CHAPTER 13

FEASIBILITY STUDIES—AN INTRODUCTION

INTRODUCTION

This chapter explains what a feasibility study is designed to do and covers the highlights of the two major parts of such a study.

Part one includes the introduction to the study (front matter), general market characteristics, site evaluation, supply and demand information, and supply and demand analysis. The chapter illustrates a detailed approach to supply and demand analysis for a hotel and covers the four steps involved.

Part two of a feasibility study covers the financial analysis. A financial analysis generally requires four major sections: (1) calculation of the capital investment required and tentative financing plan; (2) preparation of pro forma statements; (3) preparation of cash flow projections from the net income forecasts; and (4) evaluation of the projections.

CHAPTER OBJECTIVES

After studying this chapter, the reader should be able to

1. Discuss the value of a feasibility study and the information included in its nonfinancial sections.
2. List and briefly discuss the four steps in hotel room supply and demand analysis.
3. Calculate forecast rooms required from given demand information.

4. Prepare pro forma income statements for rooms, food, and beverages from given information.
5. Convert pro forma income statements to cash flow from given information.
6. Evaluate the financial analysis projections of a feasibility study.

FEASIBILITY STUDIES DEFINED

A **feasibility study** is an in-depth analysis of the financial variability of a property development, rather than a promoter's guess that a new idea will be economically successful. A feasibility study is not designed to prove that a new venture will be profitable. An independent feasibility study that is professionally prepared by an impartial third party could result in either a positive or a negative recommendation. If it is negative, both the borrower and the lender should be happy that the proposal is not developed. However, if it is positive, this should not be taken as a guarantee of success. A feasibility study can only consider what is known at present and what may happen in the future. But, since the future is impossible to forecast accurately, and so many unforeseen factors can come into play, there can be no guarantees. In other words, a feasibility study may reduce the risk of a particular investment but does not eliminate it.

Some feasibility studies seek out the most appropriate location for a new property and continue with the study from there. Others consider one location without considering alternatives.

FEASIBILITY STUDY FORMAT

Although the scope of a feasibility study for a suburban restaurant differs considerably from one for a major downtown hotel complex, the basic format of any feasibility study is the same. Most feasibility studies conclude with a financial analysis of the proposal. This will be covered in more depth later in this chapter. However, the other parts of a feasibility study that precede the financial analysis will be briefly discussed here. In this discussion, we will assume that the feasibility study is for a hotel with food and beverage facilities. In a feasibility study for a motel with only rooms, facilities data relevant to only guest rooms would be included. In a study for a restaurant without a hotel or motel, rooms' data would be irrelevant.

A suggested format for a hotel feasibility study would generally cover the front matter, general market characteristics, site evaluation, supply and demand

information and supply and demand analysis. Sometimes, the format includes space recommendations. Let's look at these segments in further detail.

FRONT MATTER

This includes an introduction exploring why the study was carried out, what property is being evaluated and how this evaluation was conducted, when the study was conducted and by whom, and a summary highlighting the findings, conclusions, and recommendations.

GENERAL MARKET CHARACTERISTICS

This section covers such items as site location and the general area's population growth trends, industrial diversification and growth, building permit activity, employment and economic trends, disposable incomes, housing, transportation, attractions, convention facilities, and special factors (e.g., is the area's economy highly dependent on its local university population?). Only those items relevant to the proposed new hotel should be discussed. Both descriptive and statistical data should be included. The information should be concise and primarily related to the demand for rooms (since other services offered by a hotel are generally derived directly from rooms' usage).

SITE EVALUATION

If an in-depth section on the site location is included in the study, that section should include detailed maps of the location. Wherever possible, those maps should show important subcenters of activity related to the proposal, such as industrial areas, shopping malls, and convention and support center locations. Transportation routes, including, for example, routes to and from the airport, should be shown. If access by automobile is important (as it frequently is), these auto routes should be indicated.

Physical information about the site should be included, such as dimensions, existing improvements (buildings) on the site, and adequacy of the site for possible future expansion.

Cost of the site, site preparation costs prior to construction, and property taxes should be covered. Finally, any other important matters such as zoning restrictions, height restrictions, parking space requirements, future traffic flow changes, and availability of utility services should be part of this section.

SUPPLY AND DEMAND INFORMATION

There are three possible reasons for a new hotel. One is that the demand for rooms is greater than the supply; another is that there is a demand from a new market that is not being served with the existing supply; and the third is that the

supply is inferior in quality to the needs of the demand or market. It is, therefore, important that the study analyze the supply/demand situation to identify the market for the proposed new property. This is preferably done by looking at the current situation for the entire local market and then adjusting for anticipated future changes.

