

BUSM 4741: Financial Analytics for Managerial Decisions

Assessment - 3: Case - Study

Part C

Answers to questions of Part A: MCACA

Cash Budget: To prepare the cash budget for Monsha Community Aquatic Centre Association or MCACA for the period of 01 July 2024 to 30 June 2025, some data have been collected from the MCACA case study that have been illustrated in the given spreadsheet. Here, some tables have been added such as expected opening hours, expected number of daily passes purchased, expected ice-cream inventory purchased, Kiosk sales including ice-cream and sunscreen, working hours per month for paid positions, utility, and sundry cost that have been given in the spreadsheet and allocated through the following tables 1, 2, and 3.

MCACA EXPECTED OPENING HOURS PER MONTH FOR 2024 AND 2025											
Year		2024				2025					Total
Month		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
No. of days when pool is open		0	31	30	30	31	28	31	30	0	211
Expected days with 8 hours		0	31	30	20	11	10	29	30	0	161
Expected days with 10 hours operation			0	0	10	20	18	2	0	0	50
Total hours		0	248	240	260	288	260	252	240	0	1788
For necessary Maintenance	May to September										
Board Decisions:											
Regular Opening Hours	11 am to 7 pm		8 hrs								
Opening hours for identified days(extreme heat)	11 am to 9 pm		10 hrs								
MCACA EXPECTED NUMBER OF DAILY PASSES PURCHASED FOR 2024 AND 2025											
Attendees		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Adults		0	1300	1400	3000	4000	3700	1900	1500	0	16800
Children		0	2600	2800	6000	8000	7400	3800	3000	0	33600
Total attendees per month		0	3900	4200	9000	12000	11100	5700	4500	0	50400

Table 1: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

MCACA EXPECTED ICE-CREAM INVENTORY PURCHAED PER MONTH											
Ice-cream purchased					2024			2025			Total
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
Expected number of boxes of ice-cream to be purchased.(50 Ice-cream per box)		40	45	90	120	110	55	50	0	0	510
MCACA KIOSK SALES FOR 2024 AND 2025											
Ice-cream	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Total	
Numer of Ice-cream to be purchased during month	2000	2250	4500	6000	5500	2750	2500	0	0	25500	
50% of total Pool attendance (number of ice-cream)	0	1950	2100	4500	6000	5550	2850	2250		25200	
Expected ice-cream sales per month	0	1950	2100	4500	6000	5550	2850	2250	0	25200	
Items will be sold based on	Sunscreen and Ice-cream.										
Ice-cream in one box	50										
Beginning Inv of Ice - Cream		2000	2300	4,700	6,200	5700	2900	2550	300		
Ending Inv of Ice-cream BEFORE current month purchases		50	200	200	200	150	50	300	300		
Purchases during month	2000	2250	4,500	6000	5500	2750	2500	0	0	25500	
Ending Inv of Ice-cream AFTER current month purchases		2300	4,700	6,200	5700	2900	2550	300	300		

Table 2: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

Sunscreen														
		Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25				
5% of total Pool attendance (number of sunscreen sold)			195	210	450	600	555	285	225		0			
Expected ice-cream sales per month		0	195	210	450	600	555	285	225	0	2520			
Sunscreen in one box	1000 tubes													
Working hours per month for paid positions for 2024 and 2025														
		2024						2025						
Position		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Coordinator		10	10	100		100	100	100	100	100	100	100	10	840
Manager		0	0	32		100	100	120	120	120	120	100	20	852
Utility and Sundry Cost for 2024 and 2025														
		2024						2025						
Name of the Costs		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Projected Utility Costs		300	300	600	1000	1500	3000	3000	3000	1500	1300	600	300	16400
Projected Sundry Costs		100	100	300	500	500	750	1000	1000	750	500	300	100	5900
Total Utilities and Sundry costs		400	400	900	1500	2000	3750	4000	4000	2250	1800	900	400	22300

Table 3: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

Next, the costs data have been collected which are relevant to the sunscreen and ice-cream items. Here, number of qualitative and quantitative data have been collected from the case study such as cost per box \$5000, number of sunscreen in a box 1000, cost per box ice-cream \$100, and so on that are highlighted in the following table 4.

