CFE FD Model Solutions
Fall 2022

1.   **Learning Objectives:**
2.   The candidate will understand how to gauge a company's performance through an evaluation of its financial reports.

Learning Outcomes:
(2a)   Analyze the interrelationships between the income statement, cash flow statement, and balance sheet, in order to measure a corporation's financial performance.

(2b)   Identify and analyze the impact of unusual accounting practices on the quality of earnings and assets of a corporation, including analyzing the signs of questionable accounting.

(2c)   Analyze the impact of tax accounting and policies, local regulations, and foreign exchange rates.

Sources:
Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 11 Financial Reporting Quality

Commentary on Question:
Candidates should understand the ways companies can manipulate financial statements, use financial statement analysis techniques to identify the signs of questionable accounting, and understand the implications of accounting choices to financial statements.

Solution:
(a)   List three accounting techniques companies can use to improve their financial position in the current reporting period.

   Commentary on Question:
   The following are examples of acceptable answers. The first three the candidate wrote were accepted.

1. **Continued**

Choose 3 of:
- Use non-recurring transactions to increase profits
- Defer expenses to a later period,
- Recognize revenue prematurely
- Measure and report assets at higher values
- Measure and report liabilities at lower values

(b)

(i)   Calculate each metric from 2017-2021. Show your work.

(ii)   Assess what the results may mean as they pertain to financial warning signs.

Commentary on Question:
While part (i) was a straight calculation, part (ii) allowed the candidate to interpret and justify their findings. Candidates who could interpret the results of their calculations were given credit.

Part (i)

	2021	**2020**	**2019**	**2018**	**2017**	2016
Net income versus cash flow from operations: **=Cash from Operations/Net Income**	82%	44%	355%	231%	226%	
NI	29	16	16	35	50	50
CF from operations	24	7	57	81	113	86
Inventory turnover ratio: **=-Total Cost of Sales/Avg Inventory**	78%	100%	140%	120%	112%	
Cost of sales	(216)	(226)	(272)	(228)	(209)	-201
inventory	300	256	196	192	187	187
Receivables turnover ratio: **=Net revenue/avg accounts receivable**	153%	132%	179%	197%	191%	
revenue	170	140	186	200	191	179
accounts receivable	113	108	105	103	100	100

1. Continued

Part (ii)

Cash from Operations vs Net Income: As the ratio declined there may be problems with the company's accrual accounts

Inventory Turnover Ratio: Declining inventory turnover ratio could suggest obsolescence problems that require recognition for example by marking down to realizable value.

Receivables turnover: Receivables are increasing as a percentage of net revenue (turnover ratio is decreasing). Could indicate issues with channel stuffing or fictitious sales.

(c) Recommend three appropriate questions to ask BJT as part of the audit based on your observations in part (b). Justify your recommendations.

Commentary on Question:
Several examples of acceptable answers are listed below. Candidates should always justify their answers.

- Does the company use reserves for obsolescence in its inventory valuation? Justification: inventory turnover declined.
- Have there been any changes in depreciable lives for long-lived assets? Justification: cash from ops vs. net income indicates something changed with accruals
- Has the company changed sales practices by offering unusual discounts or threatening price increases? Justification: receivables turnover declined.
- Does the company engage in bill-and-hold transactions? Justification: receivables turnover declined.

(d)

    (i) Describe the three methods that can be used for depreciating long-lived assets.

    (ii) Evaluate your manager's statement based on BJT's financial statements.

Part (i)
1. Straight line depreciation: Depreciate evenly over asset's life.
2. Units of production: Depreciate based on units produced vs expected number capable of being produced.
3. Double declining balance: depreciation is a fixed percentage applied to declining/outstanding balance

1. **Continued**

Part (ii)
The statement may be true but there is insufficient information to be sure
If it were true, as production decreased so would depreciation expense
Production decreased in 2021, but depreciation expenses did not
Increase in depreciation expenses may be a result of depreciation of increased inventory. This may be offset but reduced depreciation of longer-lived assets
Audit team should review depreciation methods.

2. **Learning Objectives:**

2.   The candidate will understand how to gauge a company's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a)   Analyze the interrelationships between the income statement, cash flow statement, and balance sheet, in order to measure a corporation's financial performance.

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 7: Cost Allocation: Theory

Case Study

Commentary on Question:

This question is to test students on understanding of operational efficiency and evaluation based on historical data and industrial benchmarks. In order to receive full credit, candidates must show that they understand the implications of the ratios and movements.

Solution:

(a)

(i)   Calculate the Days of inventory On Hand (DOH), Days of Sales Outstanding (DSO), and Total Asset Turnover for the past 5 years. Show your work.

	2021	2020	2019	2018	2017
DOH	94.79	69.73	87.93	84.99	81.83
DSO	4.03	4.22	4.44	4.66	4.89
Total Asset Turnover	1.45	1.56	1.65	1.77	1.78

Commentary on Question:

Most candidates received full credit. Candidates using average numbers to calculate the ratios also received full credit.

(ii)   Evaluate Frenz's operational performance based solely on your calculations in part (i).

2. Continued

DOH: inventory turnover has been stable for 2017-2019 and reached the highest point in 2020. Higher inventory turnover ratio implies a shorter period that inventory is held. Due to the possible delay of deliveries of ingredients due to global pandemic, the inventory is held shorter in 2020. To avoid this happening again, inventory is higher in 2021 which causes inventory period is longer.

DSO: it has been steadily decreased in the past five years. Receivable has been the same for the past five years regardless of the growth of the revenue indicating highly efficient credit and collection

Total Asset turnover: Total asset turnover has been decreased indicating the inefficiency of capital usage.

Commentary on Question:
Most candidates received full credit for describing the movement but fewer candidates were able to provide reasons for the movement as well as the implication of the movement.

(b) Explain the implications of Frenz's operating efficiency based on the industry ratios above.
DOH: Frenz inventory has been stored longer than what industry usually does. Its inventory on average store for around 2-3 months which is relatively long as a food/coffee industry. It may affect coffee's quality and freshness which is Frenz competitive advantage.

DSO: Frenz DSO is shorter than Industry. It's lower compared to industry indicating that Frenz's credit or collection policies are too stringent, could loosen a bit to boost sales.

Commentary on Question:
Candidates generally did well on this question. Most candidates demonstrated good understanding on the movements and their implications.

