UNIVERSIDADE CATÓLICA PORTUGUESA

CATÓLICA LISBON SCHOOL OF BUSINESS & ECONOMICS

Dell Technologies Inc. (DELL) Equity Valuation

Patrícia de Araújo e Sá Olaio

153921007

Dissertação apresentada para cumprimento parcial dos requisitos para obtenção do grau de Mestre em Gestão Aplicada, da Universidade Católica Portuguesa

Dissertação realizada sob orientação da do Prof. José Carlos Tudela Martins

2023

Resumo

O objetivo desta tese é fazer uma avaliação financeira com data de 31 de janeiro de 2024 das ações da DELL Technologies Inc., uma empresa com sede nos Estados Unidos que faz parte do índice S&P 500 e é cotada na bolsa de Nova Iorque (NYSE). Primeiramente foi feita uma análise ao ambiente macroeconómico e da indústria de IT, depois foi feita uma análise profunda e também financeira da empresa como um todo para se poder efetuar uma análise adequada. O principal método de avaliação escolhido foi o método de *Discounted Cash Flow* (DCF) que tem por base o desconto dos cash-flows futuros estimados pelo Custo Médio Ponderado do Capital (WACC) e a respetiva taxa de crescimento a longo prazo. Apurou-se que o valor final de uma ação é de 47,30$ em comparação com o valor de 31 de janeiro de 2023 de 40,62$, o que indica um potencial de crescimento de 16,44% desta mesma ação. Da perspetiva de um analista, dá-se assim a recomendação de *Buy* sobre uma ação da DELL Technologies Inc. Por fim também foi feita uma análise de sensibilidade em alguns fatores do modelo do DCF e realizado o modelo *Dividend Discount Model* (DDM) como forma de comparação com o método principal.

Palavras chave: Avaliação patrimonial, DELL, Computadores, Indústria de Tecnologias de Informação, IT, DCF

Abstract

The goal of this dissertation is to perform the valuation of DELL's Technologies Inc. shares on the 31st of January 2024. The company is United States based and part of the index S&P 500 in the New York Stock Exchange market (NYSE). First an analysis of the industry and the economic context the company is in was done, then a thorough analysis of the enterprise as a whole, more specifically in financial terms, in order to conduct the correct valuation. The major method chosen was the Discounted Cash Flow (DCF), that relies on discounting the estimated future cash flows by the Weighted Average Cost of Capital (WACC) allied with the growth rate. The final value calculated was $47,30 in comparison with the value on the 31st of January 2023 of $40,62, which indicates an upside potential of 16,44% of these shares. In an analyst point of view, the recommendation is to Buy for the shares of DELL Technologies Inc. At last, a sensitivity analysis was made as well as a valuation through the Dividend Discount Model to be compared with the previous method.

Keywords: Equity Valuation, DELL, IT Industry, Computers, IT, Discounted Cash Flow

Acknowledgements

The conclusion of this dissertation represents, for now, the end of the academic life, and I proudly state that I am glad I chose Católica-Lisbon.

First of all I would like to thank all my family for the support given through my master, especially my mother Teresa.

To all my colleagues at SUMOL+COMPAL and Future Healthcare for the help and assistance through out these couple years.

I cannot thank enough to my partner, Gonçalo for all the knowledge, help and hours lost discussing equity valuation.

To my all my Friends and classmates, for challenging and helping me become a better person and student.

Last but not least, a special thanks to Professor José Carlos Tudela Martins for the availability, expertise and support provided in this final project.

List of Abbreviations

APJ	Asia Pacific and Japan
APV	Adjusted Present Value Model
CAPM	Capital Asset Pricing Model
CAPEX	Capital Expenditures
CEO	Chief Executive Officer
CSG	Clients Solution Group
DCF	Discounted Cash Flow
DFS	DELL's Financial Services
D&A	Depreciation and Amortization
DDM	Dividend Discount Model
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EMEA	Europe, Middle East and Africa
EV	Enterprise Value
FCFF	Free Cash Flow to the Firm
GDP	Gross Domestic Product
IMF	International Monetary Fund
ISG	Infrastructure Solutions Group
IT	Information Technology
MRP	Market Risk Premium
NWC	Net Working Capital
NYSE	New York Stock Exchange
PC	Personal Computer
PV	Present Value
R&D	Research and Development
SG&A	Selling, General and Administrative
TV	Terminal Value
US	United States
WACC	Weighted Average Cost of Capital
YoY	Year on Year

List of Figures

Index

1. Introduction

A current topic regarding business and economics is how to create value, especially looking in a corporative perspective, how do we create value not only to the shareholders but to all the stakeholders? It is a highly debated question in which companies try to determine their worth taking in account the current position of the company in many aspects which it is involved such as economy, country basis, industry, growth and many other aspects.

This dissertation aims to answer this question, by delivering the Equity Valuation of Dell Technologies Inc. (DELL) with all things considered such as historical and future performance as well as all other important variables.

Equity Valuation can be determined by many different quantitative and qualitative methods and there are many different authors and specialists and for that reason, I conducted a Literature Review that indicates the most used methods of valuation. After this, there is explanation of all the conditions the company is embedded in, like the exposition of the industry and economics along with the description of the business itself.

The method chosen to give the valuation of this company, was the Discounted Cash Flow Method which takes into account projections of Cash Flows of the company adjusted to a specific date.

The ultimate purpose of this thesis is, performing as an analyst, to give the best estimate/projection possible and deliver, in terms of the investor point of view, a buy or sell recommendation of a DELL stock.

2. Literature Review

As said previously, valuation is a highly discussed topic, especially in Finance, regarding which method is more suitable when conducting an analysis of a company. When conducting this analysis, the investor can determine if it should sell, buy or keep a certain investment.

According to Damodaran there is intrinsic valuation and relative valuation, the first on relies on objective calculations such as Cash-Flows or other complex financial model, while the other is based in the value of comparable or similar assets/companies.

Therefore, this chapter will have the description of the four methods that I believe are more relevant and more used nowadays.

2.1 Intrinsic Valuation

The value of a company by intrinsic valuation is determined by the expected future cash flows allied with the risk of Cash flows, more precisely, the risk can be i.e., risk of capital or discount rate, growth rate and other risk factors.

Since there is no consensus on only one model of intrinsic valuation, answering question such as, which cash flows should be considered? Or which risk variables does the discount rate has? I will describe three different models of intrinsic valuation:

2.1.1 Discounted Cash Flow (DCF) Model

This model is one of the most commonly used models in valuation and it is based in the value created by the expected cash-flow from operations before interest after taxes and all company investments and it must be discounted by the appropriate discount rate (WACC), here is the simplification of the formula of this model:

$$DCF = \sum \frac{CF_n}{(1 + WACC)^n}$$

These Cash-flows are also known as Free Cash Flow to the Firm (FCFF), which can be a good measure of a company's profitability after all expenses and reinvestments, as we can see in the

formula:

$$FCFF = EBIT - Taxes + D\&A - \Delta NWC - CAPEX$$

$$EBITDA = Earning\ before\ Interest\ Depreciation\ and\ Amortization\ ;\ D\&A = Depreciation\ and\ Amortization;$$

$$\Delta NWC = Net\ Working\ Capital\ ; CAPEX = Capital\ Expenditures$$

The FCFF is also known as the unlevered cash flow and expresses the amount of cash flow available from operations for distribution to the shareholders of the company if it was an only equity financed company.

Since most of businesses are not only equity financed, the DCF uses as a discount rate, the Weighted Average Cost of Capital (WACC), which is the rate the Cash Flows will be discounted. The WACC "is the rate of return that investors expect to earn from investing in the company and therefore the appropriate discount rate for the free cash flow" (Koller, Goedhart, & Wessels, 2020), which includes the two sources of financing inhouse or out-of-house, i.e., shareholders and banks:

$$WACC = K_d \frac{D}{D+E} \times (1-t) + K_e \frac{E}{D+E}$$

$$D = Debt\ ; E = Equity\ ;\ K_d = Cost\ of\ Debt\ ;\ K_E = Cost\ of\ Equity; t = efective\ tax\ rate$$

For the definition of the value of the WACC, the cost of Debt and the Cost of Equity should be calculated first and they are explained below.

The cost of Debt should be considered by the market prices, "for a company with investment-grade debt, yield to maturity is suitable."(Koller, Goedhart, & Wessels, 2020). If the company does not have public debt, it can be measured by the default spread partnered with the comparable credit rating obtained i.e., S&P or Moody's. Lastly, if it does not have a credit rating, a synthetic rating can be estimated with the interest coverage ratio (EBIT/Interest Expense) and matched to the default Spread.

Determining the cost of equity, it is a more complex process that uses models to define the risks associated with the cash flows of the shareholders. The most frequently used model is the Capital

Asset Pricing Model (CAPM) that stipulates expected rate of return on any security equals the risk-free rate plus the security's beta times the market risk premium, according to Koller, Goedhart, & Wessels, (2020).

$$K_e = Rf + \beta \times (Rm - Rf)$$

$Rf = Risk \cdot free\ rate\ ;\ \beta = Beta\ sensitivity\ to\ the\ market\ ;\ Rm = risk\ of\ the\ market\ ;$
$(Rm - Rf) = MRP = Market\ risk\ premium$

Investors are always concerned about risk and if an investment has a higher risk, they will want a higher return in exchange. Considering this, the Risk-Free rate is the expected return of the investor on an investment with no risk, it is true that there is always risk but usually we tend to think that government bonds are the ones with less risk associated with it. For this reason for long-term risk-free interest rate, it is usually used the government bonds with maturities between 10 to 15 years, since buying shares is considered to be a long-term investment.

For the coefficient Beta, the bigger it is the more return those shares will have, in case of listed companies it can be calculated by a regression between the return on the shares and the market portfolio. To calculate the MRP we can calculate the market risk premium in a forward-looking perspective, by the connection between the share prices and the future cash flows for those shares, this method can be found in the site of Professor Aswath Damodaran.

Finally, it is mandatory to calculate Debt and Equity by market values in order to use the appropriate Debt and Equity weights in the WACC calculations.

For the market value of Debt we shall use the following formula:

$$Market\ Value\ of\ Debt = I \times \left[\frac{1 - \frac{1}{(1 + K_d)^t}}{K_d}\right] + \left[\frac{FV}{(1 + K_d)^t}\right]$$

$I = Interest\ expense\ ; K_d = Cost\ of\ Debt\ ;\ t = Weighted\ average\ maturity(in\ years);\ FV = Total\ Debt$

In terms of the market value of Equity we should look at the company's outstanding shares and multiply them for the value of the share.

The Terminal Value (TV) appears after the last year of forecasted Cash Flow, that is, after doing all the calculation for the estimated cash flows for a specific period. It is important to calculate the following years, or else we would be saying that after that period of time the company would close, so the terminal value allows the perpetuity of the company after the forecasted cash flows are estimated. There are some assumptions that are made to calculate the TV, or else it would be an inaccurate way to make the valuation of a company, here is the formula:

$$TV_n = \frac{FCFFt \times (1+g)}{WACC - g}$$

$$g = growth\ rate$$

With the Terminal Value included in this model, the final Formula for the DCF model can be computed as the Value of the company, as known as the Enterprise Value:

$$EV = \sum_{1}^{n} \frac{FCFF_n}{(1+WACC)^n} + \frac{FCCF_n \times (1+g)}{WACC - g} \times \frac{1}{(1+WACC)^n}$$

There are several advantages to choosing this method, since is a forward-looking model that focus on the forecasted Cash flows, where you can hypothesize many scenarios according to the investment options, finally it also incorporates perpetuity and specific risk of each company.

This model brings of course some disadvantages, since all the assumptions made are exposed to errors and can be misleading, especially in instable business models or markets.

2.1.2 Adjusted Present Value Model (APV)

It is discussed by many specialists that the Adjusted Present Value Model ought to be used only for companies that have an extreme level of debt or if the level of leverage is changing a great deal during a cycle. If the Debt/Equity changes a lot then the Kd, Beta and Ke will change as well as the WACC, making the computations of valuation through the DCF model extremely challenging.

When using the APV we start by calculating the value of the enterprise as if it were only equity financed, moreover without debt to non-shareholders, and then we calculate the value created using leverage such as subsided financing, tax shields and many other:

$$APV = PVof\ Unlevered\ Firm + PV\ of\ Financing\ Effects$$

The advantages of this model as previously stated is that is more flexible when regarding a significate change of leverage, but this method does not represent taxes or other financing effects in the discounted rates as Luehrman (1997) describes.

2.1.3 Dividend Discount Model

The Dividend Discount Model has the model itself is called is dictated by dividend, which is the income distributed to shareholders in a specific time, and this model formulates that the value of a company in calculated as the present value of the future dividends as formulated in (Gordon, 1959):

$$DDM = \sum_{1}^{n} \frac{DPS_n}{(1+r)^n} + \frac{DPS_n \times (1+g)}{(r-g)} \times \frac{1}{(1+r)^n}$$

$$r = estimated\ cost\ of\ equity\ capital -\ in\ CAPM\ K(e);\ g = growth\ rate$$

Also, as the DCF model, DDM is also based on many assumptions of the future that can also be incorrect or biased, and since there are less assumptions made, it can be extremely beneficial or a very unfortunate valuation due to errors in the assumptions.

Some companies are very conservative regarding dividend payments which automatically can lead to very low valuation by using this model and the exact opposite can also happen when a company always distributes many dividends and ultimately ends up issuing more debt to pay these dividends because Cash Flows of the operation are insufficient, which will lead to a very overestimated valuation of a company.

This method can be a good method to use in very specific scenarios i.e., where the company distributes all the free cash-flow as dividends or shares repurchases or if the prediction of the future is very difficult especially in calculating cash-flows.

2.2 Relative Valuation

The relative valuation does not lie on what a company generates itself but with the comparison with other companies that are similar.

2.2.1 Multiples Model

This method is extremely liked between decision makers because it is very simple to understand, easy to use and comparable to other companies.

In this methodology it is very important to define well the peer group, we should always try to build a peer group that is more suitable and comparable to the company chosen, by looking at size business areas/markets, ratio D/E, and specially to profitability or growth rate.

Multiples can be used historical ones which are more secure, but it is recommended to use forward-looking multiples since a valuation of a company is about the future, it is also vital to choose the right multiples and peers as reported by Goedhart, Koller, & Wessels (2020).

The most commonly used multiples are PER (Price to Earnings Ratio) because it links the company value to profit and is very easy to calculate for most companies and also Enterprise Value multiples such as EV/EBIT or EV/EBITDA as stated in Fernández (2007).

3. World Economic Overview

The last few years were scarred with restrictions and constraints from the pandemic Covid-19, in the year 2021 the economy seamed to begin to recover from this calamity, and reach a GDP growth worldwide of 6%, according to the International Monetary Fund, with 5,7% solely in United States.

The year 2022 ended with a GDP Growth of 3,4% and it is significantly lower in comparison with the previous year, it is being recognized that only now we are experiencing a slowdown in economies, like a post Covid-19 aftermath which is something the economists predicted.