Cost of Items											
Sunscreen											
Each Sunscreen				\$5						Number of Sunscreen boxes bought	4
Cost per box (Sunscreen)				\$5,000	per box					Number of Sunscreen boxes bought	2.52
Number of Sunscreen in a box				1,000	per box					Inventory of Sunscreen	1.48
5% of total attendees				5%						Cost of inventory	\$7,400
Number of sunscreen boxes bought				4							
Ice-Cream											
Each Ice-cream				\$2						Number of Ice-cream boxes bought	510
Cost per box (Ice-cream)				\$100	per box					Number of Ice-cream boxes sold	504
Sales Price				\$4						Inventory of Ice-cream	6
50% of total attendees				50%						Cost of inventory	\$600
Minimum Inventory of Items = 360											
Number of Ice-cream boxes sold				510							
Number of Ice-cream in a box				50	per box						

Table 4: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

Then, some revenue data have been added where pool entrance fees, revenue from primary school, high school, membership, fundraising events, grants are remarkable and represented in the following tables 5 and 5a along with the numerical numbers.

MCACA's Board of Management									
Elected Directors				10					
REVENUE DATA					REVENUE DATA				
Pool Entrance fees					Item Sales: Sunscreen				
Number of Expected Attendees (Adults)				16800	Selling Price per items (Kiosk)				
Fees for each adult				\$5	Sunscreen		\$5,000	per box	
Entrance fees for expected attendees (adult)				84,000	The expected total attendance		\$0400		
Number of Expected Attendees (Children)				33600	Amount of sunscreen for total attendees		\$252,000	Per annum	
Fees for each children				\$5	The amount of 5% of the total attendance		\$12,600	Per annum	
Entrance fees for expected attendees (children)				168,000	The amount of 5% of the total attendance		\$1,050	Per month	
Revenue - from Primary School					Item Sales: Ice-Cream				
Primary school				3 ea	Selling Price per items (Kiosk)				
Contribution of 3 primary school				\$600 per month	Ice-Cream		\$100	per box	
Total Payment				\$1,800	The expected total attendance		\$0400		
Number of month use (Oct24_Dec24 and Feb25_Apr25)				6 months	Amount of Ice-Cream for total attendees		\$100,800	Per annum	
Revenue - from High School					The amount of 50% of the total attendance		\$50,400	Per annum	
Contribution of High school				\$1,200 per month	The amount of 50% of the total attendance		\$4,200	Per month	
Number of high school				1 es					
Number of month use (Oct24_Dec24 and Feb25_Apr25)				6 months					
Other Income - memberships, fundraising, and grants									
Membership									
MCAC's incentivize membership				\$10 ea					
Number expected Individuals having Incentives membership				1000					
90% Membership will be paid in July 2024				\$9,000					
10% Membership will be paid in August 2024				\$1,000					

Table 5: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

Revenue - from High School					Amount of Ice-Cream for total attendees		\$100,800	Per annum	
Contribution of High school				\$1,200 per month	The amount of 50% of the total attendance		\$50,400	Per annum	
Number of high school				1 es	The amount of 50% of the total attendance		\$4,200	Per month	
Number of month use (Oct24_Dec24 and Feb25_Apr25)				6 months					
Other Income - memberships, fundraising, and grants									
Membership									
MCAC's incentivize membership				\$10 ea					
Number expected Individuals having Incentives membership				1000					
90% Membership will be paid in July 2024				\$9,000					
10% Membership will be paid in August 2024				\$1,000					
Fundraising events									
Will be raised in November 2024				\$4,000					
Will be raised in February 2025				\$5,000					
Will be raised in June 2025				\$6,000					
Total grants				\$15,000					
Grants									
From Greater City of Cantara				\$15,000					
Received in Mar_2025									

Table 5a: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

Here, the cost data also included with some features with expenses such as co-ordinator, manager, pay rates per hour, pool safety-lifegaurds, maintenance of pool, capital expenses, and insurance that are representing in the following table 6.