Certain basic information should be included as follows:

- *Occupancy trends in the local area for the past five years.* Occupancy trends should be broken down by hotel classification if possible (see next item).
- *A list of hotels currently serving the local market.* The hotels should be listed by type. Three classes are normally listed: those that would be the most competitive properties, those that would be somewhat competitive, and those that would be less competitive. The list should include each hotel by name, the number of rooms it has, and its current room rates. Any hotels in this list that were built in the past five years should be highlighted with added information, such as the facilities they have other than rooms (e.g., number of seats in their restaurants) and the quality of those facilities.
- In addition, the most competitive hotels should be further highlighted by including additional information (if available) about their occupancy rates, food and beverage facilities' usage (e.g., seat turnovers and average checks), and the composition of their market for rooms, food, and beverages.
- *The principle sources of demand.* Generally, for a city hotel, the sources of room demand are classified into three major types of customers: the traveling businessperson, the convention delegate, and the general tourist or vacationer. For each category, relevant data should be provided that could indicate demand for rooms.

For the business traveler, relevant data might include growth in local airport traffic, and/or growth in local office space occupancies for the past five years, since there is frequently a high correlation between these items and demand for hotel rooms.

Data concerning the convention or business meeting delegate would include the number of conventions held each year in the area, types of conventions, their size, total number of delegates, average length of delegates' stay, and average conventioneers' daily spending.

Data concerning vacationer arrivals would include number of tourists, average length of stay, average daily spending on hotel accommodations and meals, and any change in or extension of the tourist season over the past several years.

If there is any significant demand for hotel accommodations from any special source, this should be included. For example, sporting events can often be a major source of demand for hotel rooms close to the sporting event location.

Much of the information necessary for this section of the study can be obtained from local chambers of commerce, convention and visitor bureaus, hotel and motel associations, airport authorities, government agencies, and, in the case of office space occupancies, the local office building owners' association. Each individual situation will require contact with other possible sources of relevant information.

SUPPLY AND DEMAND ANALYSIS

Once the supply and demand information has been assembled and tabulated, it must then be analyzed to determine if additional hotel rooms in the area can be justified. This requires four steps:

1. Calculate the most recent 12-month average occupancy rate of the most competitive hotels.
2. Calculate the composite growth rate of demand from various sources.
3. Calculate the additional rooms required year by year.
4. Calculate the future supply of rooms required.

Step 1. Calculate the most recent 12-month average occupancy of the most competitive hotels.

Let us assume there are five competitive hotels and their number of rooms and occupancies are as follows for the most recent year:

Hotel	*Rooms in Hotel*	*Average Occupancy (%)*	*Average Nightly Demand*
1	320	70	224
2	108	75	81
3	246	85	209
4	170	70	119
5	312	85	265
Total	1,156		898

For each hotel, the number of rooms has been multiplied by that hotel's average occupancy percentage to arrive at average nightly demand. We use these figures to calculate the total average nightly demand of 898 rooms.

The average annual occupancy of the most competitive hotels is then calculated using the following equation:

$$\frac{\textbf{Average nightly demand}}{\textbf{Rooms available}} = \textbf{Average annual occupancy} = \frac{898}{1{,}156} = \underline{\underline{77.7\%}}$$

Step 2. Calculate the composite growth rate of demand from the various sources.

Let us assume that our demand information gave the breakdown figures in percentages for each source, as well as annual compound growth rates for that source, as follows:

Source	*Source of Demand (%)*	*Annual Compound Growth (%)*	*Composite Growth (%)*
Business travelers	75	8	6.0
Convention delegates	10	5	0.5
Vacationers	15	10	1.5
Total	100		8.0

Source-of-demand percentages have been multiplied by the annual compound growth rate percentages in the next column to provide the composite growth rate figures in the right-hand column (e.g., 75% × 8% = 6.0%). The annual compound growth rate figures can be estimated from historic growth rate figures projected into the future. The total overall composite growth rate figure is 8.0% as indicated above.

Step 3. Calculate future rooms demand year by year.

This calculation is shown as follows:

Year	*Composite Demand*	*Future Growth (%)*	*Demand*
1	898	108	970
2	970	108	1,048
3	1,048	108	1,132
4	1,132	108	1,223
5	1,223	108	1,321

In year 1 the current average nightly demand for rooms figure of 898 (calculated in step 1) is multiplied by the composite growth rate figure of 108 percent (100% + 8% composite growth rate figure calculated in step 2) to arrive at the future demand figure of 970 rooms in the year 1. The 970 figure is carried forward into year 2 and is itself multiplied by 108 percent. Similar calculations are made for each of the remaining three years.

Step 4. Calculate the future supply of rooms required.

