

Flexibility and Capital Budgeting Study of The New Nagpur International Business & Finance Centre (IBFC)

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Abstract:

The proposed New Nagpur International Business & Finance Centre (IBFC) is a large greenfield urban-business development planned by the Nagpur Metropolitan Region Development Authority (NMRDA). Public documents indicate that the project was approved in 2025 with an estimated cost of ₹6,500 crore, including ₹3,000 crore for land acquisition and ₹3,500 crore for development, while subsequent government documents in 2026 revised the financing and guarantee structure. This study examines the project from a capital budgeting and financial flexibility perspective. The paper focuses on net present value (NPV), internal rate of return (IRR), payback, sensitivity analysis, scenario analysis and real-option-type flexibility arising from phased land acquisition, staged infrastructure investment, timing of development and expansion. Because the project is still under development and public sources do not provide a complete operating cash-flow forecast, the paper does not present an assumed financial return as an official project forecast. Instead, an illustrative ten-year cash-flow model is constructed solely to demonstrate how investment appraisal can be applied to a project of this scale. The study finds that flexibility can materially affect capital-budgeting outcomes because investment can be staged as demand, financing conditions and development milestones become clearer. The paper recommends that the project appraisal should be updated periodically using an approved detailed project report, actual financing terms, land-acquisition expenditure, development costs, occupancy assumptions and measurable cash-flow estimates.

Keywords — Capital budgeting, financial flexibility, NPV, IRR, real options, infrastructure investment, New Nagpur, IBFC, NMRDA.

I. INTRODUCTION

Large public and urban infrastructure projects require capital commitments that extend across several years. In such projects, the investment decision is not limited to asking whether an estimated return exceeds a required return. Managers also need to consider when money should be committed, how investment can be divided into stages, whether a project can be expanded after demand becomes visible, and how financing and cost changes affect the economic value of the project.

The New Nagpur International Business & Finance Centre (IBFC) is a proposed greenfield business district under the wider New Nagpur development initiative. A Maharashtra Government decision in September 2025 described the proposed development over approximately 692.06 hectares at Godhani (Rithi) and Ladgaon (Rithi), Hingna, under NMRDA. The same decision referred to an estimated total project cost of ₹6,500 crore, including ₹3,000 crore for land acquisition and ₹3,500 crore for development. [1]

NBCC subsequently stated that it had entered into a memorandum of understanding with NMRDA for development of Naveen Nagpur as an International Business & Finance Centre. NBCC's description

refers to an approximately 1,710-acre area, with about 1,000 acres planned as the business district and 710 acres reserved for future expansion. [2] The difference between hectares and acres reflects rounded presentation in public communications; 692.06 hectares is approximately 1,711 acres.

The financing position also requires a time-sensitive interpretation. A later Maharashtra Government document dated March 2026 records a revised process concerning HUDCO financing and superseding an earlier government decision, while reporting a ₹3,000 crore principal amount and associated interest guarantee structure. [3] A contemporaneous report in April 2026 described a ₹4,999.28 crore state guarantee covering ₹3,000 crore principal and ₹1,999.28 crore projected interest. [4] Therefore, a research paper should not treat every announced figure as a permanent project cash flow.

This paper therefore studies two linked ideas: capital budgeting and flexibility. Capital budgeting provides the financial framework for evaluating investment outlays and future cash flows. Flexibility recognises that a public-private or urban-development project can change its investment pace as information about land, infrastructure costs,

financing, tenant demand and regulatory conditions becomes available.

II. BACKGROUND AND PROJECT CONTEXT

The IBFC is intended to form a major business and finance district within the New Nagpur concept. Public descriptions identify objectives such as attracting knowledge-based industries, startups, corporate offices and service-sector activities. The project also includes integrated infrastructure and a single-window approach to business approvals in the stated project concept. [1], [5]

The project is relevant to capital budgeting because its costs are incurred before the full economic benefits can be observed. Land acquisition and basic infrastructure create a substantial initial or early-stage cash requirement, whereas benefits from commercial development, leases, service activities, property-related receipts and wider economic activity may occur gradually. For this reason, timing and sequencing can be as important as the total project size.