(c) Explain how a change in overhead expense allocation may impact a company's current and future operational results.

An overhead allocation assigns common costs to cost objects using an allocation base that approximates how the cost objects consume the common resources. Changing the allocation basis to allocate historical costs will not impact total company results.

2. Continued

Cost allocation can impact future results because cost allocations change how decision rights are assigned within the company and hence managers' incentives and behaviors. An allocation of more costs to one department and less to another transfers decision rights over the amount of discretionary spending, and could change the mix of factor inputs, etc

Commentary on Question:
Most candidates failed to answer how the current results would impact and only received partial credit.

(d) Recommend two actions that Frenz should take regarding operating efficiency. Justify your recommendations.
1. loosen Frenz's collection policies -- as the current DSO is a bit too short compared to industry level. Looser collection policies can build a better relationship with customers and boost sales
2. lower inventory level - this can shorter the days inventory was held to make sure the quality and freshness of Frenz's products. However, this can increase the supplier risk
3. increase account receivable level - since the sales increased a lot in the past few years, account receivable should not be fixed ($5000 every year)
4. impose inventory charge

Commentary on Question:
Points were awarded for other reasonable actions. Any action that isn't related to operating efficiency was not awarded any credit.

(e)

(i) Calculate Frenz's debt-to-equity ratio over the last 5 years. Show your work.

Year	2021	2020	2019	2018	2017
Debt to Equity	89.93%	100.96%	110.33%	124.75%	119.32%

(ii) Evaluate Frenz's debt-to-equity ratio in part (i) considering the company's expansion plan.

Frenz's debt-to-equity ratio has been decreasing due to higher retention ratio.
Lower debt-to-equity ratio may provide more ability to pursue expansion.

(iii) Propose two approaches to reduce the company's internal debt burden.

2. **Continued**

Possible answers:
1. Lower the cash dividend payout as in the past years, dividend payout ratio is extremely high - its 100% in 2017.
2. Increase account receivable as sales increase year over year
3. Increase paid in capital such as looking for investors.
4. Renegotiate the debt covenants to propose convertible debt to equity

Commentary on Question:
Candidates generally didn't not do well in part (i) and (ii). Several candidates included account payable in the total debt calculation in part (i), which is incorrect. Most candidates didn't include the reason of lower debt-equity ratio in part (ii). In part (iii), answers like increase equity/cash, lower debts only received partial credit.

3. **Learning Objectives:**

5. The candidate will understand the application of quantitative methods and techniques with a risk management focus to business problems for financial and non-financial companies.

Learning Outcomes:

(5b) Evaluate model risks and processes
   (i) Assess model tradeoffs among usefulness, resource constraints, timeliness, fidelity, and accuracy
   (ii) Assess processes for vetting models

(5c) Evaluate results of deterministic, stress-testing, stochastic and simulation methods and models

Sources:

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 and Ch. 12

Commentary on Question:
Commentary listed underneath question component.

Solution:

(a) List two key data considerations when designing features of an Analytics Base Table (ABT).

   1. Availability of the data
   2. Format(s) of the data

(b) Create a confusion matrix for Model 1 and for Model 2.
Show your work.

   Commentary on Question:
   Because the question did not specify which category was positive and which was negative, full credit was given where Default was chosen as positive, rather than No Default. Strong candidates, however, recognized that with 100 scenarios, having Default as positive required partial scenarios to obtain precision and recall as given, which is not reasonable.

   Candidates generally did well on this question. Candidates who did not receive full points did not incorporate all given information, such as Target Default being 25% of total, or did not recall the formulas for Precision and Recall.

3. **Continued**

Model 1
Precision   0.933
Recall   0.933

Model 2
Precision   0.97
Recall   0.867

Total No Default   75
Total Default   25

Model 1

		Prediction	
		No Default	Default
Target	No Default	70	5
	Default	5	20

Model 2

		Prediction	
		No Default	Default
Target	No Default	65	10
	Default	2	23

(c)

    (i)   Evaluate your coworker's recommendation.

    (ii)   Calculate the profit and loss for Model 1 and for Model 2 using the confusion matrices created in part (b). Show your work.

Commentary on Question:
Most candidates did not evaluate their coworker's recommendation in part (i), but rather critiqued management's preference, which was not what the question asked them to do.

Candidates generally did not understand all profit and loss implications in the profit matrix, and few received full credit. Common mistakes include assigning a loss to a correct prediction of No Default, where no loss would be incurred. Another common mistake was applying the 25% Target Default to the 60% no recovery rate in the profit matrix, rather than recognizing that the 25% Target Default is already incorporated in the confusion matrix.

3. **Continued**

    (i)   Management prefers models with categorical target features to be based on expected value. These models use categorical target features, and profit and loss is an expect value measurement, so this is a reasonable approach. Profit and loss is an effective performance measure to use. Cost of default on the loans is the primary risk, so understanding expected value of loss is useful.

    (ii)   The profit matrix is multiplied by the confusion matrices to determine the profit and loss for each model:

Loan Face Value	100,000
Interest	10%
Recovery	40%

Prediction No Default, Target No Default = Profit of 100,000 * 10% = **10,000**

Prediction of Default, Target No Default = Loss of interest on loan, since no loan is issued = -100,000 * 10% = **-10,000**

Prediction of No Default, Target Default = Loss of interest on loan + Loss of face value defaulted = - (100,000 * 10% + 100,000 * (1 - 40%)) = -(10,000 + 60,000) = **-70,000**

Prediction of Default, Target Default = No loan issued, and no interest lost, so no profit or loss = **0**

3. **Continued**

Profit Matrix		Prediction	
		No Default	Default
Target	No Default	10,000	(10,000)
	Default	(70,000)	0

Profit - Model 1		Prediction	
		No Default	Default
Target	No Default	700,000	(50,000)
	Default	(350,000)	0
	Profit - Model 1		300,000

Profit - Model 2		Prediction	
		No Default	Default
Target	No Default	650,000	(100,000)
	Default	(140,000)	0
	Profit - Model 2		410,000

(d) Recommend whether Model 1 or Model 2 should be adopted by ABC Company. Justify your response, using results from parts (b) and (c).

Recommendation: Model 2 should be adopted by ABC Company

Justification: Model 2 has a higher expected profit at 410,000, compared to Model 1 at 300,000, which aligns with management's preferences. Additionally, Model 1 misclassifies Default as No Default more often than Model 2, and this mistake is the most costly, resulting in lower profits.

