate risk. The upcoming lifting of a tariff barrier, a procedure that creates pollution or the fact that your business is situated within a fragile sector of the economy may cause a lender to be overly cautious. The Company should also be adequately covered by insurance

that is tailor to the nature of its activities.

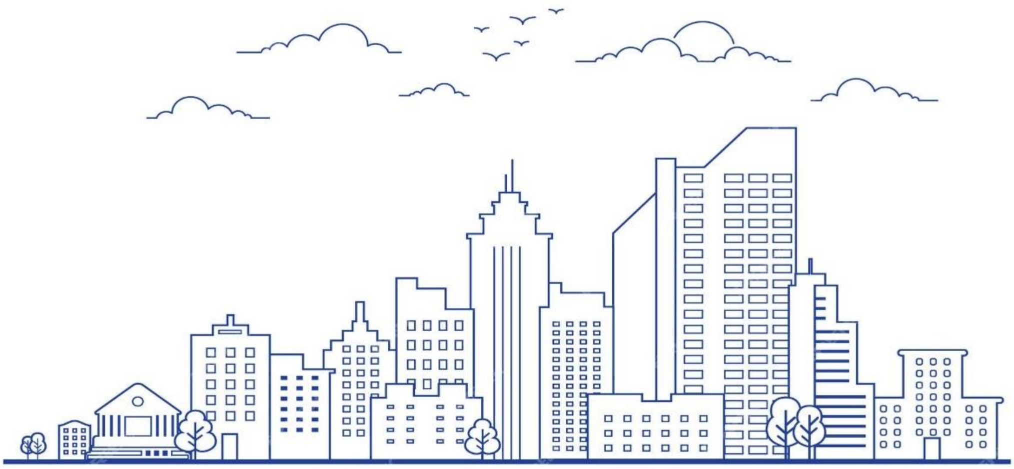
3. **Principal's financial history: -**
   In lenders eyes, the future is largely be predicted bypast. It is more than likely that they will run a credit check on the business principals to see if principles effectively met past financial obligation.

4. **Company's ability to pay and financial structure: -**
   You'll have to prove that the company is able to meet all its financial obligation. The company's financial structure should therefore show a healthy balance between loans and assets.

5. **Caliber of business principle: -**
   Principles are the primary sources of fuel for business projects. Their vision, energy and the effort they are willing to make the factors that make-or-break projects.

6. **Security:** -
   Debt financing is usually secured against company assets, which could be sufficient to allow lenders to cover their risk.

CHAPTER-2: RESIDENTIAL/HOUSING SECTOR IN INDIA



2.1 OVERVIEW OF REAL ESTATE IN INDIA-

The real estate sector is one of the most globally recognized sectors. Real estate sector comprises four sub sectors - housing, retail, hospitality, and commercial. The growth of this sector is well complemented by the growth of the corporate environment and the demand for office space as well as urban and semi-urban accommodations. The construction industry ranks third among the 14 major sectors in terms of direct, indirect and induced effects in all sectors of the economy. Real estate sector in India is expected to reach a market size of US$ 1 trillion by 2030 from US$ 180 billion in 2023 and contribute 13 per cent of the country's GDP by 2025. Retail, hospitality and commercial real estate are also growing significantly, providing the much-needed infrastructure for India's growing needs.

The Indian real estate sector has witnessed high growth in recent times with the rise in demand for office as well as residential spaces. Demand for residential properties has surged due to increased urbanization and rising household income. India is among the top 10 price appreciating housing markets internationally. Residential segment contributes ~80 per cent of the real estate sector.

2.2 INVESTMENTS/DEVELOPMENTS-

Rapid urbanization in the country is pushing the growth of real estate. More than 70 per cent of India's GDP will be contributed by urban areas by 2020. The Government of India has been supportive towards the real estate sector. In August 2015, the Union Cabinet approved 100 Smart City Projects in India. The Government has also raised FDI (Foreign Direct Investment) limits for townships and settlements development projects to 100 per cent. Government of India's Housing for All initiative is expected to bring US$ 1.3 trillion investment in the housing sector by 2025. As of December 2019, under Pradhan Mantri Awas Yojana (Urban) [PMAY (U)], 1.12 crore houses were sanctioned in urban areas, with a potential to create 1.20 crore jobs. The scheme is expected to push affordable housing and construction in the country and give a boost to the real estate sector.

