

Financial Analysis on Dell Technologies Inc.

Chintan Wagh

Department of Data Analytics for Business
St. Clair College, Windsor, Ontario, N9A 5K3
Email: cw70@myscc.ca

Devashish Patel

Department of Data Analytics for Business
St. Clair College, Windsor, Ontario, N9A 5K3
Email: dp176@myscc.ca

Jervis Murzello

Department of Data Analytics for Business
St. Clair College, Windsor, Ontario, N9A 5K3
Email: jm220@myscc.ca

Omkar Shinde

Department of Data Analytics for Business
St. Clair College, Windsor, Ontario, N9A 5K3
Email: os18@myscc.ca

Urvashi Ketulkumar Prajapati

Department of Data Analytics for Business
St. Clair College, Windsor, Ontario, N9A 5K3
Email: UP16@myscc.ca

**Supervised by
Prof. Pratik Bedi
St. Clair College**

Table of Contents

1) Business Analysis	3
1.1 History:.....	3
1.2 Current Operations:.....	3
1.3 List of Solutions	3
1.4 Macroeconomic environment (Growth- organic or mergers or acquisitions):	4
1.5 Industrial Competitors of Dell:	5
1.6 Approximate market share of the company and competitors of Dell:	5
2) CAPM and Ratio & Valuation Analysis	6
2.1 Define CAPM and its importance in Business valuation:	6
2.2 Ratio and Valuation Analysis.....	6
3) Technical Analysis.....	8
3.1 Bollinger Bands	8
3.2 Stock Signals	9
3.3 Monte Carlo Simulation.....	10
3.4 Facebook Prophet Library	11
4) Analyst Recommendations	12
5) References	13

List of Figures

Figure 1: The history of Dell's mergers and acquisitions from 2010.....	4
Figure 2: Summary of CAPM analysis performed in MS Excel	6
Figure 3: Calculation of all the Ratios performed in MS Excel	7
Figure 4: Adjusted Close Price and Change in the Stock Price of Dell	8
Figure 5: Bollinger Bands generated using Python.....	9
Figure 6: Stock signals graph generated in Python.	9
Figure 7: Dendrogram generated in Python showing the frequency of Daily returns	10
Figure 8: Monte Carlo Simulation of the stock prices for 30 days for the month of August 2022.....	10
Figure 9: Monte Carlo Simulation performed in MS Excel showing the next day's stock price	11
Figure 10: Predictions of the Dell stock price up till July 2023 by using FB Prophet Library	12

1)Business Analysis

Dell Inc., originally PC's Limited (1984–88) and Dell Computer Corporation (1988–2003), is a multinational corporation that creates, develops, and produces personal computers (PCs) and a range of associated goods. The business is a major PC provider in the world. The headquarters of Dell are in Round Rock, Texas^[1].

1.1 History:

- Michael Dell, an American who at the time was a student at the University of Texas in Austin, launched the business in 1984 under the initial moniker PC's Limited.
- Dell initially operated the company out of a dorm room, offering specialised PC upgrades.
- The business was successful, and Dell left college the following year to start making computers.
- The first computer with a Dell-exclusive design was the Turbo PC, which the company debuted in 1985.

1.2 Current Operations:

Dell operates under two divisions:

Dell Client Solutions Group (48% of fiscal 2019 revenues) – produces desktop PCs, notebooks, tablets, and peripherals, such as monitors, printers, and projectors under the Dell brand name

Dell EMC Infrastructure Solutions Group (41% of fiscal 2019 revenues) – servers, storage, and networking^[2].

1.3 List of Solutions

Dell offers many solutions for IT infrastructure, workforce, industry and OEM.

1) IT infrastructure solution:

APEX delivers complete IT infrastructure solutions for a range of data and workload requirements, enabling you to accelerate innovation, adapt to evolving requirements and stay in control of IT operations.

2) Dell also provides security Solutions along with the IT infrastructure.

