INSTITUTO
UNIVERSITÁRIO
DE LISBOA

Equity research: Shopify Inc.

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Master's in Finance

Supervisor:
Phd Pedro Manuel de Sousa Leite Inácio, Assistant Professor, ISCTE Business School

November, 2022

BUSINESS
SCHOOL

Department of Finance

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Resumo

A Shopify é uma empresa Canadiana cujo rápido crescimento no setor do e-commerce está a gerar bastante interesse junto de investidores. O core do negócio consiste em disponibilizar um Software que permite aos seus utilizadores criar uma loja online em breves minutos sem conhecimento prévio de programação.

Os subscritores da sua plataforma consistem em pequenas, médias e grandes empresas com interesse em potencializar o canal de vendas digitais com diversas soluções adaptadas à dimensão e estratégia de cada comerciante. A sua estratégia consiste em aumentar o número de subscritores que uma vez dentro da plataforma encontram à sua disposição inúmeras ferramentas para comercializarem de forma fácil e eficaz os seus produtos num ambiente digital.

O objetivo da tese é avaliar a Shopify e determinar qual o valor das suas ações. Foram selecionadas como metodologias para a avaliação da Shopify: Discounted Cash Flow através do FCFF e do FCFE bem como a avaliação relativa de múltiplos (EV/EBITDA e Forward P/E).

Como complemento ao 5-Year Discounted Cash Flow, incluída na tese encontra-se ainda uma análise de sensibilidade de maneira a avaliar os impactos dos pressupostos nas quais a avaliação é feita como o WACC, o custo dos capitais próprios e a taxa de crescimento.

A avaliação pelo método FCFF resultou num preço de USD 20.6 por ação, seguido pelo valor obtido através da avaliação pelo método FCFE de USD 21.4. A avaliação através dos múltiplos EV/EBITDA e Forward P/E resultou num valor de USD 18.3 e USD 33.7 USD, respetivamente.

Obtidos os justos valores por via da aplicação das metodologias anteriormente referidas, resta comparar com o valor de mercado. A avaliação do preço das ações da Shopify é inferior ao valor pela qual a empresa é transacionada no mercado e encontra-se por isso sobrevalorizada. Tendo em consideração o valor da ação á data de 31 outubro de 2022 de USD 34.2, a recomendação final é **venda**.

Palavras-Chave: E-commerce, avaliação de empresas, múltiplos e comparáveis, digitalização; Business-to-Consumer, Business-to-Business, Discounted Cash Flows; WACC

JEL Classification: G300 – Corporate Finance; G32 – Value of Firm

Abstract

Shopify is a Canadian company that caught the eye of worldwide investors due to its fast-growing tech-enabled business. Within the core of its operations, we find software that enables almost any merchant to build an online shop with little to no previous knowledge of programming. Its subscriber base is diverse and the services offered are tailored to serve small, medium-sized and big-sized merchants. Its growth strategy is based on increasing its subscriber base and then generating additional revenue through the tools they provide to its merchants to manage their daily operations.

In 2021, the global pandemic directly affected the demand for Shopify shares. Shopify's stock rose to record high levels as investors saw in Shopify´s online network of merchants, a good retail hedge for the impacts caused by the government closing of all non-essential businesses. Across 2022 and as we move further away from the pandemic the stock has been steadily decreasing from its all-time high of USD 176.3 to USD 34.2 as of 30th October 2022.

The main goal of this equity research is to reach the fair value of Shopify. Several valuation methodologies were carried out to value Shopify: the Discounted Cash Flow model through the FCFF and FCFE methods and the multiple-based valuation through EV/EBITDA and the Forward P/E ratio. Complementary to the 5-Year Discounted Cash Flow Method, a sensitivity analysis table was also included to understand the impacts of some of the most critical assumptions considered in the presented valuation such as the WACC, the growth rate and the cost of equity.

The valuation based on the FCFF results in a fair value for Shopify stock at USD 20.6, followed by the value obtained through the FCFE methodology at USD 21.4. The valuation through the multiples resulted in a share price of USD 18.3 and USD 33.7 corresponding to the EV/EBITDA and Forward P/E ratio respectively.

The value at which the stock is currently trading above the fair values through the application of the models and as result the final recommendation is to **sell.**

Key Words: E-commerce, Valuation; Digitalization; Business-to-Consumer, Business-to-Business, Discounted Cash flows; WACC.

