CP 311 Model Solutions
November 2025

1. **Learning Objectives:**

4. The candidate will understand the role organizational behavior plays in organizational decision-making and efficacy

Learning Outcomes:

(4b) Explain the role of cognitive biases on making suboptimal individual decisions

Sources:

CP311-106-25: Quantitative Enterprise Risk Management – Chapter 19
Optimism Bias & Capital Bias

Commentary on Question:

This question tested candidates' ability to identify and apply behavioral biases in a realistic managerial decision-making context, particularly optimism bias, the endowment effect, and narrow framing. To earn full credit, candidates needed to clearly ***explain*** *(not just define) each concept and explicitly link it to the XYZ Airlines scenario, especially when recommending and justifying an alternative compensation scheme. Many candidates performed well in identifying optimism bias and the endowment effect, and in recognizing that proposing solutions early can introduce anchoring or framing bias. Weaker responses tended to provide generic descriptions, confuse biases, or recommend compensation schemes without clearly explaining how they mitigated the endowment effect.*

Solution:

(a) Explain the effectiveness of each item I to III in helping overcome bias in decision-making.

Commentary on Question:

This part tested candidates' understanding of how specific decision-making practices can either mitigate or exacerbate cognitive bias. Strong responses correctly identified that proposing a solution early is ineffective due to anchoring or framing, while considering worst-case outcomes and using decision rules are effective bias-reduction techniques. Weaker answers listed the items without clearly explaining why they were effective or ineffective in overcoming bias.

I. Propose solutions early in discussions, as these tend to anchor the decision-making. It is better to consider all the facts and arguments before any decisions or solutions are tabled. **This is ineffective.**

1. Continued

II. Consider the plausible worst-case outcomes of a decision or of alternative decisions. This is a remarkably powerful thought exercise for assessing whether a decision or strategy is tolerable in a wide range of contexts. When used to select a strategy, it is a form of minimax solution – minimize the maximum loss. **This is effective.**

III. Create rules for making decisions; the rules can be structured to avoid the trap of simply following the suggestion of the dominant member. Rules might include requiring some written input from each individual before and after discussions, or ensuring adequate documentation of the decision process, including alternatives considered and reasons for rejecting the alternatives. **This is effective.**

(b) Explain how optimism bias is applicable in this discussion.

Commentary on Question:
This part assessed candidates' ability to recognize optimism bias in a managerial judgment context. High-scoring answers explained that the VP underestimated the likelihood and severity of negative customer reactions and assumed overly positive outcomes without supporting evidence. Some candidates lost credit by defining optimism bias but failing to clearly apply it to the compensation proposal.

Full credit can be given if the answer correctly defines Optimism bias with adequate explanation how it applies in the discussion.

Optimism bias is causing individuals to underestimate the likelihood of an adverse event.

In this case, the VP of Product Strategies assumes the proposed compensation scheme is sufficient for the "bumped" traveler while the business traveler is happy.

Although this might work in most cases, the low probability of high severity events of this strategy is also needed to be considered in cases this ideal outcome is not achieved.

(c) Explain how the endowment effect applies to the service.

Commentary on Question:
This part tested understanding of the endowment effect and its application to customer behavior. Strong answers explained that passengers value their existing seat more highly simply because they already "own" it, making them dissatisfied even with seemingly generous compensation. Weaker responses described customer dissatisfaction in general terms without clearly linking it to ownership-driven valuation.

1. **Continued**

Full credit can be given if the answer correctly defines the endowment effect with adequate explanation how it applies to the service.

The endowment effect refers to the additional value placed on something that is owned over something that is not.

(d) Recommend an alternative compensation scheme that can reduce the impact of the endowment effect. Justify your answer.

Commentary on Question:
This part required candidates to recommend and justify a compensation scheme that specifically reduces the endowment effect. Full credit was earned by proposing mechanisms such as voluntary bidding, escalating compensation, or differentiated compensation tied to timing, and clearly explaining how these convert a perceived loss into a choice. Some candidates lost credit by redesigning the concierge service itself or proposing compensation without explaining its behavioral impact.

Alternative Compensation

Recommendation:
Must be a reasonable proposal focused on compensation and not a redesign of the product.

