DEMystifying Feasibility Studies

August 6, 2020
CPE and Support

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▶ *Please note that questions and answers submitted/provided via the Q&A feature are visible to all presenters as well as the participants.

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▶ BDO Employees: Please contact technical support at 888-236-9111

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Learning Objectives

Identify the criteria necessary to obtain financing based on feasibility studies

Distinguish between “pie in the sky” dreamers and developers with solid business plans

Identify the elements used to develop financial projections needed for feasibility studies
What is a Feasibility Study?

Objective analysis of the relevant factors of a proposed business or project to assess and opine on the viability of the project

- Assessment typically culminates with a binary outcome rather than probabilistic outcome
- Numeric results are often in the form of Internal Rate of Return (IRR), Return on Invested Capital (ROIC), Payback Period depending on the sources of capital and purpose of the study
Who Needs a Feasibility Study?

- Typically the business seeking to raise capital or secure a grant is required to procure a feasibility study by the potential equity and/or debt investors.
- Potential investors will use the feasibility study as part of their investment decision making process.
- Occasionally, a business will request a feasibility study to be conducted for internal planning purposes regarding project investment decision making purposes.
Who Needs a Feasibility Study?

SMALL BUSINESS ADMINISTRATION (SBA) BORROWERS

- All SBA loans require that the potential borrower reasonably demonstrate the ability to repay the intended obligation from the business operation.
- The lender will consider the cash flow from the business, the timing of the repayment, and the probability of successful repayment of the loan.

U.S. DEPARTMENT OF AGRICULTURE (USDA) - COMMUNITY FACILITIES GUARANTEED AND DIRECT LOAN PROGRAMS BORROWERS

- Loans above $500,000 will likely require a feasibility study inclusive of examination opinion attesting to the validity of the assumptions and backed by the preparer’s professional liability insurance.
What a Feasibility Study is Not

BUSINESS PLAN

- Usually the business plan is prepared prior to commencing a feasibility study.
- A comprehensive feasibility study that is intended as an investor facing document may include several items from the business plan that assist in communicating an independent opinion of the viability of the business.

- Marketing Strategy
- Operational Capabilities
- Managerial Capability
- Financial Projections
- Facility Requirements
- Licensing / Permitting
- Strengths, Weaknesses, Opportunities, Threats (SWOT)
What a Feasibility Study is Not

ECONOMIC IMPACT STUDY

- Quantitative estimate of the economic benefits a particular project or industry brings or could bring to the surrounding community or region
  - Value Added: Gross Domestic Product (GDP)
  - Change in Output, by Industry
  - Employment Impact
  - Tax Impact
What a Feasibility Study is Not

ENVIRONMENTAL IMPACT STUDY

- Process of examining the anticipated environmental effects of a proposed project communicated through an Environmental Impact Assessment Report
  - Evaluated by the relevant governing body for determination as to whether the project should be permitted to proceed; may entail process for public response to initial decision

- In the United States, an EIS is mandated by the National Environmental Policy Act of 1969 (NEPA), to assess the potential impact of actions “significantly affecting the quality of the human environment”
Types of Feasibility Studies

COMMON FEASIBILITY STUDY TYPES:

A comprehensive feasibility study is comprised of several sub-categories of feasibility studies.

Market  Technical  Real Estate  Financial
Types of Feasibility Studies

ADDITIONAL

Other feasibility study types include, but are not limited to, the following:

- Legal
- Environmental
- Political
- Managerial
- Operational
- Cultural
- Schedule

Often, several of these feasibility considerations are included in a comprehensive feasibility study depending on degree of relevance to project success.
Types of Feasibility Studies
MARKET FEASIBILITY

Market feasibility study identifies market opportunities and demonstrates that adequate demand for a product or service exists

- Demand Determinates:
  - Expected price of the product or service
  - Price of related products/service, complimentary, substitutes
  - Income levels of buyers
  - Tastes and preferences
  - Value proposition; efficiency enhancing, cost saving
Types of Feasibility Studies