We know from step 1 that the current occupancy rate in the competitive area is 77.7 percent. Let us now assume that a 70 percent occupancy of hotel rooms is *normal* for our competitive area. *Normal* means that, at that occupancy, a hotel should be profitable. We, therefore, know that the local market could support additional rooms right now, since current occupancy is averaging 77.7 percent. We can calculate the current need for additional rooms at a 70 percent occupancy rate by dividing current nightly demand by 70 percent:

$$\frac{\textbf{Average nightly demand}}{\textbf{Average occupancy \%}} = \textbf{Rooms required} = \frac{\textbf{898}}{\textbf{70\%}} = \underline{\underline{\textbf{1,283}}}$$

From this we can conclude that there is currently a shortage of 127 rooms (1,283 that the market could support less than the 1,156 that the market currently offers). Stated another way, if a new 127-room hotel were built today, given the current demand for rooms, the new overall average occupancy rate would be 70 percent.

$$\frac{\textbf{Average nightly demand}}{\textbf{Rooms shortage + Rooms available}} = \textbf{Average occupancy rate} = \frac{\textbf{898}}{\textbf{127 + 1,156}} = \underline{\underline{\textbf{70\%}}}$$

Next, the future demand for additional hotel rooms is projected for the next five years, as follows:

$$\frac{\textbf{Rooms demand}}{\textbf{Normal occupancy \%}} = \textbf{Supply required} - \textbf{Current supply} = \textbf{New rooms required}$$

Year	*Rooms Demand*	*Normal Occupancy (%)*	*Supply Required*	*Current Supply*	*New Rooms Required*
Current	898	70	1,283	1,156	127
1	970	70	1,386	1,156	230
2	1,048	70	1,497	1,156	341
3	1,132	70	1,617	1,156	461
4	1,223	70	1,747	1,156	591
5	1,321	70	1,887	1,156	731

In the above tabulation, the future demand figures from step 3 have each been divided by a 70 percent occupancy rate (as was demonstrated earlier for the current year) to arrive at the figures in the supply-required column. From each year's supply-required figure, the current supply of rooms (1,156) has been

deducted. The end result is a forecast of the number of new rooms that could be supported over each of the next five years, given all these assumptions. We see that, at the end of five years, 731 additional rooms could be supported at an average occupancy of 70 percent. Note, also, that the rooms-required figures in the right-hand column are cumulative.

To reduce risk we might want to assume that a 75 percent, rather than a 70 percent, occupancy should be used. In that case, the year-by-year demand figures would be divided by 75 percent, resulting in a reduced number of additional rooms per year that the market could support.

However, before the supply/demand analysis is finalized and a recommendation is made about the size of property to be planned, some other factors might need to be considered. For example, if any of the existing competitive facilities are expected to be removed from the market (demolished or converted to some other use), the supply figures should be adjusted accordingly. Similarly, if any information is available about other proposed competitive hotels in the area, this should be adjusted for in the future supply figures. Finally, the decision about whether to build should not be based on numbers alone. Frequently, two adjacent, competitive hotels, motels, or restaurants will have vastly different demands for their products. There are many nonquantifiable factors that cause this to be so, such as atmosphere, quality of decor, management, and staff training, to name only a few.

SPACE RECOMMENDATIONS

The feasibility study at this point could include information that the architect might require to prepare more detailed plans. This should include not only such items as the number of rooms and the proportion of rooms of various types (singles, doubles, twins), but also the proportion of space and number of seats recommended for food, beverage, and related facilities, such as meeting rooms and public spaces (lobbies), and possibly even suggested themes for bars and restaurants. Back-of-the-house facilities and space requirements (kitchens, storerooms, offices) should be included, as should parking space requirements. Finally, any recommendations concerning recreation facilities should be covered in this section.

FINANCIAL ANALYSIS

A major part of any feasibility study is the financial analysis section. This section is normally broken down into four subsections, such as the capital investment required and a tentative financing plan, pro forma income statements, projected cash flow, and evaluation of projections.

Each of these subsections will be discussed in relation to the financial feasibility of a hypothetical new 100-room motor hotel that will have a 65-seat coffee shop, 75-seat dining room, and 90-seat cocktail lounge. Any income received other than from these operating departments will be incidental.

CAPITAL INVESTMENT REQUIRED AND TENTATIVE FINANCING PLAN

Estimates based on professional advice from architects, contractors, and other useful sources indicate that the investment required in the proposed property will be:

Land	$ 300,000
Building (including all professional fees for architects, designers, and lawyers)	2,100,000
Furniture and equipment	600,000
Interest on construction financing	220,000
Preopening operating expenses	100,000
Initial working capital	50,000
Total	$3,370,000

The total estimated investment required of $3,370,000 is tentatively broken down into the following possible financing plan:

	Debt	*Equity*	*Total*
Land and building (75% debt / 25% equity)	$1,800,000	$ 600,000	$2,400,000
Furniture and equipment (80% debt / 20% equity)	480,000	120,000	600,000
Interest on construction financing		220,000	220,000
Preopening expenses		100,000	100,000
Initial working capital		50,000	50,000
Totals	$2,280,000	$1,090,000	$3,370,000

Assumptions and other information:

1. Interim, or bridge financing of $1,800,000 will be required for partial payment of the land and for construction financing. This amount, advanced by the lender month by month as required, will carry a 12 percent interest rate, or 1 percent per month. Interest will be paid monthly out of equity funds available. The full amount of the advance ($1,800,000) will be refunded, just prior to opening, out of the proceeds of a permanent first mortgage to be taken out on the land and building. Total preopening interest cost will be