COST DATA					COST DATA				
Labour Costs					Capital expense				
Operation Manager					Refrigerator for the Kiosk				
1 Operation manager				852 hrs (Annually)			\$4,800		
Coordinator					Three electric barbeque				
1 coordinator				840 hrs (Annually)			\$4,200		
Pay Rates per hour					Combinely table and benches costs				
Operation Manager				\$35 per hour			\$4,500		
Coordinator				\$35 per hour	Shade cloths				
Pool safety - Lifegaurds							\$6,000		
Lifegaurds				\$26 per hour	Total capital expense				
Lifegaurds				4			\$19,500		
*Paid in month following the service_1st week of Feb_2025					Depreciation expense				
Regular Opening Hours 11 am to 7 pm				8 hrs			\$3,000		
Maintenance of pool					Insurance				
Pool maintenance				\$2,500 Per month	Insurance per annum				
* Payment will be due by 14 Nov_2024 following the month maintenance carried out							\$48,000	Increase for 2026	3%
Major work maintenance: Sep to May				\$30,000 For 9 months	Insurance per month				
Payment to be made in August_2025							\$4,000		
					*Paid monthly in advance_1st in June 2024				
					Other expenses				
					Total utility Costs				
							\$16,400	Per annum	
					Total utility Costs				
							\$1,367	Per month	
					Total Sundry Costs				
							\$5,900	Per annum	
					Total Sundry Costs				
							\$491.67	Per month	

Table 6: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

The cash budget has been set up after collecting all the data from the given data spreadsheet where cash receipts(inflows), total cash receipts, cash outflows, total cash outflows, net operational cash flow and net cash flow for month features are significantly enlightened in the following table 7, 8 and 9 respectively.

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
MCACA_CASH BUDGET: 2024-2025																		
2024																		
2025																		
Transaction Detail		Before July_24	Jul_24	Aug_24	Sep_24	Oct_24	Nov_24	Dec_24	Jan_25	Feb_25	Mar_25	Apr_25	May_25	Jun_25	Jul_25	Aug_25	Total (For financial year)	
CASH RECEIPTS (INFLOWS)																		
Adults (Attendees)						6,500	7,000	15,000	20,000	18,500	9,500	7,500	0				\$84,000	
Children (Attendees)						13,000	14,000	30,000	40,000	37,000	19,000	15,000	0				\$168,000	
Ice-cream						7,800	8,400	18,000	24,000	22,200	11,400	9,000	0				\$100,800	
Sunscreen						975	1,050	2,250	3,000	2,775	1,425	1,125	0				\$12,600	
Membership		9,000		1,000													\$10,000	
Grants																		\$15,000
Fundraising																		\$15,000
Schools																		\$18,000
TOTAL CASH RECEIPTS		9,000	1,000	0	28,275	34,450	65,250	87,000	85,475	56,325	50,625	0	6,000				\$423,400	

Table 7: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

17																	
18	CASH OUTFLOWS																
19	Cash paid for ice-cream inventory					4,000	4,500	9,000	12,000	11,000	5,500	5,000	0	0			\$51,000
20	Cash paid for sunscreen inventory					20,000											\$20,000
21	Cash Paid for Labour																
22	Lifeguards			350	350	3,500	3,500	25,792	24,960	27,040	29,952	27,040	26,208	24,960			\$185,952
23	Co-ordinator							3,500	3,500	3,500	3,500	3,500	3,500	350			\$29,050
24	Manager			0	0	1,120	3,500	3,500	4,200	4,200	4,200	4,200	3,500	700	700		\$29,120
25																	
26	Administrative Costs																
27	Cash paid for pool maintenance	0	0	0	0	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500			\$22,500
28	Cash paid for major pool maintenance															30,000	\$0
29	Cash paid for utilities		300	300	600	1,000	1,500	3,000	3,000	3,000	1,500	1,300	600	300			\$16,400
30	Cash paid for sundry		100	100	300	500	500	750	1,000	1,000	750	500	300	100			\$5,900
31	Cash paid for insurance	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	0			\$44,000
32																	
33	TOTAL CASH OUTFLOWS	4,000	4,400	4,750	5,250	36,620	20,000	52,042	55,160	56,240	51,902	48,040	40,608	28,910	1,050	30,000	403,922
34	NET OPERATIONAL CASH FLOW	-4,000	4,600	-3,750	-5,250	-8,345	14,450	13,208	31,840	29,235	4,423	2,585	-40,608	-22,910	-1,050	-30,000	19,478

Table 8: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

15	Cash paid for refrigerator		4,800														
16	Cash paid for three electric barbeque		4,200														
17	Cash paid for table and benches		4,500														
18	Cash paid for shade cloths		6,000														
19	NET CASH FLOW FOR MONTH	-4,000	-14,900	-3,750	-5,250	-8,345	14,450	13,208	31,840	29,235	4,423	2,585	-40,608	-22,910	-1,050	-30,000	-22
20	Cash Balance at Start of Month	15,000	11,000	-3,900	-7,650	-12,900	-21,245	-6,795	6,413	38,253	67,488	71,911	74,496	33,888	10,978	9,928	
21	Cash Balance at eEnd of Month	11,000	-3,900	-7,650	-12,900	-21,245	-6,795	6,413	38,253	67,488	71,911	74,496	33,888	10,978	9,928	-20,072	10,978
22																	
23																	
24																	
25																	

Table 9: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

To continue the viability of the cash budget, MCACA can hire the cheaper payments with lifegaurds and co-ordinator, may be it can help to inceased the viability of the cash budget of MCACA and enhance their liquidity for the future business that have been enlightened in the following table 10 and 11 respectively.

