JOHNSON MAWULI TSIMESE

MBAN 5570

ACCOUNTING & FINANCE ANALYSIS

ASSIGNMENT 1

QUESTION I - Financial Statements Analytics
From the excel sheet, the following analysis can be made.

Profitability: The company's profitability, as determined by return on sales (ROS), return on assets (ROA), and return on equity (ROE), has been very consistent throughout time, with an average ROS of 27.4% and an average ROA and ROE of around 8%. This shows that the business has managed to keep itself profitable and produce a steady return on its investments. Also consistent with the forecast values.

Efficiency: The company's efficiency, as measured by asset turnover ratios, has been relatively stable over time as well, with an average asset turnover of around 30%. This indicates that the company is efficiently using its assets to generate sales. However, the forecast of the company's inventory turnover has been slightly decreasing, which could be a cause for concern if the trend continues in the future.

Leverage: Based on the company's debt and times interest earned (TIE) ratios, financial leverage has remained largely constant throughout time. While the firm's TIE ratio has constantly been high, showing that it has enough profits to cover its interest expenditures, the debt estimate for the company has an average of 41.6%, which, in my opinion, is comparable with the actual figures. These statistics indicate that the corporation is not too leveraged and that its financial situation is generally steady.

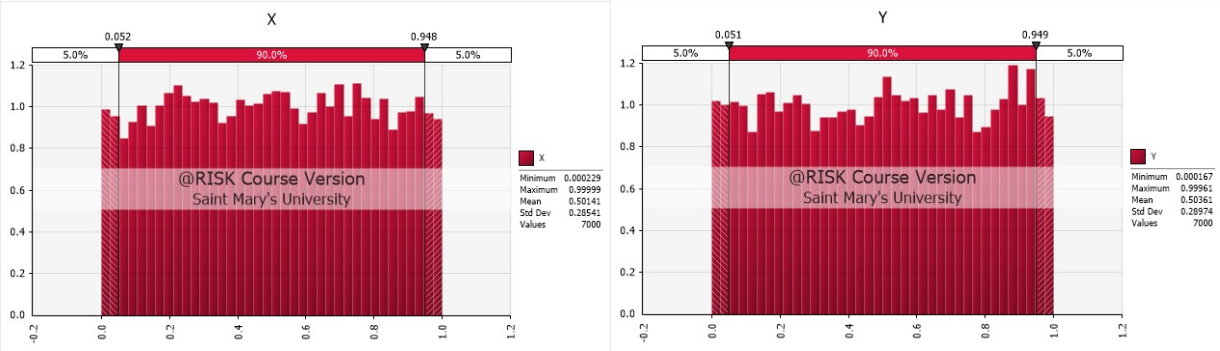
Liquidity: The company's liquidity position, as shown by its current and quick ratios, has remained largely consistent over time, averaging roughly 34% and 17%, respectively. These ratios imply that the corporation can pay its short-term obligations and has enough current assets to cover its current liabilities. But, if the pattern continues, the company's liquidity position, which has somewhat deteriorated over time, may be reason for concern.

Market Value: A good market value should be generally less than 1. The average of the actual and the forecast values is 0.69 and 0.7 respectively which tells us that….