JEL Classification: G300 – Corporate Finance; G32 – Value of Firm

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Glossary

APV – Adjusted Present Value
B2B – Business to Business
B2C – Business to consumer
B2G – Business to government
CAGR – Compound Annual Growth Rate
CAPEX – Capital Expenditure
CF – Cash Flow
COGS – Cost of goods Sold
CFI – Corporate Finance Institute
D&A – Depreciations and Amortisations
DCF – Discounted Cash Flows
EBIT – Earnings before Interest and Taxes
EBITDA – Earnings before Interest, Taxes, Depreciation and Amortisation
EMEA – Europe, Middle East and Africa
EV – Enterprise Value
EVA – Economic Value Added
FCFE – Free Cash Flow to Equity
FCFF – Free Cash Flow to the Firm
g – Growth rate
GDP – Gross Domestic Product
IMF – International Monetary Fund
IPO – Initial Public Offering
MS – Merchant Solutions
NOPLAT – Net Operating Profit less Amortisation and Taxes
NWC – Net Working Capital
OECD – Organization for Economic Cooperation and Development
ROE – Return on Equity
ROIC – Return on Invested Capital
SaaS – Software as a service
T- Tax
WACC – Weighted Average Cost of Capital
WTO – World Trade Organization

1. Introduction

Shopify is a fast growing company in the e-commerce segment that offers cloud based services to merchants worldwide. Today in 2022, there are more than four million online stores using Shopify´s software across 175 countries all around the globe. Since the IPO in 2015, Shopify has managed to consistently grow its merchant base and increase the dollar amount of merchandises sold through their software.

The aim of this equity research is to reach the fair value of Shopify´s stock price using several valuation methodologies.

This thesis is divided into 5 parts. The first part is the literature review, which presents the theory regarding the valuation models that are going to be used in the fair value assessment. The second section explains the distressing global macroeconomic environment that we live today. Section three aims to present not only Shopify but also the market where Shopify operates, the e-commerce market. The fourth part details the application of the models as well as the forward looking assumptions on which the valuation thesis is performed. And the fifth part relates to the presentation of valuation results, additional considerations and final recommendations.

2. Literature Review

2.1 – Valuation

According to Professor Aswath Damodaran, every financial and real asset has a value and, the key to successful investing and managing those assets derives from understanding not only what the value of the asset is but what the sources of that value are (Damodaran 2018). Professor Damodaran adds that there is a surprising similarity in the basic principles of valuation despite the difference in techniques across assets. The focal point in valuation analysis is that a firm's true value can be derived from financial characteristics such as its growth prospects, risk profile, and cash flows. Some analysts use the Discounted Cash Flow models to value different firms while others complement the Discounted Cash Flow model with relative valuation techniques through the use of multiples such as price-to-earnings ratio and price-to-book value ratios. Throughout the years, several models have been born and discontinued but the main models used in the market remain in great part unchanged and aim to value an asset based on the cash flows they are expected to generate.(Damodaran 2018).

As introduced by Frykman and Tolleryd (2003:12) in "Corporate Valuation: an easy guide to measuring value", the necessity to evaluate a company mainly arises from four situations:

1) Raising capital for growth.
2) Creating an incentive program to keep and attract employees.
3) Executing a merger, acquisition or divestiture.
4) Conducting an IPO.

The authors explain that in a valuation there are two parties with opposite goals, one wants to maximize the valuation and the other wants to minimize it. The main goal of this project is to evaluate Shopify (NYSE: SHOP) under the framework that the goal of every investor should be not to pay more for an asset than it's worth (Damodaran, 2018) and arrive at the fair value of Shopify's share price. Consequently, the following literature review aims to present the foundations of the valuation methodologies applied as a means to streamline the interpretation of the results presented hereinafter.

2.2 Valuation Methodologies

2.2.1 – Discounted Cash Flows (DCF)

The DCF Model is a valuation methodology to estimate investments using their future cash flow. As Mota *et al*. (2015) put it, the DCF model results in a value estimate by discounting expected cash flows to today using a discount rate. According to the authors, the main merit of the DCF model is its direct association with important drivers of value and future cash flow generation potential of the company. However, the authors note that the key limitation of this model is related to the access to relevant market data that can be used to effectively estimate future cash flows where pessimism and optimism play an important part regarding the forecasted evolution of any given firm's activity and operations.