114							
115			COST DATA				
116			Labour Costs				
117			Operation Manager			1	
118			1 Operation manager			852 hrs (Annually)	
119			Coordinator			1	
120			1 coordinator			840 hrs (Annually)	
121			Pay Rates per hour				
122			Operation Manager			\$35 per hour	
123							
124			Coordinator			\$33 per hour	
125			Payment will be made on Thursday, 05 Jan_2025.				
126			Pool safety - Lifegaurds				
127			Lifegaurds			\$22 per hour	
128			Lifegaurds			4	
129			*Paid in month following the service_1st week of Feb_2025				
130			Regular Opening Hours	11 am to 7 pm		8 hrs	
131							

Table 10: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

[illegible]

Table 11: Pervin, 16 April 2024, s3923324 MCACA Excel Solution PART A

CVP Analysis: Here, CVP or Cost-Volume-Profit analysis has been completed to find the break-even number of the pool attendees. To do the CVP analysis, the income statement features have been collected where income, total income, expenses, total expenses, with variable values and fixed values are illustrated in the following table 12, 13, and 15 respectively. Here, CVP or Cost-Volume-Profit analysis helps to determine what level of sales is required to obtain the break-even-point and targeted profit (Birt et al. 2019). Hence, it is observed from the analysis that MCACA needs 51,878 attendees to make the break-even point.

1	APPENDIX 1											
2												
3												
4												
5												
6												
7												
8	INCOME											
9												
10	Variable											
11	Pool Attendees											
12	Ice-cream											
13	Sunscreen											
14	Fixed											
15	Membership fee											
16	Grants											
17	Fundraising											
18	Schools											
19	TOTAL INCOME											

Table 12: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

20	EXPENSES											
21	Variable											
22	Ice-Cream											
23	Sunscreen											
24	Total variable expenses											
25	Fixed											
26	Insurance											
27	Wages											
28	Lifeguard											
29	Maintenance											
30	Utilities											
31	Sundry											
32	Depreciation											
33	Total Fixed expenses											
34	TOTAL EXPENSES											
35												
36	DEFICIT											

Table 13: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

5	MONSHA COMMUNITY AQUATIC CENTRE ASSOCIATION											
6	SEASON 2024 - 2025											
7												
8	Data											
9												
10												
11	Income											
12	Variable Expenses											
13	Contribution											
14	Fixed Expenses											
15	NPBT											
16	Desired Surplus (\$)											
17												
18	ANALYSIS											
19												
20	Answer to Question no.2											
21	2a) BEP (Attendees)											
22	2b) Number of Attendees for Desired Surplus before Tax											
23												

Table 14: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

Sales Promotion Strategies: As the cooler days are challengeable to run most of the businesses, therefore, it is anticipated that the promotion deal strategy can work to continue their ice cream sales rather than stop sales.

Although, MCACA has already sold 20 ice-creams on average, therefore, it is notion that it will be worthwhile if they can continue this approach with adding different values per ice-cream, as the cooler days are against to continue this type of item sale.

	A	B	C	D	E	F	G	H	I	J
3	3.a)									
4	<u>Data</u>									
5										
6		Sales Revenue		\$4.50 per ea						
7		Variable cost for 2 ice-cream		\$4.50						
8		Variable cost for 1 ice-cream		$\$4.50/2 = \2.25						
9		Contribution Margin		\$2.25						
10		Now,								
11		If 2 ice-cream for \$4.50, then 20 ice-cream will cost $(\$4.50*20)/2$								
12				= \$45						
13		Therefore,								
14		BEP (Break-even Point) = Fixed Cost/ Contribution Margin								
15				= \$45/\$2.25 = 20						
16		Therefore, MCACA would need to make 20 purchases per day to make this arrangement worthwhile.								
17										
18										
19										
20	3.b)									
21		If 1 ice-cream is \$2, therefore, three ice-cream for \$6 will not make any money.								
22		On the other hand, according to the question, if 2 ice-cream is \$4.50, then 1 ice-cream would be \$2.25. Hence,								
23		for 3 ice-cream, it would be \$6.75 ($3*\2.25) which will make loss for this arrangement and will not be worthwhile.								
24		Because, it will exit the budget range of \$6.								
25										