QUESTION II – CENTRAL LIMIT THEOREM

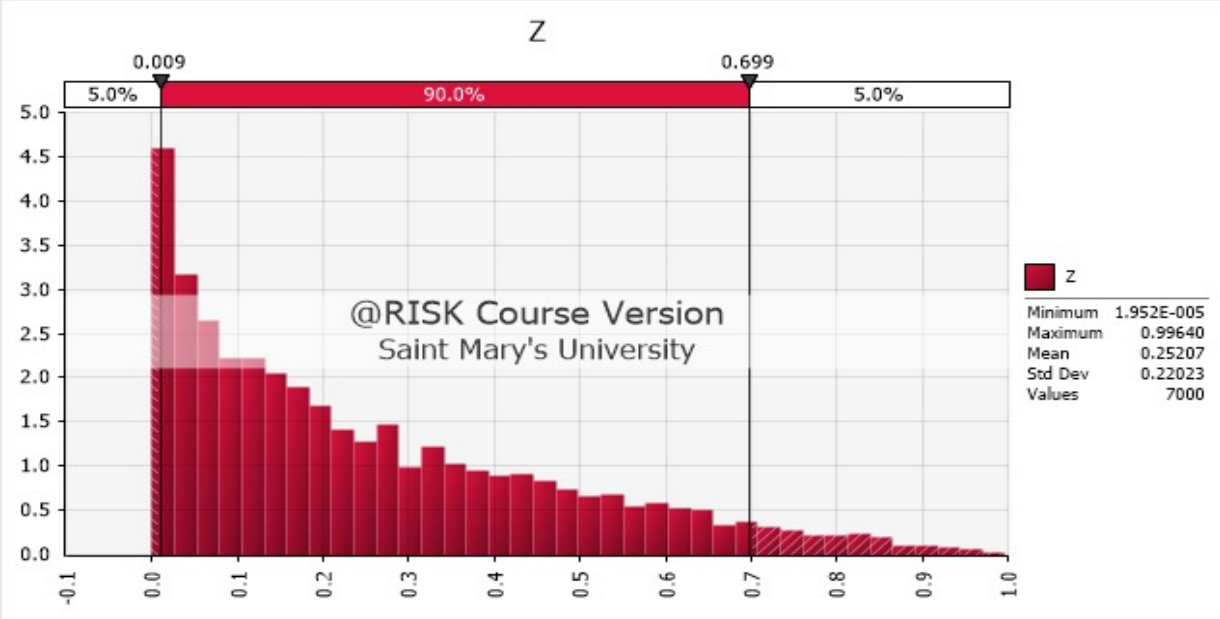
This section shows the random variable of X, Y, Z and W. Z is a product of X and Y while W is a sum of the three variables.

Figure 1: Plots showing the distribution of Random Variable X & Y



From Figures above, it is clear that both random variables X and Y follow a uniform distribution ranging from 0 to 1. This is because they have a constant probability distribution. As you increase the simulation, it becomes more evident. The graph above shows 7000 iterations.

Figure 2: Plot showing distribution of random variable Y



From figure 2 above, graphically, this looks like an exponential distribution but statistically, multiplying two uniform distribution will generate a triangular probability density function (PDF), not an exponential PDF. Specifically, if X and Y are two independent random variables uniformly distributed over [0,1], then the PDF of the product Z=XY will be a triangular distribution with a mode at 0 and a maximum value of 1 which can be seen in the figure above.