(e) Determine the annual effective loan interest rate at which the models would produce the same expected profit and loss. Show your work.

Commentary on Question:
Candidates generally performed well on this question. Full credit was given for answers utilizing goal seek, so long as the candidate demonstrated an understanding of how to set up the problem.

3. **Continued**

The profit matrices need to be set equal to each other.

Model 1 Profit: (70 * 100,000 * i) - (5 * 100,000 * i) - 5 * [(100,000 * i) + 100,000 * (1 - 40%)]

Model 2 Profit: (65 * 100,000 * i) - (10 * 100,000 * i) - 2 * [(100,000 * i) + 100,000 * (1 - 40%)]

- (70 * 100,000 * i) - (5 * 100,000 * i) - 5 * [(100,000 * i) + 100,000 * (1 - 40%)] = (65 * 100,000 * i) - (10 * 100,000 * i) - 2 * [(100,000 * i) + 100,000 * (1 - 40%)]

- (5 * 100,000 * i) + (5 * 100,000 * i) - 3 * [(100,000 * i) + 100,000 * (1 - 40%)] = 0

- (500,000 * i) + (500,000 * i) - (300,000 * i) - (300,000 * 60%) = 0

- (700,000 * i) - 180,000 = 0

- 700,000 * i = 180,000

i = 25.7143%

At an interest rate of 25.7143%, ABC Company would be indifferent between Model 1 and Model 2

(f)   Recommend one additional performance measure for evaluating the performance of models with categorical target features that management may not have considered. Justify your recommendation.

Recommendation: F1 measure

Justification: F1 measure works well with prediction problems with binary target features; can collapse precision and recall into this simpler misclassification rate

4.

Learning Objectives:
3. The candidate will understand how managerial accounting impacts performance evaluation and decision making.

Learning Outcomes:
(3a) Assess how managerial accounting can impact decision making and organizational architecture.

(3b) Assess and recommend methods a company may use to allocate its costs and how these methods impact the perceived performance of a company or its component lines of business.

(3c) Assess how managerial accounting can impact behavior and performance evaluation in organizations.

Sources:
Zimmerman, Accounting for Decision Making and Control 10th Ed
- Chapter 4: Organizational Architecture
- Chapter 5: Responsibility Accounting and Transfer Pricing
- Chapter 10: Criticisms of Absorption Cost Systems: Incentive to Overproduce
- Chapter 11: Criticisms of Absorption Cost Systems: Inaccurate Product Costs

F-155-21: Product Costing In Service Organizations

F-156-21: ABC and Life Insurance Industry

Case study

Commentary on Question:
Candidates should
- *Assess how managerial accounting can impact decision-making and organizational architecture.*
- *Assess and recommend methods a company may use to allocate its costs and how these methods impact the perceived performance of a company or its component lines of business.*
- *Assess how managerial accounting can impact behavior and performance evaluation in organizations*
- *Apply Frenz case in answering the questions*

4. Continued

Solution:

(a)

     (i)   Describe the agency problem at Frenz, as observed in the email exchange.

     (ii)   Describe how Frenz's organizational architecture may reduce agency problems.

     Commentary on Question:
     Candidate should show an understanding of the 'agency problem' and the explanation of how Jeff is acting in his self-interest, and the discussion on the separation of duties and incentive compensation structure

     (i)   Jeff is focused on how he can maximize his bonus. Jeff is acting in his self-interest to maximize his utility. Agents' pursuit of their self-interest instead of the principal's is called the agency problem. The agent would prefer to see firm resources directed into activities that improve the agent's welfare even if these activities do not benefit the company to the same degree.

     (ii)   Separation of duties: Jeff cannot change the cost allocation. He can influence it, but he does not have authority to change it. Bonuses are linked to profits. Incentive compensation plans better align the interests of senior managers and the company: Several specific accounting procedures, such as standard costs, budgeting, and cost allocations, help reduce agency problems. Financial measures are not under the control of the operating managers.

(b)   Describe how each of the four types of overhead costs listed in Kitty's email may be allocated to each of the four cost codes to more accurately reflect how the cost codes consume the overhead resources.

    Commentary on Question:
    Candidates should discuss the cause-and-effect relationship for overhead items mentioned in Exhibit B - corporate advertising, executive salaries, store operating expenses, and the rent on our home office building.

    Corporate advertising – Advertising benefits all products sold. Frenz should find a common base (e.g., sales, cost of sales, etc.) to allocate these expenses to all four cost codes.

    Executive salaries – Executive decisions affect all products sold. Frenz should find a common base (e.g., sales, cost of sales, or time spent, etc.) to allocate these expenses to all four cost codes.

4. **Continued**

Store operating expenses – Store related expenses should not affect cost codes of COTS and NCOTS. Using controllability principle, any expenses related to Frenz stores should be allocated to products of Frenz stores.

Rent on home office building – It is not easy to find a common base to allocate rent on home office building. Frenz can either not to allocate such expense or find a common base to allocate the expenses.

(c)
   (i) Calculate Operating Income using an overhead allocation to the four cost codes based on 'Sales'. Show your work.

   (ii) Calculate Operating Income using an overhead allocation to the four cost codes based on 'Cost of Sales'. Show your work.

Commentary on Question:

(i)

2020 Financial Data by Cost Code

	Cost Code				
	CS	COTS	NCS	NCOTS	Total
Sales	260,145	110,403	40,211	20,724	431,483
Cost of Sales	26,702	20,141	6,012	3,540	56,395
Overhead	176,812	75,037	27,330	14,085	293,265
Operating Income	56,631	15,225	6,869	3,099	81,823

(ii)

2020 Financial Data by Cost Code

	Cost Code				
	CS	COTS	NCS	NCOTS	Total
Sales	260,145	110,403	40,211	20,724	431,483
Cost of Sales	26,702	20,141	6,012	3,540	56,395
Overhead	138,856	104,737	31,264	18,409	293,265
Operating Income	94,587	(14,475)	2,935	(1,225)	81,823

(d)
   (i) Describe how Jeff's bonus will change if the overhead allocation base is changed from 'Sales' to 'Cost of Sales'.

   (ii) Critique Jeff's statement regarding the true profitability of the non-coffee items.

   (iii) Recommend a change to Frenz's product mix based on Kitty's overhead allocation analysis. Justify your recommendation.