MARKET FEASIBILITY

MARKET OPPORTUNITY: TOTAL ADDRESSABLE MARKET

- Top Down Analysis
  - A process of elimination that starts with a subset of the population and, with careful consideration, hones in on the likely buyer subset
  - Existing sales data by industry
  - Bureau of Labor Statistics (BLS) Reports - fairly detailed breakdown of consumer total expenditures
  - Some products / services may be understated by existing industry sales level
    - Think Uber and the Taxi market
Types of Feasibility Studies
MARKET FEASIBILITY

MARKET OPPORTUNITY: TOTAL ADDRESSABLE MARKET

► Bottom Up Analysis
  • Often based upon a proven data point such as existing sales in a small subset of a greater market
► May employ use of primary collection methods
  • Survey in a local market
  • Secondary research
    - Industry reports, public company filings
Types of Feasibility Studies
MARKET FEASIBILITY

MARKET OPPORTUNITY: TOTAL ADDRESSABLE MARKET

► Value Theory
  • Estimate of the value provided to customers by the product and how much of that value can be earned for a given product price point
    - How much is a customer willing to pay for an improvement or evolution of an existing product?
    - How many customers may find that amount of value and select it over alternatives?
Types of Feasibility Studies
MARKET FEASIBILITY

- Market studies for novel products or services may be a very fundamental exercise
- Clear and comprehensive communication of value proposition
  - Draw parallels and inferences from similar product / service lines
  - Trending of usage and demand of similar product / service lines
    - Industry studies and outlooks (industries with similar drivers)
    - Department of Labor for employment growth statistics
- Current interest among anticipated customers
- Fundamental market surveys - gauge level of interest at a given price point
  - Extrapolate from sample sizes based on careful consideration for marketing plan and the available spend accordingly to estimate addressable market and potential demand
Types of Feasibility Studies

TECHNICAL FEASIBILITY

- Key engineering components of the project that are necessary for project success such as civil or other key infrastructure, high-technology, novel technology
- Technical capability of the technologies and the capabilities of the personnel to be employed in the project as applicable
- Assessment of durability and longevity of infrastructure, technical equipment
  - Maintenance cost assessment
- Developer / manufacturer capability
Types of Feasibility Studies

TECHNICAL FEASIBILITY

ADDITIONAL CONSIDERATIONS

► In developing countries certain technical considerations for both development and operational phases may need to be broader such as the following:
  • Assessment of the adequacy and reliability of the power grid, power transmission
  • Resources, materials availability
  • Local technical capability - operational, maintenance
► Key Component in Project Finance
Types of Feasibility Studies
REAL ESTATE FEASIBILITY

- Real estate feasibility studies may cover a broad number of considerations such as site survey, site planning, land use and environmental permitting, structural engineering, development program, code compliance, traffic implications.

- Income generating real estate assets such as residential, office, hotel and multi-use developments entail a market assessment and financial feasibility in line with the duration of the contemplated financing.

- Highest-and-best-use considerations based upon contemplated locations and anticipated acquisition costs.
Types of Feasibility Studies
FINANCIAL FEASIBILITY

- Financial feasibility studies assess the viability of a project or business based on the ability to generate sufficient income that adequately exceeds the associated costs.