2.3 GOVERNMENT INITIATIVES FOR RESIDENTIAL AND HOUSING-

Government of India along with the governments of respective States has taken several initiatives to encourage development in the sector. The Smart City Project, with a plan to build 100 smart cities, is a prime opportunity for real estate companies. Below are other major Government initiatives:

- In order to revive around 1,600 stalled housing projects across the top cities in the country, the Union Cabinet has approved the setting up of Rs 25,000 crore (US$ 3.58 billion) alternative investment fund (AIF).
- Blackstone crosses US$ 12 billion investment milestone in India.
- Puravankara Ltd, a realty firm plans to invest around Rs 850 crore (US$ 121.6 million) over the next four years to develop three ultra-luxury residential projects in Bangalore, Chennai and Mumbai.
- Under Pradhan Mantri Awas Yojana (Urban) [PMAY (U)], 1.12 crore houses have been sanctioned in urban areas creating 1.20 crore jobs.

2.4 REAL ESTATE IN GURUGRAM-

With Gurugram, Sonepat, Faridabad and Panchkula humming with commercial and residential building activities, the real estate emerged as the most favourite sector for investors in Haryana in 2010, an Assocham Study said.

Bucking the trend in urban centers around the country, real estate in Gurugram is leading a revival of investor sentiment in the National Capital Region. One of the biggest reasons for this buoyancy, breaking a five-year dry spell, is strict implementation of the law, say experts.

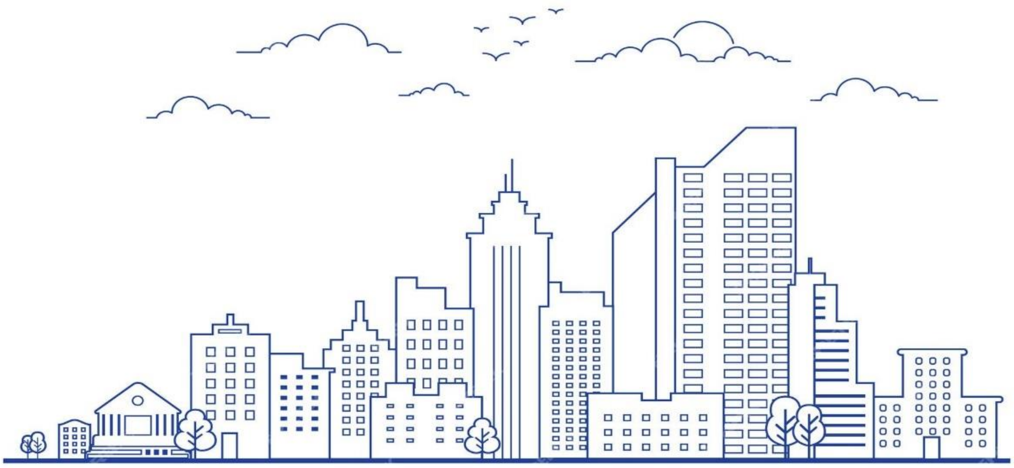
The revival of confidence among buyers could lead to prices of residential and commercial properties in Gurugram increasing by as much as 10% to 20%.

The market in Gurugram is now witnessing the positive effects of the implementation of Real Estate (Regulation and Development) Act, 2016 (RERA). In the last two months, construction of 20,000 new flats has started in the Millennium City, bringing in investments of Rs 3 lakh crore into the real estate business. "Earlier, developers used to take investors' money and divert it to other projects. Such practices were widely prevalent before 2014. The next few years will be even more exciting for buyers since builders are under pressure to complete projects in the next three years, in line with PM Narendra Modi's promise of 'housing for all by 2022'.

With the delays in the completion of the Dwarka Expressway almost resolved, the demand will see a further boost. Commenting on the effects of this, Prashant Solomon, managing director of Chintels India and treasurer, CREDAI, an apex body of private real estate developers' associations, says: "It is good news for the area as developers have invested over Rs 60,000 crore in residential and commercial projects along the 150-metre-wide roadway, but had been struggling to sell projects due to lack of proper connectivity. There are around 1.5 lakh home buyers who have suffered for more than a decade due to the delay. As the entire land required for completing the Dwarka Expressway now vests with NHAI, we are hopeful of a quick completion of the road project."

In Gurugram, the realty investment hotspots are the areas where the Southern Peripheral Road and Northern Peripheral Road (as the Dwarka Expressway is also known) meet at NH-8 (sectors 99-112 and 37D, sectors 58-63, 68, 78-81, 84, and 85-86). As per data by Anarock Property Consultants, the weighted average price for properties launched between Januarys to May in 2019 is Rs 4,900 per sq.ft. Approximately 8,500 new units have been launched in Gurugram from January to May 2019, comprising nearly 51 per cent of the total supply in the entire NCR.

CHAPTER-3: METHODOLOGY



3.1 AIM OF THE PROJECT-

Aim of the project is the construction of High-Rise Residential Building having total area is around 90000 sq. ft with 45000 sq. ft of built-up area in Gurugram, Haryana. The building has 10 floors. Each floor has 5 flats. Another requirement for preparing this report is to create a financial model for the project and to know that the project is feasible or not.