The rise of and costs of living and Inflation will mark the year 2022 and 2023 not only because of the pandemic but also due to Russia's invasion of Ukraine, which will ultimately inhibit the countries worldwide to continue to grow as it is projected in the Figure below:

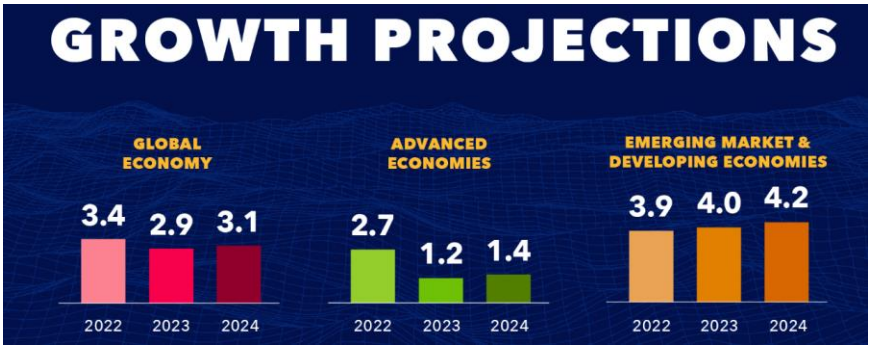


Figure 1 - World Growth Projections 2022-24

Source: IMF

Considering all these factors in the near future it is important to keep investing the resources in the right segments and proceed with cautious in order to keep delivering the same added value to all the stakeholders of the enterprise.

4. Industry Overview

The industry DELL is part of is a wide Industry that is called the Tech Industry, to be more specific, the Information Technology (IT) Industry, and in 2022 it was worth 4,4 trillion USD. When referring to the IT Industry, we will be talking not only about Hardware from sales in Personal computers, tablet's or desktops but also about software and other service solutions.

As there was the industrial revolution, later on, the technologies revolution happened. In this era the computers, cellphones and many other devices were developed along with software that fulfilled new needs for its customer. It is crucial to keep in mind that this industry feeds on knowledge and innovation, so in order to survive and keep revenue streams it is extremely important to invest wisely in Research and Development (R&D).

This industry is important across all companies and through all the levels of the organizations, it is impossible to think of progress and improvement without technology allied to it.

For a long time we have heard that IT is the future and I agree with it. We can see it in our daily-day life, not only in more tech related job applications and courses but also with everything we use from the coffee machine to the computers we use at work.

Even though Covid-19 made many companies reduce spendings in IT and new technologies, many others had to make an investment in hardware, data center, clouds and other related IT services in order to keep the organization flowing, especially because of adaptation to remote work, which led to a higher overall spending in IT in 2021 and 2022 than what we could have anticipated. According to Statista it is forecasted that the Information Technology spending worldwide continues to grow having a 3% increase of 2022 in comparison with 2021 and will continue to increase in 2023.

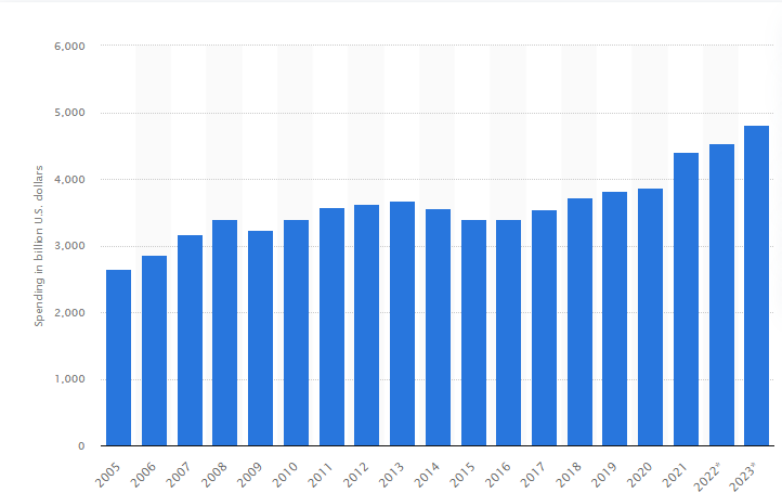


Figure 2 - IT Spendings Worldwide

Source: Statista

As demonstrated in the image bellow, the IT industry grew 47% during the 1st quarter of 2020 and 2022 but falls short in comparison with other digital economy activities, as reported by the U.S. Department of Commerce Bureau of Economic Analysis and detailed in the Comptia's IT Industry Outlook 2023.

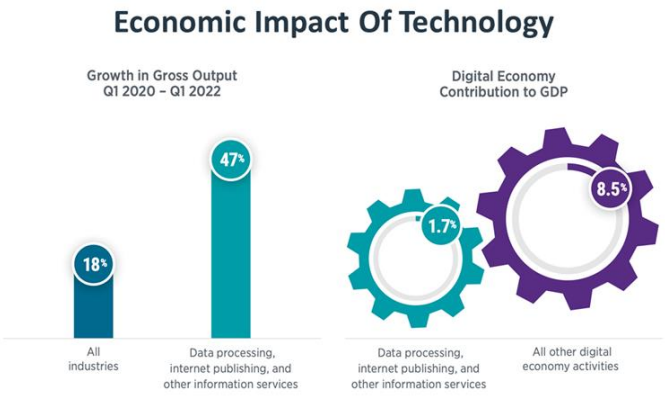


Figure 3 - GDP Growth by output (Q1 2020 to Q1 2022)

Source: Comptia (IT Industry Outlook 2023)

According to Gartner, IDC estimation, the total Global spending projection for IT in 2023 will increase 5,1% over 2022, reaching 4.6 trillion US Dollars. The Segments are illustrated by the image bellow:

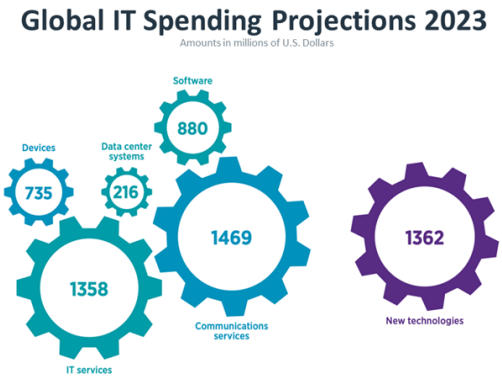


Figure 4 - Global IT Spending Projections 2023

Source: Comptia (IT Industry Outlook 2023)

Looking to these segments it is important for DELL to focus on IT services and New Technologies delivered to enterprises as well as to continue to provide exceptional devices, data center systems and software to existing and future customers.

According to Mckinsey forecast, data center consumption in the United States will increase about 10% a year till 2030.

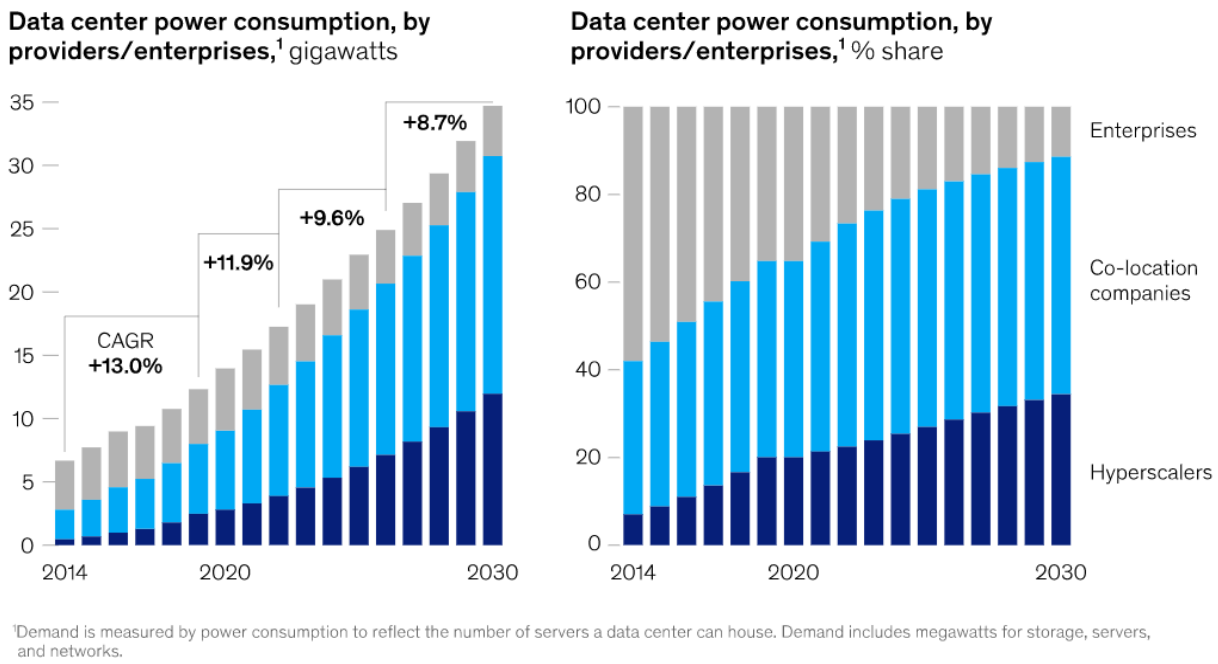


Figure 5 - U.S. Data center consumption (2014-2030)

Source: Mckinsey

Through a global perspective, IDC indicates that software revenue growth will vary from 10 to 12% in the next few years:

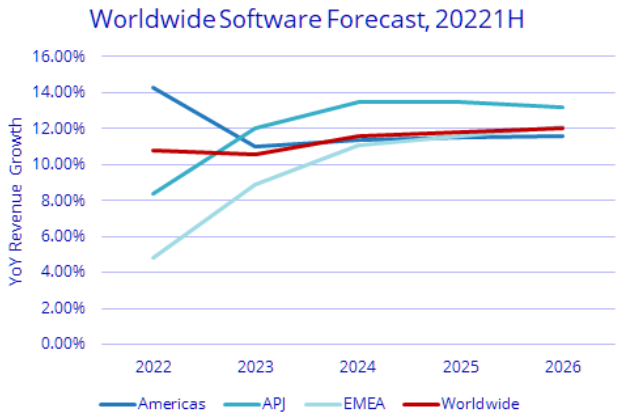


Figure 6 - Worldwide Forecasted Revenue Growth in Software (2022-2026)

Source: IDC

In terms of Hardware solutions, for PC's the worldwide CAGR is forecasted to be 0,1%, as can be seen in the figure below:

Worldwide Personal Computing Device Forecast by Market Category, Shipments, Year-Over-Year Growth, and 2022-2026 CAGR (shipments in millions)

Market Category	2022 Shipments	2022/2021 Growth	2026 Shipments	2026/2025 Growth	2022-2026 CAGR
Consumer	265.3	-9.8%	260.3	0.5%	-0.5%
Enterprise	56.3	-4.0%	62.1	0.8%	2.5%
Public Sector	67.4	-22.6%	65.5	1.1%	-0.7%
SMB	67.9	-13.4%	71.1	0.5%	1.2%
Total	**456.8**	**-11.9%**	**459.0**	**0.6%**	**0.1%**

Figure 7 - PC's Shipments World Forecast

Source: IDC

5. DELL 's Business Overview

DELL Technologies Inc (DELL) is a U.S. based Technology company that sells IT product and services, from hardware such as PC's to Cloud data servers to its customers.

The company's Statement of purpose is to help organizations to develop, by transforming the way they work and build their digital futures with innovative solutions and also including traditional infrastructure and better multi-cloud options in the industry it is integrated in.

DELL was founded as PC's Limited in 1984 by Michael DELL, which is still CEO and chairman of the company. Nowadays employs about 133,000 people, has more than 20 manufacturing locations (9 of them owned) and operates with 180 locations worldwide.

The company is known for making a lot of acquisitions, specially of small or with added value IT companies, and by adopting this strategy it helps the company to keep innovating in all areas and deliver a good product/service to its customers. One of the most known acquisitions was EMC Corporation that occurred in 2015 and in 2021 DELL completed the spin-off of one of its companies VMware, which was previously one of the business units of the enterprise.

In 2022 the value invested in R&D was 2,6 billion along with 26,189 total patent/patent applications which allies with company's strategy of continued innovation and improved technology.

The company is leader in particular businesses of the company, for example in North America in Desktops, High-End PC Gaming, Storage Software or Server Units.

Taking all this to consideration, this makes the company maintain the position and recognition of one of the largest Tech Companies of the world.

Figure 8 - 4Q22 & 4Q21 Companies PC Shipment Share (Worldwide)

Source: Gartner

According to figure above, Dell's market share in worldwide PC shipment has decreased 2% from 2021 and 2022 but continues to be in third place as one of the PC providers in the world, after Lenovo and HP Inc.

In terms of geographical locations, more or less half of the revenue is from the U.S. and the other half is distributed to all the other geographical such as Europe, Middle East, Africa, Asia-Pacific and Japan, also known as EMEA and APJ Areas.

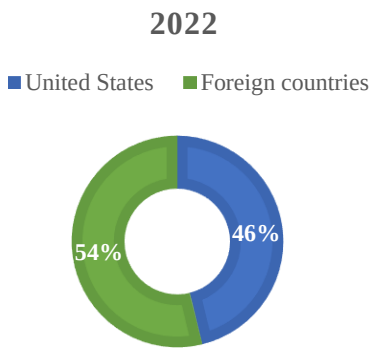


Figure 9 - Revenue by Area - 2022

Source: Author

In terms seasonality, sales tend to be higher in 3rd Quarter in United States, while in the 4th and Final Quarter sales are higher in Europe, the Middle East and Africa.

The annual reports are issued with final date of the end of January, in 2022 the revenue was 101,2 billion US Dollars up 17% from 2021, with gross margin of 22% and you can see the evolution of the company's revenue of the past 5 years in the following graphs:

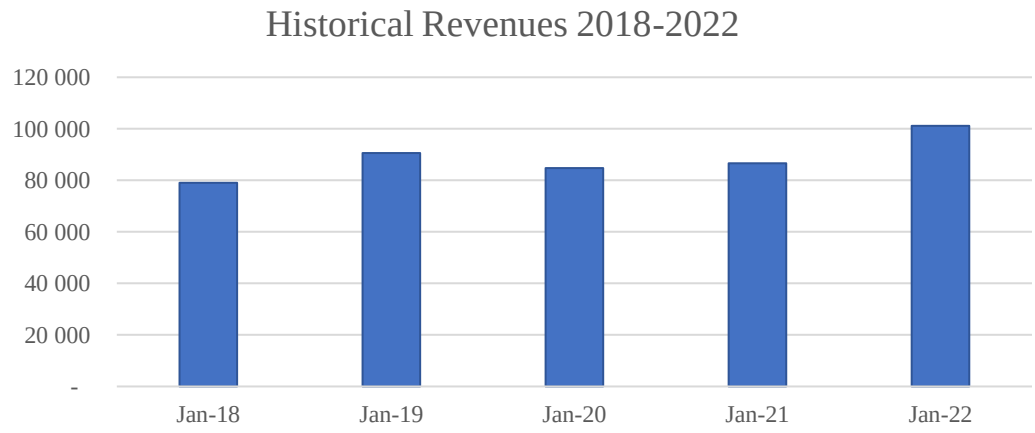


Figure 10 - Historical Revenues (2018-2022)

Source: Author

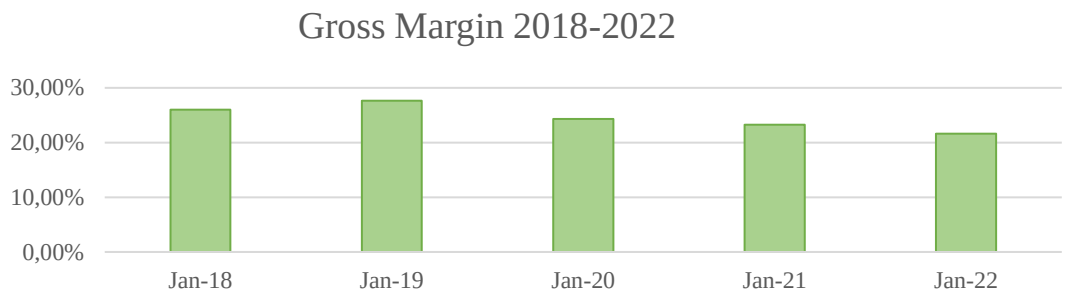


Figure 11 - Historical Gross Margin (2018-2022)

Source: Author

DELL's Vision and Strategy

The core objective of the company is to "to become the most essential technology company for the data era" (2022 10-K Report), translating this, is to become the main company delivering the best IT products and services by reaching all client's needs and digital transformation in this multi-cloud environment.

