

Problem 1. Business Strategy Analysis

- (i) What are the primary hardware platforms on which Take-Two's software products are used? **[4 points]**
- Sony PS
 - Microsoft Xbox
 - “We derive most of our revenue from the sale of products made for video game platforms manufactured by third-parties, such as Sony's PS4c and PS3 and Microsoft's Xbox One and Xbox 360, which comprised 81.0% of our net revenue by product platform for the fiscal year ended March 31, 2017.” p. 6 of 10-K
- (ii) List one key success factor and one significant risk associated with the concentration of Take-Two's revenues from products used on a limited number of hardware platforms. **[4 points]**
1. Key success factor
 - Can leverage portfolio of proprietary software content for these platforms (p. 1 of 10-K)
 - Can specialize in providing a user experience customized to unique features of these platforms
 - Can specialize in developing games that appeal to users of these platforms
 2. Significant risk
 - Success of business is dependent on the continued popularity of these platforms (p. 7 of 10-K).
 - Ongoing need to secure license from platform owners
 - Platform owners have significant bargaining power and the ability to extract rents for popular games

Problem 2. Accounting Analysis

- (i) Summarize the accounting policy used by Take-Two for recognizing revenue on the sale of *Grand Theft Auto V*. **[4 points]**
- recognize revenue from the sale of *Grand Theft Auto* ratably over the period we expect to offer the PCS to the consumer ("estimated service period"). The estimated service period of GTA is 41 months. (see p. 66 of Form 10-K)

- (ii) Assume that instead of using its current accounting policies for deferring the recognition of both revenues and cost of goods sold on certain sales, Take-Two instead recognized these revenues and costs at the point of sale. Estimate the Income (loss) from operations that Take-Two would have reported for the fiscal year ended March 31, 2017. **[8 points]**

Restated Income (loss) from operations
= Reported Income (loss) from operations + Increase in Deferred Revenue – Increase in Deferred Cost of Goods Sold
= 91,305 (income statement) + 126,285 (cash flow statement) - 14,969 (cash flow statement)
= 202,621

OR

= 91,305 (income statement) + 114,728 (balance sheet) – 11,512 (balance sheet)
= 194,521

- (iii) Assume that instead of using its current accounting policy for 'Research and development' expense, Take-Two instead capitalized these costs in the fiscal year the

costs are incurred and then amortized the costs on a straight-line basis over the subsequent two fiscal years. Estimate the Income (loss) from operations that Take-Two would have reported for fiscal year ended March 31, 2017. **[5 points]**

$$\begin{aligned} & \text{Restated Income (loss) from operations} \\ & = \text{Reported Income (loss) from operations} + 2017 \text{ R\&D Expense} - \frac{1}{2} 2016 \text{ R\&D} \\ & \quad \text{Expense} - \frac{1}{2} 2015 \text{ R\&D Expense} \\ & = 91,305 \text{ (income statement)} + 137,915 \text{ (income statement)} - \frac{1}{2} 119,807 - \frac{1}{2} 115,043 \\ & = 111,795 \end{aligned}$$

- (iv) Which of the above two accounting methods for these research and development costs do you think better reflects the underlying economics of the expenditures? Briefly explain your answer. **[3 points]**
- Capitalizing and amortizing. While GAAP requires immediate expensing of software R&D before technological feasibility, these expenditures represent investments from an economic perspective that are expected to generate future benefits (in the form of product and service revenues) that should materialize over the next two years or longer.

Do not write below this point.

Problem 3. Financial Analysis

- (i) Compute the net operating asset (NOA) turnover ratios for Take-Two and Activision Blizzard for their most recent fiscal year. **[6 points]**

NOA Turnover for Take-Two =

$$\begin{aligned} &= \text{Sales}/(\text{Average Net Operating Assets}) \\ &= 1,779,748 / \frac{1}{2} (1,003,728 + 251,929 + 581,385 + 497,935) \\ &= 1.52 \end{aligned}$$

NOA Turnover for Activision Blizzard =

$$\begin{aligned} &= \text{Sales}/(\text{Average Net Operating Assets}) \\ &= 6,608 / \frac{1}{2} (9,119 + 4,887 + 8,068 + 4,074) \\ &= 0.51 \end{aligned}$$

- (ii) Summarize the primary reason(s) for the difference between the NOA turnover ratios that you have computed above. **[4 points]**

Activision has grown through significant acquisitions and has a large balance of goodwill, which considerably slows its turns

Take-Two has a much larger balance of deferred revenue, due to upfront payments for products with PCS, which increases its turns.