Commentary on Question:
Candidate should demonstrate the ability using financial statement information to analyze allocation on difference basis and the implication to the bottom line.

4. **Continued**

(i) Jeff is responsible for the non-coffee (NC) items which are cost codes NCS and NCOTS.
- When the allocation base is 'Sales', operating earnings for the NC items is 10,608 (= 10,965 - 356).
- When the allocation base is 'Cost of Sales', operating earnings for the NC items is -7418 (= 20,109 - 27,527).
- Since operating earnings for the NC items is negative and significantly lower when the allocation base is 'Cost of Sales', Jeff's bonus will be much lower if the allocation base is 'Cost of Sales' than if the allocation base is 'Sales'.

(ii) Jeff says that the allocation method for corporate overhead penalizes the non-coffee products and disguises the true profitability of this part of the operation. Kitty states that accumulated corporate overhead is spread over all sales.
- The non-coffee items make up only 11% ((10,965-356)/99,668) of Operating Earnings when the overhead cost allocation is based on Sales
- When the cost allocation is based on Cost of Sales, Operating Earnings by 7,418 (20,109-27,527)
- Current allocation method does not seem to be penalizing the non-coffee products because the non-coffee products seem to have a high Cost of Sales amount relative to their Sales amount.

(iii) Knowing the cost of different products can be useful for making judgements about their relative profitability and performance, which may lead to decisions about resource allocation, shifting money away from unrewarding activities to those which offer the greatest benefit, or to moves to improve a product's cost performance. Also, for motivating and controlling managers, incentive schemes, pricing decisions.
- When the cost allocation base is 'Cost of Sales', Operating Income for the products sold in non-Frenz stores (COTS and NCOTS) is negative.
- Given this unfavorable result, Frenz may want to consider discontinuing sales of their products in other than Frenz stores and just focus on selling in Frenz stores. The Cost of Sales for these products are much higher for these products.

(e)

(i) Contrast ABC and VCA.

(ii) Explain why VCA would be suitable for Frenz.

4. **Continued**

Commentary on Question:
Candidates should demonstrate the understanding that ABC & VCA are complementary approaches with different cost drivers and
- *Frenz's strategy is product differentiation and*
- *Frenz is in the service industry with products that have intangible aspects for which it is often difficult to trace costs,*

(i) ABC and VCA are complementary because their cost drivers are different.
- ABC focuses on resource consumption to reflect the economics underlying the production function and trace the cost of resources consumed to products. ABC focuses on what is driving overhead cost. ABC systems collect costs to functional activity pools and then allocate to products using individual ABC drivers.
- VCA looks at the costs of the core activities that make up the value chain. The value chain is how the firm adds value in each of the core activities through the processes of designing, producing, and delivering a service that customers will pay for. Differences in the way competitors perform these activities are sources of competitive success or failure, so the study of costs in each of the activities is of vital importance.

(ii) Frenz strategy is product/service differentiation. Frenz's competitive advantage is its brand/product awareness.
- Frenz is dominant in the high-end specialty coffee market. Frenz's mission statement focuses on the objective to be the most recognizable coffee brand in the world.
- Product costing issues are compounded in service organizations by the difficulty in defining the service 'product' because of the intangible aspects of many services. A closer alignment of Frenz's responsibility centers with its value chain might be a source of competitive advantage.
- Companies using a differentiation strategy concentrate on the costs of differentiating themselves in the marketplace: transaction costs with suppliers and customers, linkages with other Strategic Business Units, and inter-relationships of costs among the value activities.

4. **Continued**

Frenz would benefit from VCA by focusing on the costs that differentiate its products:

- Frenz has to manage relationships with the coffee/tea producers, outside trading companies, suppliers and exporters to manage delivery risks and the quality of ingredients. Frenz may want to negotiate trade credit agreements with its suppliers for a value-add to its products.
- Customer loyalty is pertinent to Frenz's business. Frenz continues to expand its popular loyalty card program, which has been effective in preventing other companies from stealing its customers.
- Economic conditions impact the value chain, so Frenz needs to consider.
- Health effects of consuming product is another areas in the value chain that Frenz needs to consider.

5.

Learning Objectives:

1.	The candidate will understand how a company optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a)	Recommend an optimal capital structure for given business objectives and the competitive environment.

(1b)	Compare and contrast methods to determine the value of a business or project, including the impact on capital budgeting and allocation decisions.

(1d)	Assess the impact of business strategies such as acquisitions, divestitures, and/or restructurings.

Sources:

F-134-19: Damodaran on Valuation, Ch 15: The Value of Synergy

Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 8: Fundamentals of Capital Budgeting (background)

Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 28: Mergers and Acquisitions

Commentary on Question:

Candidates mostly did well on part a and b.i. Most candidates did not perform well in parts c and d; which were focused on the analysis of capital structures and optimal solutions. A small number of candidates did not apply the understand the synergy calculations. For example, a few candidates derived the growth of synergy as 100 times of the SEA standalone valuation.

Solution:

(a)

	(i)	Explain one common financial synergy from an acquisition that is unlikely to be realized by the combination of BJA and SEA.

	(ii)	Explain why it is important to identify the control premium versus the synergy premium.

	Commentary on Question:
	Full credit was given for all answers that could be justified.

5. **Continued**

(i) Identify one synergy that theoretically could be accessed but is unlikely to increase value of the combined firm.

a. debt capacity can increase – combined firm could have more stable earnings and cash flow, allowing for more debt, for further expansion in the long term.   It could also increase tax benefits. However, BJA is already highly leveraged so likely not feasible at least in the short term.

b. Diversification - The combined firm allows for the addition of new product offerings and services (i.e., routes and convenience of bookings).   This can allow for greater growth and revenue. However, often, diversification is not seen as a synergy benefit as investors can access diversification via investing directly in other companies.

(ii)
It is important to identify the control premium separate from the synergy premium because 1) we can avoid double counting and 2) the acquisition price should reflect close to 100% of the control premium but only a portion of the synergy value 3) we may need to use different discount rate for valuing control premium and synergy premium

(b)

(i)   Calculate the annual free cash flow impact of discontinuing SEA charter service by completing the Excel template tab Q5_b-i. Show your work.

(ii)   Calculate the annual free cash flow impact for the following aspects by completing the Excel template Q5_b-ii. Show your work.