As mentioned in the Industry Overview, DELL is aware that with the acceleration of the IT Industry they have to invest and modernize the commodities offered. As well as to pursue innovative technologies such as "Edge, Telecom, data management, and as-a-Service consumption models"(2022 10-K Report).

The company has a unique position and has a huge potential to develop even more in data and multi-cloud solutions, offering competitive advantages to its customers as a Worldwide and diversified company.

DELL is a very customer-oriented company and understands that aligned with knowledge they can deliver superior services and products through investing in the customer relationship and offering broad solutions from financial services to cloud storage services.

Business Units

Since the VMware Spin off, DELL has two segments in sales revenue the Infrastructure Solutions Group (ISG) and the Clients Solution Group (CSG).

The ISG business unit helps customers with digital transformation, which it helps to build the business with the right tools, such as Big-data and Multi-Cloud solutions, giving current or traditional ways of storage as well as next generation solutions. In 2022 the revenue was 34.366 million dollars with a 4% growth in comparison to 2021.

The CSG business unit embraces the typical hardware necessary, such as notebooks, Desktops, or workstations, and also all the peripherals including software, allowing client to have a product manageable beginning to end, from workstations to configurations or warranty services. From 2021 to 2022 the revenue increased 27% reaching 61,464 million dollars.

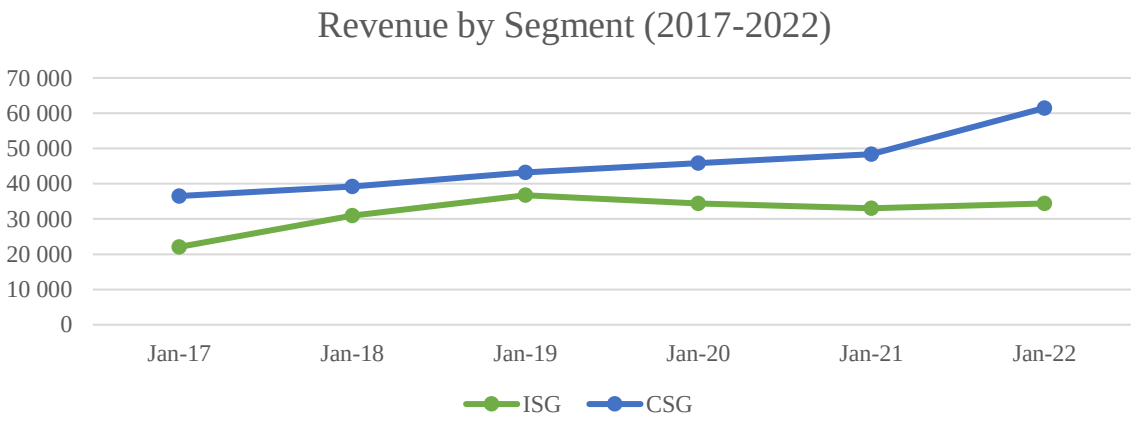


Figure 12 - Revenue by Segment (2017-2022)

Source: Author

Management

The CEO and Chairman continues to be Michael DELL, even though from 2004 to 2007 he decided to abandon this role. He returned and continues to have a big impact in the company's decision, he is also chairman or in the Administration of other companies of the Group.

Here are the executive officers that were appointed by the board of directors:

- Michael S. Dell, 57 years, Chief Executive Officer and Chairman;
- Jeffrey W. Clarke, 59 years, Co-Chief Operating Officer and Vice Chairman;
- Allison Dew, 52 years, Chief Marketing Officer;

- Howard D. Elias, 64 years, Chief Customer Officer and President - Services and Digital;
- Richard J. Rothberg, 58 years, General Counsel;
- Jennifer D. Saavedra, Ph.D., 52 years, Chief Human Resources Officer;
- William F. Scannell, 59 years, President, Global Sales and Customer Operations;
- Thomas W. Sweet, 62 years , Chief Financial Officer;
- Anthony Charles Whitten, 45 years, Co-Chief Operating Officer.

Shareholders and Stocks

The company is public traded company, listed in the New York Stock Exchange (NYSE) and part of the NASDAQ-100 and S&P500, and most of shares are owned by the Institutions as the graphic below demonstrates:

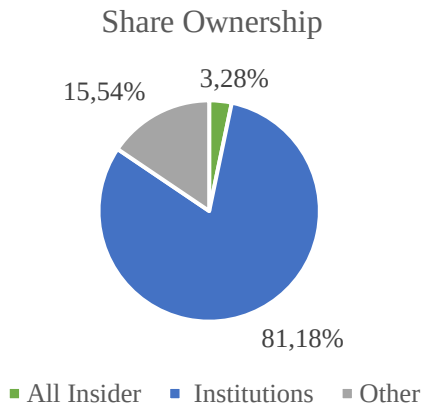


Figure 13 - Share Ownership

Source: Yahoo Finance

According to the 3rd Quarter Report of 2023, the company on 30th November 2022 had 716,128,296 shares of the registrant's common stock outstanding, containing 242,297,546 of Class C Common Stock, 378,480,523 of Class A Common Stock and 95,350,227 outstanding shares of Class B Common Stock.

The difference between each holder of stock is that Class A and B is entitled to ten votes per share of while Class C is entitled to only one vote per share. Under Conversion Rights owners of Class A and Class B Stocks have the right to convert in a one-on-one basis any share into Class C. There were no conversions of shares during the first 3 quarters of the Fiscal Report year 2023.

In September 2021, the DELL's Board of Directors authorized a program of repurchase of stock to a maximum of 5 billion of Class C Common Stocks shares with no fixed expiration date and by the end of the 3rd Quarter of 2023, the company repurchased approximately 59 million shares with a total purchase price around 2,7 billion dollars.

On 30th December of 2022 it was reported that this were Top Major Holders of Shares:

Holder	Shares	% Out	Value
Blackrock Inc.	20 573 498	8,49%	844 027 786
Dodge & Cox Inc	19 217 959	7,93%	788 416 797
Vanguard Group, Inc. (The)	16 254 346	6,71%	666 834 569
Temasek Holdings (Private) Limited	8 848 147	3,65%	362 995 244
State Street Corporation	6 407 020	2,64%	262 848 005
Lsv Asset Management	6 054 175	2,50%	248 372 538
Citadel Advisors Llc	4 522 089	1,87%	185 518 708
Point72 Asset Management, L.P.	4 508 189	1,86%	184 948 460
AllianceBernstein, L.P.	4 455 651	1,84%	182 793 089
Millennium Management Llc	4 235 025	1,75%	173 741 907

Figure 14 - DELL's Major Holders

Source: Yahoo Finance

Dividend Policy

On February 2022, the company declared to have adopted a dividend policy that intend to pay quarterly based dividends at 0,33 dollars per outstanding DELL Common Stock. After 9 months of the Fiscal 2023 year the following dividends were paid:

Declaration Date	Record Date	Payment Date	Dividend per Share	Amount (in millions)
February 24, 2022	April 20, 2022	April 29, 2022	$ 0.33	$ 248
June 7, 2022	July 20, 2022	July 29, 2022	$ 0.33	$ 242
September 6, 2022	October 19, 2022	October 28, 2022	$ 0.33	$ 238

Figure 15 - Dividends Paid 2022

Source: DELL (10-K Report)

Corporate Social Responsibility (CSR)

DELL as a large company with 133k employees and with presence in 180 locations all around the Globe, it is responsible for a big ecosystem, including the environment and communities is inserted in. Because of that, the company has defined 4 main pillars they are focused to address in terms of Social Responsibility which are in 2022 10K Report and resumed bellow:

- Advancing Sustainability – keep on valuing the planet and it's ecosystems, trying to minimize as possible the impact of the company's footprint of the global supply chain and with the highest standards in ethics and sustainability.
- Cultivating Inclusion – practicing inclusion and diversity in the workforce, especially leadership positions and also in the global customer base, believing that could help the company to be richer and more innovative.
- Transforming Lives – by addressing many social and fundamental human rights such as education, health and economics with the help of technology to achieve the highest human potential.
- Upholding Ethics and Privacy – establishing strong core values of integrity, ethics and privacy as a foundation of the business and culture, to reach a positive social impact.

Last but not least to plan address the Climate change issue and make all efforts to safe keep our communities and planet, especially with greenhouse emissions linked to the manufacturing and supply of the products.

Porter's Five Forces Analysis

Competition in the Industry – High

In terms of Hardware there are many competitors that offer similar value proposition as DELL like HP or Lenovo, these competitors have a good reputation within the industry, and it is important to keep looking for the value-added DELL can provide to its customers.

In terms of peripherals and software solutions there are many companies that can offer the same solutions as the company, especially smaller companies that can develop innovative features.

For that reason, DELL continues to invest in acquisition and knowledge of new and innovative oriented companies. If we can buy a future competitor and have it as our ally, why not?

Threat of New Entrants – Low to moderate

For PC's, workstations and other products, there is a very low threat of new enters since this is a mature marketplace that focus a lot on reputation and brand awareness, so, a new party to enter will not have price bargaining power neither the reputation. As mentioned before, for all the software improvements, as big data, cloud services and such there is a moderate threat to new entrants because of smaller companies and start-ups that can focus mainly in achieving a product/service more innovative/practical. In the end reputation also acts, because organizations that want to invest in IT, which usually will involve great amounts of cash, in order to be safe they tend to invest with bigger IT companies believing they will be more secure than new companies.

Bargaining Power of Buyers – Low

A lot of the products/services that the company has to offer are extremely good solutions and tend to help its customer to achieve the best results allied with innovation and design. This makes DELL a reliable company, although there is competition, the power of bargaining is low. The company also has been focusing a lot more in customer service, making its clients more satisfied with solutions provided and addressing all errors or complaints, giving the buyer less power in negotiations.

Bargaining Power of Suppliers – Low to Moderate

During Covid-19 there were visible problems with suppliers and logistics, which made companies realize how dependent they actually were from their suppliers.

For hardware products, DELL has a policy of low stocks which makes them very dependent of the suppliers for production to happen and to get it shipped to the customers, but at the same time there are many suppliers available.

Looking to software and other IT solutions, the company has a huge R&D development and invests in the company resources which provides a very low dependance with suppliers because suppliers are mostly indoor.

Threat of Substitute Products – Moderate to High

The IT industry is a fast-growing industry where only the companies that can innovate in a good pace to meet customer's needs have the ability to keep a steady revenue stream.

This area has become very popular and with more companies rising, more people invest time in this type of services/products, so at any given point a new revolutionary product can appear i.e., a new type of concept of workstations that eliminates completely what is used nowadays. That can happen in every product and tech is perceived as the "future" and allied with a strong competition can be a recipe for disaster.

DELL has to strongly keep an eye in progression and in innovation of substitute products/services, since IT companies seem to keep growing or arising.

Other Risk Factors

There are other risks that DELL has to be aware of, such as, Climate Change, where the company has a plan to reach net zero commissions by 2050 and feels responsible with direct and indirect greenhouse emissions and footprint.

In terms of human Capital Management, they are focused on the values of the company, making the employee feel valued, engaged and inspired to do his best work as well as inclusivity and

diversity, which is a big topic right now.

Lastly, there is a big concern in social impacts like sustainability in the business ecosystem, addressing societal challenges as health, education or economics and still continuing to do it with the right Ethics and Privacy.

Historical Financial Information

In order to have a better sense of what can happen in the future it is important to look to the performance of the company over the last few years as well as to which company measures are being implemented. For this reason, it was taken into consideration the 10-K Reports of the last 5 years, taking in special attention to the Report of 2022.

As previously mentioned, the report date is the last day of January of each year so when referring i.e., to the report 2022, the output is mainly about the 2021.

According to *Figure 8*, we can see that DELL has been thriving in the last years since the EBITDA has grown consecutively and they have been able to lower the Depreciation and Amortization (D&A), achieving a higher Operating Income through time:

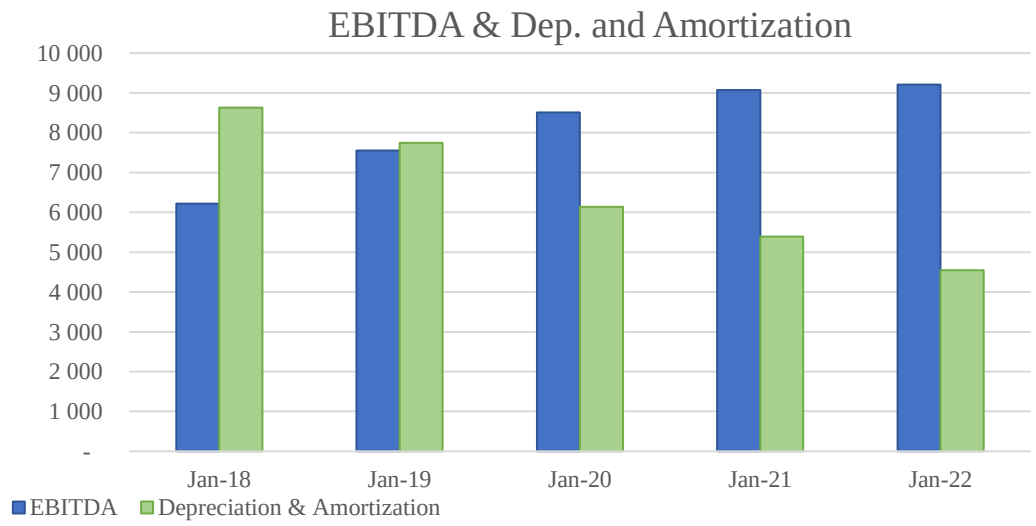


Figure 16 - Historical DELL's EBITDA and D&A (2018-2022)

Source: Author

In the last report (2022) it is mentioned that in November 2021, the company completed the spin-off of VMware, Inc. (Vmware), which for many years has been one of the reported segments of revenue, and in the 2022 report is named as part of discontinued operations.

Related to the sale of Boomi Inc. and related assets, the company received around 4 billion U.S. Dollars in cash in October of 2021.

For these reasons, DELL was able to pay-off part of the contracted debt, "With the proceeds from the VMware Spin-off and cash on hand, we were able to make steady progress in paying down our outstanding debt throughout Fiscal 2022" (DELL's 10- K Report 2022) as it can be seen in the Figure below, where the company as reduced its debt to almost half in the last 5 years reported:

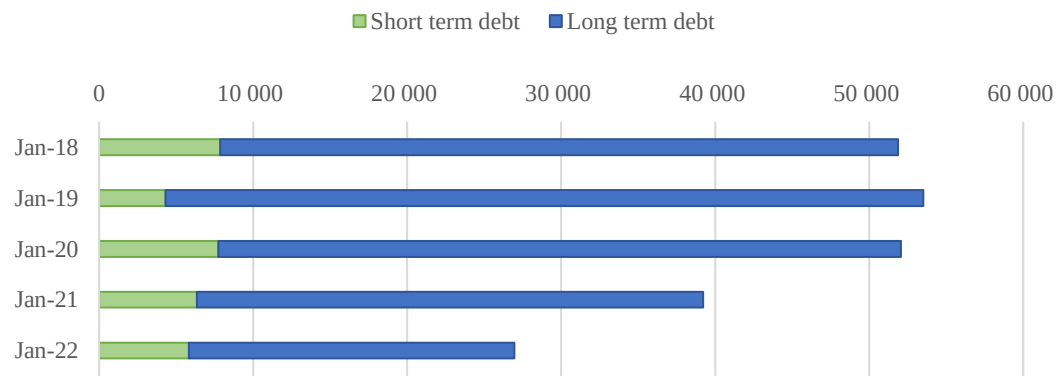


Figure 17 - Book Value Debt (2018-2022)

Source: Author

As a result of this debt reduction over the years it enabled the company to achieve an investment grade rating of BBB from three major credit rating agencies.