Activision has a higher balance of intangibles, again due to acquisitions, which slow its turns.

Take-Two has a larger balance of accrued liabilities, which increases its turns.

- (iii) Estimate the average number of days that elapsed between the receipt of cash from customers and the recognition of the associated revenue for Take-Two and Activision Blizzard during the most recent fiscal year. Be sure to specify whether cash is received before or after revenue is recognized in each case. **[6 points]**

Average number of days for Take-Two =

Days Receivables = $365 * (\text{Average Receivables} / \text{Sales})$

$$= 365 * \frac{1}{2} (219,558 + 168,527) / 1,779,748 = 39.80$$

Days Deferred Revenues = $365 * (\text{Average Deferred Revenues} / \text{Sales})$

$$= 365 * \frac{1}{2} (903,125 + 10,406 + 582,484 + 216,319) / 1,779,748 = 175.59$$

Take Two Receives Cash $175.6 - 39.8 = \mathbf{135.8 \text{ days}}$ before it recognizes revenue

Average number of days for Activision Blizzard =

Days Receivables = $365 * (\text{Average Receivables} / \text{Sales})$

$$= 365 * \frac{1}{2} (732 + 679) / 6,608 = 38.97$$

Days Deferred Revenues = $365 * (\text{Average Deferred Revenues} / \text{Sales})$

$$= 365 * \frac{1}{2} (1,628 + 1,702) / 6,608 = 91.97$$

Activision Blizzard Receives Cash $91.97 - 38.97 = \mathbf{53.0 \text{ days}}$ before it recognizes revenue

- (iv) Briefly identify the primary reason(s) for the difference between the average number of days for Take-Two and Activision Blizzard that you computed above. **[4 points]**

The key reason is that Take-Two defers revenue on key products with PCS over an estimated service period that can last several years.

Activision's key products are based on a monthly subscription model having a much shorter deferral period.

Problem 4. Forecasting

- (i) The forecasting model in Exhibit 3 forecasts that Take-Two's Operating Margin will grow from 5.1% in FY 2017 to 22.3% in FY 2019. Identify the key drivers of the improved margin. **[4 points]**

8.9% from improvement in Gross margin
4.1% from improvement in S&M/Sales
3.4% from improvement in G&A/Sales
(0.1% from R&D/Sales)
(0.7% from D&A/Sales)

- (ii) The forecasting model forecasts that Take-Two's balance of 'Software development costs and licenses, net of current portion' grow from 381,910 at the end of FY 2017 to 401,910 at the end of FY 2019. Briefly evaluate the plausibility of this forecasting assumption. **[4 points]**

This represents a growth rate of $401,910/381,910 - 1 = 5\%$, while revenues are expected to grow by $2,999,639/1,779,748 - 1 = 69\%$ over the same period. It does not seem very plausible that Take-Two will achieve such economies of scale in its software development costs. These costs have recently grown faster than sales as competition has been increasing.

Problem 5. Valuation Analysis

In this problem, we will value Take-Two using the residual income valuation model and the financial forecasts in the forecasting model. Use a discount rate (cost of equity) of 8%.

- (i) Compute Take-Two's residual income for FY 2018 and FY 2019. **[6 points]**

FY 2018 Residual Income:

$$\begin{aligned} &= \text{FY 2018 Net Income} - 8\% \text{ of 2017 Book Value of Common Equity} \\ &= 124,223 - 0.08 * 1,003,728 = 43,925 \end{aligned}$$

FY 2019 Residual Income:

$$\begin{aligned} &= \text{FY 2019 Net Income} - 8\% \text{ of 2018 Book Value of Common Equity} \\ &= 540,928 - 0.08 * 1,174,382 = 446,347 \end{aligned}$$

- (ii) Use the residual income valuation model to value Take-Two's common equity per share at the end of FY 2017 by using your answers from part (i) above and Take-Two's book value of common equity at the end of FY 2017. Assume that residual income remains constant at the FY 2019 level for all years beyond FY 2019. Use 102,621 thousand shares outstanding in your computation. **[8 points]**

$$\begin{aligned} \text{2017 Value/Share} &= (\text{2017 Book Value of Common Equity} + (\text{2018 Residual Income})/(1+r) \\ &+ (\text{2019 Residual Income})/(r*(1+r)))/\text{2017 shares outstanding} \\ &= (1003,728 + 43,925/1.08 + 446,347/(\cdot 08 * 1.08))/102,621 = \mathbf{\$60.52} \end{aligned}$$