Months Before Opening	*Equity Amount*	*Land and Building*	*Furniture and Equipment*	*Interim Loan Financing*	*Prepaid Expenses*	*Working Capital*
19	$ 216,500	$215,000		$ 1,500		
18	15,000	10,000		5,000		
17	15,500	10,000		5,500		
16	16,000	10,000		6,000		
15	32,000	25,000		7,000		
14	33,000	25,000		8,000		
13	34,000	25,000		9,000		
12	35,000	25,000		10,000		
11	36,000	25,000		11,000		
10	37,000	25,000		12,000		
9	38,000	25,000		13,000		
8	39,000	25,000		14,000		
7	40,000	25,000		15,000		
6	41,000	25,000		16,000		
5	61,500	25,000	$ 20,000	16,500		
4	82,000	20,000	20,000	17,000	$ 25,000	
3	102,500	20,000	40,000	17,500	25,000	
2	103,000	20,000	40,000	18,000	25,000	
1	113,000	20,000		18,000	25,000	$50,000
Totals	$1,090,000	$600,000	$120,000	$220,000	$100,000	$50,000

EXHIBIT 13.1

Equity Investment Schedule

$220,000 as calculated in Exhibit 13.1. This interest expense is the amount the developer has to pay the lender at the prevailing rate on the total amount of money advanced to that date.

2. The permanent first mortgage of $1,800,000 will have a 20-year term and will carry a 10 percent interest rate for the first five years. A schedule showing the breakdown between interest and principal for the first five years, following the hotel's opening is illustrated below.

Year	*Annual Payment*	*Interest*	*Principal*	*Balance*
				$1,800,000
1	$211,000	$180,000	$31,000	1,769,000
2	211,000	177,000	34,000	1,735,000
3	211,000	173,000	38,000	1,697,000
4	211,000	170,000	41,000	1,656,000
5	211,000	165,000	46,000	1,610,000

In these calculations, figures have been rounded to the nearest $1,000. Note that payments on such a mortgage would normally be made monthly and the schedule of repayments calculated on this basis. However, for the sake of simplicity, annual payments have been assumed.

3. The equipment and furniture will be financed using a chattel mortgage (the chattels being the equipment and furniture) over five years at a 12 percent interest rate. Repayment will be made with combined equal annual installments of principal and interest. A schedule showing these repayment amounts broken down into principal and interest is illustrated below. (Again, all figures are rounded to the nearest $1,000.)

Year	*Annual Payment*	*Interest*	*Principal*	*Balance*
				$480,000
1	$133,000	$58,000	$ 75,000	405,000
2	133,000	48,000	85,000	320,000
3	133,000	38,000	95,000	225,000
4	133,000	27,000	106,000	119,000
5	133,000	14,000	119,000	-0-

4. The total initial equity investment is forecast to be $1,090,000. It is useful to prepare a schedule showing the timing of this investment, by month, prior to opening, so the equity investors know when they have to put up the money and what it is for. This is illustrated in Exhibit 13.1 for our proposed hotel.

5. The interest expense of $220,000 on the interim financing will be capitalized and expensed as part of the depreciation expense of the building.

6. The preopening expenses of $100,000 (for such items as insurance, property taxes, wages and staff training, advertising, and other operating costs incurred prior to opening) will be amortized (shown as an expense) over the first two years of operation.

7. For the building, as well as the furniture and equipment, declining balance depreciation will be used. Building depreciation will be 3.75 percent per year, and furniture and equipment, 20 percent per year. Depreciation schedules are as follows:

Building

Year	*Depreciation Expense*					*Balance*
						$2,100,000
1	3.75%	×	$2,100,000	=	$79,000	$2,021,000
2	3.75%	×	$2,021,000	=	$76,000	$1,945,000
3	3.75%	×	$1,945,000	=	$73,000	$1,872,000
4	3.75%	×	$1,872,000	=	$70,000	$1,802,000
5	3.75%	×	$1,802,000	=	$68,000	$1,734,000

Furniture and Equipment

Year	*Depreciation Expense*					*Balance*
						$600,000
1	20%	×	$600,000	=	$120,000	$480,000
2	20%	×	$480,000	=	$ 96,000	$384,000
3	20%	×	$384,000	=	$ 77,000	$307,000
4	20%	×	$307,000	=	$ 61,000	$246,000
5	20%	×	$246,000	=	$ 49,000	$197,000

PRO FORMA INCOME STATEMENTS

The next step is the preparation of pro forma income statements by two departments (rooms and food and beverage).