Due to the COVID-19 the company continued to experience direct impact mostly in supply chain constraints, more over "The supply chain impacts led to an increase in orders pending fulfillment and extended lead times for our customers" (DELL's 10- K Report 2022).

In the Appendixes it is possible to see the evolution in other financial aspects, such as Balance sheet or Income Statement.

Chosen Valuation Method

Considering all that is detailed in the Literature Review and after doing the Industry and DELL's Business Overview the method chosen for this Equity Valuation is the Discounted Cash Flow due to many factors:

- This method is a commonly used in Equity valuations of larger and established companies;
- DELL is a matured company in the IT Industry and has a significant portion in revenues across the globe;
- In the latest years the company has had positive cashflows, enabling the projection of the future cash flows (FCFF);
- The company historically has slight differences in Debt-to-Equity ratio values, but it is expected for the next few years to maintain the same market values so we shall use the same discount rate, the WACC, and the DCF model can be used properly.
- There are no comparable peers in both segments where the company operates, making it difficult to use The Multiples Method;
- Finally, The Dividend Discount model is not an excellent choice because the only value considered is mainly the dividend which is quite stable for DELL, while operational values and investments tend to vary along time.

6. DELL's Valuation - DCF Valuation

Since the valuation of company must be made for a future date of share price, this valuation aims to obtain the Present Value of the FCFF on January 2024, since the report regarding the Fiscal Year of 2023 has not been released yet, there were forecasted 6 Fiscal years (2023 to 2028) where 2023 and 2024 values are not included in the PV of the valuation but ought to be done in order to achieve the following years financial statements.

6.1. Main Assumptions

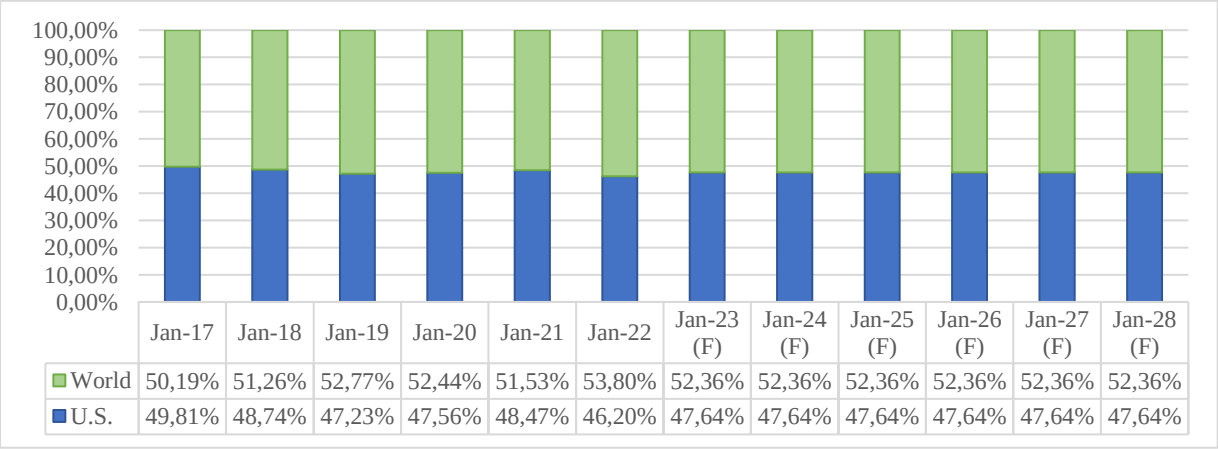
After doing the analysis of the company as whole and all the conditions it is embedded in, such as macroeconomics, industry, and main strategies for the future of DELL, it is important to start the projections for the years to follow.

In order to perform the best valuation through the DCF model, we need to look to the historical consolidated financial statement reports, which were previously and briefly exposed in the chapter Historical Financial Information and in the Appendixes are presented along with the Forecasted Financial Statements in order to see it in a more integral perspective.

Afterwards we need to start making the rules/ideas for the future years that will be included in the DCF model. These main assumptions are the rules of the important items for the valuation that will be described in the next chapter, all the other items can be seen through the Appendixes.

6.1.1 Revenues

Revenues of a company are highly influenced by the inflation of the geographical sites the company has sales in, and for that reason all the computations made are done according to the percentage of revenues per area. Since the % of revenues per area as change over the last 5 years (2018 to 2022), as illustrated in the *Figure 9*, for the forecasted periods it was assumed an historical average of the 47,64% for United States and 52,36% of Foreign Countries, as in all the other countries beside U.S..



	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)
World	50,19%	51,26%	52,77%	52,44%	51,53%	53,80%	52,36%	52,36%	52,36%	52,36%	52,36%	52,36%
U.S.	49,81%	48,74%	47,23%	47,56%	48,47%	46,20%	47,64%	47,64%	47,64%	47,64%	47,64%	47,64%

Figure 18 – Historical and Forecasted Geographical % Revenues

Source: Author

The inflation forecasts retrieved from the International Monetary Fund (IMF) and used in the calculations was only United States since the values are in US dollars and variations in other currencies are already accounted for.

The year used was the year of the report minus one, since the report of January 2023 reflects mainly the Inflation that occurred in 2022:

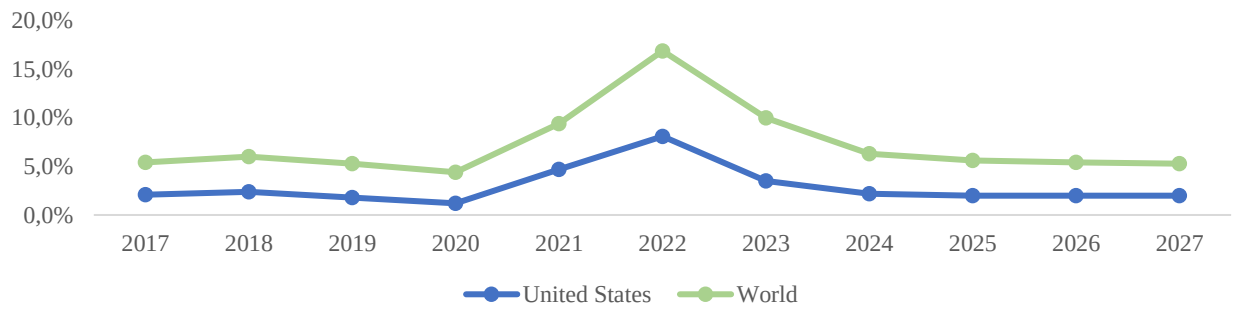


Figure 19 - Inflation by Area (2017-2027)

Source: IMF

The revenue assumption for the Segment ISG was based on the last 4-year average percentage of Growth year-on-year (YoY) and to industry predictions of data center/software per type of Product in order to be closer to industry predictions. For the Segment CSG it was also a 4-year average percentage of Growth but from 2018-2021 per type of Client and also the industry outlook for hardware which is especially low in PC's shipments in 2022 but with inflation the growth will result in 0%. The following years were assumed values closer to the industry predictions, all the years not accounted for the assumption are defined as outliers.

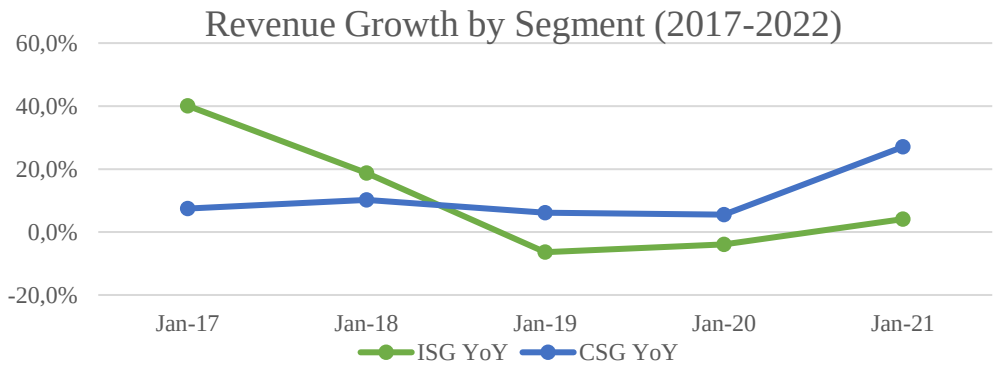


Figure 20 - Historical YoY Growth by Segment

Source: Author

For other businesses that Dell owns a 5-year average was made for the forecasted periods, Vmware was not accounted since the spin-off already occurred and all other small impacts were based on the nominal value of 2022.

By aggregating all the revenues mentioned, the total revenue has been computed, and it was divided by the 5-year historical average percentage of Products and Services, all these assumptions are described in the Appendixes.

6.1.2 Main Costs

For the cost of net revenues, the forecasted assumption was by the average historical percentage of net revenue of Products and Services, having into considerations to not include outliers, mainly because of the recent growth and competition in Information Technology services.

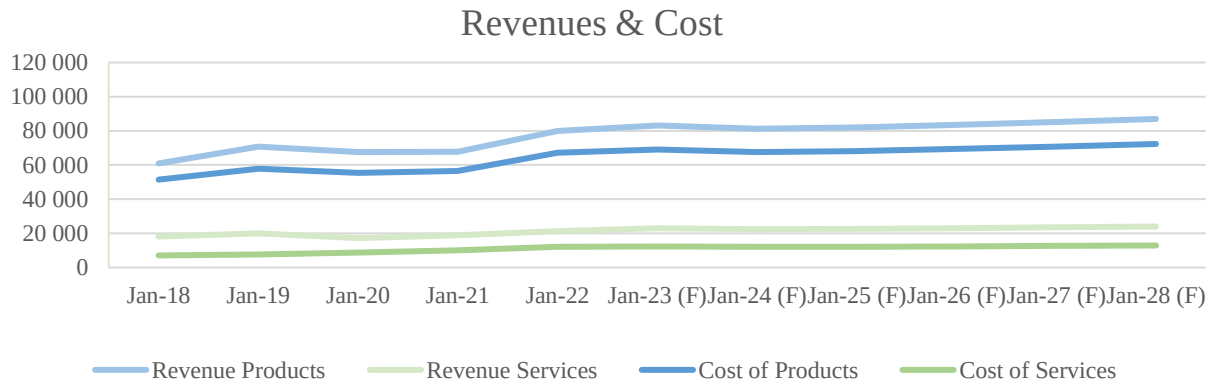


Figure 21 - Historical and Forecast Revenue & Costs

Source: Author

Looking to Selling, general and administrative (SG&A) and R&D Costs, it was used the last three-year average since, 2018 and 2019 are considered as deviations for the forecasted values:

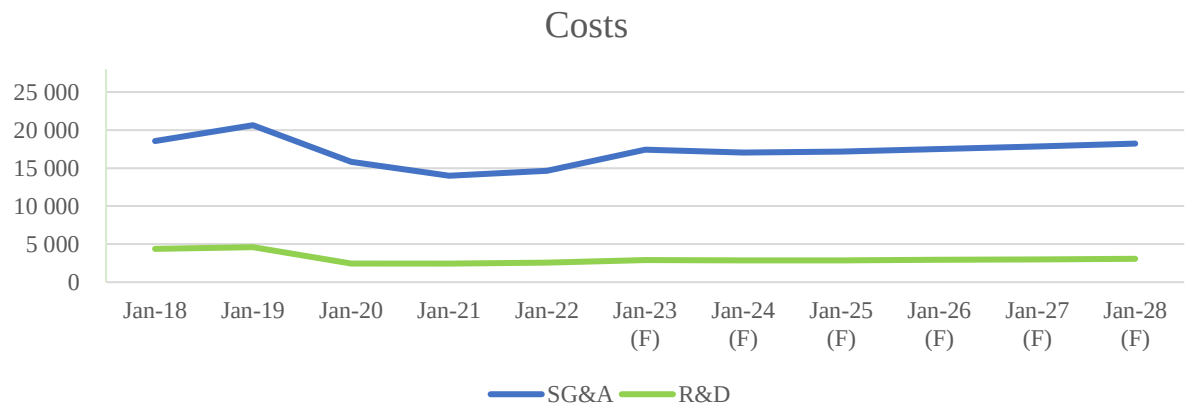


Figure 22 - SG&A and R&D Costs

Source: Author

6.1.3 CAPEX, D&A and Assets

Regarding the CAPEX, in DELL's 10-k Report it is mentioned that in the Fiscal year of 2023 it will be between 2,8 and 3,0 billion dollars, the value assumed was 2,9, for the following years the forecasted assumption was the historical 5-year average percentage of the net revenue, as illustrated in the figure bellow.

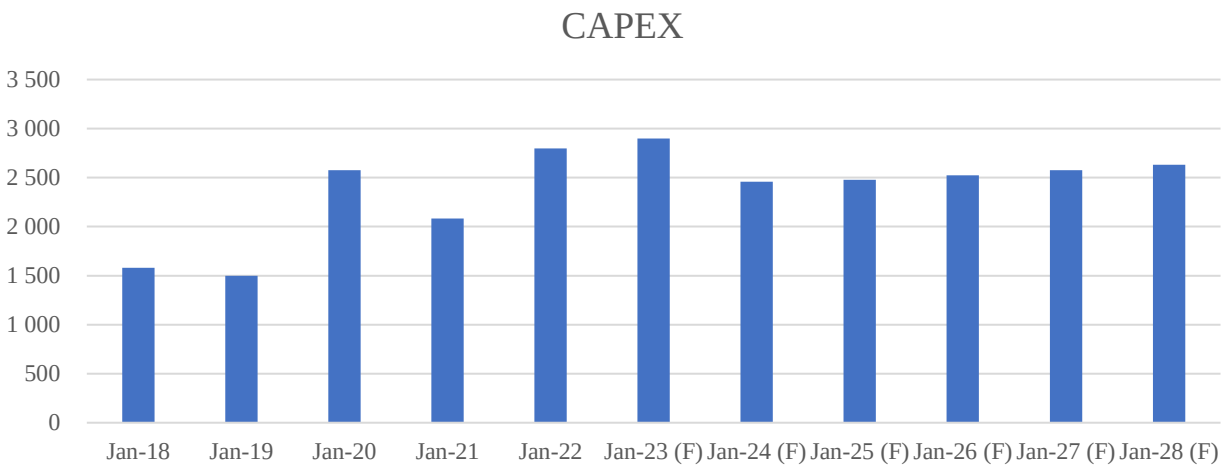


Figure 23 - Capex Historical & Forecast

Source: Author

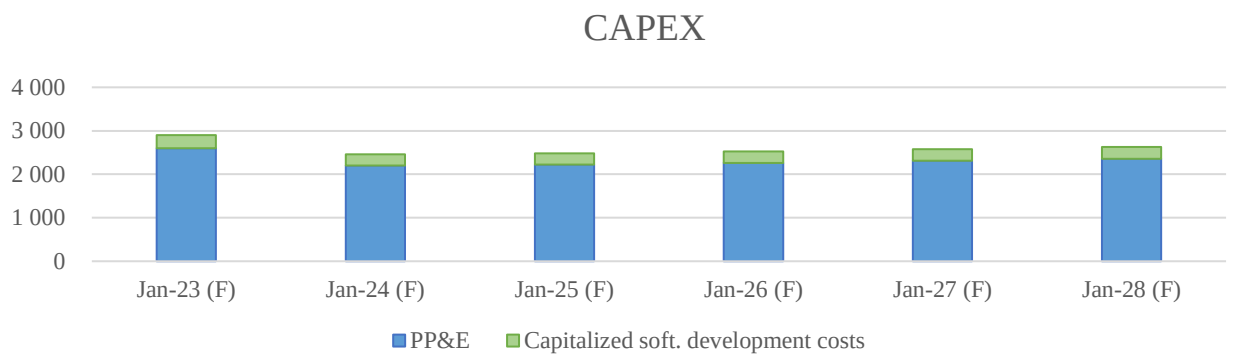


Figure 24 - Forecast Capex by Assets

Source: Author

In terms of Depreciation, it was taken into account the values described in the report of 2022 to calculate the average percentage Depreciation rate of the last 3 years and applied on the forecasted periods, except the Capitalized Software development costs that were determined to have a 3-year useful life (Page 93 of 2022 Report). For the Amortization, the values were mentioned in page 125 of the report, except for the year 2028 that was applied the average % of the previous year (Appendix 8).