Table 15: Pervin, 16 April 2024, s3923324_MCACA_Excel Solution_PART A

Answers to questions of Part B: APL (AquaLuxe Pool Limited)

Here, NPV or net present value method will evaluate the investment opportunity for two technologies known as Chinese and French that have been considered for AquaLuxe Pool Limited. To maximise the profitability as well as operational efficiency of the APL, both technologies have been investigated applying some expenses and costs where various terms such as expected life, land cost, purchase cost, staff initial training costs and maintenance costs have been collected from the given spreadsheet data and represented through the following table 1.

OPTION 1: CHINESE TECHNOLOGY						OPTION 2: FRENCH TECHNOLOGY					
Expected Life						Expected Life					
6 Years						4 Years					
Land to be acquired						675,000					
787,500 \$											
Plant Costs						Plant Costs					
Plant purchase price						248,000 \$					
262,500 \$						52,000 \$					
Setup cost						300,000					
81,900 \$											
Total Plant Costs											
344,400											
Additional Net Working Capital						108,000					
105,000						20,500					
Staff Initial Training											
21,000											
Ongoing Maintenance (Year 1)						47,250 per annum					
52,500 per annum						Maintenance necessitate increased by 1.5%					
Maintenance necessitate increased by 1% Per annu						0.02 %					
0.010 %											
Production Costs						Production Costs					
Additional Staff Salary (Year 1)						162,000					
147,000						*Staff salary expected to increase by 3%					
*Staff salary expected to increase by 3%						0.03 %					
0.03 %											
Additional Utility Bills (Year 1)						80,000					
100,000						*Utility bills expected to increase by 3%					
*Utility bills expected to increase by 3%						0.03 %					
0.03 %											
Applicable Tax Rate						0.30 %					
0.30 %											

Table 1: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

Apart from this, to analyse the NPV, WACC or Weighted Average Cost of Capital for APL has been calculated where nominal rate and effective rate have been accounted (Ross et al. 2019). To calculate the nominal and effective rate, compounding activities have been focused on semi-annually, fortnightly, and daily. From the table 2, the cost of capital values has been calculated using the effective annual rate (EAR) formula.

EFFECTIVE ANNUAL RATE CALCULATIONS					
BORROWINGS				%	Compounding periods/annum
Mortgage	Compounding Daily		Nominal Rat	0.045	365
$i = (1 + .045/365)^{365} - 1$					
i = 4.60%					
Bank Loan	Compounding Fortnightly		Nominal Rat	0.03	26
$i = (1 + .03/26)^{26} - 1$					
i = 3.04%					
Bonds	Compounding Semi annually		Nominal Rat	0.05	6
$i = (1 + .05/6)^6 - 1$					
i = 5.11%					

Table 2: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

To find the WACC, equity has been calculated using dividend discount model which has been enlightened in the table 3. From the study, it is observed that AquaLuxe Pool Limited or APL has some capital such as types of loan, share capital that have been found from the given spreadsheet data from where APL will invest money to buy the asset.

J	K	L	M	N	O	P	Q
DIVIDEND DISCOUNT MODEL							
CALCULATING THE REQUIRED RATE OF RETURN WHEN THE SHARE PRICE IS KNOWN							
Question							
Assume a share (stock) is expected to pay \$0.25 Cents dividend (D ₀) this year, and that its dividend will grow (g) by 5% each year. Assume that the Share Price is \$3.50. Calculate the required rate of return (r)(Cost of Equity).							
Solution:							
Formula: $r = (D_1/P_0) + g$							
Where:	P ₀	Share Price		\$3.50			
	D ₀	Current Dividend		\$0.250			
	D ₁	Dividend in year 1		\$0.263			
	g	Expected growth		0.05			
	r	Rate		13%			
Using Excel Rate = 0.13							

Table 3: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

Eventually, the WACC or Discount Rate or Interest Rate has been calculated for analysing the NPV of Investment or Net Present Value which is highlighted in the following table 4. Here, as the tax is 30%, therefore after tax is 70% which is applied with the before tax costs and given the after tax figures. Then, the weighted figures has been multiplied with the after tax values and made the discount rate for every types of capital.