3.2 ANALYSIS TECHNIQUES-

The techniques used for analysis are-

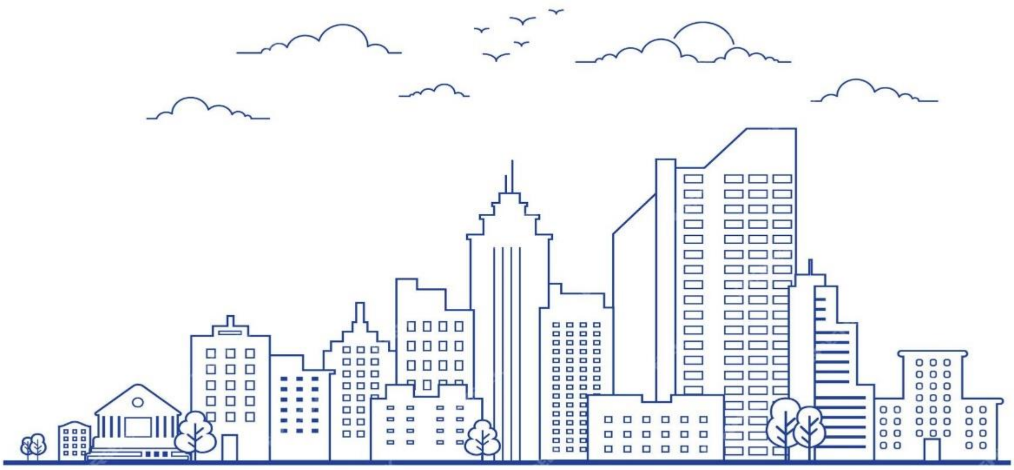
- **Quantitative techniques-**

  Quantitative techniques may be defined as those techniques which provide the decision makes a systematic and powerful means of analysis, based on quantitative data. It is a scientific method employed for problem solving and decision making by the management. With the help of quantitative techniques, the decision maker is able to explore policies for attaining the predetermined objectives. In short, quantitative techniques are inevitable in decision-making process.

- **Charts and graphical analysis-**

  Graphical analysis is a graphical depiction of data using charts, figures, and graphs. It is particularly useful in helping managers digest large volumes of data. This kind of analysis displays an easy-to-understand format of a large amount of data.
  The Graphical analysis is “the method of analysis which performs graphing by taking the input from data tables”.

CHAPTER-4: PROJECT DESCRIPTION



4.1 PROJECT DETAILS-

Techvardhan Infra Pvt. Ltd has acquired a piece of land near Gurugram HR and wants to develop it as a residential building having 50 flats of 900 sq. ft each. They are expecting to sell the flats at a rate of Rs. 4000 / sq. ft. The expected Capex is Rs. 8 Crore and Opex is Rs. 50 Lacs / per annum for the whole project. They are seeking a non-recourse debt (project financing) with 70:30 as D/E ratio from leading commercial banks in India as a 12 years term loan.

4.2 PROJECT LOCATION-

The Project going to be constructed in Gurugram. Gurugram, is a city located in the northern Indian state of Haryana. It is situated near the Delhi-Haryana border, about 30 kilometres southwest of the national capital New Delhi. Gurugram has architecturally noteworthy buildings in a wide range of styles and distinct time periods.

The city has been home to several tall buildings with the modern planning. Gurugram had estimated 1100 residential rises. The average cost of a 93 square meter (1,000 sq. ft) two bedroom at a decent condominium in Gurugram is at least RS. 10,000,000.

The factor to be considered while selecting the building location is as follows:

- Access to park & playground.
- Availability of public utility services, especially water, electricity & sewage disposal.
- Contour of land in relation the building cost.
- Cost of land.
- Distance from places of work.
- Ease of drainage.
- Location with respect to school, collage & public buildings.
- Transport facilities.
- Other essential facilities.

4.3 PROJECT DETAILS-

The table below shows the necessary project details-

Project Details		
Size in sq. ft.	45000	80.1
Equity	30%	24.03
Debt	70%	56.07
Debt Service Resv (DSR)	1.00 yrs.	

Table no. 1 Project Details

4.4 PROJECT COST (CapEx & OpEx)-

The table below shows the project cost (CapEx) sources:

Project Cost (CapEx)	Total sq. ft.		
	Rate (Rs. Per sq. ft)	45000	% of Project Cost
Land	740	33300000	41.6%
Flat Construction Cost	210	9450000	11.8%
Interior Decoration	130	5850000	7.3%
Furniture	170	7650000	9.6%
Fixtures	30	1350000	1.7%
Building Registration	10	450000	0.6%
Broker Fees	80	3600000	4.5%
Stamp Duty	190	8550000	10.7%
Fund Raising Fee	30	1350000	1.7%
Transfer of Deed fee	70	3150000	3.9%
Interest During Moratorium	60	2700000	3.4%
Loan and Documentation Fee	40	1800000	2.2%
CSR, HSE, Training	20	900000	1.1%
Total Project Cost		80100000	100%