Justification:
Overall compensation must be significantly higher for situations where the "bumped" customer has already been seated compared to the originally proposed compensation scheme. Understanding that this situation is rare and therefore the financial impact is limited.

Example
Recommendation:
It is recommended that the compensation scheme be scaled for "bumped" travelers up to the plane's departure. 2 hrs. before the flight the offer can be $500 and then scale up to $1000, 30 minutes before departure. If a "bumped" customer is already seated on the plane, compensation of $4000 can be offered in exchange for taking the next flight.

1. Continued

Justification:
By offering a scaled compensation scheme, it addresses various scenarios and keeps the financial impact manageable. In terms of the endowment effect, by offering a significantly higher compensation than initially, the "bumped" customer already on the airplane, is being given significantly more value to exit the airplane. The likelihood of bumping a passenger that has already boarded is rare so even with the high compensation, the financial impact will be limited.

(e) Explain if the concierge service along with the compensation scheme is an example of narrow framing.

Commentary on Question:
This part tested whether candidates understood narrow framing as focusing on isolated decisions rather than system-wide effects. Strong responses identified that focusing only on compensating bumped passengers or satisfying business travelers ignores broader reputational, operational, and interdependent impacts. Weaker answers either misdefined narrow framing or focused solely on fairness concerns without addressing decision isolation.

Narrow Framing is when people isolate problems into smaller individual decisions, rather than aggregating decisions into a portfolio of interdependent choices. That is focusing on a single attribute to make the decision.

GHB Airlines is trying to tackle customer service in individual decisions. The initial goal of offering a concierge service to its business travelers is a small part of the airline's total customer base. To make the service work, the VP of Product Strategies is attempting to decide on a compensation scheme that ultimately affects other customer bases without trying to understand interdependencies.

2. Learning Objectives:

1. The candidate will understand and apply strategic management concepts and frameworks to develop an organization's business strategies and solutions.

Learning Outcomes:

(1b) Evaluate commonly used business strategies and their application under different economic, risk and business environments:

- Critique and evaluate internal/organic and external/inorganic growth strategies.
- Assess and recommend growth strategies under different business situations and market opportunities, utilizing the applicable strategic or change management models.

Sources:

Strategic Management – Chapter 9 Cooperative Strategy
Strategic Management – Chapter 7 Merger and Acquisition Strategies and Restructuring

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Explain two competitive risks that BJA could encounter utilizing a cooperative strategy with SEA.

Commentary on Question:

There are 4 main competitive risks associated with cooperative strategies defined in the source text. To receive full credit, candidates needed to identify two of the risks and adequately explain how they apply in the case of BJA and SEA. Candidate results were mixed – some were able to recall and explain two of the risks, while others provided generic risks not specific to cooperative strategies. Below is a sample response – answers related to misrepresentation of competencies or holding partners' specific investments hostage also received full credit.

1. <u>Inadequate contract</u>: The contract may not be clear or specific enough in many facets – including how the resources will be shared or how each company should help the other. This could lead to SEA engaging in opportunistic behavior, resulting in a breakdown of trust and damaging the alliance's ability to achieve its objectives. BJA may experience additional loss or risk (financial as breaching fiduciary responsibilities or flow of funds, reputational due to customer abrasion or safety concerns, or inappropriately determining the scope of the alliance).

2. <u>SEA fails to use its complementary resources</u>: The contract was handled correctly; however, SEA has decided to not share the technologies or expertise that its pilots/repair teams have. SEA/BJA are thus unable to achieve synergies.

2. Continued

(b) Recommend two ways that BJA could mitigate the risks provided in (a). Justify your answer.

Commentary on Question:
The source text identifies the ways to mitigate competitive risks with cooperative strategies: implementing detailed contracts, monitoring, and developing trusting relationships. To receive full credit, the candidate's response needed to relate to these mitigation techniques. Many candidates performed well on this part of the question, while some provided generic responses.

1. Utilize formal thorough contracts (engage the BJA legal team along with stakeholders from major segments of the carrier to determine what items should be included) and develop/implement extensive monitoring systems with leading KPIs.
2. Build/reinforce trust on multiple levels of the organization (executive teams, training staff, technology teams).

(c) Identify three reasons why BJA should consider an acquisition instead of a cooperative strategy. Justify your answer.