- Comprehensive analysis of revenue projections and all associated costs:
  - Cost of Goods Sold
  - Operating Expenses
  - Capital Expenditures
  - Working Capital
  - Financing Costs

- The cash flow generated from the project must not only cover all costs and debt service but must also generate a return to equity investors that is commensurate with risk.
Common Elements of a Feasibility Study

<table>
<thead>
<tr>
<th>COMMON ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business / Project Overview</td>
</tr>
<tr>
<td>Value Proposition / Key Advantages</td>
</tr>
<tr>
<td>Sources of Revenue</td>
</tr>
<tr>
<td>Operations / Capability</td>
</tr>
<tr>
<td>Risks - Mitigants</td>
</tr>
<tr>
<td>Industry Overview</td>
</tr>
<tr>
<td>Competitive Assessment</td>
</tr>
<tr>
<td>Addressable Market</td>
</tr>
<tr>
<td>Demand Determinants</td>
</tr>
<tr>
<td>Market Forecasts</td>
</tr>
</tbody>
</table>
Depending on sources of capital additional analysis may be required that might be outside of the typical feasibility scope but may nonetheless be required to secure capital.

Debt and equity investors may likely require repayment in full / exit prior to the useful life of the project or sale of the business:

- Detailed financial forecasts for debt service
  - Quarterly debt service, covenant compliance
  - Loan-to-Value lending requirements could lead to valuation considerations
- Equity cash flows for Return on Investment (ROI), Internal Rate of Return (IRR), Multiple of Invested Capital (MOIC)
- Key Sensitivity Analyses
Additional Elements of a Feasibility Study

► Analysis of potential exit market
  • If business is relatively novel, who are the likely strategic buyers?
  • Assessment of total return to equity investors via sale or refinance scenarios
    - Exit via sale scenario would entail an analysis of potential values paid by strategic acquirers
    o Market analysis of multiples paid in strategic acquisitions whereby product / service may compliment or enhance existing lines
Feasibility Light

- Generally smaller capital requirements for relatively low-risk projects may require a light-touch analysis
- USDA loan programs generally require the following elements

- Signed and dated compilation or opinion letter
- 5 years historic and 5 years forecasted financial statements
- Schedule of ratios pertinent to the industry
- Summary of significant financial forecast assumptions and accounting policies
- Summary of significant demand forecast assumptions
- Sensitivity analyses
- Other information deemed appropriate by the preparer
Multi-Disciplinary Considerations

- Many Feasibility Studies will require multi-disciplines
- Real Estate Infrastructure
- Machinery & Equipment

- Civil works projects may require specific technical expertise provided by Real Estate and Machinery & Equipment specialists
- Highly engineered projects
If the Proposed Project Includes Real Estate

- A feasibility study often includes a real estate component
- When bricks and mortar are involved the complexity of a plan increases significantly
- The key goal of a feasibility study involving real estate is to understand if a venture will produce more money than it costs to build
  - Cost In
  - Revenue Returned
- The big question becomes whether the difference is worth the time and effort
Real Estate Feasibility

▶ This type of feasibility study cannot happen in a vacuum
▶ The engagement team must have a strong working relationship with the owner / developer
▶ Such a process brings complete understanding of the possibilities and challenges of a development site
▶ The inability to communicate clearly with the owner / developer will result in inaccurate projections
The client wanted to turn an old office building into a hotel with gallery and retail components
Uniquely, the engagement team needs to be able to understand the legal restrictions that affect development.

Zoning permitted uses

Zoning bulk requirements
Region’s comprehensive planning

Potential for rezoning
Often zoning attorneys, architects and engineers must also be consulted.
Real Estate Feasibility

- The property was located in a dense area in New York City close to the Highline.
- Zoning was complex and the political situation was changing.
Real Estate Feasibility

- Next, the physical nature of the land to be developed and an understanding of the types of improvements proposed needs to be understood.
- A detailed and careful examination of the economic trends that affect real estate values, the current market conditions and trends that directly affect the subject property and potential redevelopment is required.
- Primary research needs to be conducted to identify the uses that are in demand in the neighborhood.
- The contributory value of the overall site of the current improvements must be determined.
Real Estate Feasibility

The subject was located mid-block. Primary research indicated that there was strong demand for all three proposed uses:

- Hotel
- Gallery
- Retail
The cost of development is then determined.

Ownership projections.

Review of competitive projects in the market.

Use of cost manuals.