Table no. 2 CapEx

O & M Monthly Breakdown (OpEx)	Total sq. ft.	
Building Maintainence	3.2	144000
Utilities (Electric + Water + Internet)	1.9	85500
Salary (Maid + Acountant)	2.1	94500
Plumber + Electrician + Misc etc	1.5	67500
Insurance	2.5	112500
Total O&M Cost (per year)		504000

Table no. 3 OpEx

4.5 PROJECT REVENUE SOURCES-

The table below shows the project revenue sources:

Revenue Parameters	
City	Gurugram, Haryana
Size (Sq. ft) of one flat	900.00
Selling Price per sq.ft	4000.00
Selling Price per Flat	3600000.00
No. of Floors	10
No. of Flats	50
Avg. No of Flat Sold per Year	5
Sale Price Appreciation	10%
Sales Commision	2%

Table no. 4 Revenue Parameters

4.6 PROJECT ASSUMPTIONS-

The table below shows the project assumptions: -

Assumptions					
Inflation	5%	Moratorium	1.00 yrs	USD/INR	83.28
Tax Rate	25.00%	Depreciation	5.00%	Discount	10.00%
Debt Rate	10.00%	Construction Time	1.80 yrs	DDT	0.00%
Debt tenure	12.00 yrs	MAT	15.00%	Tax Holiday	0.00 yrs

Table no. 5 Project Assumptions

Above assumptions are taken into consideration while preparing financial model

4.7 PROJECT FINANCING-

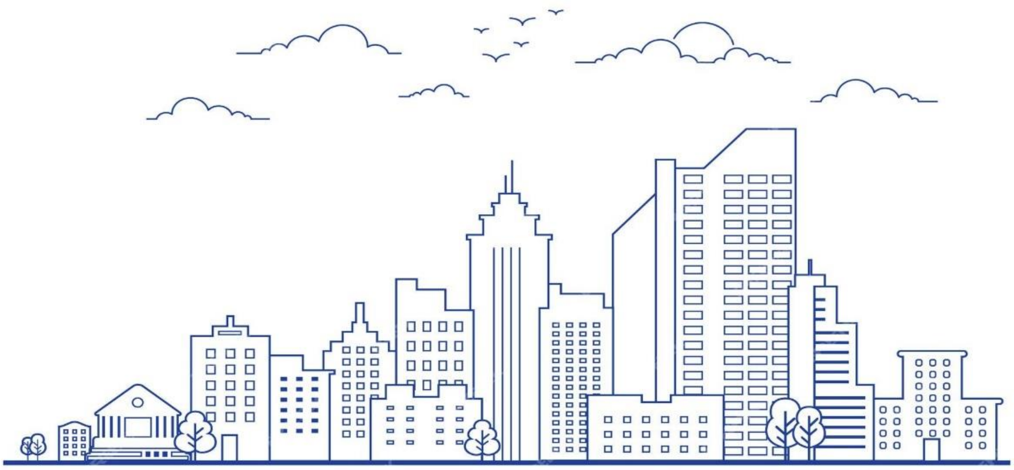
The table below shows the project financing sources:

Details	
Debt Amount (mn. Rs.)	56.07
Debt rate	10.00%
Moratorium	1.00 yrs
Term	12.00 yrs
Payment Periods	48
One period is one quarter	
COD	31-Jul-2025
First Quarter End	29-Oct-2025

Table no. 6 Project Financing

The project is being financed through a commercial bank through debt and equity in 70:30. The schedule of debt repayment is for 12 years in 48 period (one period means one quarter) respectively.

CHAPTER-5: FINANCIAL FEASIBILITY ANALYSIS OF THE PROJECT



5.1 FINANCIAL FEASIBILITY ANALYSIS

Before an investment decision is made it is necessary to determine whether or not the planned investment idea is feasible. The feasibility of an investment has to be considered with respect to several different aspects in order to determine whether the investment should be realized or not. Carrying out a feasibility analysis is therefore one of the most critical step.

A financial feasibility study should be conducted at the onset to determine the economic viability of a proposed venture before proceeding to the preparation of a business plan. It identifies the startup costs, makes projections of profits and cash flows and determines the return of the investment.

To assess the financial feasibility of investments relevant criteria, have to be chosen. Financial feasibility calculations need to be done with care and the complexity of the calculations depends on the number of different aspects that need to be considered. The assumptions used in the calculations can, and often will, change as the project progresses and then the analysis needs to be updated.