Similarly, for Damodaran (2011), a company can be valued through expected future cash flows, discounted at a rate that reflects its risk. For assets that generate cash flow, this value will be a function of the expected cash flows and the uncertainty about receiving those cash flows (Damodaran, 2016). A positive DCF valuation means that the asset, project or investment can generate more cash than it consumes and hence is profitable for shareholders. Many consider the DCF methodology to be the most precise as it is the only method that provides investors with an intrinsic value of how much the company is worth. Notwithstanding DCF's precision, accuracy often poses a challenge in this valuation technique as the analysis relies on forecasted future cash flows that depend on multiple assumptions that may not hold.

All in all, the discounting of cash flows that take into account the aforementioned associated risk can be synthetized as follows (Damodaran, 2014):

$$Discounted\ Cash\ Flows = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t} \quad (1)$$

Where:

n = life of an asset

CF_t = Cash flow in period t

r = Discount rate reflecting the riskiness of the cash flows.

Damodaran (2012) presents four approaches to the model as follows: firm valuation through the Free Cash Flow to the Firm (FCFF), equity valuation through the Free Cash Flow to Equity (FCFE) or the Dividend Discount Model (DDM) and the Adjusted Present Value (APV) Model.

2.2.2. - Free Cash Flow to the Firm (FCFF)

The amount of cash created by the business after deducting costs, taxes, changes to networking capital, and investments in fixed capital is referred to as free cash flow to the firm (Pinto et al., 2013). The FCFF, according to Pinto et al. (2013), is what's left over after operating costs (taxes included) and the necessary expenditures in working capital and fixed capital have been made. So, the Free Cash flow to the company is the cash flow from operations less capital outlays. The value of the common stock, according to the authors' hypotheses, corresponds to the present value of anticipated future FCFF less the market value of outstanding debt.

According to Koller *et al.* (2010) to determine the value of operations, one should discount each year's forecast of free cash flow for time and risk. When analysts discount any set of cash flows, it is imperative to define the cash flows and discount factor consistently. The risk that the investor faces must be reflected in the discount factor for free cash flow to the firm. The required rates of return for debt (Kd) and equity (Ke) based on their market-based target values are combined to create the weighted average cost of capital (WACC). The opportunity cost of the capital suppliers is seen as the cost of capital. This means that if these capital providers have other opportunities to participate in projects with comparable risk, they won't choose to do so in a firm unless its rate of return can offset this opportunity cost (Pinto et al, 2010).

Hence, the FCFF is calculated by forecasting EBIT (1 – Tax rate) and subtracting incremental fixed capital expenditures and incremental working capital expenditures as follows (*Pinto et al, 2010*)

$$FCFF = EBIT\ (1 - t) + \ D\&A - CAPEX\ \mp\ \Delta NWC \quad (2)$$

or,

$$FCFF = Operating\ Cash\ Flow - Capital\ Expenditures \quad (3)$$

Where:

EBIT = Turnover – Cost of Goods Sold – Operating Expenses – Depreciation and Amortization

t = Tax rate

CAPEX = Capital Expenditure (net of disposals

ΔNWC = Investment in Net Working Capital

OCF = Operational Cash Flow = NOPLAT + D&A

NOPLAT = (EBITDA-D&A) (1- t) = EBIT (1-t)

EBITDA = Operating Profit + D&A

Capital Expenditure or CAPEX is the investment effort related to not only the expansion but also the renovation of the company's fixed assets. CAPEX are cash payments to acquire fixed assets (Berk and Demarzo, 2014). Purchases of a new property, plant and equipment are examples of capital expenditures. As Berk and Demarzo (2014) put it that capital expenditures do not appear immediately as expenses on the income statement. Alternatively, the firm depreciates these assets and gradually deducts depreciation as time goes by.

A firm's Working Capital corresponds to the difference between current assets (such as cash, inventory and accounts receivable) and current liabilities (such as account payables, taxes payable and wages payable).
Berk and Demarzo (2014) support that the release or consumption in period t represents the Investment in Working Capital and is calculated by:

$$\Delta NWC_t = \Delta NWC_t - \Delta NWC_{t-1} \quad (4)$$

Where:

NWC= Current Assets – Current liabilities
NWC_t= Net Working capital of Year t
NWC_{t-1}= Net Working capital of Year t-1

Operational Cash Flow (OCF) is a measure of the cash that the firm generates through its core operations. D&A is added to the operational cash flow because it is not a cash outflow but rather a charge on the carrying amount of a fixed asset. D&A is removed from the Net Operating Less Adjusted Taxes (NOPLAT) calculation since it provides for tax savings (Mota et Al., 2015). However, as it represents the economic flow that will be converted to cash, we add D&A once more to the NOPLAT when calculating the OCF as per Berk and Demarzo (2014).