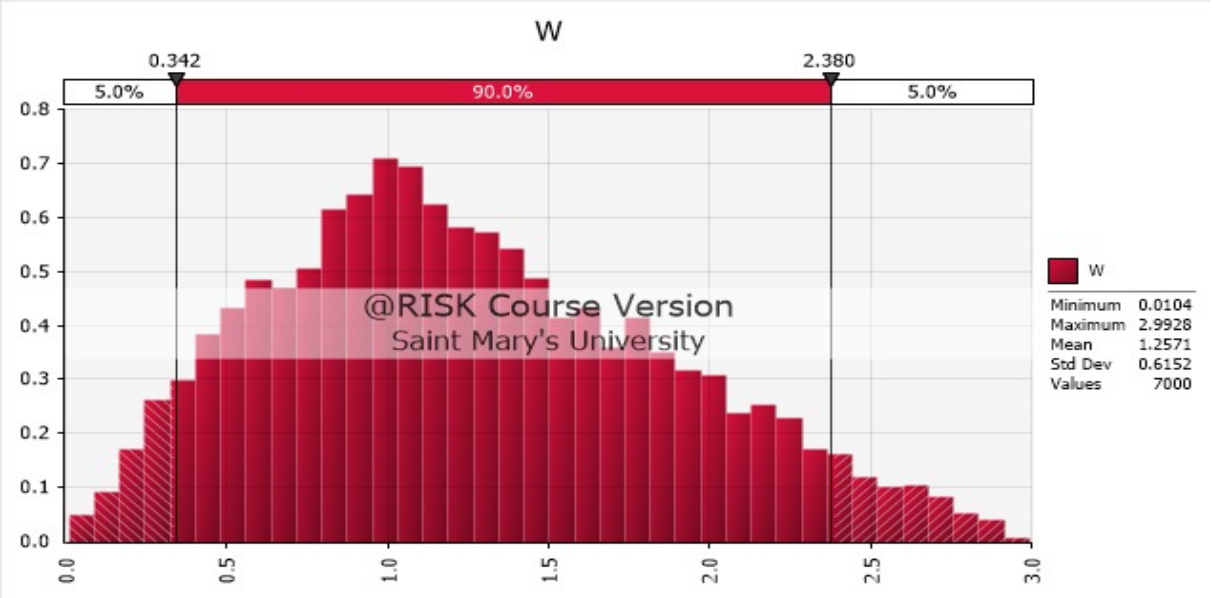


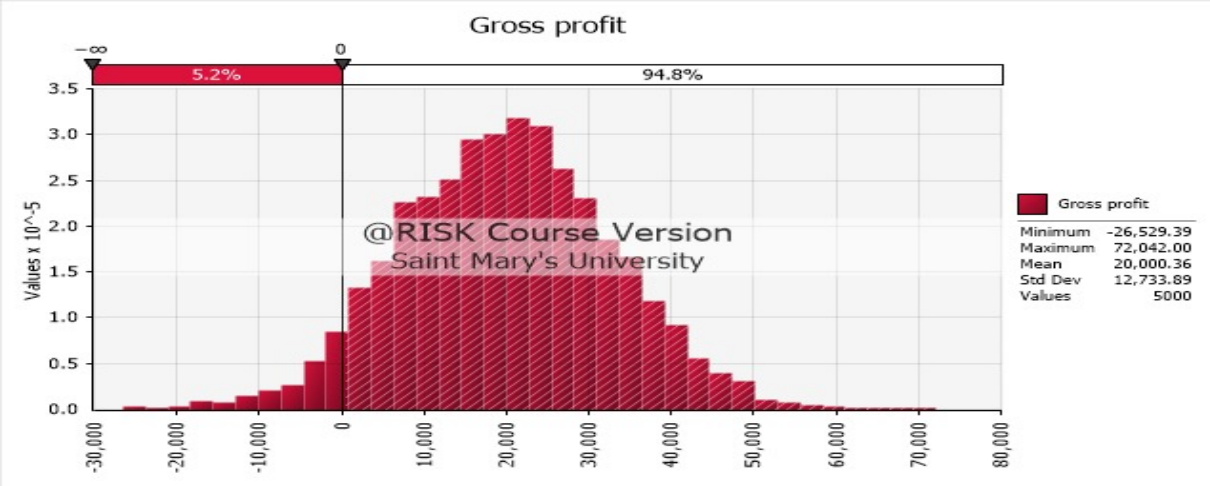
Figure 3: Pobability distribution of W

The figure above The figure above shows a normal distribution which is slightly skewed to the right with mean of 1.2571. The mode of this distribution is 1 as seen in the figure above. Mean is greater than Mode hence positive skewness.

To conclude, the distribution of X, Y & Z are not the same as the distribution of W

QUESTION III – Simple Gross Margin Simulation

Figure 4: Probability distribution of Gross profit



From the figure above, the probability that the company's profit will exceed 0 is 0.948. Thus, 94.8%.