A financial feasibility study, or FFS, should assess the viability of a project based on major pivotal component: will the project or business have enough cash to complete the project (and generate a profit). One of the bottom lines of any business is whether a company can sustain itself, pay its employees and of course make a profit. A financial study can help in this assessment. Components to consider include:

1. Company Expenses

2. Revenues

3. Debt schedule/ repayment

4. Cash flow (money in, and money out).

5. DSCR

6. IRR

5.2 EXPENSES-

Operating expenses include all expenses incurred by the Authority associated with operating the project as well as its share of capital expenditures. Total operating expenses for ten-year period from FY2025 – Budget 2035 are projected to increase from approximately 5 Mn INR to 8.2 Mn INR due to inflation rate which is 5%. Total capital expense includes the items which shown in below chart.

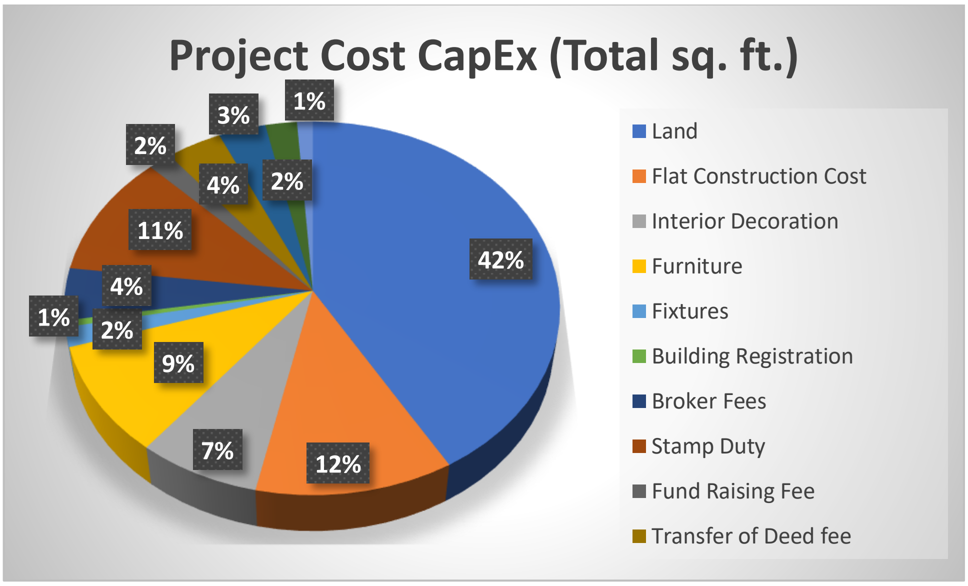


FIG. 2 Distribution of project cost (CAPEX)

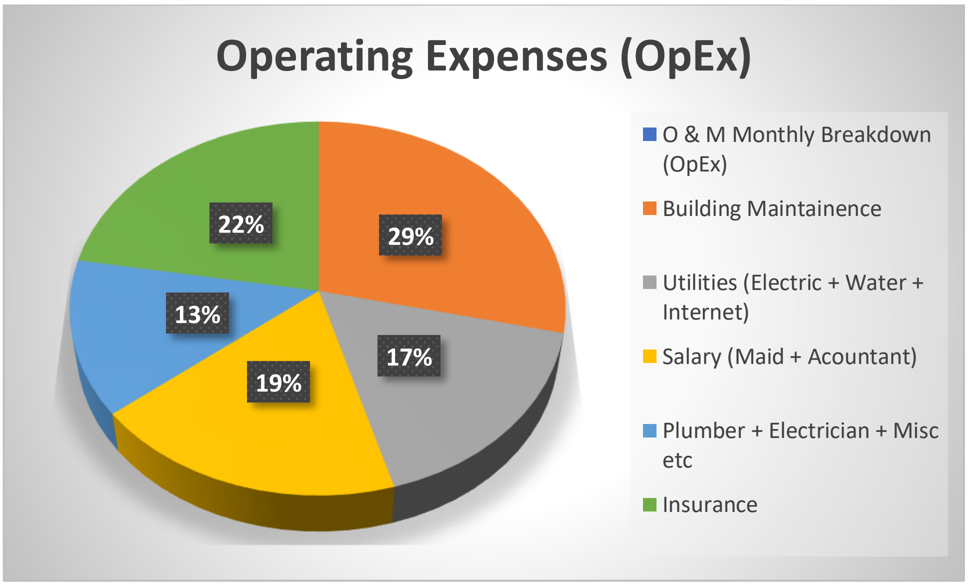


FIG. 3 Distribution of Operating Expenses (OPEX)

5.2 REVENUE GROWTH-

Total operating revenues for the Ten-year period from Year 2026 to Year 2035 are projected to increase from approximately 17.88 million INR to 42.16 million INR. Increased price of flats and interest of deposit contribute significantly to this growth. You can look table no. 7 for yearly revenue.