The estimation of the Free Cash Flow to the Firm (FCFF) model assumes projections based on a point in time when the firm's activity stabilises. Forecasting the Free Cash Flows is divided into two periods, a first one is usually three to five years long where we try to make projections of all relevant variables (such as EBITDA, depreciation and amortization, corporate taxes, changes in working capital, investments and disposals). And a second period where we assume constant growth for the cash flows generated from the firm.

We also refer to the time frame in which we generate our estimates as the Explicit Forecast period. In addition to the management of the company's forecasts and future strategy recommendations, it includes all the financial data that is currently available regarding operational activities. We assume that cash

flows will continue to grow perpetually to capture a company's continuity value (or the value of cash flows that occur after the explicit forecasted period) (g). According to Damodaran (2015), the continuity value—also known as the Terminal value—can be calculated as follows:

$$Terminal\ Value = \frac{FCFF_{n+1}}{WACC - g} \quad (5)$$

Where:

$FCFF_{n+1}$ = Free Cash Flow to Firm of the Year following the Last year of Explicit Forecasted Period.

WACC = Weighted Average Cost of Capital

g = Perpetual Growth Rate of Cash Flows, after the Explicit Forecast Period.

Enterprise Value (EV) is calculated by discounting the Explicit Forecast Period cash flows and Terminal value at the Weighted Average Cost of Capital:

$$Enterprise\ Value = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{Terminal\ Value}{(1+WACC)^t} \quad (6)$$

Where:

$FCFF_t = Free\ Cash\ Flow\ to\ the\ Firm\ of\ year\ T$

WACC = Weighted Average Cost of Capital

Terminal Value = Value of perpetual cash flows as per equation (5)

The equity value of an enterprise refers to the value of shareholders' claims in the company. Equity value is often referred to as the market value (MV) of equity as it represents the accumulated market value of all company shares (Frykman and Tolleryd, 2003). As per Frykman and Tolleryd (2003) it is important to establish the difference between the accounted equity in the balance sheet and the market value of equity. As they explain, to arrive at the value per share, one must divide the firm's equity by the total number of shares outstanding.

The authors further explain that the Enterprise Value ("EV") corresponds to the value of the whole company which translates into the value to all claim holders in the company. As so, the enterprise value is composed of the market value of any given firm´s equity plus the market value of the company's debt, its pension provisions, minority interests and additional claims. Many investment professionals define enterprise value as interest-bearing debt plus the market value of equity minus excess cash, whereas Koller *et al.* (2020) define Enterprise value as the value of operations plus non-operating assets. As Koller *et al*. (2020) extend, the investment banker´s definition of enterprise value resembles their

definition of the value of operations but for companies that do not own non-operating assets (such as non-consolidated subsidiaries) or owe debt equivalents (such as unfunded pension liabilities). According to them, for companies with significant non-operating assets or debt equivalents, the banking version of enterprise value is susceptible to distortions.

Koller *et. Al* (2020) suggest that to determine enterprise value, one must add non-operating assets to the core value of operations. As the authors further postulate, the most common non-operating assets are excess cash, investments in nonconsolidated companies, and tax loss carry forwards. To estimate equity value, one must subtract all non-equity claims from enterprise value. Non-equity claims include short-term and long-term debt, debt equivalents like unfunded pension liabilities, and hybrid securities like convertible securities and employee stock options. Finally, to estimate the intrinsic value per share, divide the resulting equity value by the most recent number of shares outstanding. A lot of investors have found substantial value hidden in non-operating assets, especially in privately held conglomerates and others have been burned by not being able to identify and value all non-equity claims against enterprise value as happened in the case of Enron in the year 2000 (Koller *et. Al*, 2020)

$$Equity\ Value = Enterprise\ Value + Non\ Operating\ Assets - Debt\ and\ equivalents \quad (7)$$

Non-operating is defined by the CFI institute as something that is not necessary for a business to run normally but can nevertheless bring in money. Excess cash and cash equivalents, marketable securities, unused assets, loans and receivables, unconsolidated subsidiaries, operating leases, and pension assets are examples of non-operating assets. Non-operating assets nonetheless have value to the shareholder, despite not being taken into account in the calculation of free cash flow, as Koller *et al*. (2020) have stated. Thus, to determine the enterprise value, it is necessary to estimate the market value of each non-operating asset separately and then add the resultant amount to the DCF value of operations.