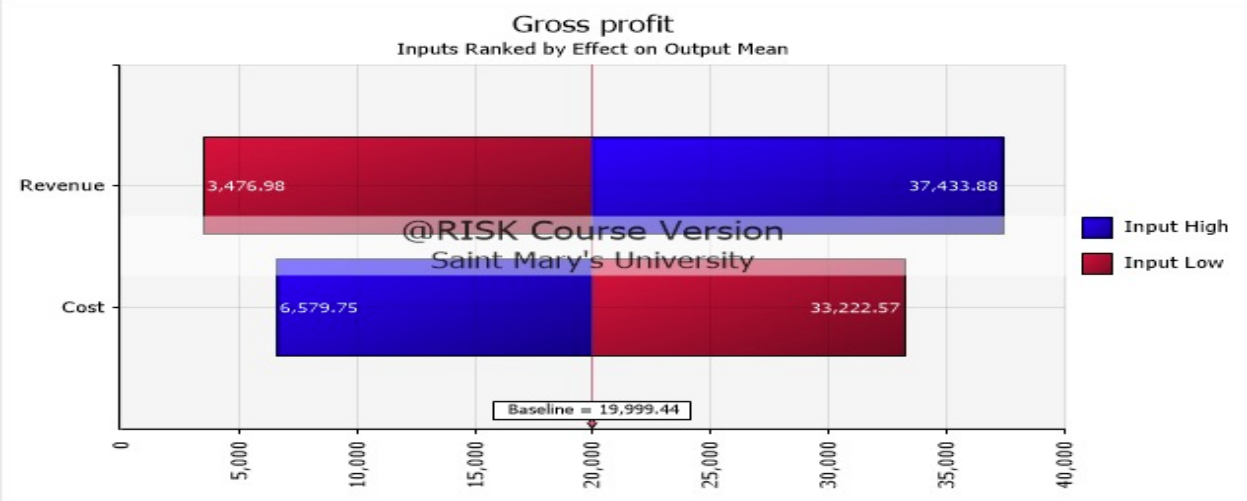


Figure 5: Plot showing the sensitivity of profit

From the figure above, we can tell from the tornado chart that the revenue is more sensitive to the gross profit as compared to the cost. In other words, Revenue has a great impact on gross profit.

QUESTION IV – Parametric sales analysis

[Two-way sensitivity analysis performed in the Excel sheet provided]

QUESTION 5 – Random Variable Distrubution

Discrete random variable

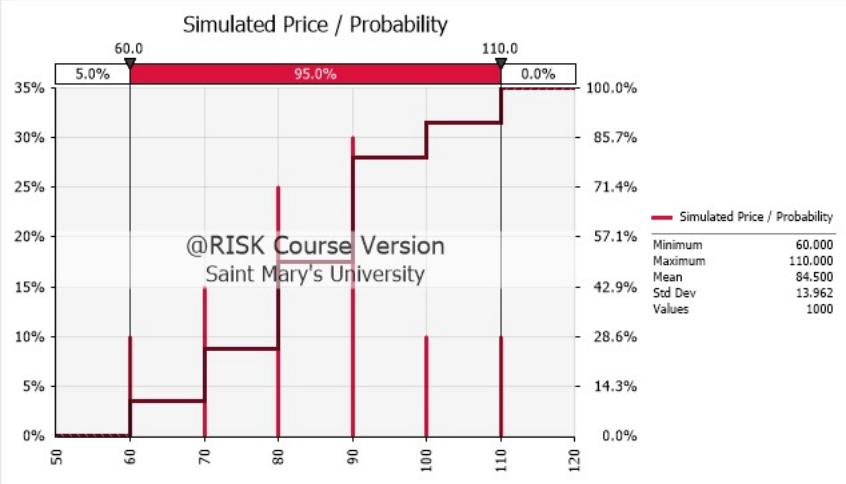


Figure 6 Discrete distribution of stock prices

The discrete distribution of the possible stock prices are displayed in the graph above. The mean E(x) of this distribution after simulation is $84.5 with a spread of $194.94 as well as a standard deviation of $13.96. Possible stock price of $90 occurred frequently (mode). This distribution has a skewness of 0.04 which makes it moderately skewed with a peak of 2.4048. Simulated price is $80.