Commentary on Question:
For full credit, each reason should have a tie back to the case study and the situation of BJA. The source materials describe reasons for an acquisition as well as various benefits. Overall, candidates generally performed well, though some lost points due to generic responses or insufficient justification.

I. Increased Market Power: Per the case study: "Cost Control is a key element of the industry" and "has a vision to be the safest airline in the industry" – therefore, SEA capabilities in plane repair/maintenance and the pilot training school reduce total costs and improve safety reputation possibly driving an ability to charge more per flight.

II. Cost of New Product Development and Increased Speed to Market: Substantial time would be required to expand geographically through more planes, route negotiations, staffing, etc. so purchasing SEA enhances efficiency and speed in developing new routes and entering the Pacific Northwest Markets.

III. Increased Diversification: New type of operation in seaplanes, new geographic footprint, new routes, new cargo revenues, enhanced relationships between U.S. and Canada business operations, etc.

2. **Continued**

(d)

(i) Describe the two types of complementary alliances.

(ii) Explain which type from (i) is applicable to the partnership with SEA.

Commentary on Question:
Part (i) is a straight recall from the source materials. Candidates generally performed well, though some could not recall the two types correctly. For part (ii), candidates needed to recognize that BJA and SEA are at the same stage in the value chain to receive full credit. Most did well, but some lost points due to insufficient justification.

(i) Complementary alliances are agreements between companies to share resources in a "complementary' manner. It can include either a vertical component with resources shared at different stages of the value chain or horizontal where resources are shared at the same stage of the value chain.

(ii) SEA/BJA are both operating plane and are considered at the same stage of the value chain. Therefore, it can be considered as a horizontal alliance.

(e) Assess the potential impact on BJA's culture.

Commentary on Question:
Candidates should recognize that complementary alliances involve sharing resources but are not full integration, thus substantial cultural impacts are not expected. Below is a sample response, other responses that include some cultural impacts also received full credit if sufficiently justified and do not state the impact is significant. Some candidates provided responses that did not relate to culture and thus did not receive credit.

The culture of BJA should remain largely unchanged as it's not an acquisition. Both firms maintain their own organizational structures and decision-making processes, reducing the need for cultural harmonization. This relationship would look more like a vendor or supplier interaction and involve minimal cultural shifts.

(f) Recommend a business-level cooperative strategy on AI adoption for BJA/SEA. Justify your answer.

Commentary on Question:
Business-level cooperative strategies are identified in the source materials. Candidates needed to properly identify one of the business-level cooperative strategies and provide sufficient justification. Results were mixed with many candidates unable to recall the business-level cooperative strategies or did not provide sufficient justification.

2. Continued

Horizontal Complementary Strategic Alliance: No firm specializes in multiple use cases of AI, therefore this type of strategy allows for scaling cost savings and revenue optimization practices by leveraging a different carrier's AI tech. As AI is new technology, its adoption is costly and hard for both BJA and SEA to stay up to date on changing tech; therefore, BJA and SEA can better leverage on each other by jointly developing AI-driven predictive maintenance systems that use combined fleet data to anticipate mechanical issues, reducing downtime and improving safety.

3. **Learning Objectives:**

2. The candidate will understand how sustainable growth and value can be created through strategic budgeting. The candidate will also understand measures of an organization's value and their uses in decision making.

Learning Outcomes:

(2d) Evaluate and recommend appropriate value measures for an organization.

(2f) Assess an organization's ability to create value and recommend actions to improve value creation.

Sources:

Damodaran on Valuation: Chapter 13, The Value of Control

Damodaran on Valuation: Chapter 14, The Value of Liquidity

Valuation: Measuring and Managing the Value of Companies, Koller. Chapter 3, Fundamentals of Value Creation

Valuation: Measuring and Managing the Value of Companies, Koller. Chapter 16, Moving from Enterprise Value to Value per Share

Commentary on Question:

This question is designed to assess candidates'

- *Understanding of the relation of net operating profit after tax (NOPAT), return of invested capital (ROIC), weighted average cost of capital (WACC), and growth (g).*
- *Illiquidity premium determination for private or public held company and its related assets.*
- *Actions and accounting items may or may not affect Enterprise Value.*

Candidates in general did well if following those described in the book. Meanwhile, candidates are also required to identify which BJA balance sheet item will create future cash flow and which will not.