Debt and equivalents refer to borrowed money that is used to finance operations.

2.3 – Weighted Average Cost of Capital (WACC)

The discount rate, which is commonly believed to reflect the investor's opportunity cost of capital, is the desired rate of return for an investment. According to each type's intended use, the Weighted Average Cost of Capital (WACC) calculates the normal cost of financing a corporation using debt and equity as follows:

$$\text{WACC} = \frac{E}{E+D} * r_e + \frac{D}{E+D} * r_d * (1 - t) \quad (8)$$

Where:

E = Market Value of Equity

D = Market Value of Debt

$\frac{E}{E+D}$ and $\frac{D}{E+D}$ = Target Capital Structure

r_e = Cost of Equity

r_d = Cost of Debt

t = Corporate Tax Rate

2.4 – Target Capital Structure:

The proxy for the target capital structure for any given firm is the average D/E ratio of its peer group because it is expected that in the long run, the firm's capital structure will converge with its peers. Usually, the peer group is defined as a set of comparable publicly listed companies that operate in the same sector. As Koller *et. Al.* (2020) suggest, a lot of companies are already close to their target capital structure. If the company we are valuing is not close to its capital structure, one must decide how quickly the company will achieve the target. In the simplest scenario, the company will rebalance immediately and maintain the new capital structure. In this case, using the target weights and a constant WACC (for all future years) will most likely result in a reasonable valuation. To determine a firm's current capital structure we need to measure the market value of all claims against enterprise value. For most companies, the claims will consist primarily of traditional debt and equity.

2.5 – Cost of Debt (r_e)

The cost of debt measures the funding expenses associated with a company's borrowings and is an indicator of the interest rate at which the company can finance itself. Debt typically has the following traits: a promise to make regular payments in the future. These payments are tax-deductible, and if they are missed, the party who is owed them may lose control of the business or default. The rate represents both the average market interest rates and the company's implicit default risk (Damodaran, 2012). The interest paid on the company's debt is legally agreed upon for traditional bank financing, and for traded debt (such as bonds), the yield-to-maturity adjusted for default probability is normally

2.6 – Cost of Equity (r_d)

Mota *et al.* (2015) define the cost of equity as the rate that reflects not only the operational but also the financial risk of a company – measuring the operational risk through the unlevered beta, and considering the weight of equity in the capital structure of the firm. The most used models to estimate the cost of equity (Ke) are the CAPM ("Capital Asset Pricing Model"), the Gordon Model and the Modigliani & Miller. We are going to focus on the most commonly used CAPM model which defines a stock's risk as its sensitivity to the market as a whole (Koller *et. al.,* 2020). The cost of equity can be divided into three main components: the risk-free rate (R_f), the risk premium or the product between the equity risk premium by the beta of the stock (β_L) and the country risk premium.

$$k_e = R_f + \beta_L * [E(R_m) - R_f] + \text{CRP} \quad (9)$$

Where:

$k_e =$ Cost of equity

R_f = Risk-free rate

E (R_m) = Expected Market Return

E (R_m) $- R_f$ = Market Risk Premium

β_L= Levered Beta

CRP = Country Risk Premium

The predicted return on an asset that is considered to be risk-free serves as the risk-free rate in the majority of risk and return models used in finance (Damodaran 2012). In most cases, it refers to a return on a Treasury bill or government bond in the country where the company is based that is valued with a term that typically fits the investor's investment horizon. Bonds with a longer length of 10 to 15 years

should be taken into consideration since equity investments are often long-term investments (Frykman and Tolleryd. 2003).

According to Damodaran (2003), a company's unlevered beta (β_U) is influenced by the cyclicality and discretionary character of its products and services, as well as its operating leverage. Given that it is based on the assets the company owns, another name for this indicator is asset beta. Thus, in addition to the riskiness of the business, the levered beta (β_L)), also known as the beta for an equity investment in a corporation, is defined by the amount of financial leverage risk it has assumed.

