Caledonia project

Caledonia Project Caledonia Project FIN/370 Julie Vogt January 9, 2012 Week 4 Team project was to answer question 12 a-e on page 363, Chapter 10 of Financial Management: Principles and Applications. 12. Caledonia is considering two additional mutually exclusive projects. The cash flows associated with these projects are as follows: YEAR| PROJECT A| PROJECT B| 0| -$100, 000| -$100, 000| 1| 32, 000| 0| 2| 32, 000| 0| 3| 32, 000| 0| 4| 32, 000| 0| 5| 32, 000| $200, 000| The required rate of return on these projects is 11 percent. a.

What is each project's payback period? According to Financial Management: Principles and Applications Payback period is defined as " A capital-budgeting criterion defined as the number of years required to recover the initial cash investment" (Keown, Martin, Petty, & Scott, 2005, p. 292). The equation for payback period is: Payback period = Investment required / Net Annual Cash or Payback period = Y + (A / B) Y = the number of years before final payback year A = Total remaining to be paid back B = Total (net) paid back in the entire payback of the year Keown, Martin, Petty, & Scott, 2005, p. 292). Project A - payback period is 3. 125 years. The initial investment is $100, 000. Each year Caledonia accumulates $32, 000. Within a three-year period, $96, 000 will be recovered ($32, 000 x 3 = $96, 000). The amount left from the initial investment is $4, 000 ($100, 000 - $96, 000 = $4, 000). This amount will be recovered in the fourth year. To recover the remaining $4, 000, it will take an additional . 125 years ($4, 000/$32, 000 = . 125). The formula used to come up with this was Payback period = + ($4, 000/$32, 000) = 3 + . 125 = 3. 125 years Project B - payback period is 4. 5 years. The initial investment is $100, 000. It is assumed that Caledonia has no recovery

until the fourth year. In the fifth year $200, 000 is received. To determine how much into the 5th year it took Caledonia to recover the initial $100, 000 investment, the payback period formula is used ($100, 000/$200, 000 = . 5) The formula used to come up with this was Payback period = 4 + ($100, 000/$200, 000) = 4 + . 5 = 4. 5 years b.

What is each project's net present value? According to Financial Management: Principles and Applications Net present value is defined as " A capital-budgeting decision criterion defined as the present value of the free cash flows after tax less the project's initial outlay" (Keown, Martin, Petty, & Scott, 2005, p. 295). The formula for Net Present Value (NPV) is: This is equation 9-1, page 295. NPV = or NPV = Cash Flow * PVIFA – Initial outlay This is on page 296, Table 9-5. Appendix E is used to find the PVIFA for this problem.

Per Financial Management: Principles and Applications, the variables are defined as: FCFt = the annual free cash flow in time period t (can be either positive or negative). K = the appropriate discount rate: that is, the required rate of return or cost of capital IO = the initial cash outlay N = the project's expected life (Keown, Martin, Petty, & Scott, 2005, p. 295). PVIFA = Present-value interest for an annuity (Keown, Martin, Petty, & Scott, 2005, p. 155). Project A = Even cash flow each year. NPVa = FCF (PVIFA 11%, 5yrs) – IO NPVa = $15, 000 (3. 696) - $100, 000 NPVa = $118, 272 - $100, 000

NPVa = $18, 272 Project B = Uneven cash flow each year. Formula used in NPVb = Free cash flow / (1 + discount rate) – Initial Cash Outlay Equation (9-1) on page 295. NPVb $200, 000 / (1 + . 11) - $100, 000 NPVb = $180, 180.

18 - $100, 000 NPVb = $80, 180. 18 c. What is each project’s internal rate of return? According to Financial Management: Principles and Applications Internal rate of return is defined as “ A capital-budgeting decision criterion that reflects the rate of return a project earns” (Keown, Martin, Petty, & Scott, 2005, p. 299). The formula for internal rate of return is on page 299, equation 9-3.

PVIFAi, n = 1-(1/ (1+i)n / i (equation 5-10a on p. 155) Per Financial Management: Principles and Applications, the variables are defined as: FCFt = the annual free cash flow in time period t (this can take on either positive or negative values) IO = the initial cash outlay N = the project’s expected life IRR = the project’s internal rate of return (Keown, Martin, Petty, & Scott, 2005, p. 299) PVIFAI, N = Present-value interest factor for an annuity (Keown, Martin, Petty, & Scott, 2005, p. 155) Project A = Internal rate of return is 18%. $100, 000 = $32, 000 (PVIFAi 5yrs) 100, 000 / $32, 000 3. 125(PVIFAi 5yrs) = 18% Project B = Internal rate of return is 15%. $100, 000 = $200, 000 (PVIFAi 5yrs) $100, 000 / $200, 000 0. 5(PVIFAi 5yrs) = 15% d. What has caused the ranking conflict? According to Financial Management: Principles and Applications ranking conflicts can be a result of a “ size disparity problem, the time disparity problem, and unequal lives” (Keown, Martin, Petty, & Scott, 2005, p. 355). To determine the best option all factors need to be looked at. Here is the ranking conflict: Project A has an initial outlay of $100, 000 receiving $160, 000 cash flow over the next 5 years. __ $32, 000__ _$32, 000__ $32, 000___$32, 000___$32, 000 $100, 000 1 2 3 4 5yrs Outflow NPV - $18, 272 PI - 3. 125 yrs IRR - 18% Project B has an initial outlay of $100, 000 receiving $200, 000 cash flow over the next 5 years.

_____ $0 $0 $0 $0 $200, 000 $100, 000 1 2 3 4 5yrs Outflow NPV - $80, 180. 18 PI - 4. 5 yrs. IRR - 15

The ranking conflict is the time disparity problem. Projects A & B both start off $100, 000; Project A starts seeing a return each year, however; Project B does not see a return until the fifth year. Project A can start reinvesting $35, 000 after year one, however; Project B cannot do this until year 5. e. Which project should be accepted? Why? The projected that should be accepted is A. The internal rate of return (IRR) concludes that project A is favorable over project B. For project A, the rate of return is 18% versus 15% for project B. Not only does project A have a larger rate of return, it has a smaller payback period.

It has been determined that project A has a PI of 3. 125 years, and project B has a PI of 4. 5 years. Because project B is longer than project A, project A is favorable due to the payback period. This will result in a liquidity increase for project A. Lease versus buy There are multiple factors to consider when choosing to lease or buy. Companies should analyze the advantages and disadvantages of buying versus leasing before making the decision. The number one factor that Caledonia should consider is the term of the project and the equipment needed to complete the project.

Buying would be preferred if the project is long-term, and if the plant or equipment can be used again in the future. If Caledonia can sell the equipment and receive a cash inflow, buying the equipment would be beneficial. Technology equipment depreciates quickly and often becomes obsolete. Unlike buying, leasing does not usually require money down. Funds

can be devoted to capital and can be used for other debts and purchases.

References: Keown, A. J. , Martin, J. D. , and Petty, J. W. (2005). Financial Management: Principles and Applications (10th ed.). Upper Saddle River, NJ: Pearson/Prentice Hall.