Solution:

(a) Recommend which company BJA should purchase to maximize value based on Xolar and Skylite's recent initiatives and the table above. Justify your answer.

Commentary on Question:

This question required candidates to understand the interactions of

- *NOPAT*
- *ROIC*
- *WACC*
- *g*

3. Continued

Based on the conditions given, Xolar should be chosen. Nevertheless, if candidates make strong argument for Skylite with the improvement of ROIC, the reduction of WACC and/or control g, a partial point will be given.

Blue Jay Air should purchase Xolar Aircraft for the following reasons:

1. Xolar Aircraft has an ROIC that is greater than its WACC. Thus, if BJA is able to fuel growth while maintaining the ROIC and WACC, there is potential for increase in value.

Alternatively:

1. Value/unit of NOPAT for Xolar of 37.5 = (1 – g / ROIC) / (WACC - g) = 37.5% / 1% > that for Skylite of 20.8% = (-83.3%) / (-4%).
   - If NOPAT were very close, Xolar still brings more value. If Xolar's NOPAT is higher, Xolar clearly has more value
   - Even if Skylite's NOPAT is higher, note that Skylite's ratio is positive because both the numerator and denominator are negative. The numerator being negative means that Skylite is spending more than its current earnings (= NOPAT) on reinvesting in growth, which is not sustainable in the long term. For the denominator, ROIC < WACC < g means growth is not sustainable since the cost of capital is greater than what g is bringing in ROIC.

2. Xolar Aircraft is working on cost cutting campaigns, which should improve ROIC. Improving ROIC generally increases value, all else equal. However, if growth decreases because of cost cutting, this can lower value if that growth is bringing in the ROIC at current or higher levels.

3. Skylite has an ROIC that is lower than its WACC. Its high growth rate will lead to a value deterioration unless ROIC and/or WACC can be improved. While Gungwoo has forecasted profitability in the future, value creation will not be possible with only a marketing initiative that led to growth so long as ROIC < WACC. Profitability by itself does not create value. Profitability has to be high enough so that ROIC > WACC.

(b) BJA has decided to move forward with your recommendation. At a meeting to discuss the offer price, BJA’s CFO makes the following statement:

“This deal will be a huge win for BJA. After we close, the aircraft manufacturer will be our biggest asset. We should include a liquidity premium in determining our offer price.”

Evaluate the statement with respect to each of Xolar and Skylite.

3. Continued

Commentary on Question:
This question required candidates to compare, from liquidity viewpoints, a private company vs. a public company and private company's assets vs. public company's assets to determine illiquidity premium should be added to the discount rate.

Xolar is a privately held company, which makes it illiquid as there would not be a ready market for it. Xolar is also an aircraft manufacturer, so its aircraft assets are not liquid assets that are readily disposable. It may be difficult to sell the asset in the future given the lack of a deep, open market for trading this type of significant investment. The value of liquidity tells us that given the asset is not liquid, we should adjust our discount rate to incorporate this lack of liquidity. This means we should add an illiquidity premium to the cost of capital when valuing the business.

Skylite is a publicly traded company. This means that it can be considered a liquid asset. Thus, an illiquidity premium is not needed.

(c) Describe the likely impact to the share price of RPPC (BJA's parent) after the management changes are publicly announced. Justify your answer.

Commentary on Question:
This question requires candidates to comment on optimal value and probability of management change. Candidates follow the formula mentioned below get good scores.

Market Value = Status quo value + (Optimal value – Status quo value) x Probability of management change

The price will increase. Given the above formula, an announcement of the management change will increase the 'Probability of management change' leading to an increase in market value. Also, the optimal value would be expected to increase also leading to an increase in market value. RPPC's ability to change management and therefore to have the opportunity to increase the market value of BJA, is the value of control.

The management changes were significant with the new CEO viewed as the turnaround CEO, as indicated in the case study. With this new management, BJA had made substantial investments and continues to look for improvements in service and operations and even in culture. This would indicate that those changes were needed to get to the optimal value of BJA.

(d) Analyze the potential of each action I and II to increase enterprise value. Justify your answer.

3. Continued

Commentary on Question:
This question required candidates to evaluate if the events affect Enterprise Value or not. In general, moving accounting items in different classification will not affect the Enterprise Value.