The levered beta reflects the operational risk of the company in comparison to the market in which operates. This means that a beta greater than 1 means the company generates

As so, the formula to calculate the levered beta is as follows:

$$\beta_L = \beta_U * [1 + (1\text{-}t) * \frac{D}{E}] \quad (10)$$

Where:

β_L = Beta Levered

β_U= Beta Unlevered

t = Corporate tax rate

$\frac{D}{E}$ = Debt to Equity Ratio

As per Frykman and Tolleryd (2003), the market risk premium is the average risk premium that is required to invest in a risky security (shares for example) compared to investments that are considered to be safe (government bonds for example). It is defined as the difference between the market return and the risk-free rate, representing the additional earnings over the risk-free rate. Frykman and Tolleryd (2013) add that historically this risk premium has been around 5-6% for traded companies included in the SP&500 but there might be a need for adjustment depending on the market.

2.7 – Free Cash Flow to Equity ("FCFE")

The free cash flow to equity corresponds to the leftover free cash flow after deducting all interest expenses, debt issuance costs, and debt repayment costs, according to Berk and Demarzo (2014). The cash flow to equity, according to Damodaran in "The Little Book of Valuation" (2010), is the cash flow that is left over for equity investors after all debt repayments have been made and reinvestment needs have been satisfied. Then, using the cost of equity described in the preceding section, the cash flows are discounted.

According to Berk and DeMarzo (2014) the formula for the FCFE is as follows:

FCFE = FCFF – Interest Payments * (1 – t) + Net Borrowing (11)

Where:

FCFE = Free Cash Flow to Equity

FCFF = Free Cash Flow to the Firm

t = Corporate tax rate

Pinto et al (2007) define Net borrowing as net debt less debt repayments over the period for which we are calculating the cash flow and is represented by:

Net Borrowing = $D_t - D_{t-1}$ (12)

Where:

D_t = Debt at the end of period t

D_{t-1} = Debt at the end of period t-1

In conclusion, the cash flows (net of taxes) that have been transacted with creditors and preferred stockholders are deducted from FCFF to arrive at FCFE (Pinto et al, 2007).

2.8. – Dividend Discount Model ("DDM")

The Dividend Discount Model ("DDM"), which defines the value of a company as the present value of expected dividends on it, is one of the simplest models for valuing equity (Damodaran 2012). Damodaran (2012) goes on to say that when a stock is purchased, an investor expects to get two forms of cash flows: dividends for the duration that the investment in the company is held and also the gain or loss recorded at the time of disposal. The value of a stock is the present value of dividends to infinity since the expected price is influenced by future payouts. The formula is as follows:

$$\text{Share Price} = \frac{D_1}{(1+K_e)} + \frac{D_2}{(1+K_e)^2} + \ldots + \frac{D_n}{(1+K_e)^n} + \frac{TV}{(1+K_e)^{n'}} \quad (13)$$

And,

$$\text{TV} = \frac{D_{n+1}}{(k_e - g)} \quad (14)$$

Where:

TV = Terminal Value

N = Number of years in Explicit Forecast Period.

D_t = Expected dividends per share, in period t.

k_e = Cost Equity

g = Perpetual growth rate

According to Frykman and Tolleryd (2003), there are two parts to the calculation, the first part is to forecast the yearly dividend and discount them back to today using the correspondent yearly cost of capital. The authors state that the time frame chosen usually ranges from 10-15 years for the explicit period. The second part, after the explicit period, relates to the forecast of the long-term dividend growth and the appropriate long-term cost of capital which are used to compute the terminal value. One of the limitations of the model pointed out by Frykman and Tolleryd (2003) is not only that the model looks back to predict the future but also assumes a static dividend distribution policy. Nonetheless, given its simplicity, it is widely accepted as a complement to other valuation models.

2.9 – Adjusted Present Value Model ("APV")

Steven Myers introduced the APV in 1974. (Adjusted present value). According to Myers, the value of a firm that has debt is equal to the value of a firm without debt plus the present value of the tax savings from interest payments. Once debt is added to the company, the net impact on value is analysed by taking into account both the advantages and disadvantages of borrowing (Damodaran 2012).
The formula for the APV model is as follows:

$$\text{APV} = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1+r_0)^t} + \sum_{t=1}^{t=n} \frac{Tax\ Rate \times Interest_t}{(1+k_d)^t} \quad (15)$$

As Damodaran (2006) explains the value of the firm can be estimated by summing two values: the value of the company if financed by equity and without recourse to debt and the value of tax shields which relate to the side effects of a company being financed by debt.