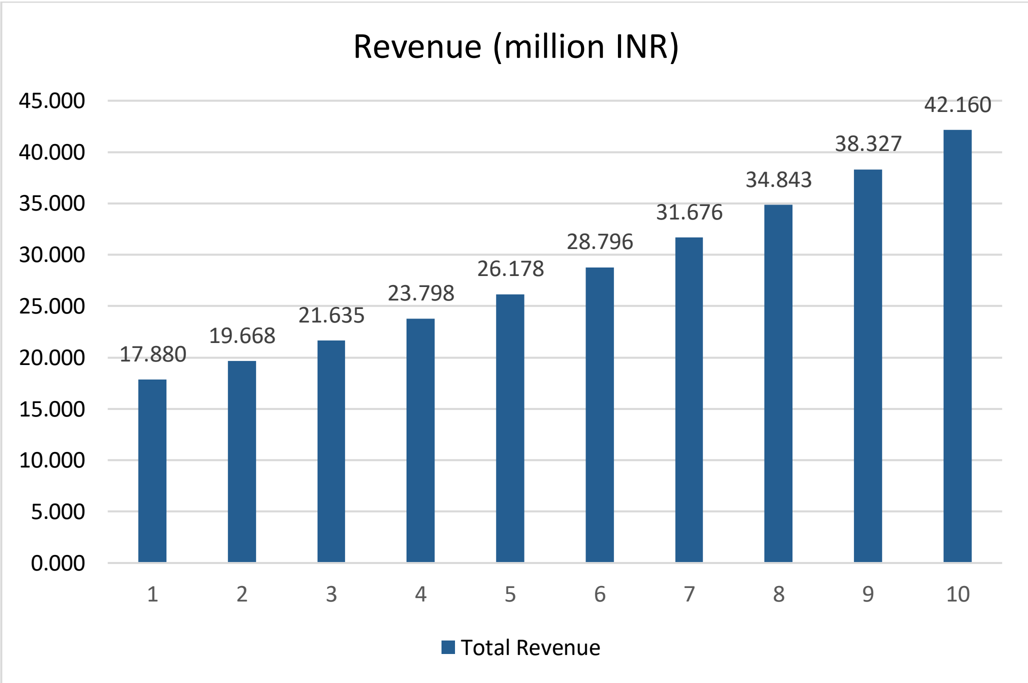


FIG. 4 Revenue Growth

5.3 EBITDA GROWTH-

The EBITDA has been constantly growing positively during the period of 10 years i.e from Year 2026 to Year 2035. The EBITDA is shown as follows in Table 8

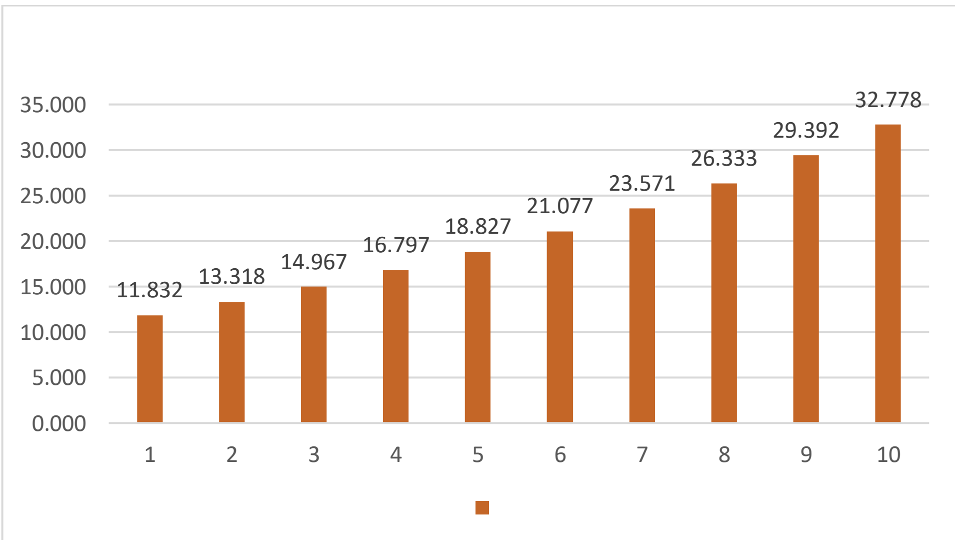


FIG. 5 EBITDA Growth

5.4 DEBT/LOAN REPAYMENT SCHEDULE

As the project need larger amount of investment capital and this one need to develop special purpose vehicle to divide the risk. The Special Purpose Vehicle (SPV) or Special Purpose Entity (SPE) is one of the most used tools in infrastructure financing. It doesn't matter whether the project is being constructed by a private company, a public entity, or in a public private partnership. In most cases, special purpose vehicles are created for every infrastructure project.

