Assignment 1: Finance

Part 1 (50 marks):

- **Question 1 (15 marks):**

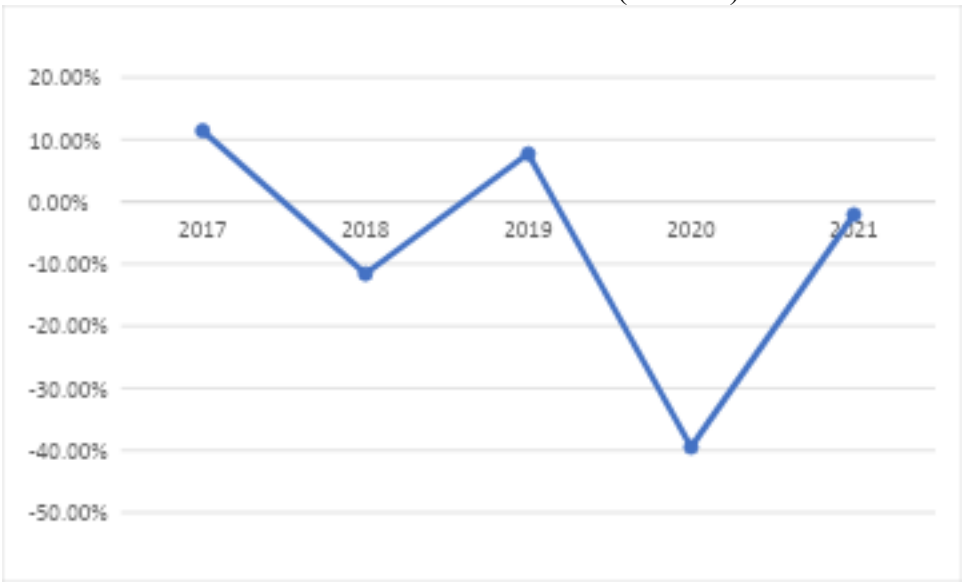
Choose a publicly traded company that has been listed on the Egyptian Exchange (EGX) for at least five years. Use any data source of your choice to find the annual dividend paid by the company in each of the past five years. Also, find the closing price of the stock at the end of each of the preceding five years.

Year	Last trading date of the year	Share price	Dividend
2021	12/27/2021	8.41	0.207
2020	12/28/2020	8.8	0.2
2019	12/30/2019	14.87	0.208
2018	12/31/2018	14	0.117
2017	12/25/2017	15.97	0.15
2016	12/26/2016	14.47	0.223

a. Calculate the return for each of the five one-year periods (5 marks).
I selected Edita Food Industries for my analysis and obtained its dividend and share price information from Edita's investor relations site (Edita Food Industries SAE, 2022) and Investing's website (Investing, 2022)
Return = (Ending share price – Beg. Share price + dividend)/Beg. Share price

Year	Return
2021	-2.08%
2020	-39.48%
2019	7.7%
2018	-11.6%
2017	11.4%

b. Create a graph that shows the return that the investment earned on the y-axis and the year in which the return was earned on the x-axis (5 marks).



c. On the basis of the graph in part b, estimate the return for the coming year, and explain your answer (5 marks).
   There is an alternating trend in Edita Food's returns: in 2018, the stock returns dropped to -12% before increasing to 8% in 2019 and then dropping to -39% in 2020. If this trend persists, the 2021 recovery of the return to -2% should be followed by a subsequent drop. Predicting the subsequent period's rate of return is more reliable when there is a sustained upward or downward trend in the rate of return. Since this is not the case for Edita, the rate of return is best predicted as the average return over the five-year period.