### General Assumptions

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Bldg. Area</td>
<td>50,709</td>
</tr>
<tr>
<td>Avg. Room Size (SF)</td>
<td>375</td>
</tr>
<tr>
<td>Est. No. of Rooms/Keys</td>
<td>135</td>
</tr>
<tr>
<td>Days of Year</td>
<td>365</td>
</tr>
<tr>
<td>Total Rooms Available</td>
<td>49,357</td>
</tr>
<tr>
<td>Occupancy Rate</td>
<td>86%</td>
</tr>
<tr>
<td>Total Occupied Rooms</td>
<td>42,447</td>
</tr>
<tr>
<td>ADR</td>
<td>$270</td>
</tr>
<tr>
<td>RevPAR</td>
<td>$232</td>
</tr>
<tr>
<td>Miscellaneous Income</td>
<td>6%</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>$33,000</td>
</tr>
<tr>
<td>R.E. Taxes (Upon Completion)</td>
<td>$7,000</td>
</tr>
<tr>
<td>Reserves</td>
<td>4%</td>
</tr>
</tbody>
</table>

### Room Revenue and Expenses

<table>
<thead>
<tr>
<th>Items</th>
<th>% of Revenue</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Revenue</td>
<td>94.3%</td>
<td>$11,460,640</td>
</tr>
<tr>
<td>Miscellaneous Income</td>
<td>5.7%</td>
<td>$687,638</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>100.0%</td>
<td>$12,148,278</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>36.7%</td>
<td>$4,462,392</td>
</tr>
<tr>
<td>Real Estate Taxes</td>
<td>7.8%</td>
<td>$946,568</td>
</tr>
<tr>
<td>Management Fee</td>
<td>4.3%</td>
<td>$546,673</td>
</tr>
<tr>
<td>Reserves</td>
<td>4.0%</td>
<td>$485,931</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>53.0%</td>
<td>$6,441,564</td>
</tr>
<tr>
<td>Net Income/Cash Flow</td>
<td>47.0%</td>
<td>$5,706,714</td>
</tr>
<tr>
<td>Capitalization Rate</td>
<td>7.75%</td>
<td></td>
</tr>
</tbody>
</table>

### Hotel Valuation

| Hotel Value                    | $73,635,025  |
| Rounded                        | $74,000,000  |
| Value Per Room                 | $547,240     |
| Value PSF                      | $1,459       |

### Proposed Renovation (PSF)

| Renovation/PSF *               | $305         |
| Per Room                       | $113,885     |
| Developer's Profit             | 5%           | $800,000     |
| Demolition Costs/PSF           | $20          | $1,000,000   |
| Restaurant Allowance           |              | $1,000,000   |

### Total Renovation Costs / PSF

| $359                            |
| $18,200,000                     |

### Shell Value (Building Only)/PSF

| $450                            |
| $23,000,000                     |

### Total Cost

| $41,200,000                     |

### Valuation Recap

| HOTEL                           | $74,000,000  |
| TOTAL CONSTRUCTION COSTS        | ($41,200,000) |
| RESIDUAL LAND VALUE             | $32,800,000  |
| VALUE PER FAR                   | $647         |

*Includes FF&E (furniture, fixtures and equipment)
Real Estate Feasibility

- An overall examination of several aspects of the proposed project must be considered:
  - Time to achieve the redevelopment
  - Cost to complete
  - Entrepreneurial profit
  - Anticipated return

PHASE 1: 18 Months
- Drawings
- Approvals
- Demolition

PHASE 2: 18 Months
- Construction

PHASE 3: 6 Months
- Completion
- and Absorption

PHASE 4: Total 3 Years
- @ Stabilized Occupancy

Construction Timeline Gallery or Hotel Redevelopment
Real Estate Feasibility

- This leads us to the conclusion of Feasibility and the “Big” question.
- Is the anticipated return sufficient to support the project?
- Is the return in excess of the costs and carrying costs?
- Is the return more than the return expected from a similar investment with similar risk?