I.   Cost reduction

II.   Growth in Pacific NW region and international expansion

(iii)   Calculate the following by completing the Excel template Q5_b-iii. Show your work.

I.   The combined firm's value

II.   Value of the control premium

III.   Value of the cost synergy

IV.   Value of the growth synergy

See separate spreadsheet calculation

5. **Continued**

(c)

    (i)   Recommend to BJA an acquisition price for SEA. Justify your recommendation.

    (ii)   Analyze whether BJA's acquisition offer is likely to be accepted or rejected by SEA.

    See separate spreadsheet calculation

(d)

    (i)   Recalculate combined firm's synergy premium for each risk, A and B, by using the Excel template Q5_d-i. Show your work.

    (ii)   Explain how each risk, A and B, could change SEA's decision.

    See separate spreadsheet calculation

6.   **Learning Objectives:**

4.   The candidate will understand how to apply and recommend appropriate ERM frameworks, principles and strategies to manage, evaluate, analyze and mitigate risk exposures faced by an entity and to ensure operational excellence in any industry.

5.   The candidate will understand the application of quantitative methods and techniques with a risk management focus to business problems for financial and non-financial companies.

Learning Outcomes:

(4a)   Assess the potential impact of risks faced by an entity in any industry, including the extent to which risks are hedgeable or non-hedgeable.

(4b)   Evaluate risk measurement, modeling, and management of financial and non-financial risks.

(4c)   Develop and evaluate an appropriate risk mitigation or risk transfer strategy for any given situation.

(5d)   Assess techniques to measure risks given limited information

Sources:
F-113-14: Securitization, Insurance, and Reinsurance

Lam, Implementing Enterprise Risk Management from Methods to Applications, Ch 16: Risk-Based Performance Management

Case Study

Commentary on Question:
The goal of this question is to test candidates' understanding of excess-of-loss reinsurance as a risk mitigation strategy and compare reinsurance vs. securitization in a real-world business scenario.

Successful candidates were able to demonstrate robust knowledge of risk assessment and transfer techniques and apply those concepts to the case study. As prompted by the questions, well described recommendations, explanations, and proposals earned more credit.

6. Continued

Solution:

(a)

     (i)   Calculate the missing components of the table found in the Excel file tab Q6_a. Show your work.

     (ii)   Recommend which option combination Snappy should select, if any. Justify your recommendation.

Commentary on Question:
Candidates generally performed well on part (i) while many struggled to support a recommendation in part (ii). Candidates earned more points for justifications supporting Snappy's business objectives to control tail risk. Recommendations supported only by the net cost of reinsurance were not sufficient for full credit. Correct answers are not limited to option H so long as sufficient justification was provided.

Part (i)
Calculation answers should match the cells in the solution Excel template using the following formula: Payment = Proportion of covered loss * [MAX(loss - point of attachment, 0) - MAX(loss - point of exhaustion,0)]

	Option A	Option B	Option C	Option D	Option E	Option F	Option G	Option H
RRR payment based on expected loss	610	610	1,067	1,067	410	410	717	717
RRR Payment - High loss scenario	700	892	1,225	1,561	500	692	875	1,211
RRR Payment - Average loss scenario	552	552	966	966	352	352	616	616
RRR Payment - Low loss scenario	280	280	490	490	80	80	140	140

Part (ii)
Snappy should pursue option H. Snappy is concerned with adverse mortality experience. This plan offers robust coverage with a high point of exhaustion if claims are higher than expected. Furthermore, the high proportional coverage helps protect Snappy's lower underwriting standards. Lastly, the high attachment point helps reduce the cost of coverage relative to some more expensive options.

(b)   Propose a new set of treaty options, other than the eight combinations above, that Snappy might pursue to improve its mortality risk profile. Justify your proposal.

Commentary on Question:
Multiple recommendations had the potential to earn full credit so long as:
(a) The recommendation was adequately justified in context of the business case
(b) The suggested point of attachment was higher than the $2,130 "medium" risk average loss.
(c) The suggested point of exhaustion was higher than the $2,980 "high" risk average loss.

6. Continued

I propose a treaty option with a $2,200 point of attachment and a $6,000 point of exhaustion. The higher exhaustion point would provide greater tail coverage while also not impacting premium, as premium paid to RRR is a function of expected loss. The higher point of attachment would lower the net cost of reinsurance for Snappy while still providing the same tail risk protection.

(c)

(i)   Explain two ways securitization can help Snappy address inefficiencies in the reinsurance market.

(ii)   Assess whether each of Snappy's products is suitable for securitization.

Commentary on Question:
To earn full credit for this question, candidates needed to tailor their responses to Snappy's business and product offerings. Appropriately justified responses could earn full credit regardless of assessment stance. Correct responses are not limited to those listed below:

Part (i)
A securitization program can reduce or eliminate counterparty risk that Snappy would otherwise have with RRR. A fully collateralized SPV ensures payment in the event of catastrophic events, where a reinsurer could default.

Mortality risk is generally uncorrelated with market risk, so mortality risks may be a desirable diversification opportunity for external investors and result in a lower premium than the 10% load RRR is offering.

Part (ii)
Level term is well suited for securitization since the mortality risk is the key risk of term products and can be easily measured by attained age and approximated by an external mortality index. Furthermore, Snappy's underwriting is generally simplified so mortality experience would likely match closely to an external index.

Whole Life could also be easily securitized since the product is simple. However, mortality exposure would vary over time as reserves and cash values fluctuate over time.

However, Snappy may have a difficult time justifying the cost and administration of setting up an SPV given they're a smaller insurer in the life space. Also, mortality exposure on term and whole life products is usually driven by smaller, independent risks, better suited by reinsurance.

6. Continued

(d) Explain two benefits to Snappy of implementing an ERM program regarding the selection of risk transfer mechanism.

Commentary on Question:
Candidates generally performed well on this section. Correct answers not limited to the below.

An ERM program would help Snappy optimize limits and attachment points for reinsurance policies and hedging structures. This would help Snappy it's book to defined risk levels without being under or over protected.

An ERM program would help Snappy better identify more efficient opportunities to transfer risk at lower cost/better capital terms. This involves minimization off risk transfer costs by arbitraging between reinsurance and securitization.

An ERM program would help Snappy view and measure risk exposure wholistically across the company. Inter-company hedging could help reduce the net cost of risk protection.