Triangular Random Variable

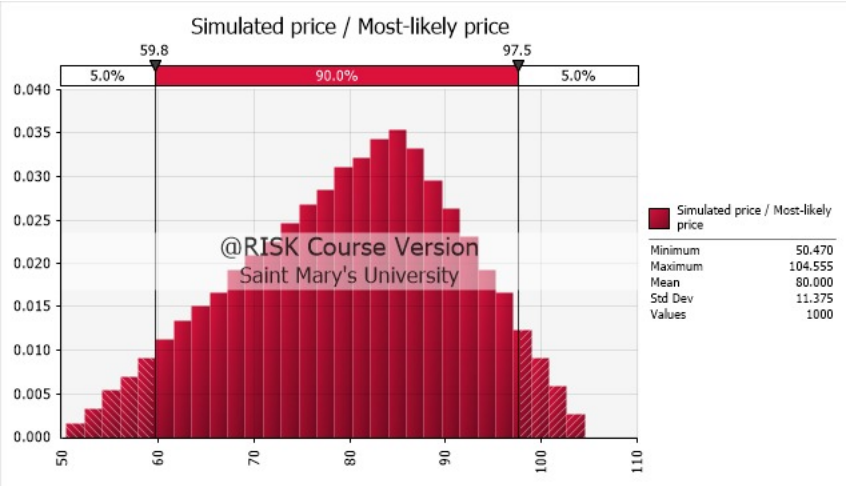


Figure 7. A triangular Random Variable

The figure above shows a triangular distribution with a mean of $80, median of $81.02 and mode of $84.97. This distribution has a skewness of -0.2556 which means its slightly negatively skewed. Furthermore, the simulated prices have a kurtosis of 2.4 which is generally a good peak for any distribution. The simulated price generated was $91.2

Normal Random Variable

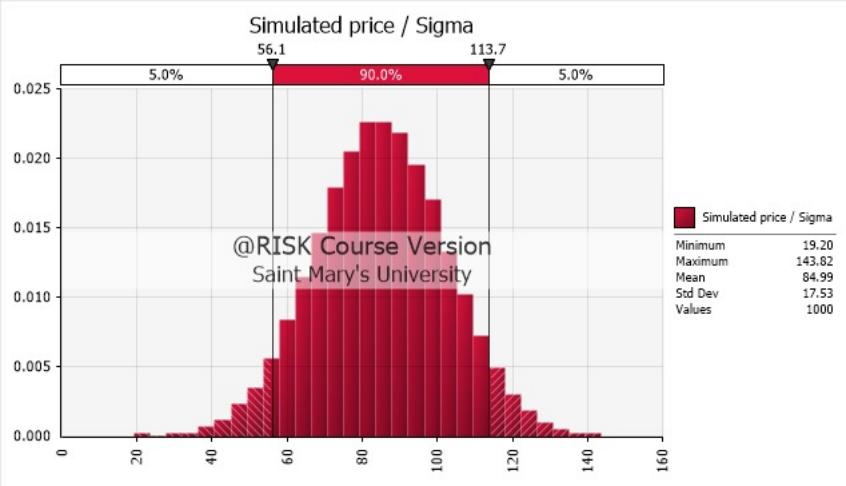


Figure 8 Normal Random Variable

The distribution above is a normal distribution which generated a simulated Price of $72.5 with a mean price of $84.99, SD of $17.53 and mode of $84.78. The distribution has a kurtosis of 3 and a skewness of 0.

QUESTION 6 – LOAN REFINANCING DECISION

Comparison between each Banks

	Maximus	CIBC	TD	BMO
Loan Amount	$1,900,287.04	$1,900,287.04	$1,900,287.04	$1,900,287.04
Loan Amortization	10 Years	10 Years	10 Years	10 Years
Interest rate	7.01%	5.70%	4.97%	5.23%
Number of Payment	120	120	120	120
interest / period	0.58%	0.48%	0.41%	0.44%
Loan maturity period	60	60	60	60
Monthly Payment	$22,025	$20,869	$20,081	$20,417
Sum of PMT (60 months)	$1,321,487	$1,252,127	$1,204,876	$1,224,994
Sum of interest (60 months)	$534,557	$437,546	$370,779	$399,276
Sum of Principal (60 months)	$786,931	$814,581	$834,097	$825,718
Balance left after 60 months	$1,113,357	$1,085,706	$1,066,190	$1,074,569
FV OF FEES				
PV of interest	($377,829.60)	($328,280.97)	($290,066.14)	($306,810.97)
Upfront fee	($61,128.93)	750	750	4000
Early breakup fee	0	$48,528.77	$48,528.77	$48,528.77
Annual fees	0	1750	5000	12500
Amendment fees	0	250	0	0
FV OF Upfront fees	**($86,485.77)**	**$999.63**	**$958.69**	**$5,205.50**
FV of breakup fees	**$0.00**	**$64,681.02**	**$62,032.22**	**$63,154.10**
FV of Annual fees	**$0.00**	**$2,332.47**	**$6,391.28**	**$16,267.18**
FV of amendment fees	**$0.00**	**$333.21**	**$0.00**	**$0.00**

The sum of interest payments and principal are basically the Future Values (FV) of the amount HCCC is paying under the loan. As a financial Analyst, I calculated the future value of the fees and made comparison. Thus, the amount of Fees we will pay in 60 months.