- **Question 2 (15 marks):**

In early 2009, General Electric (GE) had a book value of equity of $105 billion, 10.5 billion shares outstanding, and a market price of $10.80 per share. GE also had cash of $48 billion, and total debt of $524 billion. Three years later, in early 2012, GE had a book value of equity of $116 billion, 10.6 billion shares outstanding with a market price of $17 per share, cash of $84 billion, and total debt of $410 billion. Over this period, what was the change in GE's:

a. market capitalization? (3 marks)
   Market capitalization = Share price * shares outstanding
   Market capitalization, 2009 = 10.5 billion * $10.8
   Market cap, 2009 = $113.4 billion
   Market capitalization, 2012 = 10.6 billion * $17
   Market capitalization, 2012 = $180.2 billion
   Market cap increase in dollars = $66.8 billion (180.2 – 113.4)
   Percentage change = 58.91% (66.8/113.4); the 2012 market capitalization was 58.91% higher than the 2009 capitalization.
b. market-to-book ratio? (3 marks)
   Market-to-book ratio = market capitalization/book value of equity
   Market-to-book ratio, 2009 = 1.08 (113.4/105)
   Market-to-book ratio, 2012 = 1.55 (180.2/116)
   Percentage change = 43.52% (0.47/1.08); the 2012 market-to-book ratio was 43.52% higher than the 2009 ratio.
c. enterprise value? (3 marks)
   Enterprise value = Market capitalization + Total debt – cash
   Enterprise value, 2009 = $589.4 billion (113.4 + 524 – 48)
   EV, 2012 = 506.2 billion (180.2 + 410 – 84)
   Change in dollars = $-83.2 billion (506.2 – 589.4)
   % change = -16.4% (-83.2/506.2); the enterprise value decreased by 16.4%
d. Discuss the difference between the "market capitalization" and the "enterprise value" as two different measures of the firm value. Use your own words to suggest your preference for one of them. (6 marks).
   Market capitalization is the value ascribed to a firm by its equity investors and is equal to the value of its outstanding shares. On the other hand, the enterprise value takes into both

the equity and debt sources of capital into account in the company's valuation. Enterprise value is the market capitalization plus the outstanding interest-bearing debt less the cash balance (Ross et al., 2019). I prefer enterprise value over market capitalization as it gives a better estimate of the cost of fully acquiring a company. To fully own a company, one would need to buy all outstanding shares and repay existing long-term debt. Cash is subtracted from the EV calculation as it is assumed that the cash balance would be used to purchase debt and reduces the cost of fully acquiring the company.

- **Question 3 (20 marks):**

On January 1, 2017, Dave Coates, a 23-year-old mathematics teacher at Xavier High School, received a tax refund of $1,100. Because Dave didn't need this money for his current living expenses, he decided to make a long-term investment. After surveying a number of alternative investments costing no more than $1,100, Dave isolated two that seemed most suitable to his needs.

Each of the investments cost $1,050 and was expected to provide income over a 10-year period. Investment A provided a relatively certain stream of income. Dave was a little less certain of the income provided by investment B. From his search for suitable alternatives, Dave found that the appropriate discount rate for a relatively certain investment was 4%. Because he felt a bit uncomfortable with an investment like B, he estimated that such an investment would have to provide a return at least 4% higher than investment A. Although Dave planned to reinvest funds returned from the investments in other vehicles providing similar returns, he wished to keep the extra $50 ($1,100 - $1,050) invested for the full 10 years in a savings account paying 3% interest compounded annually.

As he makes his investment decision, Dave has asked for your help in answering the questions that follow the expected return data for these investments.

	Expected Returns	
End of Year	A	B
2017	$ 50	$ 0
2018	$ 50	$150
2019	$ 50	$150
2020	$ 50	$150
2021	$ 50	$200
2022	$ 50	$250
2023	$ 50	$200
2024	$ 50	$150
2025	$ 50	$100
2026	$1,050	$ 50

Questions:

a. Assuming that investments A and B are equally risky and using the 4% discount rate, apply the present value technique to assess the acceptability of each investment and to determine the preferred investment. Explain your findings (3 marks).