Most of the Tangible and Intangible Assets were calculated considering the last year net value minus the D&A of the period, besides the Other Assets in non-current Assets and Indefinite-lived intangible assets which were accounted in the forecast as the nominal value of 2022 (Appendix 9).

6.1.4 Debt

As mentioned in the Historical Financial Information DELL is determined to continue to lower its Debt as it has been able to do it in the previous years, but it is important to be noted that since the Working Capital has been negative in the last years the debt should not go to 0 in order to have a financial cushion.

There are two main types of debt that are being incurred, the DELL's Financial Services (DFS) Debt which has been used to fund expansion of the DFS business, and Senior and other Notes Issued at a certain Coupon rate with usually more than 10 years maturity.

Given the circumstances, the assumption made in debt were the historical average values of the last 2 years of issued and incurred debt for the types of debt mentioned, for the other types of loans such as loans from discontinued operations they were not considered in the calculations.

In terms of short-term Debt, it is according to the following year that appears in the Table of Aggregate Future Maturities of Debt in Page 118 of DELL's 10-K Report (2022), apart from the last 2 years that is an average of the historical 5-year short term debt (Appendix 10).

Related to interest forecast, the values assumed will be the Cash obligations of interest stated in last year report plus the Debt issued multiplied by the Cost of Debt calculated during the WACC computations (Appendix 10).

6.1.5 Net Working Capital (NWC)

The NWC is composed by the Current Assets less Current Liabilities without Debt and Cash & Equivalents, it is known as the enterprise short-term liquidity.

Historically, the NWC values of DELL are negative which means they have higher short-term obligations than assets, this situation can be a concern to DELL to fulfill obligations and being forced to rely on borrowing or issuance of stock. Even though DELL has lowered the negative NWC it is still Negative and can still be a hurdle for operations.

The forecast assumptions for 2023 onwards of NWC are demonstrated in the next Figure:

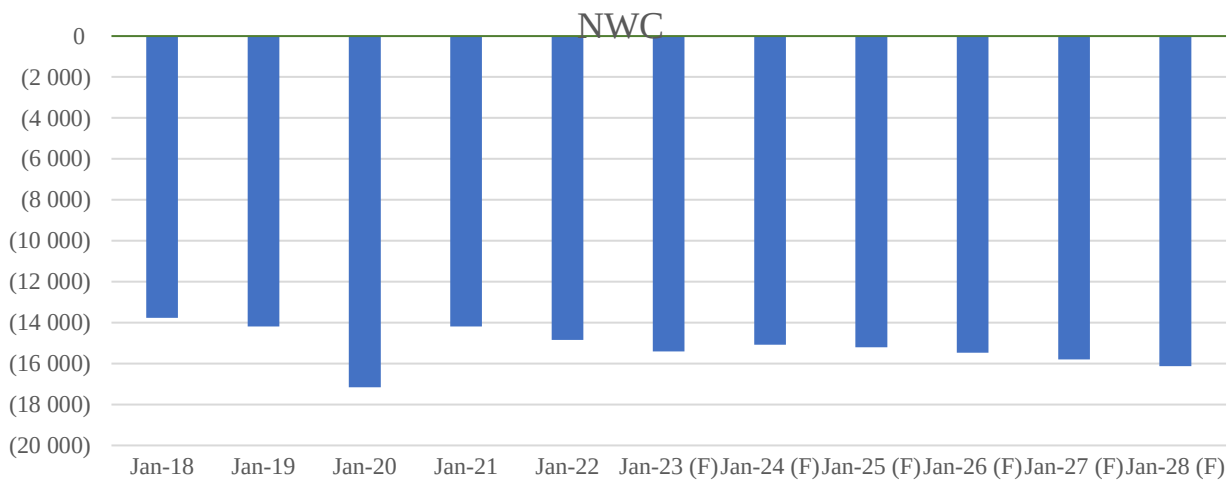


Figure 25 - Net Working Capital 2018-2028

Source: Author

6.2. DCF Calculations

Since the assumptions were made, now it is possible to see how the financial information for the years to come are. It is important to mention that all the values of Vmware and other discontinued operations were effectively taken from all the following years of the assumption, whether from revenues, from assets or other items because in the 2022 Report they were already reported as discontinued operations.

With this information and the calculations of each important part done, the Discount Cash Flow Model will now be explained.

6.2.1 FCFF Projection

The first Step for this model is to calculate the Free Cash Flow to the Firm, which calculated by the formula described in the literature review:

$$FCFF = EBIT - Taxes + D\&A - \Delta NWC - CAPEX$$

Since the last few years, except 2021 and 2022, the company has had negative earnings before taxes (negative EBT) the tax rate could not be an historical average of the last 5 years, the assumption made for the Tax rate was the % of the 2022 EBT which was 16,6%.

With the expected tax rate and the other components of the FCCF that were explained in the last chapter, we reach the value of the expected cash flows for the next 6 years.

As said previously, it is important to note that the FCFF of the 2023 and 2024 will not enter the calculations of the enterprise value since the valuation date is set to be in January 2024 and these values considered as historical in the valuation.

6.2.2 WACC Calculation

The discount rate, the WACC, applied in the DCF model is a fundamental part of this method, and only its proper value can lead to the correct valuation.

6.2.2.1 Risk-Free Rate

The most commonly used approach to get to Risk-Free rate is government bonds. Since half of DELL's Revenue is from the United States, the risk-free rate taken in consideration was the 10-year U.S. Treasury yield, that was retracted from Bloomberg on the 24th of February landing on 3,94%.

6.2.2.2 Beta Calculation

The Beta of the company is the risk relation of the company with the market, how does the company react when the market changes. That is, if it is close to 1, every time the market rises or declines the company goes in the same rate if it is lower than 1 till 0 the company does not go in the same direction as the market and opposite for number above 1.

For this case DELL stock can be comparable to the United States Index, more specifically the S&P 500 that the company is part of.

To calculate the Beta it was conducted a Regression analysis from the adjusted close price of DELL's shares of the last 5 year and the same period for the S&P 500 (Appendix 17). The value of Beta calculated was 1,09 which indicates that DELL reacts a lot with what happens in the market, i.e. if the market price declines 1% it is expected for DELL's Shares to decline 1,09%.

6.2.2.3 Market Risk Premium

The MRP represents the difference between the expected market return and the risk-free rate as represented in the formula below.

$$MRP = (Rm - Rf)$$

The correct way to reach this value should be by an average of every country equity risk premium according to what percentage they are responsible. Since it is not possible to do this according to the percentages of net revenue calculates by area (in Figure 18) and the values that were retracted from Damodaran were U.S. and Global values and applied the % of revenues expected for each area, the value of the Market Risk Premium calculated is 9,42% (Appendix 18).

6.2.2.4 Cost of Debt

In terms of the component Cost of Debt, three possible methods of computations were done in order to understand which one would be more suitable for DELL's valuation.

The first one was interest rate which divides the interest expenses with the debt the company has, the second one was with regarding all the issued notes at a certain coupon rate and YTM, an average Cost of debt was calculated.

Lastly, the 3rd method is the credit Spread method which takes into the account the risk-free rate plus Default spread of the country (calculated in the previous step) and plus the default spread of the country according to the rating of the company, table given by Damodaran.

Since the company's debt majority are issued notes, the 2nd method was the chosen one since it has into account the value for the market and not the book values of debt, the computed value of cost of Debt was 5,97% (Appendix 19).

6.2.2.5 D/E Ratio

For the WACC calculation it is very important to have the appropriate Debt to Equity Ratio, the computations of the market value of Debt and Equity were made with date of January 2023. It was assumed that the Equity to Market value structure will remain identical, so, the calculated weight

of Debt and Equity was used for all the forecasting years, .

The Market value of Debt calculated was $22.895,53 (in millions) with the formula mentioned in the literature review, while the market value of Equity was $29.089,13 (in millions) as you can see in the Appendix 20. This leading to a D/E ratio of 79% that is far from the industry optimal capital structures, according to Damodaran in the Computers and Peripherals, which is the Industry DELL is inserted in, the D/E optimal ratio is 11,85%.

The overall WACC calculations can be checked in Appendixes but the final WACC value for the following years is 10,16%.

6.2.3 Growth Rate

The Growth rate is a variable that can impact deeply the valuation of a company so it is important to be careful when conducting the computations.

According to Macabacus (2023) "*The perpetuity growth rate is typically between the historical inflation rate of 2-3% and the historical GDP growth rate of 4-5%*", for this reason we conducted an analysis in the Inflation rate and GDP growth of 2027 in the figure below:

Market	GDP Forecast for 2027
United States	1,90%
Global	3,20%

Market	Inflation for 2027
United States	2,00%
Global	3,30%

Figure 26 - Inflation and GDP Growth 2027

Source: IMF

Since DELL has businesses across 180 locations globally the growth rate could be between 1,9% and 3,3% but since in revenues assumption the Global inflation was already accounted for, not knowing which percentages of each country. The growth rate the value used was the United States value of Inflation for 2027, 2,0% in order to have a more conservative approach and do not overestimate the share at stake.

6.2.4 Terminal Value

The last component of the DCF model is the Terminal Value, for this value it is important to change some parameters that were defined before, such as risk-free rate, D/E Ratio or other.

The terminal value is the value used in terms of perpetuity, so the risk-free rate of the U.S. 30 Years Treasury bond instead, the Debt and Equity Weight used was the same as the forecasted years, making the assumption that the Debt-to-Equity ratios will be constant in the years to come. The EBIT minus Taxes used was of last year's, the D&A were an average from 2023 to 2028 and the variation NWC and CAPEX were assumed also the same as in 2028 (Appendix 21 and 22).

6.2.5 Enterprise Value & Share Price

With all the elements of the Discounted Cash Flow done it is possible to get to the enterprise value of DELL on the 31st of January 2024 is $ 48.957 million.

After the enterprise value we have to deduct the Net Debt that is the Debt of the company in this date less the Cash & Equivalents of the company forecasted for 2024. The Equity Value will be $33.871 million and divided by the outstanding shares on November 30th, the share price will be $47,30 which has an upside potential of 16,44% in comparison with the price on 31st January 2023.

DCF - Price Target	EUR million
Enterprise Value	48 957,38
Net Debt	15 086,80
Equity Value	33 870,58
Share Outstanding	716,13
Equity Value per Share	47,30
For. Price on 31 January. 2024	47,30
Price on 31 January. 2023	40,62
Upside Potential	**16,44%**

Figure 27 - DCF Price Share January 2024

Source: Author

6.2.6 Sensitivity Analysis

The Terminal value is the element in the DCF that usually accounts the most in the enterprise Value, in this valuation accounts for 68% of the value. To put to the test the reliability of this valuation, a sensitivity analysis was conducted for the variables of WACC and Growth rate, since they are the most important drivers for the terminal value.

For WACC it varies from +/-0,05%., while the terminal growth rate varies +/- 0,5%, the growth has a more variation scale because of its conservator approach on the model.

		WACC						
	35 876	10,01%	10,06%	10,11%	10,16%	10,21%	10,26%	10,31%
Terminal Growth rate	1,00%	32 347	32 110	31 876	31 644	31 415	31 189	30 965
	1,50%	34 418	34 155	33 895	33 638	33 384	33 133	32 885
	2,00%	36 748	36 453	36 163	35 876	35 593	35 313	35 037
	2,50%	39 388	39 056	38 729	38 407	38 088	37 774	37 464
	3,00%	42 405	42 028	41 657	41 291	40 930	40 574	40 223
	3,50%	45 887	45 454	45 028	44 608	44 196	43 789	43 388

Figure 28 - Sensitivity Analysis of Terminal Value

Source: Author

7. Dividend Discount Model

Since the valuation of a company can be made in many models and in order to have a comparison point, it was calculated also the Dividend Discount Model.

The cost of Equity was calculated in the DCF model and is 14,2%, while the dividend per share is 0,33 quarterly and in November there were 716.128,86 shares outstanding, as mentioned in the report, it is expected to maintain the same dividend policy for the next few years.

The final value of the enterprise was 8,315 ($ million) and with the outstanding shares it leads to a $11,6 per share on the 31st of January 2024 which has a downside potential of 71%. With only this model the recommendation would be to sell the shares instead of buy as it was in the DCF model.

Enterprise Value	USD million
Equity Value	8 315,13
Share Outstanding	716,13
Equity Value per Share	11,6
For. Price on 31 January. 2024	11,6
Price on 31 January. 2023	40,6
Downside Potential	**-71%**

Figure 29 - EV Dividend Discount Model

Source: Author

As previously stated, this model only relies on the cost of equity and on the Dividends distributed so it is a poor model to do a valuation of a bigger complex company.

8. Conclusion

Along with The DCF Model the value reached was 47,30 dollars per share for the 31st of January 2024, revealing good potential for the share to go up particularly because on the 31st of January of this year the value was 40,62 dollars. According to my calculations, I can give a buy recommendation of the shares of the company. The Dividend Discount Model was also applied but it was far off the previous analysis made.

After all the computations done and especially the sensitivity analysis, it is possible to see how complex and sensitive a valuation model is and how any number, component or assumption in a valuation model can influence the final value of company in analysis.

It is important keep in mind that the chosen method of valuation takes a huge importance in the valuation outcome, especially for all the parties interested, since these valuations are usually made in order to help the company or other elements involved to make financial decisions in the future. Every method can be biased or influenced according to the analyst performing the evaluation but if the components are reviewed and discussed in more than one method and with precise justifications, these valuations will be meaningful to the board and other stakeholders of the company.

To conclude, it is possible that some of the components are influenced or not completely accurate but given the information, I believe DELL is a company with value and that is a good investment for the future.

9. Bibliography:

Books

Damodaran, A. (2011). *The Little Book of Valuation: How to Value a Company, Pick a Stock and Profit*. John Wiley & Sons.

Goedhart, M., Koller, T., Wessels, D., (2020). *Valuation – Measuring and Managing the Value of Companies*.7th Edition McKinsey & Company. John Wiley & Sons Inc.

