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Abstract

Hotel feasibility studies are critical in the determination of hotel construction, sales and refinancing. Discrepancies have been reported between forecasted results and actual operating results. The author, with funding provided by the Hilton corporation, examines whether such studies under- state or overstate occupancy, average rate, and net income.

Keywords

John M. Tarras, Accuracy of Hotel Feasibility Study Projections, Forecasts, Occupancy, Average rate, Net income

Accuracy of Hotel Feasibility Study Projections

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Hotel feasibility studies are critical in the determination of hotel construction, sales and refinancing. Discrepancies have been reported between forecasted results and actual operating results. The author, with funding provided by the Hilton corporation, examines whether such studies understate or overstate occupancy, average rate, and net income.

Before a hotel is built, the mortgage lender and/or investors often require that a feasibility study be performed by an independent third party to determine whether the value of the hotel will exceed the total cost of building it. Another reason may be to determine a value for the purposes of buying, selling, refinancing, etc.; therefore, one of the obvious components of such a study is a forecast of income and expense. It is crucial that this forecast be accurate because it will weigh heavily in the decision of whether to build the proposed hotel or whether to cancel the project.

Over the years there have been discrepancies between forecasted results printed in certain feasibility studies and the actual operating results. One respondent to this survey, the president of a large hotel chain, wrote, "I have long felt that the accuracy of feasibility studies might be suspect if reviewed retrospectively." Another president responded, "I find that the best I can say for feasibility studies is that they arm the developer with the necessary paperwork to obtain a loan."

How accurate are feasibility studies? Do they understate or overstate occupancy, average rate, and net income? If these forecasts are inaccurate, by how much do they miss the mark?

Since many people view feasibility studies as a "necessary evil," the purpose of this study is to determine how accurate the forecasts of occupancy, average rate, and net income are for a selected number of hotel projects. These three variables are the most important projections in a typical feasibility study. From the occupancy and average rate forecast it is possible to determine the room revenue forecast. The food and beverage revenue forecast is partially determined by the occupancy forecast. Many of the other forecasts in a feasibility study are derived from a combination of the occupancy and/or average rate forecasts. The net income forecast is one of the most important because this is the cash

flow which is capitalized at a discount rate to yield the present value of the property.

A total of 387 questionnaires were sent to the presidents of hotel chains or the vice-presidents of development selected at random from the 1988 *Directory of Hotel and Motel Systems*; 35 usable responses were received. Eleven respondents indicated that their companies never obtained a feasibility study from an outside source.

Cross Section of Hotels

The lodging properties in the feasibility studies ranged from small to large. Eleven of the studies were for hotels with fewer than 150 rooms; 17 were for hotels with 150 to 299 rooms, six for hotels with 300 to 600 rooms, and one for a hotel with more than 600 rooms. In addition, 11 of the studies were performed on chain-owned properties and 17 were for franchised properties. Five of the other seven hotels in this study were independently-owned properties. Sixteen of the hotels studied were located in the west, seven in the northeast, eight in the southeast, and four in the south central area.

Fourteen of the studies were performed on economy hotels, 11 on full-service hotels, four on luxury hotels, two on suite hotels, and four on resort hotels. Twenty-two of the hotels had fewer than six months' operating history when the feasibility study was performed; nine had more than six years. Two studies were performed for hotels with one year of operating history, one for a hotel with three years of history, and another for one with five years.

First-Year Occupancy Percentage Calculations Vary

The distribution of the difference between the actual occupancy percentage and the projected occupancy percentage for the first year of the forecast is shown in Table 1. The difference was calculated by taking the actual occupancy achieved during the first year of the forecast

Table 1
Frequency Distribution of the Difference Between
Actual and Forecasted Occupancy Percentage
(First Year of Projection Period)

Forecast Too High		Forecast Too Low	
Range	Frequency	Range	Frequency
0.01- ⁻ 5%	5	0.01- ⁺ 5%	5
⁻ 5.01- ⁻ 8%	2	⁺ 5.01- ⁺ 8%	4
⁻ 8.01- ⁻ 11%	2	⁺ 8.01- ⁺ 11%	0
⁻ 11.01- ⁻ 14%	4	⁺ 11.01- ⁺ 14%	0
⁻ 14.01- ⁻ 17%	6	⁺ 14.01- ⁺ 17%	0
> ⁻ 17	6	> ⁺ 17	1
	<u>25</u>		<u>10</u>
Total = 35			

period and subtracting from it the projected first-year occupancy percentage.