- 3) Their infrastructure solutions include many services like AI, Analytics, VMware, Validated designs, etc.
- 4) Their Workforce solutions include many services like Endpoint Security, AI Workstations, Optimizer Intelligence etc.
- 5) Their Industry solutions are spread across different industries like Healthcare and Life Sciences, Digital solutions, Retail, etc.
- 6) Along with this they also offer specific OEM solutions in collaboration.

1.4 Macroeconomic environment (Growth- organic or mergers or acquisitions):

Date	Company	Industry	Country	Transaction Value
February-11-2010	KACE Networks	Appliance-based systems management provider	United States	—
February-19-2010	Exanet	OEM NAS software provider	Israel	\$12,000,000
July-01-2010	Scalent	Data center management vendor	United States	—
July-30-2010	Ocarina Networks	Storage deduplication vendor	United States	—
November-02-2010	Boomi	Cloud integration vendor	United States	—
December-13-2010	Compellent	Storage systems manufacturer	United States	\$960,000,000
January-04-2011	SecureWorks	Security services	United States	\$612,000,000
June-21-2011	RNA Networks	Software networking	United States	undisclosed
July-20-2011	Force10	Data center ethernet switches	United States	\$700,000,000
April-05-2012	Make Technologies	Services modernization	United States	undisclosed
April-03-2012	Clerity Systems	Services modernization	United States	undisclosed
April-02-2012	Wyse Technology	Cloud technology	United States	undisclosed
April-01-2012	SonicWALL, Inc.	Software security	United States	undisclosed
April-01-2012	AppAssure	Software security	United States	undisclosed
July-02-2012	Quest Software	Systems management and security software	United States	\$ 2,40,00,00,000
November-16-2012	Gale Technologies	Infrastructure automation solutions	United States	undisclosed
May-06-2013	Enstratus, formerly enStratus Networks	Cloud management software	United States	\$3,500,000
March-24-2014	StatSoft	Statistical software and services	United States	undisclosed
October-12-2015	EMC ²	Storage, virtualization, services, cloud, data center, security and compliance	United States	\$67,000,000,000

Figure 1: The history of Dell's mergers and acquisitions from 2010.

- 98% of the Fortune 500 are served by Dell Technologies, which also owns several market-leading companies.
- The Dell client solutions company and the Dell EMC infrastructure solutions business are the two biggest and most well-known, and both are backed by Dell EMC Services.
- Additionally, Boomi, Pivotal, RSA, SecureWorks, Virtustream, and VMware are all part of Dell Technologies.
- The focus and innovation of a start-up are combined with the global reach and services of a large company in this distinctive structure^[3].

Due to its size, Dell Technologies will be able to provide clients with more innovative and cost-effective solutions by investing more in R&D, sales and marketing, services, and support.

1.5 Industrial Competitors of Dell:

Top 11:-

- 1) Lenovo
- 2) Apple
- 3) Samsung
- 4) Hewlett Packard
- 5) Compaq
- 6) Acer
- 7) IBM
- 8) Sony
- 9) Toshiba
- 10) ASUS
- 11) Microsoft

1.6 Approximate market share of the company and competitors of Dell:

Dell's market share of shipments of PC units fell from 19.5% in the fourth quarter of 2021 to **17.7 percent** in the first quarter of 2022. Following Lenovo and HP Inc. , Dell is the third largest PC vendor worldwide.

Competitors of Dell : Hewlett Packard Enterprise (HPE), IBM, Lenovo, NetApp, Oracle, BMC, NEC, Supermicro.

2) CAPM and Ratio & Valuation Analysis

2.1 Define CAPM and its importance in Business valuation:

The relationship between systematic risk and expected return for assets, particularly stocks, is represented by the Capital Asset Pricing Model (CAPM).

The CAPM is widely used in finance to value risky securities and estimate predicted return for assets given its risk and cost of capital^[4].

The capital asset pricing model (CAPM) is an imagined description of how securities are priced in financial markets, which in turn establishes expected returns on capital investments. The model offers a method for calculating expected return on equity by quantifying risk and translating that risk into estimates. The objective nature of the model's estimated equity costs is among CAPM's key benefits.