Rooms

Rooms revenue is based on the assumption that, in the first year, occupancy of the 100 rooms will be 60 percent and that the average room rate will be $52. This rate would be competitive with what other motor hotels in the area are charging. In year 2, and for the remaining three years of our five-year projections, occupancy is expected to climb to 70 percent, and average room rate will be increased to $56. Year 1 room revenue is therefore

100 rooms × 60% × $52 × 365 nights = $1,138,800

and for each of the next four years room revenue will be

100 rooms × 70% × $56 × 365 nights = $1,430,800

The operating costs for the room department estimated as follows for year 1:

Payroll and related expenses	**$244,000**
Other direct operating costs	**54,000**
Total	**$298,000**

These estimated operating costs will generally be based on a percentage of sales revenue, using national averages for that size and type of operation, adjusting for local conditions if necessary. In year 2 and the remaining years of our forecast, these costs are increased in total by $74,000 a year to take care of the increased occupancy. Our rooms department income condensed statements would now be as follows, with figures rounded to the closest $1,000:

	Year 1	*Years 2 to 5*
Sales revenue	$1,139,000	$1,431,000
Operating costs	(298,000)	(372,000)
Net department operating income	$ 841,000	$1,059,000

Food and Beverage

Food and beverage, insofar as sales and cost of sales are concerned, should be broken down into two separate components: food and alcoholic beverages. Food sales should, in turn, be broken down by sales area (coffee shop and dining room) and then, in turn, by meal period within each sales area. Sales are then calculated by using the basic equation given in Chapter 9.

$$\textbf{Number of seats} \times \textbf{Seat turnover rate} \times \textbf{Average check} \times \textbf{Days open in year}$$

For example, in our 65-seat coffee shop, assuming it will be open every day of the year, breakfast sales are calculated as follows, assuming one turnover and a $5.25 average check:

$$\textbf{65} \times \textbf{1} \times \textbf{\$5.25} \times \textbf{365} = \textbf{total sales } \underline{\textbf{\$124,556}}$$

Similar calculations would have to be made for the other meal periods, and, possibly, for coffee break periods if these were expected to generate significant amounts of sales revenue. Seat turnover figures and average check amounts normally vary enough from one meal period to another to require separate calculations. Turnover rates and average checks can often be based on an assessment of what local competitive hotel restaurant operations are doing, combined with an evaluation of the type of clientele the guest rooms will be catering to.

In the calculation of total food revenue, it might be necessary to consider sales generated in areas such as room service. In room service, the rooms occupancy figure will give an indication of the number of guests per day who might require some type of food service. This would give total daily sales, which should then be multiplied by 365.

In addition, the derived demand from nonfood areas might add to total food sales. For example, if food service is offered to customers in the cocktail lounge, an estimate of the number of daily orders that could be expected multiplied by an assumed average check would give a forecast of daily sales. This daily sales figure can then be multiplied by the days in the year that the lounge will be open.

Let us assume that this work has been completed and that total annual food revenue is estimated at $1,570,000. To this food figure must be added

the alcoholic beverage sales in the coffee shop and dining room, as well as in the lounge. You are referred to the relevant section in Chapter 9 for forecasting beverage sales. Assume that total annual beverage sales for the proposed hotel have been calculated and are estimated to be $1,038,000. Combined food and beverage sales will be $2,608,000.

From the combined food and beverage sales figures, the direct operating costs must be deducted. As was the case with the rooms department, these costs can be estimated as a percentage of sales, using national restaurant industry figures for this size and type of operation, adjusting if necessary for local conditions. The departmental income statement can now be prepared.

	Food	*Beverage*		*Total*
Sales revenue	$1,570,000	$1,038,000		$2,608,000
Cost of sales	(628,000)	(261,000)		(889,000)
Gross profit	$ 942,000	$ 777,000		$1,719,000
Payroll and related expenses			$921,000	
Other direct operating expenses			519,000	(1,440,000)
Net departmental operating income				$ 279,000

Once the forecast departmental income statements have been finalized, the total departmental operating income can be calculated. From this can be deducted the undistributed expenses (administrative and general, marketing, property operation and maintenance, and energy costs). These expenses are generally primarily fixed in nature and can usually be estimated with some accuracy. In this case, the figure is estimated to be $480,000 annually.

The forecasted departmental operating income figures, less undistributed expenses, have been transferred to Exhibit 13.2 for each of the first five years of operation. It should be noted that these figures are constant for each of the years (except for rooms departmental income from year 2 forward, due to the anticipated increase in occupancy percentage, room rate, and direct expenses, as explained earlier). In all other cases, the possibility of increasing costs has been ignored on the assumption that any increased costs will be passed on in the form of higher room rates or food and beverage prices; thus, net operating income will not change significantly. Also, for years 2 through 5, no upward adjustment has been made for any additional sales revenue that the food and beverage areas would derive from the additional rooms occupancy. At this point, the sales revenue figures should be kept as conservative as possible.

In Exhibit 13.2, in years 1 and 2, $100,000 preopening operating costs have been deducted: $50,000 in each of the years. For tax purposes in the United States (as well as some other countries), the interest expense on interim financing of $220,000 cannot be deducted to arrive at operating income (before tax).

