

# The “Lillie Mae”: A Capital Investment Project In Riverboat Restoration

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## FOCUS

This case involves a proposed capital investment project. It was written for use in an introductory business finance course to present students a capital budgeting scenario involving elements of both an expansion project and a replacement project that is more complex than the usual textbook problems. It also provides students an exercise in the application of standard spreadsheet software to a common analytical problem in corporate finance, namely, a proposed capital expenditure.

## SETTING

The case involves the planned restoration of a Civil War era paddle-wheel steamboat, the “Lillie Mae,” which was originally owned by Mississippi entrepreneur Harrison Collier. Since initial repairs were made several years ago, the boat has been used on a limited basis for summer dinner cruises and as a pier-side restaurant during the off-season. However, the boat’s current owner, Harriette Reynolds, great granddaughter of Harrison Collier, dreams of restoring the boat to its former glory as a passenger paddle-wheeler and flagship of Reynolds’ firm, Delta Enterprises, Inc. (DEI), which operates the largest fleet of passenger steamboats in the world. Renovation will involve restoring the exterior of the boat to make it seaworthy, remodeling and enhancing the interior, and replacing furniture and fixtures as well as the boat’s boiler system. At the end of its limited economic life the boat will be sold by DEI to the collective Collier heirs to be maintained as an heirloom in the family. Analytical work to determine the feasibility of the project has been assigned to Frank Stevens, a Financial Solutions Ltd. analyst with six years of experience in reviewing the feasibility of projects that many would view as “pipe dreams.”

## AVAILABILITY

Teaching notes, including Excel solution spreadsheets, are available from any of the authors.

## CASE SCENARIO

In 1870, five years after the Civil War had left much of the South in ruin, Harrison Collier abandoned his once-prosperous Mississippi transportation empire. What had been a thriving river outpost, complete with a grand hotel and a fleet of paddle-wheel steamboats, was reduced to little more than some burned-out buildings, rotting boats, and fallow gardens. Now, over one hundred thirty years later, Collier’s great granddaughter, Harriette Reynolds, has returned to the family property on the banks of the Mississippi with a plan to restore a family heirloom. With the exception of the “Lillie Mae,” a decrepit old paddle-wheeler that once ferried Colliers, crops, and cattle up and down the “Old Man,” little of value remained when Reynolds arrived. But Reynolds is a woman with a passion for riverboat travel. As a result of a project in her college entrepreneurship course, she founded Delta Enterprises, Inc. (DEI) some twenty years ago and has grown the firm to the point that it now operates the largest fleet of passenger riverboats in the world. Her next project is to transform the Lillie Mae into the flagship of the DEI fleet, provided of course that the restoration will add value to her firm.

Despite the boat's age, after initial repairs the Lillie Mae was re-floated several years ago and is currently used on a limited basis for summer dinner cruises and a pier-side restaurant during the off-season. Reynolds, however, dreams of restoring the old steamer to its former glory as a passenger paddle-wheeler. Trips on the Lillie Mae would afford passengers a journey back into a grander, more romantic time. To that end, DEI paid Financial Solutions Ltd. a consulting firm, \$35,000 last year to determine the cost of fully restoring the boat. The project was assigned to Frank Stevens, a Financial Solutions analyst with six years of experience in reviewing the feasibility of projects that many would view as "pipe dreams."

Steven's research indicates that although it is possible to rebuild the boat, the process will be costly. First, the seaworthiness and external condition of the boat must be restored. Next, the interior of the boat must be remodeled and enhanced. Not only must cabins and luxury suites be added, but the kitchen and dining rooms must be refurbished with new equipment and furnishings, including antique mahogany furniture, Tiffany glass windows, Waterford crystal chandeliers, and the like. Finally, a new boiler system must be installed, as the existing boiler will be too small for the weight of the refurbished boat. Estimated materials costs for this ambitious undertaking are \$4.05 million. Shipping and labor for installation are expected to add another 35 percent. The modifications will qualify as a 10-year MACRS project and will be depreciated accordingly. The current estimated market value of existing equipment and furnishings, which are to be replaced, is \$425,000. In addition, the proposed operating changes will require an increase in inventories and accounts receivable of \$75,000, matched in part by a \$30,000 increase in accounts payable.