A Special Purpose Vehicle (SPV) is an entity created only for the purpose of execution of the project. This means that for legal purposes, the Special Purpose Vehicle (SPV) is different from the private company or the government body, which may be sponsoring it. It has its own balance sheet and profit and loss statement. Lenders are supposed to lend to these Special Purpose Vehicles (SPV) based on their assets and liabilities and not the assets and liabilities of the parent firm. In most cases, the Special Purpose Vehicle (SPV) Company takes non-recourse financing. This means that in the event of a default, investors can only seize the assets of the project and not the assets of the parent firm, which may be involved in the project.

Here, in this project, "Home Developers" need to create SPV for non-recourse liability. To complete the project, they need to get a debt loan from commercial bank of 70% of total capital expenditure which is Rs. 56.01 million. For that necessary assumption like debt rate/ loan rate, moratorium period, loan term needs to take into consideration for loan / debt repayment. For that, have to prepare debt/ loan repayment schedule so that final cash flow amount can be estimation can be accurate. Here, estimated construction period is 1.8 year so moratorium period also assumed for 1 year. And at 10 % interest rate, first instalment will be paid from 28 JUL, 2022. Interest instalments will be year wise. So, there are total 12 instalments in 12 years which need to pay back to the bank with principal amount at 10% of compound interest rate.

To prepare the schedule in model, interest payment (IPMT) formula and principal payment (PPMT) formula should be used in excel.

IPMT (interest rate, period, number payments, PV, [FV], [Type])

PPMT (interest rate, period, number payments, PV, [FV], [Type])

For the debt of Rs. 56.07 million, interest at 10% interest rate for 12 years in 12 terms will be 42.68 million. This payment will be made from the profit earned from the project. (Refer to Financial Model Debt Sheet)

5.5 CASH FLOW

The cash flow projections include the amount of funds needed for startup and identifies where these monies will come from. The amount of equity capital is determined along with the amount and source of all borrowed funds and leases.

From the above fin flow statement, it's clearly shows that payback period is of twelve years. In Twelve years, company can pay the interest and principal payment from the revenue it will generate by selling the flats.

Here, final project cash flow is Negative for the year 2023 because in the year 2023 construction will just be started so there will be no revenue during the construction time period. After completion of construction in 2025, cash flow shows positive values. This means in from 2026, bank have cash on hand which shows that project is financially feasible.

5.6- PROJECT FEASIBILITY ANALYSIS (DSCR, IRR and RESULTS)-

1. DSCR (DEBT SERVICE COVERAGE RATIO)

The debt service coverage ratio (DSCR) is defined as net operating income divided by total debt service. it is the amount of cash flow available to meet annual interest and principal payments on debt, including sinking fund payments.

Here's how to interpret:

- **DSCR < 1**: You have negative cash flow. You don't have enough income to service all of your debt.
- **DSCR = 1**: You have exactly enough cash coming in to service your debt, but you don't have additional cash cushion.
- **DSCR > 1**: You have positive cash flow. The higher you're DSCR, the more income you have to pay off your debt.

2. IRR (INTERNAL RATE OF RETURN)

The internal rate of return rule is a guideline for evaluating whether to proceed with a project or investment. The IRR rule states that if the internal rate of return on a project or investment is greater than the minimum required rate of return, typically the cost of capital, and then the project or investment should be pursued. Conversely, if the IRR on a project or investment is lower than the cost of capital, then the best course of action may be to reject it.

IRR is the rate of return that yields a net present value (NPV) of zero. A project is feasible if the IRR is greater than the interest rate you can borrow at. IRR is an indicator of how efficiently the capital is used in a business.

The Net Present Value (NPV) is defined as the sum of the present values of the individual cash flows (both incoming and outgoing) of a series of cash flows. And the Present Value is defined as the current worth of a future sum of money or stream of cash flows at a certain discount rate.

IRR represents the time adjusted earnings over project life. It is that rate that equates the present value of cash inflows to the present value of cash outflows of the project. Or in other words, the discount rate that set sets NPV of cash flows to zero.

In the calculation of IRR, a distinction is made in Project IRR and Equity IRR. As the name suggests, the project and equity IRRs differ in terms of the cash inflows. Project IRR signifies returns to all investors in the project. For the Project IRR, the cash flows considered would be the ones directly benefiting the project. Equity IRR measures the returns for the shareholders of company, after the debt has been paid off. Therefore, the latter is based on the free cash flows of equity holders.

3. RESULTS-

RESULTS	
Equity IRR	16.55%
Min DSCR	1.28
Avg DSCR	2.07
Project IRR	9.97%

Table no. 7 Results

The following result in Table no. 7 shows the internal rate of return of the project which is 9.97% and equity internal rate of return is 16.55%. The average DSCR from the project is 2.07 and Min DSCR is 1.28. DSCR is an important measure to consider the feasibility of the project. DSCR interpretation is important to the debt obligation and repayment capacity of the project.