33	WACC CALCULATION							
34								
35								
36	TYPES	Market Value	Weights	Cost of Capital	Tax Rate	After Tax	WACC	
37	Security Backed Mortgage	3,500,000	0.0875	4.60%	0.3000	3.2217%	0.2819%	
38	Interest Only Bank Loan (due 30th of June 2025)	2,500,000	0.0625	3.04%	0.3000	2.1306%	0.1332%	
39	5% Bonds due on 31st December 2030	10,000,000	0.25	5.11%	0.3000	3.5737%	0.8934%	
40	Equity	24,000,000	0.6	13%	0.3000	8.7500%	5.2500%	
41	TOTAL CAPITAL EMPLOYED	40,000,000	1		0.3000		6.5585%	
42								

Table 4: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

Next, a table has been made for Chinese technology where various years from 0 to 6 years have been set up with the cash flows. In this step, year 0 is used as a present year which means APL is going to purchase it today. The cash flows from the year 6 to year 0 would be

discounted using the WACC or weighted Average Cost of Capital or Discount Rate that have been illustrated in the following table 5..

OPTION 1									
CHINESE TECHNOLOGY									
	Details	Present Time	Year	Year	Year	Year	Year	Year	
		0	1	2	3	4	5	6	
Initial Acquisition	Initial Outlay (Acquisition for Land)	-787,500							
Initial Acquisition	Initial Outlay (Acquisition for Plant)	-344,400							
Initial Acquisition	Additional Net Working Capital	-105,000							
Operating Costs	Staff Initial Training	-21,000							
Operating Costs	Ongoing Maintenance		-52,500	-53,025	-53,555	-54,091	-54,632	-55,178	
Operating Costs	Additional Staff Salary (Year 1)		-147,000	-151,410	-155,952	-160,631	-165,450	-170,413	
Operating Costs	Additional Utility Bills (Year 1)		-100,000	-103,000	-106,090	-109,273	-112,551	-115,927	
Operating Costs	Total Cost before tax (EBIT)	-21,000	-299,500	-307,435	-315,598	-323,994	-332,632	-341,519	
Operating Costs	Total saved on Costs	6,300	89,850	92,231	94,679	97,198	99,790	102,456	
Operating Costs	Total Cost after tax (NI)	-14,700	-209,650	-215,205	-220,918	-226,796	-232,843	-239,063	
Operating Costs	Add: Depreciation tax shield	0	17,220	17,220	17,220	17,220	17,220	17,220	
Operating Costs	Net Operating Cash Flow (EBIT 1-TAX)(After Tax Profit)	-14,700	-192,430	-197,985	-203,698	-209,576	-215,623	-221,843	
Terminal Cash Flows	Gain Loss on Salvage							50,000	
Terminal Cash Flows	Additional Net Working Capital							105,000	
Terminal Cash Flows	Tax on Gain							-15,000	
Net Cash Flows		-1,146,600	-192,430	-197,985	-203,698	-209,576	-215,623	-221,843	
Discount Rate	0.065585								

Table 5: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

From the above table 5, it is also observed that staff initial training expense \$21,000 is tax deductible where land, plant and additional net working capital expenses are not showing as tax deductible as bank will not allow to claim of a full cost of capital item in day one (Ross et al. 2019). Here, an initial outlay refers to the initial investments needed in order to begin a given project and indicates the fixed capital except adding net working capital. Because, it is net working capital not the fixed capital which is needed to run the project after its get started. Apart from this, although depreciation is showing as cash flow but it is not a cash flow. Depreciation is indicating as tax deductible money which will be activated from the following year (Ross et al. 2019). Moreover, we can see the salvage or book value of an asset that has been found after the depreciation which is tax deductible with 30% tax (KENTON 2023).