- Debt to off balance sheet – low impact. Different geography on the financial statement, same cash flows.
- Create the low-cost carrier business – high impact. This can increase market share or expand an existing business by reaching a new market. This has the ability to increase BJA's growth.

Alternative answer: uncertain impact. Its effect on Enterprise Value could be uncertain as the cost could be high and it may not be a good fit with BJA's brand as the most customer- oriented airline company in the world providing the best services in the marketplace. If it were to fail, it would lower Enterprise Value.

(e)

(i) Identify one balance sheet item whose value should be added to BJA's DCF value of operations to determine enterprise value. Justify your answer.

(ii) Identify one balance sheet item whose value should not be added to BJA's DCF value of operations to determine enterprise value. Justify your answer.

Commentary on Question:
This question required candidates to go to BJA's balance sheet to identify which balance sheet item will or will not provide future cash flow.

For (i), the justification should be on how the item can provide future cash flows:
- Cash and cash equivalents or
- ST investments are the only ones that fit.
  They can be invested for growth which can increase future cash flows.

For (ii), the justification should be on how the item would not provide future cash flows:
Every other item on Exhibit 2 is not added to the discounted cash flow (DCF) to get Enterprise Value. Any one of the following items is acceptable:
- Restricted cash is needed for current cash flows and already reflected in DCF.
- Accounts receivables reflect sales already reflected in DCF.
- Inventory supports current cash flows and is already in the DCF.
- Prepaid expenses have been used to support DCF.
- Property & Equipment supports the projected CF in DCF

3. Continued

- Intangible assets, DTA and Goodwill were incurred to support the future projection of current expected CF and already in DCF
- Deposit is normally earmarked for current operations so it should already be accounted for in current DCF.

4. **Learning Objectives:**

3. The candidate will understand how to apply decision making models to general managerial decisions within specified constraints.

Learning Outcomes:

(3a) Apply fundamental techniques and frameworks of management science to make informed business decisions

(3b) Apply statistical and quantification methods to analyze managerial decisions with uncertain conditions

(3c) Evaluate business decisions using quantitative and statistical methods

Sources:

Data Models and Decisions, Chapter 5 [problem "Operations at Conley Fisheries"]

Commentary on Question:

This question tested candidates' ability to ***use simulation output to interpret risk, tail outcomes, and strategy trade-offs****, rather than simply performing calculations. Strong answers demonstrated understanding of how assumptions, parameter choices, and simulation results translate into business insight. Candidates who focused only on mechanical calculations, without interpreting results or linking them to decision-making, generally received lower scores.*

Solution:

(a)

(i) Explain the parameters used to analyze the random variable of claims severity in the *Q4 (a) (b) Simulation* sheet.

(ii) Identify the parameter values for each of item in (i), where needed, in the *Q4 (a) (b) Simulation* sheet.

Commentary on Question:

This part assessed whether candidates could correctly identify and interpret the key parameters of the large-claim severity model. High-scoring answers clearly identified all required parameters and explained their roles within the lognormal framework. Some candidates struggled by listing incorrect statistics or failing to distinguish between parameters of the distribution and summary statistics.

[See Excel File]

4. **Continued**

(b)

(i) Calculate the probability that the reinsurance strategy leads to higher income in any given year. Show your work.

(ii) Calculate the probability that the reinsurance strategy will lead to a loss (negative income). Show your work.

(iii) Calculate the expected value of the reinsurance strategy. Show your work.

Commentary on Question:
This part tested candidates' ability to correctly extract and interpret probability-based results from the simulation output. Strong responses demonstrated a clear understanding of what each probability represented and how it was measured from the simulated results. Weaker answers either misinterpreted the probabilities or reported values without explaining what event they corresponded to. One word answers attracted low scores

[See Excel File]

(c) Recommend whether ABC should implement the reinsurance strategy. Justify your answer.

Commentary on Question:
This part tested higher-order judgment by asking candidates to evaluate the strategy using the full distribution of outcomes rather than averages alone. Strong answers explicitly referenced tail risk, downside protection, and the trade-off between expected profitability and risk mitigation. Candidates who focused only on mean outcomes or restated numerical results without interpretation generally scored lower.