To determine whether a project is feasible, you should consider various financial metrics and compare them to your investment criteria and the specific financial policies or requirements of your organization or project stakeholders. Let's break down the metrics you've provided:

1. Equity IRR (Internal Rate of Return) is 16.55%: This represents the expected return on equity investment in the project. An IRR of 16.55% is generally considered a decent return, but its feasibility depends on your organization's required rate of return and the associated risks. It's above the Project IRR, which is a good sign for equity investors.

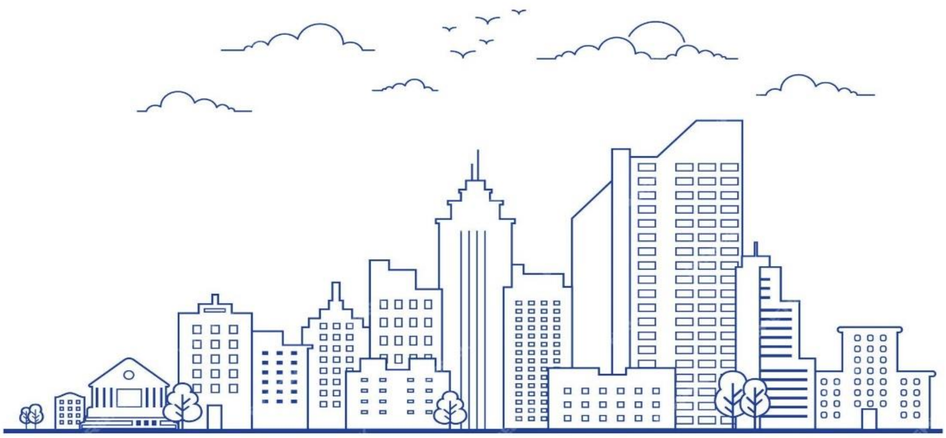
2. Project IRR (9.97%): The project IRR represents the overall return on the project, including both debt and equity. A project IRR of 9.97% might be acceptable depending on your organization's investment criteria and the nature of the project. It's typically lower than the Equity IRR because it accounts for the cost of debt.

3. Minimum Debt Service Coverage Ratio (DSCR) is 1.28: DSCR measures the project's ability to cover its debt obligations. A DSCR of 1.28 means that the project's cash flows are 1.28 times the debt service requirements. Generally, a DSCR above 1 is a positive sign, and a DSCR of 1.28 is relatively healthy, indicating a reasonable margin of safety for debt repayment.

4. Average DSCR is 2.07: A higher average DSCR is usually more favorable. A DSCR of 2.07 suggests that, on average, the project generates cash flows that are more than twice the debt service requirements, which is a strong indicator of the project's ability to meet its debt obligations.

In conclusion, based on the metrics in Table no. 7 above, **the project is feasible.** The Equity IRR and DSCR values are reasonably strong, indicating a good return on equity and sufficient cash flow to cover debt obligations. However, the Project IRR is lower than the Equity IRR, which is not unusual and depends on the financing structure. The feasibility also depends on your organization's specific financial policies, risk tolerance, and investment criteria, so it's essential to consider those factors when making a final determination.

CHAPTER-6: CONCLUSION



Real estate development can be very exciting and profitable. It can also be difficult and risky. Ultimately, the two main goals for a developer and his or her lender are to mitigate risk and maximize profit. In order to accomplish those goals, a forthright and accurate comparison needs to be made between potential home buyers and the competition and future competition for those home buyers. Without this information, it is difficult for any developer to determine the proposed market they need to capture and the feasibility of a project.

Study of Residential suggest that, it is not that much easy to predict the feasibility of project. To check the feasibility of such project, there is need to list out those factors which cannot be control by project promoters, but such factors greatly affect the project cash flows. And after determining those factors, we would able to perform sensitivity analysis of such project.

The report involves the financial modeling and analysis of 50 flats housing in Gurugram, Haryana IN. For the project non-recourse debt is beneficial as it need huge investment. By taking appropriate assumptions and data provided in, financial model is prepared. Financial viability of the project is determined by calculating the cash flow statement, DSCR and IRR. The finding of the calculation is as below:

Equity IRR for the project is 16.55% and Project IRR for the project is 9.97%. The project has a minimum DSCR is 1.28 and average DSCR ratio is 2.07. From above findings, it can be concluded that development of project is beneficial, considering DSCR and Project IRR of the project.

In conclusion, based on the metrics in Table no. 8 above, **the project is feasible.** The Equity IRR and DSCR values are reasonably strong, indicating a good return on equity and sufficient cash flow to cover debt obligations. However, the Project IRR is lower than the Equity IRR, which is not unusual and depends on the financing structure. The feasibility also depends on your organization's specific financial policies, risk tolerance, and investment criteria, so it's essential to consider those factors when making a final determination.

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