**MGMT 6054**

**M6/M8/M9 - Project Selection Practice Questions**

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|  | **Answer** |
| 1. Sue invested $2500 at 4.2% compounded annually for 6 years, then reinvested the funds at 5.4% compounded annually for 7 more years. Calculate the amount of interest earned at the end of 13 years. | Interest earned = $2124.14 |
| 1. Sam plans to invest an amount today to have access to $12,000 in 5 years and $6,000 in 11 years (i.e., 6 years after the $12,000 withdrawal), based on a 6.4% annual rate of interest. How much does he need to invest today? | $11,832.26 |
| 1. A company is considering the purchase of a copier that costs $5,000 (at year 0). Assume a cost of capital of 10% and the following cash inflow schedule: year 1: $3,000, year 2: $2,000, year 3: $2,000. Determine the project’s NPV and IRR. 2. $882.80, 20% 3. $243.80, 20% 4. $882.80, 10% | a) |
| 1. A project manager is performing a cost-benefit analysis. The company expects a return rate of 12% which is reflected in a corresponding discount rate. The projected cash flows are as follows:     What is the project benefit-cost ratio using present values cash flows? | PV of costs = -$12,009.20  PV of benefits = $13,424.31  Benefit-cost ratio (BRC) = 1.12 |
| 1. A technology start-up is expanding and adding two new programmers. The CEO of the company decides to run a cost benefit analysis to determine whether the decision will be beneficial to the company and to what degree. The company is analyzing a time horizon of one year and estimates that revenue would increase some 50% if the two programmers were hired. On the cost side of the equation, the CEO must examine: cost of the two programmer's salaries - estimated at $75,000; cost of recruitment, which might be around $3,000; training could add an additional $4,000; cost of new work areas and computers, totaling $5,000; and cost of additional licensing for software at $2,000. When calculating benefits, the CEO would include: additional revenue within a 12 month period, estimated around $100,000; the increase in product quality resulting from the new programmers (and therefore presumed customer satisfaction) would increase by 10%, adding an estimated $10,000 in value to the company. Using the benefits to cost ratio, should the company proceed with hiring the two programmers? | Benefits = $110,000  Costs = $89,000  Benefit-cost ratio (BRC) = 1.24  Given that the ratio is positive (and the total benefits are greater than the total costs), the cost benefit analysis indicates the decision to hire two additional programmers would be a beneficial move for the company. |
| 1. Suppose we have a project with the following cash flows: outgoing: $150,000 at t = 0, $250,000 at t = 1, and $250,000 at t = 2; income $1,000,000 at t=3. Find the IRR of the project.   a) 25.25%  b) 0%  c) 23.15% | a) |
| 1. You are the project manager of the organization and you are tasked with the responsibility of selecting a project from two proposals, A and B, based on the information available: Project A has a payback period of 10 months while Project B has a payback period of 20 months. Which one should you recommend? 2. Project A 3. Project B 4. Neither one is beneficial to the organization 5. Ask the project sponsor to choose. | a) |
| 1. A wind farm is being proposed by a new company. The wind is measured via anemometers that are installed at different heights and the data is collected for two years. The data is analyzed, the type and size of turbines are chosen, and the predicted revenue stream is determined. The estimated project cost is $10 million. A purchase agreement is signed with the local government that will purchase all the power from the wind farm for 15 years, at a fixed price generating $500,000 per year. What is the payback period? | 20y |
| 1. A new tower in New York City has just opened. Your company is considering investing $2,000,000 in buying the property (t=0) and renting it out for the next 5 years (t=1 to 5). By the end of each year, your company would get $200,000 in rental income. At the end of year 5 (t=5), your company will sell the property for $2,100,000. What is the net present value of the investment with a 10% per annum discount rate?   a) -$231,857  b) $156,986  c) $62,092  d) $51,689 | c) |
| 1. During the pre-project phase, a project manager is asked to compare three alternative software solutions. The company’s expected return rate is 12% which is therefore the discount rate parameter of this NPV calculation. The investment and costs relate mainly to license, implementation, customizing and maintenance cost. The company intends to benefit from materialized efficiency gains as well as increased revenues as soon as the software helps enhance customer service. The project manager is assessing the following three options for a new software solution:   Option 1 comprises buying an off-the-shelf solution that requires some customizing and an implementation time of 1 to 2 years. Initial investment: $7,000. Annual expenses: $1500. Annual income: $3000 starting year 3.  Option 2 is more comprehensive software solution that needs a shorter implementation time yet requires a higher initial investment. It would be ready to produce positive cash flows as of year 1. Initial investment: $15,000. Annual expenses: $1000. Annual income: $3000 starting year 1.  Option 3 involves an in-house development project at a lower cost which however takes more time. Benefits are expected from year 2 onward. Initial investment: $3000. Annual expenses: $500. Annual income: $3000 starting year 2  For all three options, the software is expected to be replaced at the beginning of year 7 (i.e., immediately after year 6, the end of this projection) with no residual value.  Which option should the project manager recommend based on NPV analysis? | Option 3 should be recommended.  NPV 1 = $-5903.04  NPV 2 = -$6777.19  NPV 3 = $4599.95 |