	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Departmental operating income					
Rooms	$ 841,000	$1,059,000	$1,059,000	$1,059,000	$1,059,000
Food and beverage	279,000	279,000	279,000	279,000	279,000
	$1,120,000	$1,338,000	$1,338,000	$1,338,000	$1,338,000
Less: undistributed expenses	(480,000)	(480,000)	(480,000)	(480,000)	(480,000)
Preopening expenses	(50,000)	(50,000)			
Income before interest & depr:	$ 590,000	$ 808,000	$ 858,000	$ 858,000	$ 858,000
Interest	(238,000)	(226,000)	(211,000)	(197,000)	(179,000)
Depreciation	(207,000)	(180,000)	(158,000)	(138,000)	(124,000)
Operating income (before tax)	$ 145,000	$ 402,000	$ 489,000	$ 523,000	$ 555,000
Income tax (40%)	(58,000)	(161,000)	(196,000)	(209,000)	(222,000)
Net income	$ 87,000	$ 241,000	$ 293,000	$ 314,000	$ 333,000

EXHIBIT 13.2

Pro Forma Income Statements

Instead, the interest has to be capitalized—that is, added to the total cost of building construction. Some of the interest expense is, thus, included each year as part of the building's depreciation expense. The following table shows the depreciation of the interest expense.

Construction Interest Depreciation

Year	*Depreciation Expense*	*Balance*
		$220,000
1	3.75% × $220,000 = $8,000	212,000
2	3.75% × 212,000 = 8,000	204,000
3	3.75% × 204,000 = 8,000	196,000
4	3.75% × 196,000 = 7,000	189,000
5	3.75% × 189,000 = 7,000	182,000

To arrive at the proposed hotel's overall net income (or loss), permanent and chattel mortgage interest, as well as building, furniture, and equipment depreciation, have been deducted for each of the five years. Finally, income tax has been deducted. If there had been an operating loss before income tax in year 1, there would be no income tax. Also, that loss would be carried forward into year 2 and deducted from the income before income tax before applying the 40 percent tax rate on the taxable income.

PROJECTED CASH FLOW

The next step in our financial feasibility is to convert the hotel's annual net income to an annual cash flow. This is illustrated in Exhibit 13.3.

First, to net income has been added back those expenses, previously deducted to arrive at net income, that did not require an outlay of cash in that year. These include depreciation (which is simply a write-down of the book value of the related assets), and the preopening expenses for years 1 and 2 (which were also paid out from the equity investment prior to opening).

Finally, the principal portions of the permanent and chattel mortgage payments have been deducted, since these require an outlay of cash that is not shown as a deduction to arrive at net income. The resulting figure for each year is the net cash flow. See Exhibit 13.3.

The cash flow is positive each year indicating that, with the proposed financing plan, there will be no problem in meeting both the interest and principal payments on the debt.

EVALUATION OF PROJECTIONS

At this point in the analysis, it might be useful to determine the return on the equity investment that would be achieved with the given estimates of revenue and expenses. Over the first five years the total net income from Exhibit 13.2 is as follows:

Year 1	$ 87,000
Year 2	241,000
Year 3	293,000
Year 4	314,000
Year 5	333,000
Total	$1,268,000

	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Net income	$ 87,000	$241,000	$293,000	$314,000	$333,000
Add: Depreciation	207,000	180,000	158,000	138,000	124,000
Preopening expenses	50,000	50,000			
Cash available	344,000	471,000	451,000	452,000	457,000
Deduct: Principal payments	(106,000)	(119,000)	(133,000)	(147,000)	(165,000)
Net cash flow	$238,000	$352,000	$318,000	$305,000	$292,000

EXHIBIT 13.3
Budgeted Cash Flows

This is an average of slightly less than $253,600 a year ($1,268,000 divided by 5), or an average return on the initial $1,090,000 equity investment of about 23.3 percent, which, although not high for the risk involved, could be considered reasonable after income tax. However, as seen in Chapter 12, return on investment might not be the best criterion to use in evaluating an investment proposal. The net present value (NPV) and/or internal rate of return (IRR) methods discussed and illustrated in that chapter are frequently more valid measures for project evaluation.

Also, the forecasts used were based on only one level of occupancy, set of room rates, and food and beverage prices. It is normal practice to prepare a flexible budget and determine estimated net income from a level of sales higher than expected (thus providing a higher return on investment), as well as a level of sales lower than expected.

If a satisfactory return could not be anticipated, the project might be terminated at this point. Alternatively, a different financing arrangement might be attempted, using more or less leverage and/or different terms and interest rates. To do this manually may require considerable work, but spreadsheets can be easily programmed to handle changes in a number of variables, individually or at the same time, to produce new net income and cash flow figures based on the changes.

If a plan were to be arranged that seemed to produce net income and cash flow figures that were, in the initial years acceptable, then the cash flow projections should be continued beyond the five-year period to extend them for the entire life of the project. Finally, the lifetime cash flow figures could then be evaluated, using the NPV or IRR investment analysis methods, before a final decision is made to proceed with the development.

FEASIBILITY OF EXPANDING EXISTING OPERATION

Although this chapter has discussed a financial feasibility study for a new operation, the same techniques can be applied equally well to the feasibility of expanding an existing hotel, motel, restaurant, or similar business. In that case, only the marginal or incremental revenues and expenses, as well as debt and equity financing costs associated with the expansion, would be considered in the net income and cash flow projections. In fact, these projections are much easier to make for an existing business, since it has its current operation's historic accounting data to use as a basis for forecasting.