### III. Proposed Renovation (PSF)

<table>
<thead>
<tr>
<th>Items</th>
<th>Revenue</th>
<th>Per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renovation (50,709 SF)</td>
<td>$260</td>
<td></td>
</tr>
<tr>
<td>Tenant Allowance/Build-Out</td>
<td>$30</td>
<td></td>
</tr>
<tr>
<td>Leasing Commissions</td>
<td>$30</td>
<td></td>
</tr>
<tr>
<td>Demolition Costs</td>
<td>$20</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$340</strong></td>
<td></td>
</tr>
<tr>
<td>Total Construction Costs</td>
<td>$16,000,000</td>
<td></td>
</tr>
<tr>
<td>Developer’s Profit</td>
<td>$900,000</td>
<td>5%</td>
</tr>
<tr>
<td>Demolition Costs (50,709 SF)</td>
<td>$1,000,000</td>
<td></td>
</tr>
<tr>
<td>Shell Value (Building Only)</td>
<td>$23,000,000</td>
<td>$450</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>$40,900,000</strong></td>
<td></td>
</tr>
</tbody>
</table>

### IV. Valuation Recap

| Gallery (REHAB)              | $56,000,000 |
| Total Construction Costs     | ($40,900,000) |
| Residual Land Value          | $15,100,000 |
| Value per FAR                | $298        |

### V. Valuation Recap Mixed-Use

| Gallery (Rehab)              | $56,000,000 |
| Hotel (New)                  | $80,000,000 |
| Total Value                  | $136,000,000 |
| Total Construction Costs     | ($40,900,000) |
| Hotel (New)                  | ($43,600,000) |
| Shell (Land & Bldg.)         | ($41,000,000) |
| Total Construction Costs     | ($125,500,000) |
| **Profit**                   | **$10,500,000** |

*Source: Sample Numbers*
Potential Feasibility Study Involving a Rooftop Solar Installation

- Scenario overview
- Roof space and configuration dictates the overall size of the system
  - Number of modules
  - Number of inverters
  - Additional components to complete system
  - Electricity generation capacity
- The big question becomes:
  - What is the cost vs. energy savings over the life of the system?
Project Feasibility

- This type of feasibility study cannot happen in a vacuum
- The engagement team must have experience in solar energy specific to:
  - Electrical generation capability based upon system size
  - Geographical location of system
  - Knowledge of qualification of the Investment Tax Credit ("ITC") or any state incentives
  - Type of battery system and capacity
  - Current and future electricity rates
  - Maintenance and operation of the system
  - Whether a Power Purchase Agreement ("PPA") is included
Case Study - Commercial Roof-Top Solar Installation with Battery Storage

- Available roof space dictates the total number of modules and capacity of a roof-top system
- Roof strength and structures will result in various configurations
Location is a Factor in Electrical Generation

- Each state has multiple incentives for renewable energy (www.dsireusa.org)
- Each state receives varying degrees of sunshine per year
- Alaska receives as much sunshine as Germany
- Average electricity rates per state are crucial
Solar Installation Feasibility

REVENUE DEVELOPMENT

- Determine overall roof space, compare to other state rooftop projects to determine estimated generation during first year
- Estimate the components needed for this production level
- Determine battery storage requirements
- Determine if state incentives are applicable
- Estimate overall cost to construct, allocate qualified amount for Investment Tax Credit (ITC)
- Determine current cost for electricity, estimate future rate increases
Solar Installation Feasibility

EXPENSE DEVELOPMENT

- Operation & maintenance expense based upon capacity
- Costs (if applicable)
- Insurance interconnection costs
- Costs and timing for component replacements
- Determine any additional costs (administration, monitoring, etc.)
- Costs associated with battery operations
Solar Installation Feasibility