Articles

Flöstrand, P. (2006). «Valuation Relevance. The use of Information and Choice of Method in Equity Valuation» Doctoral thesis/ Företagsekonomiska institutionen, Uppsala universitet 122.

Fernández, P. (2007). «Company Valuation Methods, The most common errors in Valuations» IESE Business School-University of Navarra .

Fernández, P. (2003). «Levered and Unlevered Beta» IESE Business School-University of Navarra

Gordon, M., (1959). «*Dividends, Earnings, and Stock Prices*», *The Review of Economics and Statistics*, Vol. 41, n.º 2, Part 1 (May, 1959), pp. 99-105.

Luehrman, T. (1997). «*Using APV: A Better Tool for Valuing Operations*», *Harvard Business Review*, pp. 145-154.

Mckinsey (2023). «*Why invest in the data center economy*» | McKinsey. [online] Available at: https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/investing-in-the-rising-data-center-economy.

Mitra, S. (2010). «*Note on Cash Flow Valuation Methods: Comparison of WACC, FTE, CCF and APV Approaches*», Ivey Publishing.

IDC (2022). «*IDC Tracker Forecast Sees Further Contraction for the Global PC and Tablet Markets with Commercial PC Demand Remaining the One Clear Opportunity*». [online] Available at: https://www.idc.com/getdoc.jsp?containerId=prUS49918522

IDC (2022). «*IDC Semiannual Software Tracker Reports Steady Increase for Software Revenues in 2022 and Forecasts Further Growth for the Next Several Years*». [online] Available at: https://www.idc.com/getdoc.jsp?containerId=prUS49933822

Gartner. (2023). «*Gartner Says Worldwide PC Shipments Declined 28.5% in Fourth Quarter of 2022 and 16.2% for the Year*». [online] Available at: https://www.gartner.com/en/newsroom/press-releases/2023-01-31-gartner-forecasts-worldwide-device-shipments-to-decline-four-percent-in-2023.

Websites

Bloomberg (n.d.). Bloomberg. [online] Bloomberg.com. Available at: https://www.bloomberg.com/markets/rates-bonds/government-bonds/us.

Comptia (2022). 2023 IT (Information Technology) Industry Trends Analysis | Business of Technology | CompTIA. [online]. Available at: https://connect.comptia.org/content/research/it-industry-trends-analysis.

Damodaran (n.d.). Useful Data Sets. [online] Available at: https://pages.stern.nyu.edu/~adamodar/New_Home_Page/data.html.

Dell Technologies. (n.d.). SEC Filings | Dell Technologies. [online] Available at: https://investors.delltechnologies.com/financial-information/sec-filings.

International Monetary Fund (n.d.). International Monetary Fund. [online] IMF. Available at: https://www.imf.org/en/Home.

Macabacus (2023). Terminal Value. [online] Macabacus by CFI. Available at: https://macabacus.com/valuation/dcf-terminal-value [Accessed 10 Mar. 2023].

Markets Insider (n.d). Markets Insider: Stock Market News, Realtime Quotes and Charts. [online] markets.businessinsider.com. Available at: https://markets.businessinsider.com/.

Statista (n.d.). The statistics portal for market data, market research and market studies. [online] Statista.com. Available at: https://www.statista.com/.

Yahoo Finance (n.d.). Yahoo Finance - Business Finance, Stock Market, Quotes, News. [online] Yahoo Finance. Available at: https://finance.yahoo.com/.

10. Appendix:

Appendix 1. Balance Sheet

Consolidated Statement of Financial Position

Balance Sheet (in USD million)	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)
Current assets:											
Cash and cash equivalents	13 942	9 676	9 302	9 508	9 477	8 555	8 750	10 954	14 833	13 266	15 327
Short Term Investments	2 187	0	0	0	0	0	0	0	0	0	0
Accounts receivable, net	11 721	12 371	12 484	10 846	13 043	14 547	14 233	14 342	14 606	14 907	15 222
Short-term financing receivables, net	3 919	4 398	4 895	5 148	5 089	5 630	5 508	5 551	5 653	5 770	5 891
Inventories, net	2 678	3 649	3 281	3 403	5 898	6 179	6 046	6 092	6 204	6 332	6 466
Other current assets	5 881	6 044	6 906	9 810	11 526	10 903	10 667	10 750	10 947	11 173	11 409
Current assets of discontinued operations				4 852	0	0	0	0	0	0	0
Total current assets	**40 328**	**36 138**	**36 868**	**43 567**	**45 033**	**45 814**	**45 204**	**47 689**	**52 243**	**51 448**	**54 314**
Property, plant, and equipment, net	5 390	5 259	6 055	4 833	5 415	6 724	7 366	7 794	8 029	8 074	7 925
Long-term investments	4 163	1 005	864	1 334	1 839	1 839	1 839	1 839	1 839	1 839	1 839
Long-term financing receivables, net	3 724	4 224	4 848	5 339	5 522	6 125	5 993	6 039	6 150	6 277	6 410
Goodwill	39 920	40 089	41 691	20 028	19 770	19 770	19 770	19 770	19 770	19 770	19 770
Intangible assets, net	28 265	22 270	18 107	9 115	7 461	6 484	5 708	5 101	4 627	4 266	3 991
Other non-current assets	2 403	2 835	10 428	7 184	7 695	7 773	7 780	7 787	7 796	7 807	7 821
Non-Current assets of discontinued operations				32 015	0	0	0	0	0	0	0
Total non-current assets	**83 865**	**75 682**	**81 993**	**79 848**	**47 702**	**48 716**	**48 457**	**48 330**	**48 211**	**48 033**	**47 755**
Total assets	**124 193**	**111 820**	**118 861**	**123 415**	**92 735**	**94 530**	**93 661**	**96 019**	**100 454**	**99 482**	**102 070**
Current liabilities:											
Short-term debt	7 873	4 320	7 737	6 357	5 823	3 362	2 107	1 097	6 755	3 330	3 322
Accounts payable	18 334	19 213	20 065	23 033	28 557	26 460	25 889	26 089	26 567	27 116	27 688
Accrued and other	8 026	8 495	9 773	7 166	7 578	10 131	9 912	9 989	10 172	10 382	10 601
Short-term deferred revenue	11 606	12 944	14 881	13 201	14 261	16 080	15 733	15 855	16 146	16 479	16 827
Current liabilities of discontinued operations				4 375	0	0	0	0	0	0	0
Total current liabilities	**45 839**	**44 972**	**52 456**	**54 132**	**56 219**	**56 034**	**53 641**	**53 029**	**59 640**	**57 308**	**58 438**
Long-term debt	43 998	49 201	44 319	32 865	21 131	20 720	21 730	23 750	20 112	19 899	19 694
Long-term deferred revenue	9 210	11 066	12 919	12 391	13 312	14 111	13 806	13 913	14 168	14 461	14 766
Other non-current liabilities	7 277	6 327	5 383	3 923	3 653	3 653	3 653	3 653	3 653	3 653	3 653
Non-Current liabilities of discontinued operations				12 079	0	0	0	0	0	0	0
Total liabilities	**106 324**	**111 566**	**115 077**	**115 390**	**94 315**	**94 517**	**92 830**	**94 345**	**97 573**	**95 320**	**96 551**
Redeemable shares	384	1 196	629	472	0	0	0	0	0	0	0
Common stock and capital in excess	19 889	16 114	16 091	16 849	7 898	7 898	7 898	7 898	7 898	7 898	7 898
Treasury stock at cost	(1 440)	(63)	(65)	(305)	(964)	(964)	(964)	(964)	(964)	(964)	(964)
Accumulated Income	(6 860)	(21 349)	(16 891)	(13 751)	(8 188)	(6 595)	(5 778)	(4 934)	(3 727)	(2 447)	(1 089)
Accumulated other comprehensive income	130	(467)	(709)	(314)	(431)	(431)	(431)	(431)	(431)	(431)	(431)
Total Dell Technologies Inc. stockholders' equity	12 103	(4 569)	(945)	2 951	(1 685)	(92)	725	1 569	2 776	4 056	5 414
Non-controlling interests	5 766	4 823	4 729	96	105	105	105	105	105	105	105
Non-controlling interests of discontinued operations				4 978	0	0	0	0	0	0	0
Total stockholders' equity	**17 869**	**254**	**3 784**	**8 025**	**(1 580)**	**13**	**830**	**1 674**	**2 881**	**4 161**	**5 519**
Total liabilities and equity	124 193	111 820	118 861	123 415	92 735	94 530	93 661	96 019	100 454	99 482	102 070

Appendix 2. Income Statement

Consolidated Statement of Income

P&L (in USD million)	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)
Net revenue:											
Products	60 898	70 707	67 607	67 744	79 830	83 085	81 291	81 919	83 421	85 145	86 941
Services	18 142	19 914	17 208	18 926	21 367	22 936	22 441	22 614	23 029	23 505	24 001
Total net revenue	**79 040**	**90 621**	**84 815**	**86 670**	**101 197**	**106 021**	**103 732**	**104 533**	**106 450**	**108 649**	**110 941**
Cost of net revenue:											
Products	51 433	57 889	55 369	56 431	67 224	69 083	67 591	68 113	69 363	70 796	72 289
Services	7 070	7 679	8 807	10 099	12 082	12 316	12 050	12 143	12 365	12 621	12 887
Total cost of net revenue	**58 503**	**65 568**	**64 176**	**66 530**	**79 306**	**81 399**	**79 641**	**80 256**	**81 728**	**83 416**	**85 176**
Gross margin	**20 537**	**25 053**	**20 639**	**20 140**	**21 891**	**24 623**	**24 091**	**24 277**	**24 722**	**25 233**	**25 765**
Operating expenses:											
Selling, general, and administrative	18 569	20 640	15 819	14 000	14 655	17 418	17 042	17 173	17 488	17 850	18 226
Research and development	4 384	4 604	2 454	2 455	2 577	2 924	2 860	2 882	2 935	2 996	3 059
Total operating expenses	22 953	25 244	18 273	16 455	17 232	20 341	19 902	20 056	20 424	20 846	21 285
Operating income - EBIT	**(2 416)**	**(191)**	**2 366**	**3 685**	**4 659**	**4 281**	**4 189**	**4 221**	**4 299**	**4 387**	**4 480**
Interest and other, net	(2 353)	(2 170)	(2 417)	(1 339)	1 264	(1 244)	(2 082)	(2 082)	(1 725)	(1 725)	(1 725)
Income (loss) before income taxes EBT	**(4 769)**	**(2 361)**	**(51)**	**2 346**	**5 923**	**3 037**	**2 107**	**2 139**	**2 573**	**2 662**	**2 755**
Income tax	(1 843)	(180)	(572)	101	981	503	349	354	426	441	456
Income from discontinued operations, net of income taxe	0	0	5 008	1 260	765	0	0	0	0	0	0
Net income	**(2 926)**	**(2 181)**	**5 529**	**3 505**	**5 707**	**2 534**	**1 758**	**1 785**	**2 147**	**2 221**	**2 298**
Net income without discontinued operations			521	2 245	4 942	2 534	1 758	1 785	2 147	2 221	2 298
Less: Net loss attributable to non-controlling interests	(77)	129	(4)	(4)	(6)	(5)	(5)	(5)	(5)	(5)	(5)
Less: Net income attributable to non-cont. interests of dis	0	0	917	259	150	0	0	0	0	0	0
Net income attributable to Dell Technologies Inc.	**(2 849)**	**(2 310)**	**4 616**	**3 250**	**5 563**	**2 539**	**1 762**	**1 789**	**2 152**	**2 226**	**2 303**

Appendix 3. Statement of Cash Flows

Consolidated Statement of Cash Flows

CF (in USD million)	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)
EBIT	4 281	4 189	4 221	4 299	4 387	4 480
Depreciation & Amortization	2 489	2 587	2 651	2 753	2 881	3 041
Income Tax	-503	-349	-354	-426	-441	-456
Δ NWC	573	-333	116	279	320	333
Other cash adjustments	5	5	5	5	5	5
Change in cash from operating activities	**6 845**	**6 099**	**6 639**	**6 909**	**7 151**	**7 402**
CAPEX	-2 900	-2 459	-2 478	-2 524	-2 576	-2 630
Other investments	-603	132	-46	-111	-127	-132
Change in cash from investing activities	**-3 503**	**-2 327**	**-2 525**	**-2 635**	**-2 703**	**-2 763**
Interest paid	-1 244	-2 082	-2 082	-1 725	-1 725	-1 725
Dividends	-945	-945	-945	-945	-945	-945
Δ Debt	-2 074	-549	1 117	2 275	-3 345	92
Change in cash from financing activities	**-4 263**	**-3 577**	**-1 911**	**-395**	**-6 016**	**-2 579**
Change in Cash	-922	194	2 204	3 879	-1 567	2 061
Cash Beggining of pepriod	**9 477**	**8 555**	**8 750**	**10 954**	**14 833**	**13 266**
Cash end of period	**8 555**	**8 750**	**10 954**	**14 833**	**13 266**	**15 327**

Appendix 4. Net Working Capital

NWC (USD million)	Unit	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)
Current Assets												
Accounts receivable, net	Mn $	11 721	12 371	12 484	10 846	13 043	14 547	14 233	14 342	14 606	14 907	15 222
Short-term financing receivables, net	Mn $	3 919	4 398	4 895	5 148	5 089	5 630	5 508	5 551	5 653	5 770	5 891
Inventories, net	Mn $	2 678	3 649	3 281	3 403	5 898	6 179	6 046	6 092	6 204	6 332	6 466
Other current assets	Mn $	5 881	6 044	6 906	9 810	11 526	10 903	10 667	10 750	10 947	11 173	11 409
Total current assets	Mn $	24 199	26 462	27 566	29 207	35 556	37 259	36 454	36 736	37 410	38 182	38 988
Current Liabilities												
Accounts payable	Mn $	18 334	19 213	20 065	23 033	28 557	26 460	25 889	26 089	26 567	27 116	27 688
Accrued and other	Mn $	8 026	8 495	9 773	7 166	7 578	10 131	9 912	9 989	10 172	10 382	10 601
Short-term deferred revenue	Mn $	11 606	12 944	14 881	13 201	14 261	16 080	15 733	15 855	16 146	16 479	16 827
Total current liabilities	Mn $	37 966	40 652	44 719	43 400	50 396	52 672	51 534	51 932	52 885	53 977	55 116
NWC	Mn $	**(13 767)**	**(14 190)**	**(17 153)**	**(14 193)**	**(14 840)**	**(15 413)**	**(15 080)**	**(15 197)**	**(15 475)**	**(15 795)**	**(16 128)**
Δ NWC	Mn $						**-573**	**333**	**-116**	**-279**	**-320**	**-333**