7. **Learning Objectives:**
4. The candidate will understand how to apply and recommend appropriate ERM frameworks, principles and strategies to manage, evaluate, analyze and mitigate risk exposures faced by an entity and to ensure operational excellence in any industry.

Learning Outcomes:
(4a) Assess the potential impact of risks faced by an entity in any industry, including the extent to which risks are hedgeable or non-hedgeable.

(4b) Evaluate risk measurement, modeling, and management of financial and non-financial risks.

(4c) Develop and evaluate an appropriate risk mitigation or risk transfer strategy for any given situation.

Sources:
Sweeting, Financial Enterprise Risk Management, Ch 19: Risk Frameworks

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Describe which risks from Case Study section 5.1 are most relevant to Basel III.

Commentary on Question:
The response to this part should be based on the case study. However, candidates who merely listed down the broad risk categories mentioned in the case study without highlighting which of the specific risks under each category were relevant to Basel III did not get full credit. Also, the question asks for a description of risks, therefore merely listing the risks without defining them did not get full credit.

- Credit risk from failure of customers or counterparties to meet their financial or contractual obligations when due
- Liquidity risk that the bank may be unable to raise funds on a timely basis or at a reasonable cost to fund asset growth or settle liabilities
- Risk of adverse changes in market risk factors such as interest rates, credit spreads, foreign exchange rates, equity prices, mortgage rates and mortgage liquidity
- Regulatory capital risk due to increasing stringency of banking regulations

7. Continued

(b)

    (i)   Calculate the Leverage Ratio, as defined by Basel III, at year-end 2021 from the table above. Show your work.

    (ii)   Recommend a risk appetite tolerance level to management regarding the leverage ratio. Justify your recommendation.

Commentary on Question:
This part of the question was difficult for candidates. Most candidates were not able to identify how to calculate the leverage ratio in part (i) correctly. Some candidates who identified the formula missed some components that made up the total exposure.

Very few candidates referenced the Basel III requirement when recommending a limit in part (ii).

Part (i)
Leverage ratio = capital measure/exposure measure

Capital measure = Tier 1 Capital = £1600

Exposure Measure = on balance sheet exposures + derivative exposures + securities financing exposures +off-balance sheet items
= £27000 + £13000 +£800 +£4000 = £44800

Leverage ratio = capital measure/exposure measure = £1600/£44800 = 3.57%

Part (ii)
I recommend that management maintain a leverage ratio greater than the Basel III minimum (1 pt.). The Basel III minimum is 3%.

(c)

    (i)   Calculate a ratio that measures the short term resilience for the bank. Show your work.

    (ii)   Analyze Big Ben Bank's long-term resilience relative to the Basel III requirements.

Commentary on Question:
This part of the question carried 3 points in total. Some candidates did not realize that the two subparts were referring to short-term and long-term resilience and used the same calculations for part (i) and part (ii). Most candidates were able to analyze the solvency ratio but did not show sufficient calculation details.

7.   **Continued**

Part (i)
Short-term resilience is dealt with by the liquidity coverage ratio LCR

LCR = stock of high-quality liquid assets / Total net asset outflows over the next 30 calendar days
          = £5000/£1250 = 4

Part (ii)
NSFR = available amount for stable funding / required amount of stable funding = £3000/£5000 = 0.6
Ratio must be at least 100%. Therefore, Big Ben must increase its NSFR to 100%

(d)   Describe two key differences between Basel III and Solvency II as they apply to Big Ben Bank and Darwin Life, respectively.

Commentary on Question:
Most candidates were able to describe key differences between the two frameworks well. Simply stating that Basel III applies to banks while Solvency II applied to insurance companies did not receive any credits.

- Basel III has a greater focus on liquidity. This is because banks raise short term capital. Insurers use more traditional financing like bonds.
- Solvency II is less prescriptive than Basel III. For example, Solvency II allows for the usage of internal models, while Basel III has predefined ratios.

(e)   Recommend specific changes, if any, that RPPC would require of Darwin under Solvency II to reach the Solvency Capital Requirement (SCR). Justify your recommendation.

Commentary on Question:
This part of the question was also not very well answered. Most candidates identified that the SCR requirement was at the 99.5% confidence level. However, they did not recommend specific actions that would achieve this level. Simply stating that Darwin needs to reduce risks did not earn full credit unless they described how risks can be reduced.

Darwin's capital is at the 75% CI level, but Solvency II requires a 99.5% CI level. Therefore, Darwin is below the required level of capital and Darwin will need to increase capital or reduce risk.

7. **Continued**

Darwin can reduce their market risk by changing the portfolio to lower-risk assets, but the benefit may be limited since they already invest only in investment-grade bonds.

Darwin can pursue reinsurance but this might increase counterparty risk exposure.

Darwin can sell a closed block of business to reduce product/underwriting risk and receive capital representing the future earnings of the business.

Otherwise, Darwin would need to ask RPPC to inject capital to reach the 99.5% CI level.

8.

Learning Objectives:
5.   The candidate will understand the application of quantitative methods and techniques with a risk management focus to business problems for financial and non-financial companies.

Learning Outcomes:
(5a)   Assess and apply methods and processes for quantifying and managing hedgeable and non-hedgeable risks within any business enterprise

(5b)   Evaluate model risks and processes
       (i)   Assess model tradeoffs among usefulness, resource constraints, timeliness, fidelity, and accuracy
       (ii)   Assess processes for vetting models

(5c)   Evaluate results of deterministic, stress-testing, stochastic and simulation methods and models

Sources:
Dowd, Measuring Market Risk 2nd ed, Ch 13 Stress Testing

F-139-19: How to Improve the Quality of Stress Tests through Backtesting (excl appendices)

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 Evaluations

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a)   Describe two benefits and two challenges of performing stress testing.

     Commentary on Question:
     Acceptable answers include the following. The candidate only needed to write two benefits and two challenges for full credit.