COMPUTER APPLICATIONS

A spreadsheet can be used for all the calculations necessary for a feasibility study pro forma income statement and budgeted cash flows for as many years into the future as desired. It will also allow rapid results to be produced in

what-if situations, for example, by changing forecast room rates and/or occupancy percentages. Finally, it will allow NPV or IRR to be applied to the forecasts to provide a more valid measure of a proposed project's viability.

SUMMARY

A feasibility study is an in-depth analysis of the financial feasibility of a property expansion or a new property development. A feasibility study cannot guarantee financial success, but it does reduce much of the guesswork and risk of a new venture.

A feasibility study for a hotel can usually be broken down into two major parts. The first part includes such items as the front matter (including conclusions and recommendations), general market characteristics (location, population and industrial growth, employment, incomes, economic trends), site evaluation (including maps, transportation routes, and physical information about the site), and supply-and-demand information (market to be served, information about competitive properties, and the likely sources of demand for the facilities to be offered). The next section in the first part of the study would be a supply-and-demand analysis for guest rooms (in a hotel situation).

The supply-and-demand analysis has four steps:

1. Calculate the most recent 12-month average occupancy of the most competitive hotels.
2. Calculate the composite growth rate of demand from the various sources.
3. Calculate the additional rooms required year by year.
4. Calculate the future supply of rooms required.

Once these steps have been completed, the first part of the study can be concluded with recommendations about the number and types of rooms proposed and about other facilities proposed, such as number of seats and themes for food and beverage areas.

The second part of a feasibility study is a financial analysis of the proposal based on the facilities recommended. This part is composed of four major sections:

1. Calculation of the capital investment required and tentative financing plan. The investment required is broken down into such items as land, building, furniture and equipment, construction loan interest, other preopening expenses, and working capital. The financing plan is then broken down into its debt and equity elements.
2. Preparation of pro forma income statements. These are usually initially prepared for a minimum five-year period. Sales revenue for each department is first forecast, and from this are deducted estimated direct expenses (usually based on a percentage of sales revenue). Next are deducted the indirect

expenses and other preopening expenses. Finally, mortgage interest and depreciation are deducted, as well as income tax, where relevant, to arrive at net income.

3. Preparation of cash flow projections from the net income forecasts. Net income is adjusted for depreciation and principal payments on debt financing to arrive at cash flow.
4. Evaluation of the projections to date is made at this point. If necessary, revenue levels and/or other variables can be changed to see how this might affect the results. Finally, if the proposal appears feasible, a complete evaluation of the project's entire life, using NPV or IRR (see Chapter 12) should be carried out before making the final decision on the investment.

DISCUSSION QUESTIONS

1. Since a feasibility study for a proposed new venture cannot guarantee that the venture will be successful, of what value is such a study?
2. In a feasibility study for a restaurant in a downtown office building, what general market characteristics do you think would be relevant?
3. In preparing a feasibility study for a motor hotel to be located in an area where there are several other motor hotels, what factors would you consider to determine which of the other operations are the most competitive?
4. A resort hotel is to be located in a mountain area near a major highway about 150 miles from the closest town or city. What sources of demand might you consider in a feasibility study for this property?
5. Briefly describe how a composite growth rate of demand for hotel rooms can be calculated.
6. Two similar competitive restaurants have quite different levels of demand (average total number of customers per day). What factors could cause this to be so?
7. In preparing the pro forma income statement for a rooms department, how do you think the average room rate and occupancy figures could be established?
8. In estimating total sales revenue for a coffee shop in a proposed new hotel, why is it important to begin by estimating sales revenue by meal period?
9. What adjustments generally have to be made to the net income figures to convert them to a cash flow basis?
10. In what way might a change in the depreciation method used affect the projected cash flow figures in a feasibility study?
11. If the initial feasibility of a proposed new hotel does not appear good from a financial point of view, what variables might one try to change to improve the result?

ETHICS SITUATION

The owner of a proposed new motel has received a feasibility study from a consultant that shows that, at best, the operation would be only marginally profitable. The owner knows that this report will not convince possible investors to advance the funds for this proposed project, so the owner changes the feasibility study figures to improve the profitability of the operation. Discuss the ethics of this situation.

PROBLEMS

P13.1 There are five competitive motels in a resort area with the following number of rooms and current occupancy rates:

Motel	*Rooms*	*Occupancy (%)*
A	74	82
B	45	73
C	58	85
D	48	70
E	52	75

Demand for rooms in the area is broken down into the following sources and growth rates:

Source	*Percentage*	*Growth Rate (%)*
Business traveler	10	5
Vacation traveler	80	8
Other travelers	10	1

a. Calculate the current average occupancy of the five motels.

b. Calculate the composite rate of growth in demand.

c. Apply the composite growth rate to the demand figures to obtain projected demand for each of the next four years.

d. Assume that a 70 percent average room occupancy for the motels in this resort would be profitable. Calculate the future supply of rooms that could be supported for each of the next four years.