Average DELL	-0.000291727		Average S&P 500	-0.000389717
Variance DELL	0.000498271		Variance S&P 500	0.000159026
Std. DEV DELL	0.022321979		Std. Dev S&P 500	0.012610544
Drift DELL	-0.000540862		Drift S&P 500	-0.000469229
Beta using Covariance formula	0.314910456			
Slope	0.314910456			
Beta for DELL	0.93	17-Jul-22		
Rf (Risk-Free Rate)	2.92	17-Jul-22		
Rm (Market Return Rate)	5.6	17-Jul-22		
Ra (Expected Rate of Return)	5.4124			
$Ra = Rf + B(Rm - Rf)$				

Figure 2: Summary of CAPM analysis performed in MS Excel

We can see the expected rate of return for Dell is 5.4124.

The beta value accounts for the market risk and it zigs when the market zags. It is calculated by 2 methods in the excel and the final value is taken directly from the yahoo finance webpage of Dell's stock.

2.2 Ratio and Valuation Analysis

We perform Ratio analysis to understand the current status of the company as compared to the industrial standards. Valuation analysis is performed to understand the economic standing of the company. Following are the ratios that we calculated:

Profitability Ratios

- **Gross profit margin (GPM):** 0.216314229
- Operating profit margin (OPM): 0.046038914
- Return on assets (ROA): 0.059988138
- **Return on equity (ROE):** -3.30
- Return on sales (ROS): 0.046037549
- **Price-to-earnings ratio:** 5.953424658
- debt-to-equity: -15.99643917
- Forward Dividend & Yield: 1.32\$ (3.04%)

Liquidity Ratios

- **Current Ratio:** 0.8010
- Quick Ratio: 0.6961
- Cash Ratio: 0.3371

We are focusing on 4 key ratios that can be used to decide whether a person should trade in this Dell stock or not.

Profitability Ratios						
	DELL Technologies Inc.	Lenovo	Apple	HP	Industrial Average	
Gross profit margin (GPM)	21.63%	2.83%	43.75%	20.21%	32.50%	As of 2021
Operating profit margin (OPM)	4.60%	2.83%	26.41%	7.07%	20.78%	As of Jan 2022
Return on assets (ROA)	6.00%	4.69%	28.86%	16.47%	9.55%	As of Q1 2022
Return on equity (ROE)	-3.30148368	49.93%	151.24%	331.56%	0.61%	As of Jan 2022
Return on sales (ROS)	4.60%	2.83%	28.86%	3.90%	7.30%	As of 2021
Price-to-earnings ratio	5.953424658	5.7	24.51	7.65	54.17	As of Jan 2022
debt-to-equity	-15.99643917	6.92	1.78	0.43	1.01	As of 2021
Liquidity Ratios						
Current ratio	0.801	0.81	0.93	0.81	1.98	As of 2021
Quick ratio	0.696	0.64	0.88	0.50	1.24	As of 2021
Cash ratio	0.337	0.34	0.40	5.91	0.59	As of 2021

Figure 3: Calculation of all the Ratios performed in MS Excel

We can see that Dell is performing poorly in terms of return on equity, price to earnings ratio as well as current ratio even though it has a higher gross profit margin as compared to Lenovo. Apple seems to be performing the best in these 3 companies. In January 2021, the free cash flow yield for Dell Technologies fell to a five-year low of 12.4%.

3) Technical Analysis

The graph below shows the one-year stock prices as well as the change in the prices. We can see that the prices lie in the low 40's and the high 50's.