A conventional NPV model assumes that the decision maker commits to a specified investment and then receives expected cash flows. A flexible model recognises that the decision maker may defer part of the investment, accelerate a profitable phase, stop or redesign a weak phase, or expand capacity after demand becomes observable. Such choices have economic value even when they do not appear as ordinary line-item cash inflows.

A. Project Characteristics Relevant To Financial Analysis

- Greenfield development creates substantial up-front land and infrastructure requirements.
- The project is planned on a large land area, allowing staged development and future expansion.
- Financing involves institutional borrowing and government-supported arrangements, making interest cost and repayment timing important.
- Demand for commercial and financial space is uncertain because the district is being developed as a new business location.
- Infrastructure can create both direct financial benefits and wider economic benefits that may not be captured fully in a narrow project cash-flow statement.

B. Problem Statement

The central problem is how to evaluate the financial feasibility of a large, phased business-district project when the complete future cash flows are uncertain and the investment can potentially be staged. A static

NPV may understate the value of flexibility if it assumes that the entire investment must be committed immediately. Conversely, an overly optimistic cash-flow forecast can make a project appear attractive without sufficient evidence. The study therefore combines conventional capital-budgeting measures with scenario and flexibility analysis.

III. OBJECTIVES OF THE STUDY

The study has the following objectives:

- To explain the capital-budgeting framework applicable to the New Nagpur IBFC.
- To identify the major investment, financing, timing and demand uncertainties relevant to the project.
- To examine how phased investment can create financial flexibility.
- To demonstrate NPV, IRR, payback and sensitivity analysis through an illustrative scenario model.
- To develop a practical framework for updating the appraisal when actual project data become available.

IV. REVIEW OF LITERATURE

Capital budgeting literature generally treats NPV as a central investment criterion because it measures the present value of expected future cash flows relative to the initial investment. Brealey, Myers and Allen explain that discounted-cash-flow analysis connects investment decisions with the time value of money and opportunity cost of capital. [6]

Ross, Westerfield and Jaffe similarly describe NPV and IRR as major tools for evaluating long-term investment projects. However, the usefulness of these tools depends on the quality of cash-flow estimates and the discount rate. [7]

Real-options literature extends conventional discounted cash-flow analysis by recognising managerial flexibility. Dixit and Pindyck argue that irreversible investment under uncertainty can have option-like characteristics because waiting for information may have value. [8] Trigeorgis develops a framework in which options to defer, expand, contract, abandon and switch can alter the value of an investment project. [9]

Infrastructure projects provide a strong setting for this approach because construction is often phased and future demand can be observed between phases. In the IBFC context, the availability of future expansion land and the stated large development footprint create a natural basis for examining staged commitment. This is an analytical interpretation, not

a claim that a formal real-options valuation has already been adopted by the project authorities.

A. Research Gap

Publicly available project information identifies the scale, location, financing and development intent of the IBFC, but it does not provide a complete, audited, project-level operating cash-flow series sufficient for an independent conventional NPV or IRR calculation. The research gap addressed here is therefore methodological: how can capital budgeting be structured for the project while explicitly separating verified project facts from assumptions required for financial modelling?

V. RESEARCH METHODOLOGY

A. Research Design

The study uses a descriptive and analytical case-study design. Public government documents and institutional disclosures are used to establish the project context. Capital-budgeting concepts are then applied to construct an illustrative financial model. The model is not presented as the official financial feasibility report of NMRDA or the Maharashtra Government.

B. Sources Of Data

Secondary data include the Maharashtra Government decision on IBFC financing, NMRDA-related project information, NBCC's project announcement, and published reporting used to understand subsequent financing developments. The project-specific factual inputs are limited to information publicly documented as of September 2026. [1]–[5]

C. Capital-Budgeting Techniques

The main measures are Net Present Value (NPV), Internal Rate of Return (IRR), discounted and undiscounted payback, and sensitivity analysis. NPV is calculated as the present value of future free cash flows less the initial investment. IRR is the discount rate that makes NPV equal to zero. Payback indicates how long it takes to recover the initial outlay from cumulative cash flows.