I will ignore the extra $50 invested in the savings account in the comparison of the two investments A and B as the future value of the $50 is the same whether we select investment A or B making it irrelevant to the investment decision
NPV of the investments = -1050 + PV of cash flows over the 10 years
NPV of A = -1,050 + 50 * PVAF (4%, 9) * 50 + PVIF (4%, 10) * 1,050
NPV of A = -1050 + 371.77 + 709.34
NPV of A = $31.11

NPV of B = -1,050 + 150/1.04^2 + 150/1.04^3 + 150/1.04^4 + 200/1.04^5 + 250/1.04^6 + 200/1.04^7 + 150/1.04^8 + 100/1.04^9 + 50/1.04^10
NPV of B = -1,050 + 1,127.84
NPV of B = $77.84

Investment B is preferred as it has a higher NPV. Investment B offers an incremental value of $77.84 over the initial investment amount over the $31.11 offered by investment B.

b. Recognizing that investment B is riskier than investment A, reassess the two alternatives, adding the 4% risk premium to the 4% discount rate for investment A and therefore applying a 8% discount rate to investment B. Compare your findings relative to acceptability and preference to those found for question a (3 marks).
NPV of A = $31.11
NPV of B = -1,050 + 922.51
NPV of B = -127.49
After accounting for investment B's higher risk premium, the investment is no longer acceptable as its NPV is negative. The present value of its future cash is $127.49 short of the initial investment amount. Investment A is, therefore, preferred over B.

c. From your findings in questions a and b, indicate whether the IRR for investment A is above or below 4% and whether that for investment B is above or below 8%. Explain (3 marks).

The IRR is the discount rate that equalizes the present value of future cash flows to the initial investment amount (Ross et al., 2019). Therefore, the IRR is less than the discount rate for a negative NPV and higher than the discount rate for a positive NPV> From Question a, both investments have an IRR above 4% as their NPVs were positive for a 4% discount rate. From Question b, the IRR of investment B is less 8% as its NPV was negative for a discount rate of 8%. Investment A's IRR is also expected to be lower than investment B's as the former had a lower NPV when the 4% discount rate was applied to both investments.

d. Use the present value technique to estimate the IRR on each investment. Compare your findings and contrast them with your response to question c (3 marks).
   Investment A, IRR = 4.4%
   Investment B, IRR = 5.4%

   The two investments IRR are as predicted, both investments have an IRR greater than 4% but less than 8% and investment B's IRR is higher than A's. Using the IRR criterion, we would accept investment A as its IRR exceeds its required return of 4% and reject investment B as its IRR falls short of its required return of 8%
e. From the information given, which, if either, of the two investments would you recommend that Dave make? Explain your answer (4 marks).

   I would recommend that Dave invests in A as it provides sufficient returns for its risk level. This is evident from the investment's positive NPV and IRR that exceeds its required rate of return. In contrast, project B does not offer sufficient returns given its risk level as indicated by its negative NPV and lower IRR than the required rate of 8%

f. Indicate to Dave how much money the extra $50 will have grown to by the end of 2026, assuming he makes no withdrawals from the savings account (4 marks).
   FV = 50 * (1+0.03)^10
   FV = 67.20
   At a 3% interest rate compounded annually, the $50 will grow to $67.2 by the end of 2026

Part 2 (50 marks):

- **Question 4 (20 marks):**

Briefly discuss the investment appraisal process.

Investment appraisal refers to the evaluation of a set of investment alternatives using various techniques and selection of the most appropriate investment(s) based on the preferred appraisal techniques. The investment appraisal process begins with the determination of the available resources for investment and enumeration of the existing investment alternatives. The initial cost of each alternative is then determined. The initial cost comprises of the cost of acquiring and setting up any required equipment or facilities as well as the required increases in working capital (Ross et al., 2019). For replacement projects, the proceeds from disposal of the assets are deducted from the cost of acquiring the new equipment when determining the initial cost of the replace alternative. The incremental cash flows over the project's useful life are then determined. The total incremental cash flows comprise of incremental cash flows from operations less any required additions to working capital plus any after-tax proceeds from the disposal of assets related to the project.

