ECE 472F PROBLEM SET #2 (suggested completion date: October 16th, 2015)

Question 1

1. In late 2012, two recent computer-engineering graduates decided that they wanted to form a partnership to establish a store to sell IBM-compatible computers. They were initially disappointed because the bank manager refused their loan request for the $300 000 that their business model showed that they needed. They then approached their families for financing and after much discussion the following arrangement was arrived at. Each family would put $125 000 into the business as equity. Ownership in the company would be split four ways. Each of the two families would receive a share and each of the engineers would receive a share. Furthermore, it was agreed that the engineers would run the store on a full-time basis and would each be paid $25 000 a year as their salary draw[1] from the business for the first few years. With the equity funding in place, they were now able to secure a bank loan of $50 000; one quarter of the loan was payable at the end of May 2013 and the remaining three installments due every six months thereafter.

The partners were also able to obtain a good retail location in a mall but to do so required a prepayment of four months' rent[2] at $3 500 per month. They equipped the store, the office and the shop with equipment and furnishings totaling $60 000, which they paid in cash. They purchased computer motherboards, power supplies, disk/diskette drives, cabinets and cables from a number of suppliers which totaled $150 000. Because they did not have an established credit rating, two-thirds of these purchases were cash on delivery; the rest were invoiced on a net 30-day basis. The store opened on January 1, 2013. Prepare an opening balance sheet for this business which they decided to call "Computer One". (Ignore any taxes.)

2. The two engineers worked hard at establishing their new business during the first year and hired a small staff of part-time employees to help with the sales and repairs. After twelve months of operations, the partners believed that they had enjoyed a good year. Sales of the machines had been strong and they were constantly busy. They were anxiously awaiting the accountant's report for their first year of operations to see how well financially they had done. During the first year of operation, the following financial activity occurred:

Gross sales	1 500 000	Advertising	45 000
Purchases	950 000	Utilities	12 000
Sales Staff Salaries	70 000	Interest	4 000
Technical Staff Salaries	55 000		

Inventory as of December 31, 2013 was $125 000. The business paid its expenses on receipt of invoice except that it had not yet paid for the last shipment of computer purchases that it received in late December. This invoice was for $175 000. Computer One accepted payment by cash, certified cheque or credit card. December's credit card sales were $100 000 and this amount had not yet been received from the credit card companies. The chartered accountant decided to depreciate the office and store equipment at an annual rate of $15 000.

To remain competitive, Computer One offered a three-year warranty[3] on all systems that it sold. The partners estimated that the cost to the business to repair systems sold this year under the warranty would be would be 1.0% and 2.0% of sales for year two and year three respectively. Prepare an income statement for the first year[4].

3. Prepare a Balance Sheet as at the end of the first year. What Owners' Equity did the chartered accountant determine as of December 31, 2013?

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[1] As part owners of the company, the two engineers' salary draws are considered a charge to the equity of the company and not an expense of the company. Hence, there salary draws do not appear on the Income Statement. Partners do not technically receive a salary, but rather make a periodic draw against their share of annual earnings.

[2] A prepayment of an expense such as rent would be considered to be a current asset.

[3] Consider the warranty as a future obligation, a liability with both current and long-term components.

[4] All financial statements should be presented in proper accounting format. Show your work in supporting worksheets.

4. By using appropriate financial ratios that measure profitability and return on investment, had the business done well during the first year? Evaluate the engineers' compensation for the year as well as the return on investment for the families. Had each of the partners done well?

Question 2

Du Pont analysis is a method of analyzing a company's return on equity (ROE) invented at the Du Pont company nearly a century ago. ROE expresses the amount of money the company earns for each dollar of equity invested. If you buy $100 of shares in a company, your share of its profits is the EPS (earnings per share) which equals (share price) x ROE%.

ROE = (profits / revenue) x (revenue / assets) x (assets / equity)
ROE = (net margin) x (asset turnover) x (financial leverage)

ROE = (profits / assets) x (assets / equity)
ROE = ROA x (financial leverage)

Broken down so, shareholder profits come from some combination of net margin (how much is made as a percentage of each unit sold), turnover (how quickly inventory/assets are sold), and financial leverage (how much debt is used to magnify gains/losses to shareholders). You can think of ROA as how much money is earned for every dollar of assets owned by the company (more is better; measures how effectively the company uses its assets), and leverage as how much "gearing" is applied using debt to increase returns. Recall leverage magnifies profits and losses, as well as increasing risk of insolvency.

(a) Use Google finance (finance.google.ca) or an equivalent tool to apply Du Pont analysis to three companies you may recognize: Goldman-Sachs Group (ticker GS[5]), Loblaw's (L), and Apple (AAPL). Look at the fields "Total Assets", "Total Liabilities", and "Total Equity" under the Financials/Balance Sheet tab, and "Revenue" and "Net Income" under the Financials/Income Statements tab.

Which has the highest leverage? Turnover? Margin? Look at the industries in which the companies participate and try to explain why this may be.[5] I would have used a Canadian financial institution here but their revenue numbers are not readily available on Google finance. For financial institutions, though, revenue numbers do not tell the full story.

(b) Try to relate financial leverage (=assets/equity) to measures discussed in class (D/E, D/V). Remember that Assets = Liabilities + Equity. Consider for a moment what happens if you assume Liabilities = Long-Term Debt (D) – not quite valid but indicative.

[5] I would have used a Canadian financial institution here but their revenue numbers are not readily available on Google finance. For financial institutions, though, revenue numbers do not tell the full story.