Because flexibility is central to the study, the analysis also considers three decision stages: (1) land and enabling infrastructure, (2) core business-district infrastructure, and (3) later expansion. The logic is that later investment should depend on information observed after earlier stages.

D. Illustrative Assumptions

For demonstration only, the model uses ₹6,500 crore as an illustrative total initial commitment because this was the project estimate stated in the

2025 government decision. It assumes a ten-year stream of illustrative free cash flows of ₹350, ₹500, ₹700, ₹900, ₹1,100, ₹1,300, ₹1,500, ₹1,700, ₹1,900 and ₹2,100 crore, respectively, plus an illustrative terminal/realisation value of ₹2,000 crore in Year 10. A 10% discount rate is used for the base case. These figures are analytical assumptions and must not be interpreted as official project forecasts.

VI. CAPITAL BUDGETING ANALYSIS

A. Illustrative Cash-Flow Model

The illustrative cash-flow schedule is presented below. The purpose is to demonstrate the mechanics of project appraisal rather than to forecast the IBFC's actual revenue or profitability.

Year	Illustrative FCF (₹ crore)	Discount Factor @10%	PV of FCF (₹ crore)
1	350	0.909	318.2
2	500	0.826	413.2
3	700	0.751	525.9
4	900	0.683	614.7
5	1,100	0.621	683.0
6	1,300	0.564	733.8
7	1,500	0.513	769.7
8	1,700	0.467	793.1
9	1,900	0.424	805.8
10	2,100	0.386	809.6
10 (terminal)	2,000	0.386	771.1

TABLE I
ILLUSTRATIVE TEN-YEAR CASH-FLOW SCHEDULE

Using the illustrative assumptions, the NPV at a 10% discount rate is approximately ₹738.2 crore. The illustrative IRR is approximately 11.82%. The undiscounted cumulative cash flow becomes positive during Year 8, giving an approximate simple payback period of 7.1 years. These results are scenario outputs only and are not evidence that the actual IBFC has an NPV of ₹738.2 crore or an IRR of 11.82%.

B. Sensitivity To Discount Rate

Discount Rate	Illustrative NPV (₹ crore)	Interpretation
8%	1,681.1	Positive under the illustrative cash flows
10%	738.2	Positive but more sensitive to assumptions
12%	-65.5	Slightly negative under the illustrative cash flows

TABLE II
SENSITIVITY OF ILLUSTRATIVE NPV TO DISCOUNT RATE

The sensitivity analysis shows why the cost of capital is important. A two-percentage-point increase from the base-case 10% to 12% turns the illustrative NPV slightly negative. In a real appraisal, the discount rate should be linked to the project's financing structure, risk profile, inflation

assumptions, taxes where applicable and the opportunity cost of capital rather than selected only to obtain a desired result.

C. Scenario Analysis

Scenario	Main Assumption	Financial Effect	Flexibility Response
Downside	Slower occupancy and higher construction/financing costs	Lower and delayed cash flows	Defer non-essential expansion; protect liquidity
Base	Gradual demand growth and controlled costs	Illustrative base-case cash flows	Proceed phase-by-phase against milestones
Upside	Faster occupancy and stronger commercial demand	Earlier and higher cash flows	Accelerate later phases after demand confirmation

TABLE III

SCENARIO-BASED CAPITAL-BUDGETING FRAMEWORK

VII. FINANCIAL FLEXIBILITY ANALYSIS

Financial flexibility is the ability to alter the timing, scale or composition of investment after new information becomes available. For a large greenfield district, this may include the option to defer a phase, expand capacity, redesign infrastructure, change the development mix or preserve land for future use.

A. Option To Defer

If market demand is uncertain, committing all development expenditure immediately may expose the project to avoidable risk. A staged approach allows the project authority to complete enabling works and observe indicators such as developer interest, tenant commitments, infrastructure readiness and financing costs before committing to later phases. Deferral is valuable when waiting provides information without destroying the project's underlying opportunity.

