Dovetown Parking Authority[1]

A meeting was held in the office of the mayor of Dovetown to discuss a proposed municipal parking lot. The participants included the mayor, the traffic commissioner, the head of Dovetown's Parking Authority (PA), a city planner on the mayor's staff, and the city's director of finance. PA outline the estimated costs and revenues for the proposed facility:

> *The parking site in Elm Street is owned by the city. Currently, the old Embassy Cinema stands on it, that would cost $1,200,000 to demolish the building and clear the site of asbestos and other hazardous waste. PA estimate the cost of a multilevel parking garage, with space for 850 cars to be $8.5 million with useful life of 15 years before PA needed to undertake significant renovations. The city could finance construction of the garage through the sale of 15-year tax-exempt bonds at 5% interest. Redemption would commence after three years, with one twelfth of the original number of bonds being recalled in each succeeding year.*
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> *A firm proposed for parking management and estimated their operating costs, to be $600,000 per year. Of this amount, $375,000 would be personnel costs; the remainder would include utilities, mechanical maintenance, repairs, cleaning, insurance, etc. In addition, they would charge a management fee of $120,000 per year. Any gross annual revenues over $2,000,000 would be shared 90% by the city and 10% by the firm. If total annual revenues are less than $2,000,000, the city would still have to pay the full management fee. The city would derive an additional $230,000 a year by renting the ground floor of the structure as retail space.*
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> *PA conducted a survey at a private parking garage nearby to estimate revenues from the prospective garage. The garage, which is open every day from 7 am until midnight, charges $3 for the first hour, $2 for the second hour, and $1 for each subsequent hour, with a maximum rate of $8.00. Their capacity is 400 spaces. During business hours (7am-5pm), 80% of their spaces were occupied by "all-day parkers" who work downtown. In addition, roughly 400 cars use the private garage each weekday with an average stay of 3 hours. The garage is usually about 80% utilized by short-term parkers on Saturdays until 5 pm, when the department stores close; the average stay is about 4 hours. It is quite until 7 pm, when the moviegoers start coming in and the garage is full from 8 pm until closing at midnight. Sundays are very quiet until 6 pm, and 70% utilized until midnight.*
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> *A report by the City College Economics Department estimated that the city has 50,000 cars entering the central business district (CBD) every day from Monday through Saturday. The report calculated the need for 30,000 parking spaces in the CBD. The city currently has 22,000 spaces in the CBD. Of these, 5% are curb spaces, and the rest are private garages. The report estimated that 60% of all auto passengers entering the CBD on a weekday were on their way to work, 20% were shoppers, and 20% were business executives. The average*

[1] Original exercise prepared by: Professor David Young at Harvard University in 2012 with Case No TCG247
Modified by Prof. Mohammad Jahanbakht in 2020 for Advanced Engineering Management course at UT Arlington

number of people per car was 1.5. PA has not yet used these data to estimate the expected revenues of the proposed garage. The Elm Street site is strategically located in the heart of the CBD, near the major department stores and office buildings.

City's director of finance presented additionally:

The city could <u>alternatively</u> sell the Elm Street site to a private developer for $6 million. The site could support an office building from which the city would derive property taxes of $280,000 per year at present rates. The office building would incorporate an underground parking garage available for the use of the tenants at no cost to the city. Besides, an office building improves the appearance of downtown but a multilevel garage is an eyesore.

The mass transit is another related issue. The city's subways are not used to capacity and are running at an annual deficit. Each person who drives downtown is a loss of $2.2 (the average round trip fare) to the subway. Reports state that 2/3 of all persons entering the CBD by car would still have made the trip by subway if they had not been able to use their cars.

City mayor commented:

The Downtown Merchants Association estimated that each new parking space in the CBD generates additional $11,000 in annual retail sales. The city benefits from 3.5% sales tax.

Traffic commissioner commented:

There are other costs associated with increasing parking downtown and the number of cars entering the CBD namely increased wear and tear on city streets, additional congestion, and intangible costs such as delays and frustration for the drivers, noise, air pollution, etc.

Assignment

1. Using the information presented at this discussion, use the Excel file provided to calculate Net Present Value (NPV), Benefit Cost Ratio (BCR), Internal Rate of Return (IRR) of building the parking. Complete the sensitivity analysis using guideline provided in the Excel file.
2. Consider a scenario that parking utility usage would be affected and using Excel Scenario Manager, estimate the new NPV, BCR, IRR.
3. Using the analysis in the excel file, the presentation provided by PA, mayor, traffic commissioner, and city's director of finance, write a one-page recommendation on whether the city of Dovetown should proceed with constructing the proposed garage or not? Support your claims citing the relevant analysis.