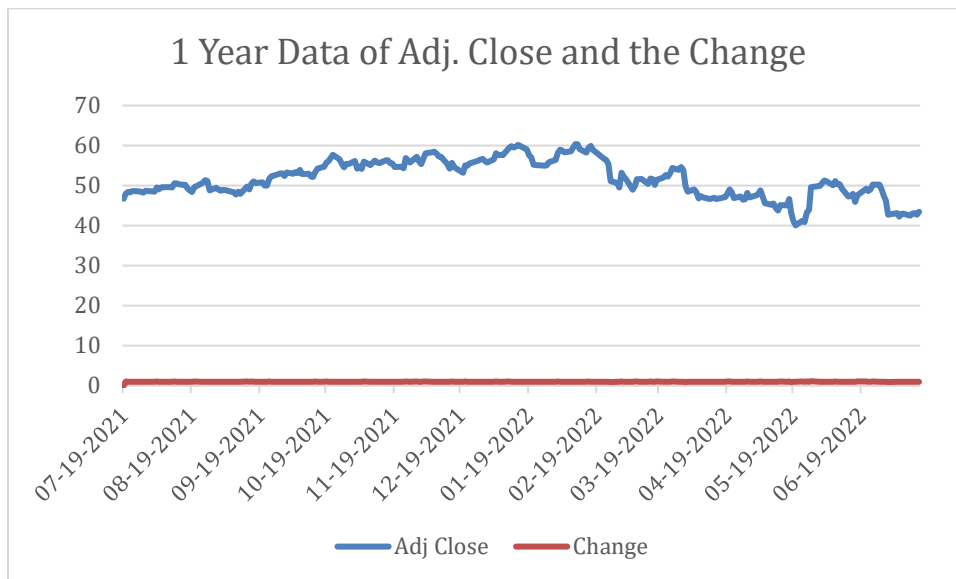


Figure 4: Adjusted Close Price and Change in the Stock Price of Dell

3.1 Bollinger Bands

Given below is the Bollinger Bands graph generated in Python. Bollinger Bands were first developed by John Bollinger.

Bollinger Bands are envelopes plotted at a standard deviation level above and below a simple moving average of the price. Because the distance of the bands is based on standard deviation, they adjust to volatility swings in the underlying price.^[5]

We can see that the moving average is closer to the lower band which suggests that the stock is performing poorly and is likely to go down in the future.