B. Option To Expand

The project description includes land reserved for future expansion. This creates a structural form of expansion flexibility. If the first development stage generates stronger-than-expected demand, later capacity can be added. The financial model should therefore separate committed expenditure from contingent future expenditure rather than treating the entire future development as an unavoidable cash outflow on Day 1.

C. Option To Contract Or Redesign

If demand develops more slowly than expected, a flexible master plan can reduce the pace of construction or alter the mix of commercial, office, service and supporting uses. This can reduce the present value of avoidable costs. The exact feasibility depends on planning permissions, contracts, financing covenants and infrastructure dependencies.

D. Financing Flexibility

The project's financing structure is particularly important because borrowing creates fixed repayment obligations. Changes in interest rates, loan drawdown timing, guarantee conditions and repayment schedules can change the project's effective cost of capital. Therefore, capital budgeting should be performed both on a project basis and on a financing basis, with debt-service requirements tested under downside scenarios.

VIII. DISCUSSION

The analysis indicates that a static investment appraisal is insufficient for a large phased development when project cash flows are not yet fully observable. The first issue is data availability: public announcements establish the scale and financing framework but do not provide the complete cash-flow assumptions required for a reliable project-level NPV. The second issue is timing: land acquisition, infrastructure construction and commercial development may occur in different periods. The third issue is flexibility: future expenditure can potentially be made conditional on information from earlier phases.

The illustrative model demonstrates the sensitivity of NPV to the discount rate. It also demonstrates that a project can have a positive NPV under one set of assumptions and a negative NPV under another. This does not establish project feasibility; rather, it shows why transparent assumptions and scenario testing are essential.

For the IBFC, the most important future inputs for a full capital-budgeting model would include actual land-acquisition expenditure, development cost by phase, financing drawdowns, interest and repayment schedule, expected lease/sale/service revenues, occupancy or utilisation rates, operating expenditure, maintenance costs, taxes where applicable, residual values, and measurable economic benefits. Once these are available from the detailed project report and financial feasibility study, the illustrative model should be replaced by an actual project cash-flow model.

IX. FINDINGS

- The IBFC is a large proposed greenfield business and finance development under NMRDA.
- The 2025 government approval cited an estimated ₹6,500 crore project cost, including ₹3,000 crore for land acquisition and ₹3,500 crore for development. [1]

- NBCC has described an approximately 1,710-acre development area with 1,000 acres for the business district and 710 acres reserved for future expansion. [2]
- The financing and guarantee structure evolved in 2026, demonstrating the importance of using date-specific financial information in capital budgeting. [3], [4]
- Because complete project cash flows are not publicly established in the sources used here, an official project NPV/IRR cannot be calculated from these sources alone.
- An illustrative model shows that NPV is sensitive to the discount rate and therefore to financing and risk assumptions.
- Phasing, deferral and future expansion can provide flexibility that should be incorporated into the investment decision rather than ignored.

X. CONCLUSION

The New Nagpur International Business & Finance Centre represents a long-horizon investment programme in which capital budgeting and flexibility should be evaluated together. Conventional NPV, IRR and payback remain useful because they provide a common financial language for comparing investment costs and future cash flows. However, for a phased greenfield development, these techniques should be complemented by scenario analysis and an explicit assessment of managerial flexibility.

The study does not conclude that the IBFC has a particular financial return because the public information reviewed does not contain a complete project-level cash-flow forecast. Instead, the paper provides a framework for conducting that appraisal once the detailed project report, actual financing terms and phase-wise cost and revenue estimates are available. A disciplined process would approve expenditure in stages, define measurable milestones, update the cost of capital periodically and preserve the ability to adjust later phases when demand and financing conditions change.

ACKNOWLEDGMENT

The author acknowledges the publicly available information released by the Maharashtra Government, NMRDA and NBCC that supported the project-context portion of this study. The financial scenario calculations are illustrative and were prepared for academic research purposes.

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