Software Project Management

INF3708

Assignment 02: Solution

ASSIGNMENT 02 - SEMESTER 2

ASSIGNMENT 02	
Due date	3 September 2018
Study material	Hughes & Cotterell: Chapters 1 and 2
Total marks	37 marks
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UNIQUE NUMBER:
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Question 1 **(10 Mark)**

1.1Discuss in detail what a project authority is, why the need of project authority is necessary in the project development? (4)

Answer

Project authority also known as project steering committee or project management board is a group of people with the overall authority over the project. Project authority is necessary in project development because, they are the people with overall responsibility for setting, monitoring and modifying the project objectives.

To have a successful project one need to have a clear and concise objective. Since project is made up of several stakeholders, the stakeholders are likely to have different objectives and claims to project ownership. To manage all these, there is a need to have a recognized project authority who will be responsible for the setting, monitoring and modifying project objective.

1.2 Explain *why discounted cash flow techniques provide better criteria for project selection than net profit or return on investment.* *(6)*

Answer

Among the points that could be discussed are:

- Discounted Cash Flow (DCF) takes more account of the possibility that investment might more profitably be placed elsewhere than on the proposed project;
- Projects where the major benefits are only experienced after several years are not favoured. There is more uncertainty about estimates of income and costs the further into the future that you gaze.
- Net Present Value (NPV) values can be calculated for a number of different feasible interest rates – different projects might be favoured as a result.

Question 2 **(27 Mark)**

The cash flows of Projects 1, 2 and 3 are given in the table below (in ZAR, South African rand, R):

Year	***Project 1***	***Project 2***	***Project 3***
0	*-R200 000*	*-R150 000*	*-R125 000*
1	*+R15 000*	*+R25 000*	*+R5 000*
2	*+R25 000*	*+R50 000*	*+R10 000*
3	*+R30 000*	*+R75 000*	*+R55 000*
4	*+R110 000*	*+R50 000*	*+R5 000*
5	*+R35 000*	*+R50 000*	*+R70 000*

Table of cash flows for Project 1, 2 and 3

Use this information to calculate the **Net Profit**, the **Return on Investment** (ROI), the **payback period** and the **Net Present Value** at 10% for **each** of these projects. Then answer Questions 2.1 – 2.6.

Q2.1. Calculate the Net Profit for each project. **(3 marks)**

Answer

Project 1:
= (15 000 + R25 000 + R30 000 + R110 000 + R35 000) = R215 000
= R215 000 - R200 000
Net Profit = R15 000

Project 2:
= (R25 000 + R50 000 + R75 000 + R50 000 + R50 000) – R250 000
= R250 000 – R150 000
Net profit = R100 000

Project 3
= (R5 000 + R10 000 + R55 000 + R5 000 + R70 000) – R145 000
= R145 000 – R125 000
Net Profit = R20 000

Q2.2 Calculate the Return on Investment for each project. **(3 marks)**

Return on Investment (ROI), also called Accounting Rate of Return (ARR), provides a way of comparing the net profitability to the investment required.

Using the information on Table 1, calculate the ROI for the three projects

Answer

Return on investment (ROI) - also called Accounting rate of return (ARR): Is a way of comparing the net profitability to the investment required

= (average annual profit/Total investment) x 100

Project 1:
= ((15 000/5)/200 000 x 100) = 1.5%

Project 2:
= ((100 000/5)/150 000 x 100) = 13%

Project 3:
= ((20 000/5)/125 000 x 100) = 3.2%

Q.2.3 Calculate the Payback Period for each project. **(6 marks)**

Payback is the time taken to break even or pay back the initial investment

Project 1

Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 5-(15 000/35 000)
= **4.57 years**

Payback period for **project 2** is nearly at the 5th year.

Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 3-(0/75 000)
= 3 **years**

Payback period for **project 3**
Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 5-(20 000/70 000)
= **4.7 years**

Q2.4 If Project 1 and 3 made extra R13,000 and R10,000 respectively for year 3, what would their net profits, ROI and payback period be? *(6 marks)*

Answer

Project 1:
= (15 000 + R25 000 + **R43 000** + R110 000 + R35 000) – R228 000

= R228 000 - R200 000
Net Profit = R28 000

Project 1:
= ((28 000/5)/200 000 x 100)
ROI = 2.8%

Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 5-(28 000/35 000)
= **4.2 years**

Project 2
= (R5 000 + R10 000 + R65 000 + R5 000 + R70 000) – R155 000
= R155 000 – R125 000
Net Profit = R30 000

Project 2:
= ((30 000/5)/125 000 x 100)
ROI = 4.8%

Payback period for **project 3**
Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 5-(30 000/70 000)
= **4.57 years.**

2.5. What changes did you notice with the extra income in question 3.4? Based on your answer in question 3.4 which one of three projects would you consider development and why? (3 marks)

Answer

Project 1 and 3 Net profits increased from 15 000 and 20 000 to 28 000 and 30 000 Rand

ROI for both projects also increased

Lastly the time it takes to payback initial investments decrease.

Based on the calculations, I will select **project 2**. This is because it has the highest net profit of R100 000, return on its investment (ROI) of 13% and it pays the project investment in year 3.

2.6. Calculate the Net Present Value for the project you selected for development in Q2.5. Based on your answer, would you still recommend the same project for development? Why. (6 marks)

Answer

Year	NPV Discount factor at 10% discount rate	Project 3	Discounted cash flow @ 10%
0		**-125 000**	**-125 000**
1	0.9091	**25 000**	**22727.5**
2	0.8264	**50 000**	**41320**
3	0.7513	**75 000**	**56347.5**
4	0.6830	**50 000**	**34150**
5	0.6209	**50 000**	**31045**
NPV		**185 590 – 150 000 =35590**	

Yes, I will still recommend Project 2 for development. This is because, the project achieved a positive NPV of 35590.