- The insurance company should purchase the reinsurance cover to ensure long-term sustainability over annual profit.
- While income on average is better in the base case without reinsurance the large loss reinsurance provides substantial value for the rare larger claims that could otherwise create a shortfall that is equivalent to erasing years of profitability.
- Reinsurance will provide the company a better ability to operate as an insurer given potential liquidity and capital impact of larger losses.

(d) Recommend how the model can be enhanced to address a limitation of the model. Justify your answer.

4. **Continued**

Commentary on Question:
This part evaluated candidates' ability to compute and interpret expected values using simulated outcomes. Full credit was given when candidates correctly combined the relevant components and showed how the simulation supported the result. Partial credit was awarded when the mechanics were mostly correct but interpretation was missing or unclear.

Examples of Limitations

- The Binomial model as a choice for frequency is overly simplistic and does not capture tail events. Specifically there is a year in the history with 11 claims while this model only captures 0 to 10.
- Both models do not consider any trend in the data such as a decrease/increase in severity over time.

Examples of Enhancements

- Frequency model should be updated to ensure it captures 11 large losses or more. Can use a Poisson distribution, Negative Binomial, Empirical etc.
- Consider improving model parameters by studying trends in frequency/severity and other factors that may not have been included in parameter calibration.

5. **Learning Objectives:**

1. The candidate will understand and apply strategic management concepts and frameworks to develop an organization's financial and ERM Solutions.

Learning Outcomes:

(1a) Evaluate and apply strategic management concepts, recognizing factors that affect development and implementation of strategies:

- Analyze the firm's external environment and the internal organization.
- Describe and apply strategic management models, including Porter's five forces and value chain analysis.
- Define types of business-level strategies and recommend an appropriate business-level strategy for a given situation.
- Explain the impact of competitive dynamics on strategic management.

Sources:

Understanding Michael Porter – Ch. 2

Strategic Management - Ch. 6

Strategic Management - Ch. 7

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Assess if there are operational economies of scale for BJA as a new entrant.

Commentary on Question:

Candidate performance on this question was mixed – with several not fully understanding the concept of economies of scale and how it translates to lower unit costs. Below is a sample answer, other responses received credit if they showed an adequate understanding of economies of scale and were specific to BJA.

Economies of scale is based on volume and the question translates to whether producing larger volumes (more flights) translates into lower unit costs.

BJA has no seaplanes and therefore would need to acquire and maintain these types of planes. In terms of pilots, flying seaplanes is different than airplane and requires special seaplane pilot training. Therefore, flying more using seaplanes would likely not lead to lower unit costs as BJA has to make major investments on planes and training, which they cannot leverage any of their current infrastructure to reduce these costs.

(b) Assess whether there is a high level of corporate relatedness with a SEA acquisition based on each of the core competencies I and II.

Commentary on Question:
Candidates generally did ok on this question, though many lost points due to not providing enough details/justification. Below is an example response, others were accepted if reasonable and sufficiently justified.

I. Marketing – there is a fair amount of synergy between marketing air travel and sea plane travel because they are both in the transportation industry, involves a sort of plane and customers tend to be in the same sales channel. As well, BJA is working on building out its loyalty program which SEA does not have. Therefore, there is a high level of corporate relatedness with respect to Marketing.

II. Key people – one can argue that there is high level of corporate relatedness between airplane and seaplane maintenance. Also, BJA management, according to the case study, has done a good job not unionizing and keeping operating costs down. On the other hand, seaplanes don't use tires and plane maintenance is different so the specific knowledge of the actual maintenance might not be transferable, but the people management will likely be transferable.

(c) Assess whether each of I to III will be a potential problem in BJA's acquisition of SEA.

I Inability to achieve synergy likely won't be a problem as this is not a main focus of the acquisition. The acquisition is related to bringing their customers closer to their final destination. Seaplane and airplane are different in terms of operation and maintenance so there isn't much synergy there. Other items that BJA is working on like the loyalty program aren't operational yet so there is no synergy there.

II Acquisition target is too large is not an issue as SEA's financials in the case study suggest they are a lot smaller than BJA.

III Too much diversification can be an issue since the company has BJT to manage as well and there isn't much synergy between those 2 organizations. Seaplanes don't use tires.