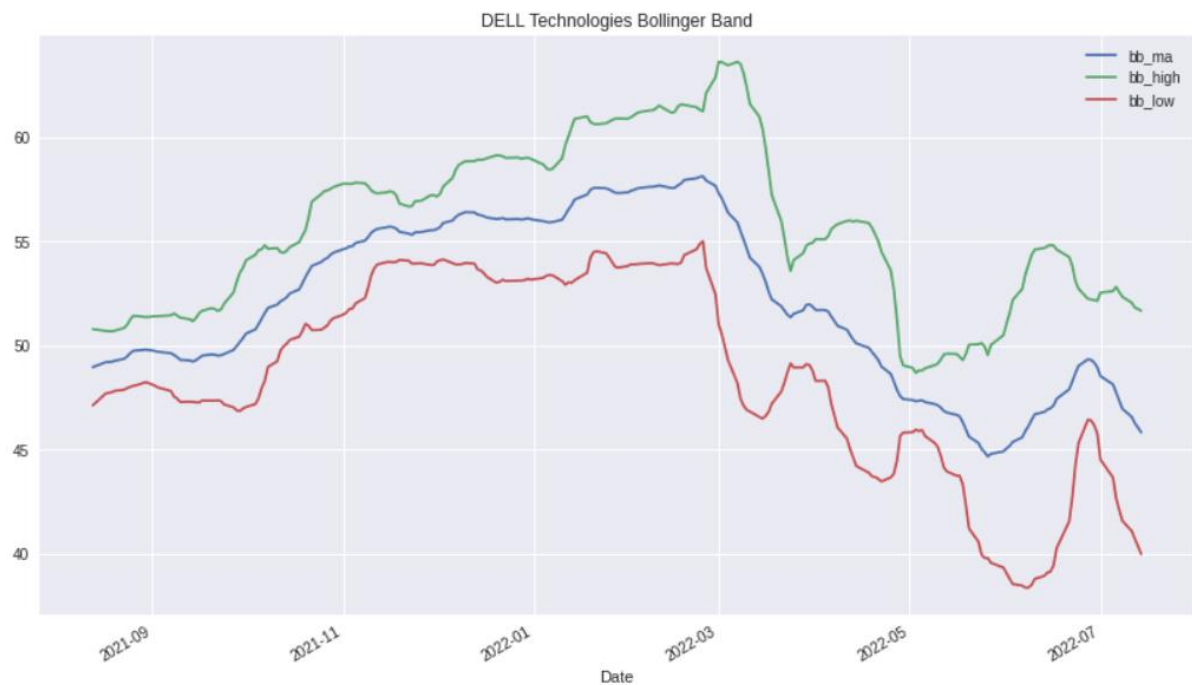


Figure 5: Bollinger Bands generated using Python

3.2 Stock Signals



Figure 6: Stock signals graph generated in Python.

This graph shows the buy and sell signals based on the stock prices of Dell in the 1 year time period that we have taken for our project.

The next signal will be buy depending on when the stock price rises and similarly the next signal after that will be sell depending on when the stock price falls because that is how the stock signals are coded.