Of the first-year occupancy forecasts, 29 percent were within ± 5 percentage points of the actual occupancy percentage. Of the forecasts which were inaccurate, 80 percent had overestimated the actual occupancy achieved in the first year of the forecast. Therefore, given that a feasibility study contains an inaccurate occupancy forecast, it is more likely that the forecast will overestimate the first-year actual occupancy percentage since nearly six out of every seven inaccurate occupancy forecasts has overestimated the actual occupancy achieved.

Of those studies which underestimate the actual first-year occupancy percentage, only 10 percent do so by more than eight percentage points. When compared to those studies which have overestimated the first-year occupancy percentage, this is the reverse. Of those studies which overestimated occupancy in the first year, 72 percent did so by more than eight percentage points. This data indicates that if a third party performing a feasibility study overestimates the first-year occupancy percentage, it is more likely they will greatly vs. slightly overestimate occupancy. Conversely, if they underestimate the first-year occupancy percentage, it is more likely they will only underestimate it by a few points.

Twenty percent of the studies had projected first-year occupancy levels that differed from the actual occupancy percentage by more than 17 points. The reason for this discrepancy would have to be studied in order to determine the exact cause.

Trend May Be to More Accuracy

Crosstabs were performed on the data using the statistical package SPSS. Any first-year occupancy projection within ± 5 percentage points of the actual was coded as being accurate.

Of the 14 studies performed on economy hotels, 7 percent had a first-year occupancy projection which was too low (more than five percentage points less than actual), and 93 percent had a projection which was too high (more than five percentage points above the actual). None of the studies performed on economy hotels were accurate (within ± 5 points).

Of the 22 studies performed on hotels with fewer than six months' operating history, 9 percent had a first-year occupancy projection which was too low and 73 percent had an occupancy projection which was too high.

During the period from 1981 to 1985, 65 percent of the studies had first-year occupancy projections which were too high. However, during the period from 1986 to 1988, only 45 percent of the studies had first-year occupancy projections which were too high. The number of studies which underestimated the first-year occupancy percentage also declined from 17 percent to 10 percent during this period. The number of accurate studies rose from 17 percent during the period 1981 to 1985 to 45 percent during the period 1986 to 1988.

This last finding may indicate a trend toward more accurate occu-

pancy forecasts in feasibility studies. However, it is interesting to note that even during the period from 1986 to 1988 there was roughly a 50/50 chance that a feasibility study would have an inaccurate occupancy forecast (projection was more than ± 5 percentage points from actual).

First-Year Average Rate Is More Accurate

The average rate forecast is slightly more accurate than the occupancy forecast. The distribution of the difference between the actual average rate and the projected average rate for the first year of the forecast is shown in Table 2. The difference was calculated by taking the actual average rate achieved during the first year of the forecast period and subtracting from it the projected first-year average rate. Forty percent of the first-year average rate forecasts were within $\pm \$5$ of the actual average rate. Of the forecasts which were inaccurate, 90 percent had overestimated the average rate achieved in the first year of the forecast. Although 40 percent of the average rate forecasts were accurate as compared to 20 percent of the occupancy forecasts, it is more likely that an inaccurate average rate forecast will overestimate the actual average rate (90 percent) as compared to the percentage of overestimated inaccurate occupancy forecasts (75). For some reason, three of the 35 studies (9 percent) had average rate projections which were $\pm \$25$ from the actual first-year average rate. The exact cause of this discrepancy would have to be researched before assuming it was due to the oversight of the consultant. Many factors which the consultant could not have known about at the time of the study could have caused this wide variation.

Table 2
Frequency Distribution of the Difference Between
Actual and Forecasted Average Rate
(First Year of Projection Period)

Forecast Too High		Forecast Too Low	
Range	Frequency	Range	Frequency
0.01- $-\$5$	10	0.01- $+\$5$	4
$-\$5.01$ - $-\$10$	9	$+\$5.01$ - $+\$10$	0
$-\$10.01$ - $-\$15$	4	$+\$10.01$ - $+\$15$	1
$-\$15.01$ - $-\$20$	4	$+\$15.01$ - $+\$20$	0
$-\$20.01$ - $-\$25$	0	$+\$20.01$ - $+\$25$	0
> -25	<u>2</u>	$> +25$	<u>1</u>
	29		6
Total = 35			

For the purpose of performing crosstabs on average rate, any first-year occupancy projection within $\pm \$5$ of the actual average rate was coded as being accurate.

Of those studies performed on hotels within 150 to 299 rooms, 76 percent had average rate projections which were too high. Of those for

hotels located in suburban areas, 82 percent had an average rate projection which was too high.

Eighty percent of the studies performed for resorts had average rate projections which were accurate; 78 percent of the studies for economy hotels had overestimated the actual first-year average rate.