Appendix 5. Balance Sheet Assumptions

Future Assumptions Consolidated Statement of Financial Position

Balance Sheet	Unit	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Current assets:								
Cash and cash equivalents	Mn $	8 555	8 750	10 954	14 833	13 266	0	See Cash Flow Statment computations.
Short Term Investments	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Accounts receivable, net	% of Net revenue	13,7%	13,7%	13,7%	13,7%	13,7%	13,7%	Historical 5-Year average (2018-2022) of Accounts receivable as % of net revenue.
Short-term financing receivables, net	% of Net revenue	5,3%	5,3%	5,3%	5,3%	5,3%	5,3%	Historical 5-Year average (2018-2022) of Short-term financing receivables as % of net revenue.
Inventories, net	% of Net revenue	5,8%	5,8%	5,8%	5,8%	5,8%	5,8%	2022YE Inventories as % of net revenue.
Other current assets	% of Net revenue	10,3%	10,3%	10,3%	10,3%	10,3%	10,3%	Historical 5-Year average (2018-2022) of Other current assets as % of net revenue.
Current assets of discontinued operations	Mn $	0	0	0	0	0	0	Equal to 2022 nominal value.
Non-current assets:								
Property, plant, and equipment, net	Mn $	6 724	7 366	7 794	8 029	8 074	7 925	See appendix "Property, plant, and equipment, net".
Long-term investments	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Long-term financing receivables, net	% of Net revenue	5,8%	5,8%	5,8%	5,8%	5,8%	5,8%	Historical 3-Year average (2020-2022) of Long-term financing receivables as % of net revenue.
Goodwill	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Intangible assets, net	Mn $	6 484	5 708	5 101	4 627	4 266	3 991	See appendix "Intangible assets, net".
Other non-current assets	Mn $	7 773	7 780	7 787	7 796	7 807	7 821	See appendix "Other Non-Current Assets".
Non-Current assets of discontinued operations	Mn $	0	0	0	0	0	0	Equal to 2022 nominal value.
Current liabilities:								
Short-term debt	Mn $	3 362	2 107	1 097	6 755	3 330	3 322	See Other Assumptions "Debt & Interest".
Accounts payable	% of Cost of net revenue	32,5%	32,5%	32,5%	32,5%	32,5%	32,5%	Historical 5-Year average (2018-2022) of Accounts payable as % of cost of net revenue.
Accrued and other	% of Cost of net revenue	12,4%	12,4%	12,4%	12,4%	12,4%	12,4%	Historical 5-Year average (2018-2022) of Accrued and other as % of cost of net revenue.
Short-term deferred revenue	% of Net revenue	15,2%	15,2%	15,2%	15,2%	15,2%	15,2%	Historical 5-Year average (2018-2022) of Short-term deffered revenue as % of net revenue.
Current liabilities of discontinued operations	Mn $	0	0	0	0	0	0	Equal to 2022 nominal value.
Non-current liabilities:								
Long-term debt	Mn $	20 720	21 730	23 750	20 112	19 899	19 694	See Other Assumptions "Debt & Interest".
Long-term deferred revenue	% of Net revenue	13,3%	13,3%	13,3%	13,3%	13,3%	13,3%	Historical 5-Year average (2018-2022) of Long-term deffered revenue as % of net revenue.
Other non-current liabilities	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Non-Current liabilities of discontinued operations	Mn $	0	0	0	0	0	0	Equal to 2022 nominal value.
Equity:								
Redeemable shares	Mn $	0	0	0	0	0	0	Equal to 2022 nominal value.
Common stock and capital in excess	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Treasury stock at cost	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Accumulated deficit	Mn $	(6 595)	(5 778)	(4 934)	(3 727)	(2 447)	(1 089)	Equal to 2022 nominal value plus net income less dividends.
Accumulated other comprehensive income (loss)	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Non-controlling interests	YoY (%)	0	0	0	0	0	0	Equal to 2022 nominal value.
Non-controlling interests of discontinued operations	Mn $	0	0	0	0	0	0	Equal to 2022 nominal value.

Appendix 6. Income Statement Assumptions

Consolidated Statement of Income

P&L (in USD million)	Unit	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Net revenue:								
Products	YoY (%)	4,1%	-2,2%	0,8%	1,8%	2,1%	2,1%	
Services	YoY (%)	7,3%	-2,2%	0,8%	1,8%	2,1%	2,1%	
Total net revenue	YoY (%)	4,8%	-2,2%	0,8%	1,8%	2,1%	2,1%	
Cost of net revenue:								See appendix "Revenues".
Products	YoY (%)	2,8%	-2,2%	0,8%	1,8%	2,1%	2,1%	
Services	YoY (%)	1,9%	-2,2%	0,8%	1,8%	2,1%	2,1%	
Total cost of net revenue	YoY (%)	2,6%	-2,2%	0,8%	1,8%	2,1%	2,1%	
Gross margin	YoY (%)	12,5%	-2,2%	0,8%	1,8%	2,1%	2,1%	
Operating expenses:								
Selling, general, and administrative	% of Net revenue	16%	16%	16%	16%	16%	16%	Historical 3-Year average (2018-2022) of SG&A as % of net revenue.
Research and development	% of Net revenue	2,8%	2,8%	2,8%	2,8%	2,8%	2,8%	Historical 3-Year average (2018-2022) of R&D as % of net revenue.
Interest and other, net	Mn $	1 244	2 082	2 082	1 725	1 725	1 725	See Other Assumptions "Debt & Interest".
Tax Rate	YoY (%)	16,6%	16,6%	16,6%	16,6%	16,6%	16,6%	Equal to 2022 effective tax rate.
Income tax	Mn $	503	349	354	426	441	456	Calculated using the 2022 effective tax rate.
Income from discontinued operations, net of income t	Mn $	0	0	0	0	0	0	Related to companies sold in 2022. Therefore is not applicable.
Less: Net loss attributable to non-controlling interests	Mn $	(5)	(5)	(5)	(5)	(5)	(5)	Historical 3-Year average (2020-2022).
Less: Net income attributable to non-controlling intere	Mn $	0	0	0	0	0	0	Related to companies sold in 2022. Therefore is not applicable.
Shares Outstanding	Mn $	716,1	716,1	716,1	716,1	716,1	716,1	
Dividend per share	$	1,32	1,32	1,32	1,32	1,32	1,32	Equal to November 2022 number of shares - "As of November 30, 2022, there were 716,128,296 shares "- DELL's 10-Q Report (2022) - Page 1
Dividend	shares	945	945	945	945	945	945	

Appendix 7. CAPEX Assumptions

Capital expenditures (CapEx)	Unit	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Capital expenditures and capitalized software development costs:	Mn $	1 581	1 497	2 576	2 082	2 796	2 900	2 459	2 478	2 524	2 576	2 630	According to DELL's 10k Report (2022) - Page 67 - "Aggregate capital expenditures for Fiscal 2023 are currently expected to total between $2.8 billion and $3.0 billion, of which approximately $0.8 billion of expenditures are expected to be applied to equipment under DFS operating leases and approximately $0.3 billion to capitalized software development costs.
CAPEX PP&E	Mn $						2 600	2 205	2 222	2 263	2 309	2 358	Assuming 2023 forecasted proportion (~90%).
CAPEX (Capitalized software development costs)	Mn $						300	254	256	261	266	272	Assuming 2023 forecasted proportion (~10%).
Capital expenditures and capitalized software development costs:	% of Net revenue	2,00%	1,65%	3,04%	2,40%	2,76%	2,7%						Assuming 5 Year Historical Average of % of Net Revenues (2018-2022).
Forecast Assumption (2024-2028)	%					2,37%							

Appendix 8. D&A Assumptions

Depreciation & Amortization	Unit		Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Depreciation (PP&E)	Mn $		1 100	1 300	1 600	1 291	1 563	1 794	2 027	2 265	2 507	Assuming 3 Years Historical average of Depreciation of PP&E - DELL's 10k Report (2022) - Page 150 "(b) *During the fiscal years ended January 28, 2022, January 29, 2021, and January 31, 2020, the Company recognized $1.6 billion, $1.3 billion, and $1.1billion, respectively, in depreciation expense.*"
Depreciation rate (PP&E)	% of PP&E		7,52%	10,94%	13,00%							
Forecast Depreciation rate (PP&E)	%				10,49%							
Amortization (Capitalized Software development costs)	Mn $		273	315	263	222	248	250	252	255	259	Assuming a useful life of Capitalized Software Development Costs of 3 years DELL's 10k Report (2022) - Page 93.
Forecast Depreciation rate (Capitalized Software development costs)	%				33,00%							
Amortization (Intangible assets)	Mn $		2 971	2 133	1 641	977	776	607	474	361	275	According to values stated in DELL's 10k Report (2022) - Page 125, and for 2028 na % of the previous year.
D&A (Discontinued Operations)	Mn $		1 685	1 523	1 004	0	0	0	0	0	0	Related to companies sold in 2022. Therefore is not applicable.
D&A (Other Assets)	Mn $		114	119	43	0	0	0	0	0	0	Not Apllicable as Other assets, value included in the 3 main other assets in this table.
D&A (Total)	Mn $	8 634	7 746	6 143	5 390	4 551	2 489	2 587	2 651	2 753	2 881	3 041	

Appendix 9. Assets Assumptions

Property, plant, and equipment, net	Unit		Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
PP&E (Gross)	Mn $		14 627	11 884	12 306	14 906	17 111	19 333	21 596	23 905	26 263	Calculated according to the formula Gross Value PP&E[t+1] = Gross Value PP&E[t] + Capex PP&E[t+1].
PP&E (Accumulated Depreciation)	Mn $		8 572	7 051	6 891	8 182	9 745	11 539	13 567	15 831	18 338	Calculated according to the formula Accumulated Depreciation PP&E[t+1] = Acc. Depreciation PP&E[t] + Depreciation PP&E[t+1].
PP&E (Net)	Mn $		6 055	4 833	5 415	6 724	7 366	7 794	8 029	8 074	7 925	

Other non-currents Assets	Unit		Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Capitalized Software development costs	Mn $		679	610	672	750	757	764	773	784	798	Calculated according to the formula CSDC(t) =CSDC(t-1)+Capex(t)-Amortization(t).
Other	Mn $		9 749	6 574	7 023	7 023	7 023	7 023	7 023	7 023	7 023	Equal to 2022 nominal value.
Other non-currents Assets	Mn $		10 428	7 184	7 695	7 773	7 780	7 787	7 796	7 807	7 821	
						78						

Intangible Assets, Net	Unit		Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Indefinite-lived intangible assets	Mn $		3 755	3 085	3 085	3 085	3 085	3 085	3 085	3 085	3 085	Equal to 2022 nominal value - DELL's 10k Report (2022) - Page 124 - this item does not have Amortization.
Definite-lived intangible assets	Mn $		14 352	6 030	4 376	3 399	2 623	2 016	1 542	1 181	906	Equal to 2022 nominal value less Amortization calculated in the Table of Depreciation & Amortization.
Intangible Assets (Net)	Mn $		18 107	9 115	7 461	6 484	5 708	5 101	4 627	4 266	3 991	

Appendix 10. Debt & Interest Assumptions

Debt & Interest	Unit	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Notes issued	Mn $			4 500	2 250	2 250	2 000	2 167	2 167	2 167	2 167	2 167	Historical 3-Year average (2020-2023) and 2023 stock excange market.
DFS debt issued	Mn $	1 332	1 133	1 836	1 901	0	951	951	951	951	951	951	Historical 2-Year average (2020-2022).
Other Loans	Mn $	2 000	3 666	8 235	0	0	0	0	0	0	0	0	Historical 2-Year average (2020-2022).
Loans /Notes of discountinued operations	Mn $	4 000		1 500	2 000	0	0	0	0	0	0	0	Related to companies sold in 2022. Therefore is not applicable.
Short term debt	Mn $	7 873	4 320	7 737	6 357	5 823	3 362	2 107	1 097	6 755	3 330	3 322	Asumming short term debt paid in t+1 and deducting that value from the long term debt plus the forecasted issued debt calculated above that it will be assumed as long-term debt. - According 10-K Report (2022)- Page 66 "We have made steady progress in paying down debt and we will continue to pursue deleveraging as an important component of our overall strategy." and Aggregate Future Maturities of Debt - Page 118. For 2027 and 2028 an average of the last 5 years short-term debt was applied.
Long term debt	Mn $	43 998	49 201	44 319	32 865	21 131	20 720	21 730	23 750	20 112	19 899	19 694	
Total Debt	Mn $	51 871	53 521	52 056	39 222	26 954	24 082	23 837	24 847	26 867	23 229	23 016	
Interes due to new issued debt	Mn $						176	186	186	186	186	186	New Debt issued calculated above multiplicated by the % of cost of debt calculated - K(d).
Interest in Cash Obligations 2023-28	Mn $						1 068	1 896	1 896	1 539	1 539	1 539	Equal values in Cash Obligations - DELL's 10-K Report (2022) - Page 68.
Total Interest Forecasted	Mn $						1 244	2 082	2 082	1 725	1 725	1 725	

Appendix 11. Inflation Assumptions

Inflation by Area		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Assumption
United States		2,1%	2,4%	1,8%	1,2%	4,7%	8,1%	3,5%	2,2%	2,0%	2,0%	2,0%	Assuming the average forecast Inflation (IMF) for U.S.. According to DELL's 10k Report (2022)- Page 7 and 38 *"Approximately half of ISG revenue is generated by sales to customers in the Americas, with the remaining portion derived from sales to customers in the Europe, Middle East, and Africa region ("EMEA") and the Asia-Pacific and Japan region ("APJ"). (...) Approximately half of ISG revenue is generated by sales to customers in the Americas, with the remaining portion derived from sales to customers in the Europe, Middle East, and Africa region ("EMEA") and the Asia-Pacific and Japan region ("APJ")."*
Africa (Region)		12,8%	11,3%	9,0%	10,6%	12,8%	14,5%	12,4%	8,7%	7,5%	7,0%	6,8%	
Asia and Pacific		2,7%	3,1%	3,4%	3,2%	3,0%	6,7%	5,7%	3,7%	3,3%	3,2%	3,2%	
Europe		2,2%	2,2%	2,0%	1,1%	3,5%	9,8%	6,9%	3,4%	2,6%	2,3%	2,3%	
Middle East (Region)		2,9%	8,4%	6,4%	9,9%	12,5%	13,2%	11,3%	8,3%	7,1%	7,1%	7,0%	
Averege EMEA and APJ Regions		5,2%	6,3%	5,2%	6,2%	8,0%	11,1%	9,1%	6,0%	5,1%	4,9%	4,8%	
World		3,3%	3,6%	3,5%	3,2%	4,7%	8,8%	6,5%	4,1%	3,6%	3,4%	3,3%	

Appendix 12. Geographical Revenue Assumptions

Geographical Description of Revenues

Country net revenue (in USD million)	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
United States	30 966	38 528	42 803	40 338	42 009	46 752	50 510	49 419	49 801	50 714	51 762	52 854	Historical 5-Year average (2018-2022), e.g. according to DELL's 10k Report (2022) - Page 149.
United States (%)	49,8%	48,74%	47,23%	47,56%	48,47%	46,20%							
Forecast Assumption (%)							47,64%						
Foreign countries	31 198	40 512	47 818	44 477	44 661	54 445	55 511	54 313	54 732	55 736	56 887	58 087	Historical 5-Year average (2018-2022), e.g. according to DELL's 10k Report (2022) - Page 149.
Foreign countries (%)	50,2%	51,26%	52,77%	52,44%	51,53%	53,80%							
Forecast Assumption (%)							52,36%						
Total net revenue	**62 164**	**79 040**	**90 621**	**84 815**	**86 670**	**101 197**	**106 021**	**103 732**	**104 533**	**106 450**	**108 649**	**110 941**	

Appendix 13. Revenue Segment Assumptions

Reportable Segments

A) Infrastructure Solutions Group:

Revenues Segment ISG (in USD million)	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Servers and networking	12 973	15 533	19 953	17 193	16 592	17 901	18 931	20 020	21 172	22 391	23 679	25 042	Historical 4-Year average (2019-2022), e.g. according to DELL's 10k Report (2022) - Page 149 and industry forecast.
YoY %		20%	28%	-14%	-3%	8%							
Forecast Assumption (%)							6%						
Storage	9 097	15 384	16 767	17 174	16 410	16 465	16 930	17 409	17 901	18 407	18 927	19 462	Historical 4-Year average (2019-2022), e.g. according to DELL's 10k Report (2022) - Page 149 and industry forecast.
YoY %		69,1%	9,0%	2,4%	-4,4%	0,3%							
Forecast Assumption (%)							3%						
Total ISG net revenue	22 070	30 917	36 720	34 367	33 002	34 366	38 766	38 739	39 933	41 613	43 458	45 393	Total Net Revenue of Segment multiplied by the inflation and revenue percentage per Area.
YoY %		40,1%	18,8%	-6,4%	-4,0%	4,1%	12,8%	-0,1%	3,1%	4,2%	4,4%	4,5%	

B) Client Solutions Group:

Revenues Segment CSG (in USD million)	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Commercial	25 773	27 507	30 893	34 293	35 423	45 576	42 538	42 793	43 050	43 308	43 568	43 830	Historical 4-Year average (2018-2021), e.g. according to DELL's 10k Report (2022) - Page 149 and industry forecast.
YoY %		7%	12%	11%	3%	29%							
Forecast Assumption (%)							-7%	1%					
Consumer	10 736	11 711	12 303	11 562	12 964	15 888	14 309	14 395	14 481	14 568	14 655	14 743	Historical 4-Year average (2018-2021), e.g. according to DELL's 10k Report (2022) - Page 149 and industry forecast.
YoY %		9%	5%	-6%	12%	23%							
Forecast Assumption (%)							-10%	1%					
Total CSG net revenue	36 509	39 218	43 196	45 855	48 387	61 464	61 451	59 190	58 797	59 034	59 388	59 744	Total Net Revenue of Segment multiplied by the inflation and revenue percentage per Area.
YoY %		7,4%	10,1%	6,2%	5,5%	27,0%	0,0%	-3,7%	-0,7%	0,4%	0,6%	0,6%	

Appendix 14. Consolidated Revenue Assumption

Consolidate net revenue (in USD million)	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Infrastructure Solutions Group	-	30 917	36 720	34 367	33 002	34 366	38 766	38 739	39 933	41 613	43 458	45 393	According to Revenue Segment Table.
Client Solutions Group	-	39 218	43 196	45 855	48 387	61 464	61 451	59 190	58 797	59 034	59 388	59 744	According to Revenue Segment Table.
Reportable segment net revenue	-	**70 135**	**79 916**	**80 222**	**81 389**	**95 830**	**100 218**	**97 929**	**98 730**	**100 647**	**102 846**	**105 138**	
Other businesses	-	1 704	1 676	4 823	5 382	5 388	5 824	5 824	5 824	5 824	5 824	5 824	Equal to 2022 nominal value.
Vmware	-	8 485	9 741	10 905	11 873	n.a	0	0	0	0	0	0	Related to companies sold in 2022. Therefore is not applicable.
Total other business	-	**10 189**	**11 417**	**15 728**	**17 255**	**5 388**	**5 824**	**5 824**	**5 824**	**5 824**	**5 824**	**5 824**	
Unallocated transactions	-	-15	-9	-1	5	11	11	11	11	11	11	11	
Impact of purchase accounting	-	-1269	-703	-229	-106	-32	-32	-32	-32	-32	-32	-32	Equal to 2022 nominal value.
Total consolidated net revenue	-	**79 040**	**90 621**	**95 720**	**98 543**	**101 197**	**106 021**	**103 732**	**104 533**	**106 450**	**108 649**	**110 941**	

Appendix 15. Net Revenue & Cost of Revenue Assumptions

Net Revenue & Cost of Revenue (in USD million)	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Assumption
Net revenue:	-												
Products	-	60 898	70 707	67 607	67 744	79 830	83 085	81 291	81 919	83 421	85 145	86 941	
% products	-	77%	78%	80%	78%	79%							Historical 5-Year average (2018-2022).
Forecast Assumption (%)							78%						
Services	-	18 142	19 914	17 208	18 926	21 367	22 936	22 441	22 614	23 029	23 505	24 001	
% services	-	23%	22%	20%	22%	21%							Historical 5-Year average (2018-2022).
Forecast Assumption (%)							22%						
Total net revenue	-	**79 040**	**90 621**	**84 815**	**86 670**	**101 197**	**106 021**	**103 732**	**104 533**	**106 450**	**108 649**	**110 941**	
YoY %			15%	-6%	2%	17%	5%	-2%	1%	2%	2%	2%	
Cost of net revenue:	-												
Products	-	51 433	57 889	55 369	56 431	67 224	69 083	67 591	68 113	69 363	70 796	72 289	
% cost of products	-	84%	82%	82%	83%	84%							Historical 5-Year average (2018-2022).
Forecast Assumption (%)							83%						
Services	-	7 070	7 679	8 807	10 099	12 082	12 316	12 050	12 143	12 365	12 621	12 887	
% cost of services	-	39%	39%	51%	53%	57%							Historical 3-Year average (2020-2022).
Forecast Assumption (%)							54%						
Total cost of net revenue	-	**58 503**	**65 568**	**64 176**	**66 530**	**79 306**	**81 399**	**79 641**	**80 256**	**81 728**	**83 416**	**85 176**	
YoY %			12%	-2%	4%	19%	3%	-2%	1%	2%	2%	2%	
Cost of net revenue as % of net revenue	-	74%	72%	76%	77%	78%	77%	77%	77%	77%	77%	77%	
Gross margin	-	**20 537**	**25 053**	**20 639**	**20 140**	**21 891**	**24 623**	**24 091**	**24 277**	**24 722**	**25 233**	**25 765**	

Appendix 16. Risk-free Rate

CAPM Model	Risk-Free Rate	3,94%

Description	Risk-free rate	Source
5Y U.S. Tresury Yields	4,22%	Bloomberg
10Y U.S. Treasury yields	3,94%	Bloomberg
30Y U.S. Tresury Yields	3,93%	Bloomberg
5Y U.S. Tresury Yields	4,21%	Investing
10Y U.S. Treasury yields	3,95%	Investing
30Y U.S. Tresury Yields	3,93%	Investing

Appendix 17. Beta Regression

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,621973
R Square	0,38685
Adjusted R Square	0,386362
StandarD Error	0,019023
Observations	1258

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0,286771772	0,286772	792,4383	1,4124E-135
Residual	1256	0,454527926	0,000362		
Total	1257	0,741299698			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95,0%*	*Upper 95,0%*
Intercept	0,000461	0,0005366	0,859134	0,390431	-0,00059172	0,001513743	-0,00059	0,001513743
X Variable 1	1,093219	0,038835104	28,15028	1,4E-135	1,017030273	1,169407923	1,01703	1,169407923

Appendix 18. MRP & CRP

Market	% of Net Revenue	Default spread	Country Risk Premium	Market Risk Premium	Source
United States	47,64%	0,00%	0,00%	5,94%	A. Damoradaran
Global	52,36%	4,72%	6,65%	12,59%	A. Damoradaran
Dell Inc.	100,00%	**2,47%**	**3,48%**	**9,42%**	

Appendix 19. Cost of Debt

Cost of Debt (Kd)	5,97259%

Method A: Interest rate: rate that the bank charges the firm

Cost of Debt	2022
Rd	**4,69%**

Method B: Yield to maturity of current debt

Senior Notes:	ISIN	Issue Price	BV 2023	BV 2022	BV 2021	Coupon	Year end	Years to Mat.	Price (Jan/23)	Paym. Year	YTM	Source
5.45% due June 2023	US24703TAA43	99,96	1 000	1 000	3 750	5,45%	2023	2023	100,062	2	5,24%	Markets Insider
4.00% due July 2024	US24703TAB26	99,56	1 000	1 000	1 000	4,00%	2024	2024	98,7805	2	4,55%	Markets Insider
5.85% due July 2025	US24703TAC09	99,86	1 000	1 000	1 000	5,85%	2025	2025	101,818	2	5,01%	Markets Insider
6.02% due June 2026	US24703TAD81	99,95	4 500	4 500	4 500	6,02%	2026	2026	101,68	2	5,47%	Markets Insider
4.90% due October 2026	USU24724AK95	99,74	1 750	1 750	1 750	4,90%	2026	2026	98,25	2	5,37%	Markets Insider
6.10% due July 2027	US24703TAF30	99,76	500	500	500	6,10%	2027	2027	104,88	2	4,82%	Markets Insider
5.30% due October 2029	USU24724AL78	99,31	1 750	1 750	1 750	5,30%	2029	2029	77,92	2	9,87%	Markets Insider
6.20% due July 2030	US24703TAH95	99,82	750	750	750	6,20%	2030	2030	104,42	2	5,44%	Markets Insider
8.10% due July 2036	US24703TAJ51	99,93	1 000	1 000	1 500	8,10%	2036	2036	115,88	2	6,32%	Markets Insider
3.38% due December 2041	US24703DBE04	99,67	1 000	1 000	-	3,38%	2041	2041	72,092	2	5,85%	Markets Insider
8.35% due July 2046	USU2526DAF60	99,92	800	800	2 000	8,35%	2046	2046	103,02	2	8,05%	Markets Insider
3.45% due December 2051	US24703DBG51	99,96	1 250	1 250	-	3,45%	2051	2051	66,7285	2	5,84%	Markets Insider
5.75% due January 2033	US24703DBL47	99,79	1 000	-	-	5,75%	2033	2033	99,21	2	5,82%	Markets Insider
5,25% due January 2028	US24703DBJ90	99,96	1 000	-	-	5,25%	2028	2028	100,23	2	5,20%	Markets Insider
7.10% due April 2028	US247025AE93	99,76	300	300	300	7,10%	2028	2028	109,58	2	4,86%	Markets Insider
6.50% due April 2038	US24702RAF82	99,94	388	388	388	6,50%	2038	2038	103,691	2	6,11%	Markets Insider
5.40% due September 2040	US24702RAM34	99,93	264	264	264	5,40%	2040	2040	91,322	2	6,23%	Markets Insider
								Weighted Average YTM			5,973%	
								Weighted Average Maturity			7,83	

Method C: Credit Spread

Risk-free rate	Default Spread (Country)	Interest Coverage Ratio	Default Sprea	Cost of Debt
3,94%	2,47%	3,69	2,00%	8,41%

If interest coverage ratio is			
>	≤ to	*Rating is*	*Spread is*
-100000	0,199999	D2/D	20,00%
0,2	0,649999	C2/C	17,50%
0,65	0,799999	Ca2/CC	15,78%
0,8	1,249999	Caa/CCC	11,57%
1,25	1,499999	B3/B-	7,37%
1,5	1,749999	B2/B	5,26%
1,75	1,999999	B1/B+	4,55%
2	2,2499999	Ba2/BB	3,13%
2,25	2,49999	Ba1/BB+	2,42%
2,5	2,999999	Baa2/BBB	2,00%
3	4,249999	A3/A-	1,62%
4,25	5,499999	A2/A	1,42%
5,5	6,499999	A1/A+	1,23%
6,5	8,499999	Aa2/AA	0,85%
8,5	100000	Aaa/AAA	0,69%

Appendix 20. Market Value of Debt and Equity

Market Value of Debt

Interest expense	Cost of Debt	Weighted average maturity (years)	BV Total debt	Market value of Debt
1 244,22	5,973%	7,83	24 081,50	22 895,53

Market Value of Equity

Outstanding Shares	Share Value (jan 23)	Market value of Equity
716,13	40,62	29 089,13

Equity Weight	56%
Debt Weight	44%
D/E Ratio	79%

Appendix 21. WACC Calculations

Book Values	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)
BV Equity	13	830	1 674	2 881	4 161	5 519
BV Debt	24 082	23 837	24 847	26 867	23 229	23 016
Cash and Equivalents	8 555	8 750	10 954	14 833	13 266	15 327
Market Value Equity	29 089					
Market Value Debt	22 896					
Equity Weight	56%	56%	56%	56%	56%	56%
Debt Weight	44%	44%	44%	44%	44%	44%

WACC	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Terminal Value
Cost of Equity							
Risk Free Rate R[F]	3,94%	3,94%	3,94%	3,94%	3,94%	3,94%	3,93%
Beta levered ß(e)	1,09	1,09	1,09	1,09	1,09	1,09	1,09
Market Risk Premium (MRP)	9,42%	9,42%	9,42%	9,42%	9,42%	9,42%	9,42%
Country Risk Premium (CRP)	3,48%	3,48%	3,48%	3,48%	3,48%	3,48%	3,48%
Cost of Equity K[e]	**14,24%**	**14,24%**	**14,24%**	**14,24%**	**14,24%**	**14,24%**	**14,23%**
Cost of Debt							
Cost of Debt K[d]	5,97%	5,97%	5,97%	5,97%	5,97%	5,97%	5,96%
Marginal tax rate [t]	16,6%	16,6%	16,6%	16,6%	16,6%	16,6%	16,6%
After-tax cost of debt K[d]	**4,98%**	**4,98%**	**4,98%**	**4,98%**	**4,98%**	**4,98%**	**4,98%**
WACC							
Weight of Equity	56,0%	56,0%	56,0%	56,0%	56,0%	56,0%	56,0%
Weight of Debt	44,0%	44,0%	44,0%	44,0%	44,0%	44,0%	44,0%
Pre-ta WACC R[U]	10,6%	10,6%	10,6%	10,6%	10,6%	10,6%	10,6%
WACC	10,16%	10,16%	10,16%	10,16%	10,16%	10,16%	10,16%

Appendix 22. PV FCFF Calculations

EUR million	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Terminal Value
EBIT*(1-Tc)	3 572,1	3 495,0	3 522,0	3 586,6	3 660,6	3 737,9	3 737,9
D&A	2 489,3	2 586,8	2 651,3	2 753,5	2 880,8	3 040,7	2 782,6
ΔNWC	- 573,0	332,8	- 116,4	- 278,8	- 319,7	- 333,2	- 333,2
CAPEX	2 900,0	2 459,4	2 478,4	2 523,8	2 576,0	2 630,3	2 630,3
FCFF		**3 289,6**	**3 811,3**	**4 094,9**	**4 285,1**	**4 481,4**	**4 223,3**
Terminal Value							52 822,8
PV(FCFF) by WACC (Jan-2024)			**3 459,6**	**3 374,2**	**3 205,1**	**3 042,6**	**35 875,9**

Appendix 23 DCF Calculations

Enterprise Value	EUR million
Terminal Growth Rate	2,00%
Perpetuity WACC	10,2%
Terminal Value	52 822,8
PV of Terminal Value	35 875,9
PV of FCFF	13 081,5
Enterprise Value	**48 957,38**

DCF - Price Target	EUR million
Enterprise Value	48 957,38
Net Debt	15 086,80
Equity Value	33 870,58
Share Outstanding	716,13
Equity Value per Share	47,30
For. Price on 31 January. 2024	47,30
Price on 31 January. 2023	40,62
Upside Potential	**16,44%**

Appendix 24. DDM Calculations

Dividend Discount Model (USD million)	Jan-23 (F)	Jan-24 (F)	Jan-25 (F)	Jan-26 (F)	Jan-27 (F)	Jan-28 (F)	Terminal Value
Cost of Equity R[E]	14,24%	14,24%	14,24%	14,24%	14,24%	14,24%	14,23%
Dividend	945	945	945	945	945	945	7 882
PV(DIVt)		945	827	724	634	555	4 629
Total PV(DIVt)	8 315,13						

Enterprise Value	USD million
Equity Value	8 315,13
Share Outstanding	716,13
Equity Value per Share	11,6
For. Price on 31 January. 2024	11,6
Price on 31 January. 2023	40,6
Downside Potential	**-71%**