3.3 Monte Carlo Simulation

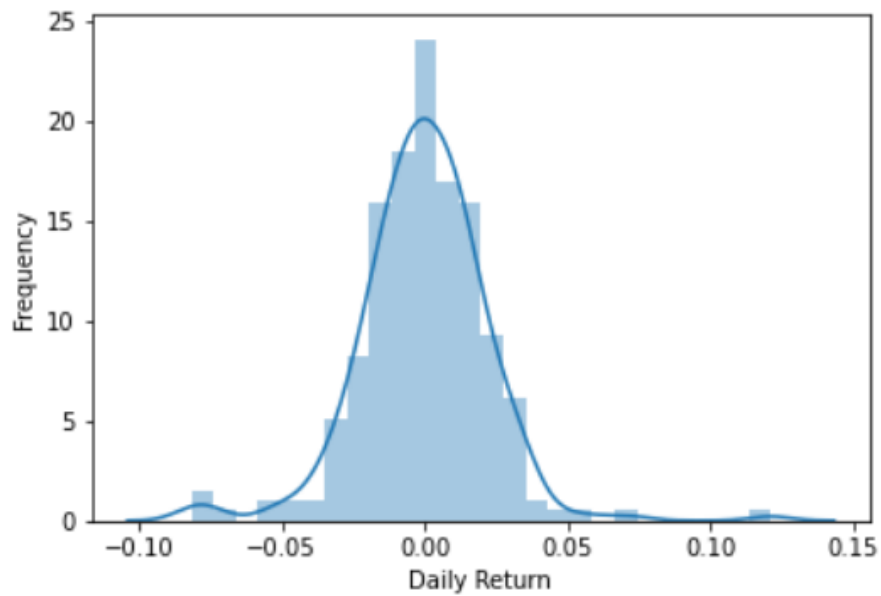


Figure 7: Dendrogram generated in Python showing the frequency of Daily returns

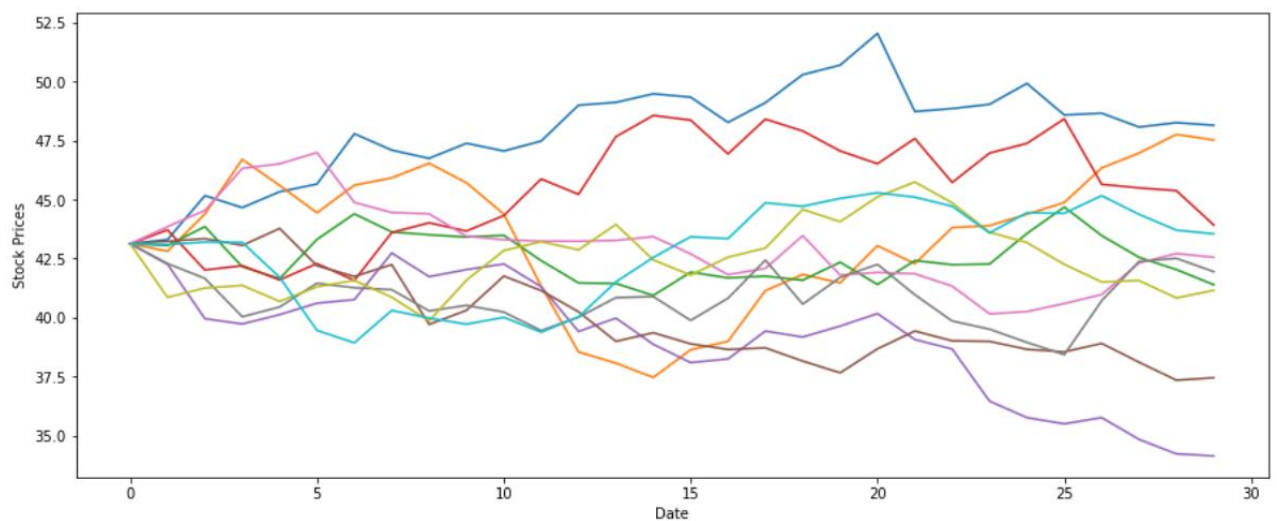


Figure 8: Monte Carlo Simulation of the stock prices for 30 days for the month of August 2022

Average	0.99995766
Standard Deviation	0.022411238
These values are imported from the sheet named DELL	
Average DELL	-0.000291727
Variance DELL	0.000498271
Std. DEV DELL	0.022321979
Drift DELL	-0.000540862
Random Value	0.012077608
Next Day's Price = Today's Price* EXP(DRIFT + Random Value)	
Next Day's Price	43.9642893

Figure 9: Monte Carlo Simulation performed in MS Excel showing the next day's stock price

The first 2 snapshots are of the Dendrogram and the line chart showing the Monte Carlo simulation of the next 30 days for Dell's stock prices performed in Python.

We can see that the highest stock price is greater than 50 and lowest stock price is less than 34.

At the same time, we can see that the Monte-Carlo analysis performed in MS Excel showed us the stock price of the next day which was 43.96 when the snapshot was taken. The value keeps changing because of the functionality of the Monte-Carlo method.

3.4 Facebook Prophet Library

We have used the Facebook prophet library to conduct analysis on the Dell's stock price for the 1 year period.

We have used the Closing price column on the y-axis and the dates on the x-axis. This analysis shows that the stock price of Dell is gradually falling even below 35 for the upcoming year.