The initial cost of the project and total incremental cash flow are used in the calculation of the payback period, NPV, IRR, and other investment criteria based on cash flow analyses. The

payback period is given as the amount of time until the initial investment in the project is recovered. To use payback period as an appraisal measure, the company must set the maximum acceptable payback period. For example, if the company's payback period is 5 years, a project with a payback period higher than 5 years is automatically rejected. NPV and IRR are the preferred project appraisal techniques as they take the time value of money into account. The weighted average cost of capital is used as the discount rate for projects with a similar risk profile as the company's existing operations (Ross et al., 2019). The project's NPV gives the addition (reduction) the project will have made to the company's value by the end of its useful life after investors have been compensated for the use of their capital. Companies will accept all projects with a positive NPV subject to the amount of capital available for investment. The IRR is often used as a complement to NPV analysis as a rate of return is easily interpreted (Ross et al., 2019).

- **Question 5 (30 marks):**

Given the following balance sheet, income statement, historical ratios and industry averages, calculate the Pulp, Paper, and Paperboard, Inc. financial ratios for the most recent year. Analyze its overall financial situation for the most recent year. Analyze its overall financial situation from both a cross-sectional and time-series viewpoint. Break your analysis into an evaluation of the firm's liquidity, activity, debt, and profitability.

Liquidity

Current ratio = current assets/current liabilities
Current ratio = 575000/345000
Current ratio = 1.7
Quick ratio = (Current assets – inventories)/ current liabilities
Quick ratio = (9500+237000)/345000
Quick ratio = 0.7

Pulp, Paper, and Paperboard Inc's current ratio has remained more or less constant between 2011 and 2013. In 2013, the company's current assets were 1.7 times its current liabilities indicating sufficient ability to cover short-term obligations that mature within a year. The current ratio was comparable to the industry average of 1.6. however, the current ratio often overestimates the liquidity of companies with significant inventory balances as inventories are relatively illiquid compared to other current assets such as cash and accounts receivable. The company's quick ratio deteriorated in 2013: quick assets (cash and accounts receivable) were sufficient to cover only 70% of current liabilities compared to the 100% covered in 2012. Furthermore, the company's quick ratio was lower than the industry average of 0.9. Thus, Pulp and Paperboard is less liquid compared to previous years and less liquid than competitors. Management should exert better control over the company's working capital, especially with respect to its inventory management, to boost the quick ratio.

Activity

Average collection period = 365 * Average accounts receivable/sales revenue
Average collection period = 365 * 237000/2080976

ACP = 41.6 days
Inventory turnover = Cost of goods sold/average inventory
Inventory turnover = 1701000/243000
Inventory turnover = 7
Total asset turnover = Revenue/ average assets
Total asset turnover = 2080976/1000000
Total asset turnover = 2.08

The average collection period and inventory turnover ratios are closely related with the company's liquidity ratios with higher inventory turnover and a shorter collection period having positive implications for the company's working capital and liquidity. On the other hand, the total asset turnover influences the company's profitability, more so its return on assets and equity. Paper and Pulp's average collection period increased by 4 days indicating slower settlement of accounts receivable while the inventory turnover dropped significantly speaking to slower conversion of inventories to sales. The decreased efficiency in inventory management and receivables collection could explain the decrease in the company's quick ratio. Both the inventory turnover and ACP ratios were less than the industry average indicating lower efficiency in the management of inventories and receivables when compared to the average firm in the industry. The total asset turnover ratio also decreased to 20.8. In 2013, the company realized $2.08 in revenues for every dollar of assets compared to the $2.2 realized in 2012. The ratio was also lower than the industry average indicating lower asset use efficiency when compared to the average firm in the industry. The lower asset turnover is expected to negatively influence profitability

Debt

Debt ratio = Total liabilities/ total assets
Debt ratio = 533000/1000000
Debt ratio = 0.5
Times interest earned = Operating income/interest expense
Times interest earned = 106130/19296
Times interest earned = 5.5

Paper and Pulp was less indebted in 2013 as indicated by its lower debt ratio of 0.5. The company's debt ratio was less than the industry average of 0.58. Paper and pulp finances only 50% of its assets using debt as compared to the 58% debt financing for the average firm in the industry. The decrease in debt levels contributed to the improvement in the company's ability to meet its interest obligations as indicated by the higher times interest earned ratio. In 2013, Paper and Paperboard could cover its interest expense 5 times over using its operating income, compared to the 3.5 times in 2012 and the 2.3 times for the average company in the paper industry.