     Benefits:
- Stress Testing is ideal for showing up the vulnerability of a portfolio (and of our VaR calculations) to otherwise hidden risks or sources of error.
- Since stress events are usually unlikely, the chances are that the data used to estimate VaR (or ES) will not reveal much about them
- The short holding period often used for VaR will often be too short to reveal the full impact of a stress event, so it is important to carry out stress events on loner holding periods
- If stress events are rare, they are likely to fall in the VaR tail region, and VaR will tell us nothing about them

8.   **Continued**

- Assumptions that help to value non-linear positions in normal times might be wide of the mark in a stress situation, so a stress test with full revaluation could reveal considerably more than a second-order approximation VaR
- A stress test could take account of the unusual features of a stress scenario and so help reveal exposures that a VaR procedure would often overlook
- Stress Testing highlights exposures that other probabilistic or other approaches to risk measurement might easily overlook
- Stress Testing can identify situations that would force the institution into insolvency much more explicitly than other methods
- Stress Testing is good for identifying and quantifying liquidity exposures
- Stress Testing can be useful in identifying the consequences of large market moves
- Stress Testing is good for examining the consequences of changes in volatility
- Stress Testing can be used to highlight dependences on correlation assumptions
- Stress Testing can be useful for highlighting other weaknesses in the risk management set-up

Challenges:
- Stress Testing is generally not as straightforward as it looks.
- Stress Testing are based on large numbers of decisions about the choice of scenarios and/or risk factors to stress, how risk factors should be combined, the range of values to be considered, the choice of time frame, etc.
- Stress Testing is dependent on the chosen scenarios and thus on the judgment and experience of the people who carry out the tests
- Difficult to work through scenarios in a consistent, sensible way without being overwhelmed by a mass of different possibilities.
- Need to be able to follow through scenarios, and the consequences of some scenarios can be complex. A trigger event can rapidly lead to many possibilities, which can become unmanageable and want to take account of the interactions of different risks
- Must recognize that there are often situations where prices cannot move independently of each other because of violating zero-arbitrage conditions. Need to eliminate all co-movements that are inconsistent with zero arbitrage
- Stress Testing can run into computational problems
- Stress Testing does not give any indication of likelihood

8. Continued

(b)   Propose a better method for developing stress scenarios than was suggested by your manager. Justify your answer.

Commentary on Question:
Acceptable answers include the following answers. The candidate needed to provide one of the answers along with the justification.

Scenario Analysis Options:

Stylized scenarios
- Simulated movement in one or more major interest rates, exchange rates, stock prices or commodity prices
- Can range from moderate changes to extreme
- Have been used for a long time in ALM

Hypothetical one-off events
- Plausible hypothetical scenarios with no direct historical precedents
- Not replays of past historical events, although they would have some similarity with past events
- Events can be natural, political, legal, economic or financial, credit or liquidity related
- Can use history of a guidance for what a hypothetical event

Mechanical Stress Testing Options:

Factor Push Analysis
- Push the price of each individual security or relevant underlying risk factor in the most disadvantageous direction
- Work out the combined effect of all such changes on the value of the portfolio
- Relatively easy to program, good for showing up where and how the institution is most vulnerable
- Does not require restrictive assumptions
- Can tell us about the likelihood of losses concerned
- Best for portfolios with straightforward positions

Maximum Loss Optimization
- Similar to Factor Push, except also searches over intermediate and extreme values of the risk variables
- Requires more computation and time than Factor Push Analysis
 Best for portfolios with less straightforward payoff characteristics
- Can help pick up interactions between different risks that might have been overlooked otherwise

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8. Continued

CrashMetrics

- Form of Maximum Loss Optimization designed to estimate worst-case losses
- Estimate plausible worst-case outcome using some reasonable ad hoc method
- Approach can be extended to deal with many Greek factors, changes in bid-offer spreads, etc.
- Application is open to criticism as it relies heavily on ad hoc Greek approximations in situations where those approximations are not likely to be good
- Is transparent

(c)

(i)   Estimate the worst-case scenario result using the information provided. Show your work.

(ii)   Explain the estimation method you used in part (i) in the context of scenario analysis.

Part (i)
Maximum loss formula under delta-gamma approximation:
This means that the maximum loss is equal to

$$Loss^{max} = -\Pi^{min} = \frac{\delta^2}{2\gamma}$$

delta = 0.5M
gamma = 4.4M

Answer:
(0.5M)^2 / (2 * 4.4M) = 0.25M / 8.8M

Maximum Loss = 0.03M

Part (ii)
Maximum losses under delta-gamma approximation are used in mechanical stress testing, and specifically CrashMetrics, which is a form of Maximum Loss Optimization that is designed to estimate worst-case losses. The approach can be extended to deal with the other Greek factors, changes in bid-offer spreads, etc.

(d)   Evaluate the stress testing results using the information provided.

Commentary on Question:
The actual result should compare to the baseline scenario. It indicates the original stress testing does not have enough adverser buffer for the baseline set up. Also, the original stress testing does not include the case where more than one risk factors are shocked, which is what happening in the real case scenario.

8. Continued

Possible Observations:
- The actual result of $6M, where interest rate was 4%, is between the baseline estimate where interest rate was 5% and the stress test result where the rate was 3%.
- The actual result of $6M, where market rate was down 2%, is directionally aligned with the market index stress test result.
- However, there are likely interactions effects (correlation) between market index and credit, which makes it hard to compare back to actual results.
- It is impossible to judge the reasonableness of the credit or operational stress test result since the actual result is not noted.
- The original stress testing does not have enough adverser buffer vs. the baseline (sensitivity testing vs. stress testing).
- The original stress testing does not include the case where more than one risk factors are shocked, which is what is happening in the real case scenario.
- There are other risk elements besides interest, market, credit, and operational that would likely have influenced actuals, too (e.g., expenses, business volume).
- The gain/loss metric alone likely does not capture the full impact of the risks being stress tested.

(e) Design an approach to help validate the hypothesis of senior management. Justify your recommendation.

Commentary on Question:
Full marks were given for a reasonably designed test.

- The quick test is to go back to the old stress testing model and run with two stresses or three stresses at once to determine interaction effects.
- Because operational risk is non-hedgeable the two drivers of results, as proposed by management, are likely not themselves interacting.
- Therefore, looking at pairwise combinations of stress testing vs. actual results and then layering on (additively) the impact of a operational event is a reasonable and quick validation exercise.
- If the model projection included hedging, and had an effectiveness assumption, re-run the model with the actual effectiveness or without hedging.

8. **Continued**

(f)   Recommend one improvement to each of the following that accomplishes this goal going forward:

(i)   the current stress testing approach

(ii)   the current scenario set

Justify your recommendations.

Commentary on Question:
Full marks were given for well justified answers.