The renovation costs will be partially offset by the sale of a piece of one-of-a-kind historic paneling discovered on the Lillie Mae during the course of some earlier repairs. Apparently, Samuel Clemons was a passenger on the boat in the late 1850's. During his journey Clemons added one of the witty comments for which he was famous, plus his signature, to the wall of one of the existing cabins. Preliminary inquiries with Sotheby's indicate that a collector is willing to purchase this slice of American history for \$575,000. Ms. Reynold's conversations with Mr. Stevens reveal that she intends to sell the piece of paneling regardless of whether she goes forward with the restoration of the boat, but its sale would certainly reduce the amount of financing needed to complete the restoration work.

Now Ms. Reynolds is asking Mr. Stevens to extend his analysis to estimate the revenues that could be generated by the fully restored Lillie Mae and to recommend whether DEI should proceed with the restoration. For Stevens' additional work, Reynolds will pay Financial Solutions another \$27,000.

Stevens believes that the planned renovations can be completed by the end of the current year (Year 0) with little or no effect on current revenue. Subsequently (beginning in Year 1), he expects DEI to operate the Lillie Mae seasonally for six months (26 weeks) each year from early May until late October. During the off-season the boat will be dry-docked for annual maintenance and then stored until the following spring. The Lillie Mae will travel exclusively up and down the Mississippi, though various trip packages will be offered. The craft will have 80 cabins and suites, with a total passenger capacity of 160. Excursion trips will feature world-class dining, entertainment, cabin service, and other services aimed at catering to the tastes of the most sophisticated traveler. As such, the trips will average five days in length followed by two days of boat docking for minor repairs and restocking of supplies. Trip packages will be priced initially (Year 1) at \$1,275 per person, on average, with modest price increases each year thereafter to offset the expected annual inflation rate of 2.5 percent.

Stevens estimates that if the modifications are made, the boat will be booked at 90 percent of capacity for the next five years. Total fixed operating costs will be \$5,000 per week during the cruise season, while variable costs will average \$140 per passenger per travel day (5 days per week). During the off-season the boat will be stored at a cost of \$375 per week. However, all of these operating costs are expected to rise at about 2 percent per year after Year 1. By the end of five years DEI expects the Lillie Mae will not be able to compete with newer, more efficient replicas of Civil War era steamboats and so plans to sell the boat to Riverboat Express Co., a privately held firm owned and managed by the collective Collier heirs. If the Lillie May is refurbished as proposed, Riverboat Express plans to pay \$3.75 million for the privilege of keeping this heirloom in the family.

If DEI does not proceed with the restoration, the firm will continue its current usage of the Lillie Mae for the next five years with revenues unchanged from the current level except for inflationary increases of 2.5 percent per year beginning in Year 1. Current (Year 0) combined revenue from pier-side dinners and dinner cruises on the Lillie May are estimated at \$1.125 million. Due to the boat's age and significant maintenance requirements, total operating expenses for the Lillie Mae are currently 60 percent of sales and are expected to rise even higher, by one percentage point per year (that is, 61 percent in Year 1, 62 percent in Year 2, etc.) throughout the remaining economic life of the boat, as maintenance costs continue to increase. Though the old boat was fully depreciated more than a century past, five years ago it underwent sufficient repairs to host summer dinner cruises and to serve as a dockside restaurant. In addition, the boiler system was replaced and other equipment and furnishings were purchased. These improvements, which cost a total of \$1,200,000, are being depreciated to a zero book value using straight-line depreciation and have a remaining useful life of five years and a current book value of \$600,000. At the end of five years (and with no further restoration and continuing increases in maintenance costs) DEI plans to dismantle the boat and sell it for scrap at an estimated net market value of \$350,000.

DEI is in the 38 percent federal-plus-state tax bracket and requires a 17 percent return on projects with this level of risk. The firm has unlimited funds to invest and faces no other constraints in its capital budgeting decisions.