Profitability

Gross profit margin = Gross profit/ sales revenue
Gross profit margin = 379976/2080976
Gross profit margin = 18.3%
Operating profit margin = Operating profit/sales revenue

Operating profit margin = 5.1%
Net profit margin = Net profit after taxes/ sales revenue
Net profit margin = 52100/2080976
Net profit margin = 2.5%
Return on total assets = Net profit after taxes/ total assets
Return on total assets = 52100/1000000
Return on total assets = 5.21%
Return on equity = Net profit after taxes/ total stockholders' equity
Return on equity = 52100/467000
Return on equity = 11.2%

Paperboard Inc.'s gross margin decreased from 19.7% to 18.3% in 2021 indicating an increase in the cost of goods sold as a percentage of sale. The increase in cost of sales does not appear to be industry wide as indicated by the higher gross margin industry average of 20.4%. The company's operating profit margin increased from 4.8% to 5.1% as did the net profit margin which increased from 1.6% to 2.5%. The improvement in the operating profit and net profit margins is attributed to the effective control over operating costs and the decrease in interest expense. The company can achieve further profitability gains by auditing its cost of revenues and applying cost management measures to reduce the cost of revenues to a level similar to the industry's. The company's reduction of operating and interest expenses had the effect of improving its return on assets and return on equity in 2013. The company's returns to its investors exceeded the typical returns offered in the industry.

References

Edita Food Industries SAE (2022). *Share and corporate information*. Retrieved from: https://ir.edita.com.eg/en/share-corporate-information-overview

Investing (2022). *Edita Food Industries SAE*. Retrieved from: https://www.investing.com/equities/edita-food-industries-dividends

Ross, S., Westerfield, R., Jaffe, J., Jordan, B. (2019). *Corporate finance.* McGraw Hill Education.

Income Statement
Pulp, Paper, and Paperboard, Inc.
For the Year Ended December 31, 2013

Sales revenue	$2,080,976
Less: Cost of goods sold	1,701,000
Gross profits	$ 379,976
Less: Operating expenses	273,846
Operating profits	$ 106,130
Less: Interest expense	19,296
Net profits before taxes	$ 86,834
Less: Taxes (40%)	34,734
Net profits after taxes	$ 52,100

Balance Sheet
Pulp, Paper, and Paperboard, Inc.
December 31, 2013

Assets	
Cash	$ 95,000
Accounts receivable	237,000
Inventories	243,000
Total current assets	$ 575,000
Gross fixed assets	500,000
Less: Accumulated depreciation	75,000
Net fixed assets	$ 425,000
Total assets	$1,000,000
Liabilities and stockholders' equity	
Current liabilities	
Accounts payable	$ 89,000
Notes payable	169,000
Accruals	87,000
Total current liabilities	$ 345,000
Long-term debt	188,000
Total liabilities	$ 533,000
Stockholders' equity	
Common stock	255,000
Retained earnings	212,000
Total stockholders' equity	$ 467,000
Total liabilities and stockholders' equity	$1,000,000

Historical and Industry Average Ratios
Pulp, Paper and Paperboard, Inc.

Ratio	2011	2012	2013	Industry 2013
Current ratio	1.6	1.7	–	1.6
Quick ratio	0.9	1.0	–	0.9
Inventory turnover	8.1	9.3	–	8.4
Average collection period	33 days	37 days	–	39 days
Total asset turnover	2.3	2.2	–	2.2
Debt ratio	60%	56%	–	58%
Times interest earned	2.5	3.5	–	2.3
Gross profit margin	21%	19.7%	–	20.4%
Operating profit margin	4.7%	4.8%	–	4.7%
Net profit margin	1.8%	1.6%	–	1.4%
Return on total assets	4.1%	3.5%	–	3.08%
Return on equity	10.3%	7.9%	–	7.3%