CREATE CASH-FLOW ANALYSIS

► Annual revenue generation over Economic Useful Life (EUL) of system
  • Electricity generation year 1, build in annual degradation
  • Consider length of all incentives
  • Local rate and increases

► Annual operating costs
  • Build in annual increases
  • Include scheduled component replacements
  • Include expenses related to the battery
Solar Installation Feasibility

CREATE CASH-FLOW ANALYSIS

Estimate Tax Depreciation

Estimate Weighted Average Cost of Capital (WACC) Rate

Estimate ITC
A unified municipal services area agreement within the state level statutes stipulated that a feasibility study is required for consideration of a withdrawal by a member municipality from the unified services area agreement.

The statutes stipulated that feasibility must be demonstrated for the withdrawing entity on a standalone basis as well as pertaining to the continuity of the remaining entities that comprise the services area agreement.
Statute Mandated Feasibility Case Study

MUNICIPAL SERVICES REORGANIZATION

- Detailed five-year cost projections to be determined for the costs of the municipality remaining within the service area agreement vs. the costs to perform the services on a standalone basis
  - Determination if any new taxes and/or rate increases per household that may be levied within the withdrawing municipality
  - Fiscal impact that withdrawal has on other municipalities served by the area agreement
  - Specific considerations for population and population density within the withdrawing municipality - likelihood of service requirements thus associated variable costs
  - Current and five-year projections of demographics and economic base in the withdrawing municipality, including household size and income, commercial and industrial development, and public facilities
MULTIDISCIPLINARY REQUIREMENTS

- Determination of the physical assets that will be required by the withdrawing municipality to provide, without interruption or diminution of service, the same service that is provided by the cooperative district.

- The physical assets that will no longer be required by the cooperative district to continue to provide the current level of service to the remainder of the district, excluding the withdrawing municipality, and could be transferred to the withdrawing district.

- Fair and equitable distribution of assets.

- Fair and equitable allocation of liabilities - assessment of municipal bonds issued to finance the purchase of the assets.
MULTIDISCIPLINARY REQUIREMENTS

- Analysis of allocation of employees to the withdrawing municipality including assessment of the following liability transfers:
  - Sick Leave
  - Vacation
  - Other accrued benefits and obligations

PUBLIC REVIEW: Q&A with constituents regarding feasibility study
Public Private Partnership Feasibility Case Study
PUBLIC PRIVATE PARTNERSHIP (PPP) WITH DEVELOPING NATION

- PPP to develop a $1.0 billion power generation facility
- Technical feasibility study performed by engineering firm as part of securing the project debt financing
- Provision of equity capital by government required comprehensive feasibility study
  - To be used in external investor capital raising efforts
Public Private Partnership Feasibility Case Study

PUBLIC PRIVATE PARTNERSHIP (PPP) WITH DEVELOPING NATION

KEY CASE-SPECIFIC COMPONENTS OF FEASIBILITY STUDY - COUNTRY OVERVIEW

- Key Industries
  - Growth prospects
  - Ensuing demand for power consumption

- Economic Data Overview
  - Macro growth expectations
    - Sources of growth including international trade prospects
  - Household income levels and growth expectations

- Government
- Regulatory
- Political Environment
Usage Uptake - Industries and Residential Consumers
- Expected usage from existing industry (‘anchor load’) for provision of necessary economies of scale
  - Significant demand from industries that historically relied upon costly ‘self-supply’ of energy
  - Increased productivity due to historical lack of ample and reliable power supply

Risks - Mitigants
- Substitution / competition
- Equity investor metrics
Questions?

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Conclusion

THANK YOU FOR YOUR PARTICIPATION!

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- Please exit the interface by clicking the “X” in the upper right hand corner of your screen.

- *If you are participating as part of a group, please allow additional time for CPE processing.

- After 48 hours your certificate will also be available under your profile on BDO.com*

- More information is available by clicking the handouts icon on the screen.

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