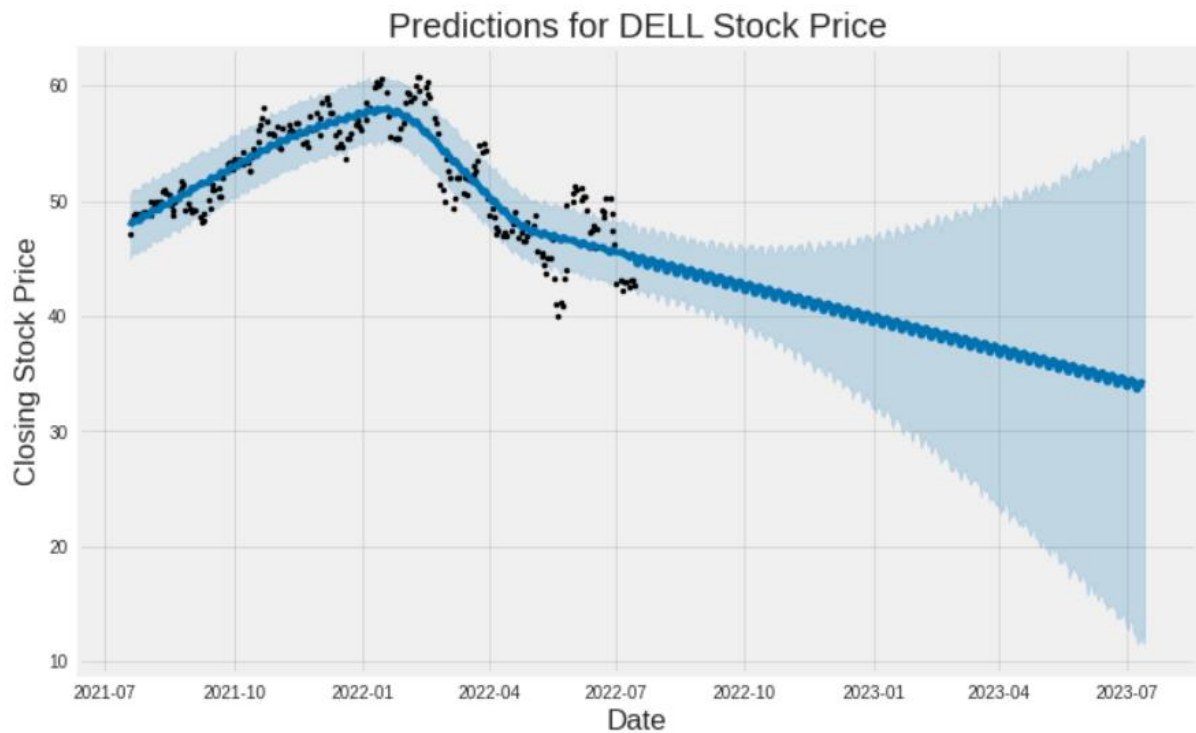


Figure 10: Predictions of the Dell stock price up till July 2023 by using FB Prophet Library

4) Analyst Recommendations

We observed that all the methods suggest one key aspect of the current status of the stock. As shown above, we could see that the stock is performing poorly. So, our recommendations are:

1) If a new trader is interested in the Dell Technologies Inc. stock:

Buying this stock right now has potential chances of inducing heavy losses to the trader. This is because the stock is at a low price relatively and the market changes are highly volatile, so it is difficult to predict if the stock price would rise.

2) If a trader had bought the stock previously:

Selling this stock right now seems to be the best option to cut losses and look for other potential stocks.

5) References

- 1) <https://www.britannica.com/topic/Dell-Inc>
- 2) [https://en.wikipedia.org/wiki/Dell_Technologies#:~:text=Current%20operations%20Approximately%2050%25%20of&text=Dell%20Client%20Solutions%20Group%20\(48,%E2%80%93%20servers%2C%20storage%2C%20and%20networking](https://en.wikipedia.org/wiki/Dell_Technologies#:~:text=Current%20operations%20Approximately%2050%25%20of&text=Dell%20Client%20Solutions%20Group%20(48,%E2%80%93%20servers%2C%20storage%2C%20and%20networking)
- 3) <https://www.dell.com/en-ca/dt/corporate/newsroom/announcements/2016/09/20160907-01.htm#:~:text=Dell%20Technologies%20serves%2098%20percent,supported%20by%20Dell%20EMC%20Services>
- 4) [https://www.investopedia.com/terms/c/capm.asp#:~:text=The%20Capital%20Asset%20Pricing%20Model%20\(CAPM\)%20describes%20the%20relationship%20between,assets%20and%20cost%20of%20capital](https://www.investopedia.com/terms/c/capm.asp#:~:text=The%20Capital%20Asset%20Pricing%20Model%20(CAPM)%20describes%20the%20relationship%20between,assets%20and%20cost%20of%20capital)
- 5) <https://www.fidelity.com/learning-center/trading-investing/technical-analysis/technical-indicator-guide/bollinger-bands#:~:text=Bollinger%20Bands%20are%20envelopes%20plotted,Period%20and%20Standard%20Deviations%2C%20StdDev>
- 6) <https://finance.yahoo.com/quote/DELL?p=DELL>
- 7) <https://research.facebook.com/blog/2017/02/prophet-forecasting-at-scale/>