Based on the information above, what should Mr. Stevens recommend to Ms. Reynolds?

Note: The schedule for MACRS depreciation allowances for ten-year properties is as follows: Year 1—10.00%; Year 2—18.00%; Year 3—14.40%; Year 4—11.52%; Year 5—9.22%; Year 6—7.37%; Year 7—6.55%; Year 8—6.55%; Year 9—6.56%; Year 10—6.55%; Year 10—3.28%.

## **CASE REQUIREMENTS**

This case involves a capital budgeting problem for Frank Stevens, an analyst with Financial Solutions Ltd., of whether to recommend full restoration of a Civil War era paddle-wheel steamboat, the "Lillie Mae," to provide excursion trips up and down the Mississippi River. The riverboat is currently owned by Harriette Reynolds, who envisions transforming this floating relic into the flagship of her firm, Delta Enterprises, Inc. (DEI), which operates the largest fleet of passenger riverboats in the world.

To enable you to answer the question as to what Mr. Stevens should recommend you must develop a Microsoft Excel spreadsheet to analyze the cash flows associated with the project. The spreadsheet should include three components: 1) computation of the initial cost of the project; 2) calculation of the incremental operating cash flows generated by the project; and 3) calculation of the terminal-year, non-operating cash flows from the project. Whenever possible, spreadsheet cells should be specified with equations using cell references so that if you were to use your spreadsheet for another capital budgeting project, you would have to make only minimal adjustments to your equations.

In addition to the cash flow components, the spreadsheet should include equations to compute both the net present value (NPV) and internal rate of return (IRR) on the project. This can be accomplished by specifying equations for the interest factors and present values of each of the annual net cash flows plus equations to calculate the NPV and IRR using the calculated present values. Again, spreadsheet cells should be specified with equations using cell references whenever possible. Finally, the calculated NPV and IRR should be verified using the NPV and IRR functions embedded in Excel.

## **CASE-RELATED QUESTIONS**

In addition to the requirements outlined above, answer the following questions on a separate page using a word-processing software. To answer some of the questions, you will have to make changes to your original spreadsheet solution.

1. Based on the figures from your original spreadsheet solution, should Mr. Stevens recommend that DEI restore the Lillie Mae as proposed? Explain, making references to specific NPV and IRR values.
2. Stevens projects that the Lillie Mae will be booked at 90 percent of capacity for the next five years. Would your answer to Question 1 change if the booking were projected to be only 80 percent of capacity over the life of the project? Explain, making references to specific NPV and IRR values. What does your analysis say about the sensitivity of the NPV calculation in this case to the revenue projections?
3. Would your answer to Question 1 change if the tax law were amended to eliminate accelerated (MACRS) depreciation, thus requiring that the restoration improvements be depreciated over their 5-year economic life using the straight-line method? Explain, making references to specific NPV and IRR values. Do you notice anything unusual about your answer, i.e., an answer different from what you might have expected? Explain what happened. (Note: in using straight-line depreciation for tax purposes, do not subtract the estimated salvage value from the cost of the project to calculate the depreciable basis.)
4. Stevens expects a significant cash flow at the end of the project's life from selling the Lillie Mae to Riverboat Express. Would your answer to Question 1 change if Riverboat Express reduced the price it is willing to pay to \$2.75 million? And if your answer would not change, would you be more or less confident in it? Explain, making references to specific NPV and IRR values.
5. Should Stevens change his recommendation if the cost of capital for this project were to increase to 19.0 percent owing to an increase in inflationary expectations or a downgrade of DEI's debt? Explain, making references to specific NPV and IRR values.
6. Should there be any relationship between the NPV you calculated to answer Question 1 and the equity value of DEI? When should that relationship be recognized for a privately held firm? A publicly held firm? Explain.
7. How does the NPV of a project like the Lillie Mae relate to the IRR on the project? Still, NPV is generally preferred over IRR as a decision-making criterion in evaluating capital investments. Why?

#### **Notes**