- Run stress tests pairwise every year. This would be able to provide a broader view of the risks with the cross-impact of multiple risk factors.
- Develop a set of correlation assumptions to use in connection with stress testing results. This would be able to help explain the impact of the movement of more than one risk factor.
- Segment results to more granular levels. This would help to provide more accurate information when the impact from the movement of certain risk factors is not linear.
- Identify other major drivers of results, if any, and develop similar scenarios to demonstrate directional impact on results.
- Calibrate the scenarios relative to each other (e.g., are these all 1 standard deviation shocks vs. 2)
- Expand the metrics that are captured in the analysis to develop broader insights and more data points against which to assess the reasonableness of the model.

(g)

(i)   Describe how predictive modeling could be used to address this challenge.

(ii)   Explain why the predictive model could go stale over time.

(iii)   Describe three ways to extract a signal indicating that the model might go stale.

Part (i)
In predictive modeling, feature selection can be used to reduce the number of features so that only the most important features will be included in the model inputs. This can effectively improve the performance of the predictive model, and address the runtime issue from the stress testing process.

8. **Continued**

Part (ii)
A predictive model will go stale because of concept drift. Because of concept drift, for almost all predictive models, the relationships that they have learned between descriptive features and target features will no longer apply.

Predictive models are based on the assumption that the patterns learned in the training data will be relevant to unseen instances that are presented to the model in the future. However, data is not constant. Ongoing validation is needed after a model is deployed.

Part (iii)
1. Monitoring changes in performance measures
- Repeatedly evaluate models with the same performance measures used to evaluate them before deployment
- If the performance changes significantly, indication concept drift has occurred
- Easiest way to tell whether a model has gone stale
- However, makes the assumption that the correct target feature value for a query instance will be made available shortly after the query has been presented to a deployed model

2. Monitoring model output distribution changes
- Use changes in the distribution of model outputs as a signal for concept drift
- Measure the distribution of model outputs on the test set originally used to evaluate the model and repeat measurement on new sets of query instances collected during periods after the model was deployed
- Use an appropriate measure to calculate the difference between the original distribution and the distributions after deployment
- Common measure used is the stability index
- If stability index value is less than 0.1, the distribution of the newly collected test set is broadly similar to the distribution in the original test set
- Stability index values between 0.1 and 0.25 indicate some change has occurred and further investigation may be useful
- Stability index values greater than 0.25 indicate significant change has occurred and corrective action is required

3. Monitoring descriptive feature distribution changes
- Comparable to the distributions of model outputs between the time the model was built and after deployment, a similar comparison for the distributions of the descriptive features used by the model
- Appropriate measures to capture the difference include stability index, chi-square statistic, and the K-S statistic

9. **Learning Objectives:**
1. The candidate will understand how a company optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:
(1a) Recommend an optimal capital structure for given business objectives and the competitive environment.

(1d) Assess the impact of business strategies such as acquisitions, divestitures, and/or restructurings.

Sources:
Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 27: Short Term Financial Planning

F-134-19: Damodaran on Valuation, Ch 15: The Value of Synergy

F-136-19: Corporate Value Creation, Governance and Privatisation, Ch 4

Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 18: Capital Budgeting and Valuation with Leverage

F-132-17: Capital Structure, Executive Compensation, and Investment Efficiency

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Evaluate if BJA should structure SEA as a subsidiary versus fully integrating SEA into BJA.

Commentary on Question:
Candidates are expected to evaluate on both subsidiary and mergers to receive full credits. Some candidates recommended one of subsidiary or merger with appropriate judgements received only partial credits.

SEA's operations have unique strengths that the combined firm can leverage but also to continue to advance within SEA with its unique focus.

As a subsidiary, SEA's success can be continued within its sphere of expertise and leverage the strength and reach of the combined firm thru corporate centralization.

9.   **Continued**

- allows for separate performance monitoring and management
- allows for SEA to preserve its entrepreneurial culture separate from BJA.
Mergers often fail because of culture clashes between the 2 firms
- mitigates the risk that the operations of the 2 firms will not mesh which is
another big reason mergers fail.
- does not maximize cost synergy as a full integration would, but the growth
synergy is a much bigger factor that the structure needs to optimize"

(b)   Recommend which executive compensation package SEA's executives should
choose if they are retained. Justify your recommendation.

Commentary on Question:
*Candidates are expected to justify their recommendation for the compensation
package they choose and tie back to BJA's financials. Candidates scored well in
this part of the question.*

Value based management have proven that the firm can be more successful when
managers are treated like owners as managers have more info on true value of
firm's assets and create value by focusing on improvement in operations.
Studies have shown that when executive compensation has a higher equity
component, the firm's investments (i.e the projects) will be higher. These studies
have shown that when the firm's leverage ratio is higher than the executive
leverage ratio (consisting of deferred compensation, pension), the firm's
investment becomes more conservative than industry peers.

Given BJA's balance sheet, historically it has very little shareholder equity and
high deficit. It will be difficult for SEA executives to accept a compensation
package heavy on equity or stock options given the history. It will be more
appropriate to choose plan B which is heavy on base salary and pension and
deferred compensation

(c)   Explain how the compensation structure may affect the preference of the SEA
executives for each of the projects above.

Commentary on Question:
*Candidates are expected to make connections with current BJA D/E ratio to earn
full points. Very few candidates were able to tie in the D/E ratio impact due to the
proposed compensation package. Most candidates received partial credits in this
part of the question.*

9. Continued

The compensation package proposed has slightly more conservative debt to equity ratio as the company itself (in 2021, D/E ratio of the company is 1725/199 =8.67, the compensation plan's D/E ratio is 9). The compensation package is heavy on debt component, the SEA executives will be more conservative in investing and align their interest with the debt holder of the company

They will favor the cost cutting projects such as IV Discontinue travel agency programs or V Discontinue free luggage check-in;

At the same time be more cautious in the other 3 projects that requires significant investment.

(d) Recommend a suitable financing approach BJA can use for the acquisition of SEA. Justify your response.

Commentary on Question:
To receive full credits, candidates are expected to tie to BJA's financial situation and recommend a financing approach that suits BJA's situation. Candidates scored okay in the part of the question.

BJA is heavily leveraged and has very little equity, it would be difficult for it to issue additional equity for financing or raise additional debt.
The most practical choice BJA can use is utilizing a secured loan with collateral as it can use either aircraft or account receivable as collateral
Alternatively, since the acquisition cost is $10 M, BJA can use cash. BJA does have $180 M cash as of 2021 so it is possible to utilize cash