During the period 1981 to 1985, 35 percent of the studies had accurate average rate projections. This percentage increased slightly to 45 percent during the period 1986 to 1988.

Of the studies which segmented the market, 63 percent had average rate projections which were too high. Of the 30 studies that segmented the market, 24 used segment growth rates to project demand in these segments; 75 percent of those studies with segment growth rates had overestimated the first-year average rate.

The accuracy of the first-year average rate forecast was related to the accuracy of the first-year occupancy forecast. Of the 20 studies that had overestimated the first-year occupancy percentage, 80 percent had also overestimated the first-year actual average rate. Of those studies that had accurate average rate forecasts, 70 percent also had accurate occupancy forecasts.

The average rate forecast seems to be increasing in accuracy. This is the same trend occurring in the occupancy forecast. The second important finding is that if the average rate forecast is inaccurate, it is more likely to be on the high side than on the low. The third significant and probably intuitive finding is that the occupancy and average rate forecast accuracy tend to be closely related to each other.

Forty Percent of Studies Accurate in Net Income

The distribution of the difference between the actual net income and the projected net income for the first year of the forecast is shown in Table 3. The difference was calculated by taking the actual net income achieved during the first year of the forecast period and subtracting from it the projected first-year net income.

Forty-three percent of the first-year net income forecasts were within \pm \$500,000 of the actual first-year net income. This is the highest percentage achieved by the three forecasts examined in this study (occupancy = 20 percent and average rate = 40 percent). Because net income is a function of occupancy, average rate, and various expense items, the improved accuracy of the net income forecast may be due to overestimated expense item forecasts which are counterbalancing the effects of the occupancy and average rate forecasts.

From this data it appears that four out of every 10 feasibility studies is accurate in its first-year net income projection. Of the forecasts which were inaccurate, 92 percent of them had overestimated the actual net income achieved in the first year of the forecast by more than \$500,000.

Due to the limited number of responses on the net income section of the questionnaire, crosstabs on net income were unable to be completed.

Table 3
Frequency Distribution of the Difference Between
Actual and Forecasted Net Income
(First Year of Projection Period)

Forecast Too High		Forecast Too Low	
Range	Frequency	Range	Frequency
0.0- -\$500,000	7	0.0- +\$500,000	3
-\$500,001- -\$1,000,000	6	+\$500,001- +\$1,000,000	0
-\$1,000,001- -\$2,000,000	5	+\$1,000,001- +\$2,000,000	1
-\$2,000,001- -\$3,000,000	0	+\$2,000,001- +\$3,000,000	0
-\$3,000,001- -\$4,000,000	0	+\$3,000,001- +\$4,000,000	0
> -\$4,000,000	1	> -\$4,000,000	0
	19		4
	No Data = 12		
	Total = 35		

Holiday Inn Monitors Its Studies

The market analysis staff at Holiday Inn, Inc. has for the last several years been monitoring the accuracy of feasibility studies performed by outside sources as well as the studies performed internally. They have tracked the accuracy of over 300 feasibility studies for the first three years of the projection period and found similar results to those reported in this study. They define an accurate feasibility study as one in which the actual room revenue per room is within 10 percent of the forecast. The reason they use this standard is so that a manager will not kill the average rate in an attempt to meet the occupancy goal or vice versa.

One of the significant findings they have discovered is that the accuracy of feasibility studies in their sample has been increasing over time. This is the same finding discovered in this research. They also reported that the percentage of accurate studies before and after 1986 was very similar to the before and after 1986 results of this study.

It appears from this study that in the past people have had good reason to complain about the accuracy of feasibility studies. Prior to 1986 the forecasts of occupancy and average rate for the first year of the projection period were frequently inaccurate. Based upon the results of this survey, the occupancy forecast prior to 1986 was only accurate in 17 percent of the cases, and the average rate forecast was accurate in 35 percent of the cases. In addition to being inaccurate the forecasts also tended to overestimate rather than underestimate the actual results.

However, recently there has been an increase in feasibility forecast accuracy. Forty-five percent of the studies performed since 1986 have been within five points of the actual occupancy percentage for the first year of the projection period. The average rate forecast accuracy has also improved. Since 1986, 45 percent of the studies have been within

\$5 of the actual average rate. During the years 1976 to 1988, the time period covered by this study, 43 percent of the studies have been accurate to within \$500,000. Due to data constraints, there was an inability to determine whether there was an increase in accuracy in the net income forecast during the period 1986 to 1988.

One thing to remember about a feasibility study is that it is not meant to determine what will happen, only predict what probably will happen. All of the forecasts contained in a feasibility study are based upon certain assumptions made by the consultant. Therefore, it is important that the client carefully read the study and question any and all assumptions made by that individual.