OPTION 1									
CHINESE TECHNOLOGY									
	Details	Present Time	Year	Year	Year	Year	Year	Year	
		0	1	2	3	4	5	6	
Operating Costs	Staff Initial Training	-21,000							
Operating Costs	Ongoing Maintenance		-52,500	-53,025	-53,555	-54,091	-54,632	-55,178	
Operating Costs	Additional Staff Salary (Year 1)		-147,000	-151,410	-155,952	-160,631	-165,450	-170,413	
Operating Costs	Additional Utility Bills (Year 1)		-100,000	-103,000	-106,090	-109,273	-112,551	-115,927	
Operating Costs	Total Cost before tax (EBIT)	-21,000	-299,500	-307,435	-315,598	-323,994	-332,632	-341,519	
Operating Costs	Total saved on Costs	6,300	89,850	92,231	94,679	97,198	99,790	102,456	
Operating Costs	Total Cost after tax (NI)	-14,700	-209,650	-215,205	-220,918	-226,796	-232,843	-239,063	
Operating Costs	Add: Depreciation tax shield	0	17,220	17,220	17,220	17,220	17,220	17,220	
Operating Costs	Net Operating Cash Flow (EBIT 1-TAX)(After Tax Profit)	-14,700	-192,430	-197,985	-203,698	-209,576	-215,623	-221,843	
Terminal Cash Flows	Gain Loss on Salvage							50,000	
Terminal Cash Flows	Additional Net Working Capital							105,000	
Terminal Cash Flows	Tax on Gain							-15,000	
Net Cash Flows		-1,146,600	-192,430	-197,985	-203,698	-209,576	-215,623	-221,843	
Discount Rate	0.065585								
ANSWERS									
Net Present Value	1) NPV of Cash Flows Years 1 to 6		-842,802						
	1) NPV of Investment		-1,989,402						

Table 6: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

The above table 6 is indicating the net present value of investment of French technology which has been calculated using the discount rate and 6 years values.

The same process has been activated for French technology to find the net present value of investment that has been represented in the following table 7.

A	B	C	D	
OPTION 2				
FRENCH TECHNOLOGY				
	Details		Present Time	Y
			0	
Net Present Value	1)	NPV of Cash Flows Years 1 to 4	-2,187,076	
	1)	NPV of Investment	-3,176,426	
Calculating the Equivalent Annual Annuity (Equivalent Annual Cost) by formula				
Formula: $C = (r \times NPV) / (1 - (1 + r)^{-n})$				
Where:				
C = equivalent annuity cash flow				
NPV = net present value				
r = interest rate per period				
n = number of periods				
Applying the formula to Project A:				
$C = (r \times NPV) / (1 - (1 + r)^{-n})$				
$= (.0894869 \times -3176426) / (1 - (1 + .0894869)^{-6})$				
-\$657,344.74				

Table 9: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

Limitations: From the above analysis, it is observed that there can be some limitations that are arisen with the process such as additional net working capital expense as this term sometime reduce the profit and hinderence the investment opportunity (Razorpay 2023). Therefore, APL needs to be aware about the positive and negative working capital.

From the above NPV analysis and the following table 10, it is found that Chinese technology is financially more attractive than the French technology as Chinese technology is showing the less amount than the French technology that have been measured using EAC or Equivalent Annual Cost formula and enlightened in the EAC (Equivalent Annual Cost) field or column.

Technology	NPV (Net Present Value)	EAC (Equivalent Annual Cost)
CHINESE	-1,989,402	-\$411,696.29
FRENCH	-3,176,426	-\$657,344.74

Table 10: Pervin, 17 April 2024, s3923324_MCACA(APL)_Excel Solution_PART B_WACC_NPV

Hence, it is recommended that APL or AquaLuxe Pool Limited should buy the Chinese technology as it is more cost effective and can enhance profitability for APL by prioritizing the operational efficiency than French technology.

From the above calculation, it is found that adding new debt and its associated interest costs can impact on NPV analysis and the entire capital structure. It can change the WACC or Weighted Average Cost of Capital. Since, debt is cheaper than equity amount and tax deductible, it can be lower risk to the investors and can lower the WACC or discount rate. From the above analysis, it is also observed that if we get a lower discount rate, it can help to increase the net present value or

NPV of projects which has been found from the calculation of the discount rate and net cash flows. Although, a new debt can form many benefits including a tax shield and tax deductions as well as can reduce overall financing debt, but it has negative approach that may impact on increasing financial risk which needs to be considered in NPV analysis. Eventually, it is researched that to avoid the double counting, interest costs need to avoid as it can cause the higher risk for the entity or business (Managementconsulted 2023).

Video Presentation Link of PART A: <https://rmit-arc.instructuremedia.com/embed/83ad5794-2f18-44f6-8ad6-d343d0e91af8>

Video Presentation Link of PART B: <https://rmit-arc.instructuremedia.com/embed/58c7322b-6d58-48b0-9628-8f5e6da5df28>

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