P13.2 Six competitive motor hotels have the following number of rooms and current occupancy rates.

Motor Hotel	*Rooms*	*Occupancy (%)*
1	150	80
2	140	90
3	90	70
4	110	80
5	66	75
6	120	75

Demand for rooms in the area where the motor hotels are located is broken down into the following sources and growth rates:

Source	*Percentage*	*Growth Rate (%)*
Business traveler	60	6
Vacation traveler	30	5
Other travelers	10	4

a. Calculate the current average occupancy of the six motor hotels.

b. Calculate the composite rate of growth in demand.

c. Apply the composite growth rate to the demand figures to obtain projected demand for each of the next four years.

d. Assume the average room occupancy is 75 percent for the motor hotels in this area and is considered profitable. Assume also that motor hotel 3 is due to be demolished in year 2 to make way for a new highway. Calculate the future supply of rooms that could be supported for each of the next four years.

P13.3 A financial feasibility study is being carried out for a proposed new 120-seat restaurant. It will be open for both lunch and dinner from Monday through Saturday and for dinner only on Sunday. For the sake of simplicity, assume a 52-week year. Seat turnover and average food check figures are estimated as follows:

	Turnover	*Average Food Check*
Weekday lunch	1.50	$ 5.60
Weekday dinner	1.25	$10.50
Sunday dinner	1.75	$13.00

In addition, the restaurant has a small banquet room, and food revenue in this area is estimated at $14,000 a month. Alcoholic beverage revenue is estimated to be 12 percent of lunch food revenue and 30 percent of all food revenue. In the banquet room, alcoholic beverage revenue is

forecast to be 40 percent of food sales revenue in that area. Food cost is estimated at 40 percent of total food sales revenue, and beverage cost is 30 percent of total beverage sales revenue.

Wage cost for salaried personnel (manager, chef, hostess, head waitress, and cashier) is estimated at $300,000 per year. Wages for all other employees will be 15 percent of total annual restaurant sales revenue.

Employee benefits (vacations, meals, etc.) are estimated to be 10 percent of total annual wages. Other operating costs are estimated at 12 percent of total annual sales revenue. Undistributed costs are forecast to be $130,000 per year.

Prepare the restaurant's pro forma income statement for the first year, rounding all figures to the nearest dollar. Ignore income tax.

P13.4 A new 50-room budget motel is being planned. Total cost will be $1,450,000, of which land will be $150,000, building $900,000, furniture and equipment $300,000, and the balance for preopening interest and other expenses. The building will be financed 70 percent by an 8 percent mortgage for 21 years. The annual payment to amortize (pay back principal and interest) this mortgage will be $63,000. The furniture and equipment will be financed 75 percent by a chattel mortgage at 11 percent, repayable in five equal installments of $61,000 principal and interest. Apart from the mortgage and chattel mortgage amounts, the balance of the total investment required will be from equity.

a. Calculate the amount of the equity investment.

b. Prepare the building mortgage repayment schedule for the first five years. Round calculated figures to the nearest $1,000.

c. Prepare the chattel mortgage repayment schedule. Round calculated figures to the nearest $1,000.

P13.5 Given the facts in Problem 13.4, assume the building will be depreciated at 6 percent double declining balance, and that furniture and equipment will be depreciated at 25 percent double declining balance. Prepare depreciation schedules for the first five years. (Round calculated figures to the nearest $1,000.)

P13.6 Given the facts in Problems 13.4 and 13.5 and the following additional information, prepare the pro forma income statements for each of the first five years:

Year	*Average Room Rate*	*Occupancy (%)*
1	$30.00	70
2	$30.00	75
3	$33.00	75
4	$35.00	75
5	$35.00	80

Rooms operating costs average 60 percent of total room revenue. Indirect expenses will be $40,000 in year 1 and will increase by $4,000 a year for each of the next four years. The preopening interest and other expenses total $100,000 and will be amortized equally over each of the first five years. Income tax, if any, will be 25 percent of earnings before income tax. Note, however, that if there are any losses, they may be carried forward and deducted from earnings before income tax, before the 25 percent tax rate is applied. (Round all calculated figures to the nearest $1,000.)

P13.7 Given the facts in Problems 13.4, 13.5, and 13.6, calculate the net annual cash flow figures for each of the five years. What would be your evaluation of the financial feasibility of this proposed motel?

CASE 13

Although Charlie (4C) has been in business for only a short time, he is thinking about opening a second restaurant similar to his current operation; a relatively medium-priced operation catering to the local neighborhood's family and small business trade.

Assume that he has asked you to do some preliminary work on a feasibility study for this second restaurant. Select a specific geographic location in your town with which you are familiar and which you think would be suitable for this new operation. Prepare a two- or three-page report for Charlie describing this location (include a map if you think it will help), explaining why that location might be suitable, and briefly discussing the economic and demographic factors (about which you would eventually need more detailed information) that would support the need for a restaurant in this location.