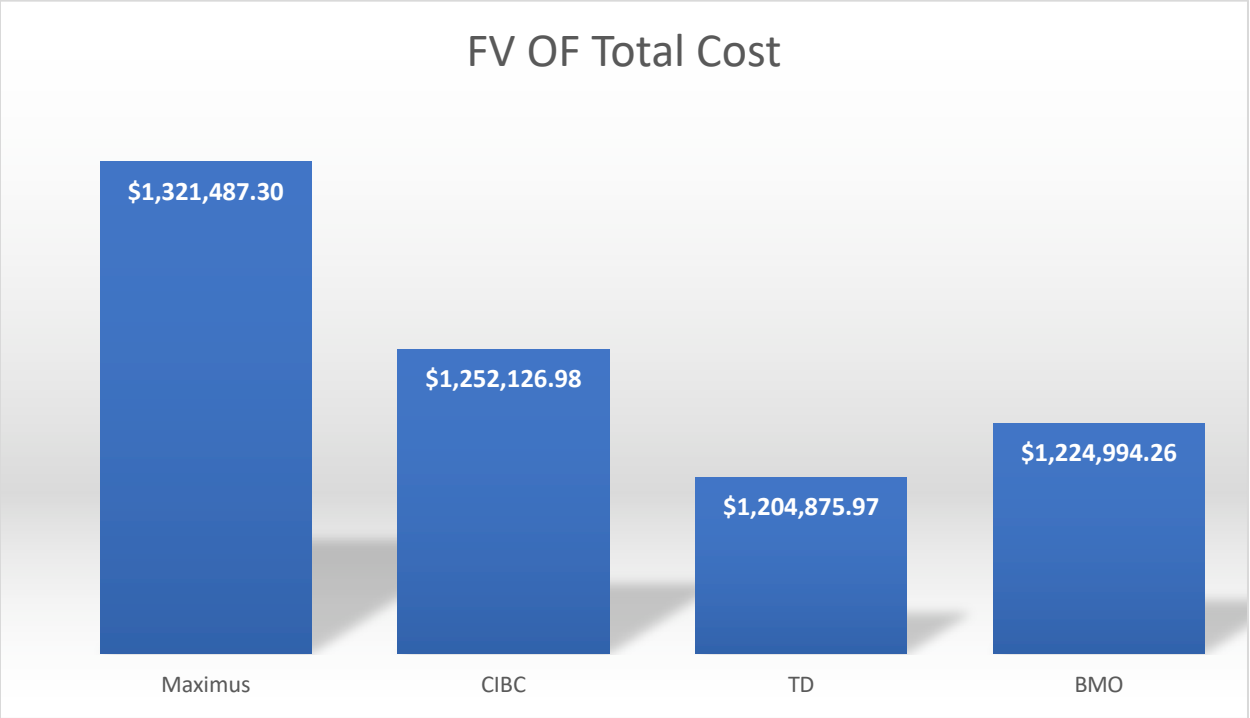
Summation of all FV Cost

	Maximus	CIBC	TD	BMO
FV OF Total Cost	$1,407,973.08	$1,320,473.31	$1,274,258.16	$1,309,621.04

Interest rate: The lower the interest rate, the less you will pay in interest over the life of the loan. In your case, the TD loan has the lowest interest rate at 4.97%.

Monthly Payment: The lower the monthly payment, the easier it will be to manage your cash flow. In this case, the TD loan has the lowest monthly payment at $20,081.

Total Interest Paid: The total interest paid over the life of the loan is an important consideration, as it represents the cost of borrowing. In your case, the TD loan has the lowest total interest paid at $370K.



Based on these factors, the TD loan appears to be the best option, as it has the lowest interest rate and total interest paid, and a relatively low monthly payment and fees.