2.10 – Economic Value Added ("EVA")

In the early 1990s, Economic Value Added ("EVA") was introduced by the consultancy firm Stern, Stewart & Co. As per Stern's model, the enterprise value corresponds to the current capital stock plus the value of all future EVA discounted to the present (Frykman and Tolleryd, 2003). Or as Mota et al. (2012) put it, the EVA model assesses whether the firm is creating or destroying value by measuring the difference between the profitability and the cost of invested capital.

EVA = NOPLAT – Investment Capital x WACC = (ROIC – WACC) x Investment Capital (16)

The Market Value Added ("MVA"), which assesses the value created not just in the past but also the value that is anticipated to be created by the firm, is linked to the EVA, the authors go on to say. MVA is represented as follows:

$$MVA = \sum_{t=1}^{n} \frac{EVA_t}{(1+k_e)^t} + \frac{TV_n}{(1+k_e)^n} \quad (17)$$

Where,

$$TV_n = \frac{EVA_{n+1}}{k_e - g} \quad (18)$$

According to Stern et al. (2001), the EVA model aligns the interests and shareholders by allowing accountability and perceiving the areas of value creation.

2.11 – Relative Valuation (Multiples)

There are two approaches to valuation: fundamental and relative. A fundamental valuation can be interpreted as a standalone basis in contrast to relative valuation which applies specific financial or operational characteristics of a peer group (Frykman and Tolleryd, 2003).

Multiple Valuation defines the implied value of a firm as an average of common variables, also called multiples of a peer group of comparable firms operating in the same industry with the same risk and growth potential. (Damodaran 2006).

According to Damodaran, the multiple valuation methodologies are divided into four main components: multiples concerning the earnings of the asset (Net income: Price to Earnings Ratio; Operating income and cash flow: EV/EBIT; EV/EBITDA), multiples concerning the book value of the asset (for example: Price/Book value to Equity; EV/Invested Capital, Firm Value/Book Value of Capital), multiples based on the level of revenue generated by the asset (Price/Sales per share; Enterprise Value/Sales) and asset or industry-specific variable (Value/kWh, Value/tons of steel).

Frykman and Tolleryd (2003) mention this methodology's inherent danger which is if the base companies chosen for the relative valuation are incorrect, the same error will pass to the company object for valuation.

The most used multiples are:

$$\textbf{Forward PER (Price to earnings Ratio)} = \frac{\textbf{Forward Share Price}}{\textbf{Earning per share}} \quad (19)$$

$$\textbf{Enterprise Value to EBITDA} = \frac{\textbf{EV}}{\textbf{EBITDA}} \quad (20)$$

Enterprise Value to EBITDA growth = $\frac{EV}{EG}$ (21)

Price to book value = $\frac{P}{BV}$ (22)

Price to Cash Earnings = $\frac{P}{CE}$ (23)

Damodaran (2012) states that while the main benefit of multiples valuation is its simplicity, there are four steps to apply this methodology correctly. Firstly, the need to define the multiple consistently and measure it uniformly across the entities compared. Secondly, the valuation analyst needs to understand how the multiple varies across firms in the market. Thirdly, we need to isolate fundamental variables that determine each multiple and how changes in these variables affect the value of the multiple. Lastly, the valuation analyst needs to define a truly comparable peer group of firms and adjust for differences between the firms on fundamental characteristics.

3. Industry Overview: Macroeconomic Outlook

3.1- Global Economy

2022 was set to be a year for global economic growth as world economies exhibited a strong rebound from the COVID-19 pandemic at the end of 2021 and the first quarter of 2022. The return to a more normal economic situation seemed plausible until Russia invaded Ukraine which led to the halt of economic growth in the second quarter of 2022. The Russian aggression on Ukraine resulted in significant price increases for energy and food prices worldwide which further aggravated the already existing inflationary pressures that resulted from a two-year-long pandemic struck the global economy. According to the OECD, the estimates for global growth were revised downwards from 3% in 2022 to 2.25% at the end of 2023, a number far below the projected before the Russian-Ukraine war. In real terms, 2023's global income is projected to be USD 2.8 trillion lower than what was estimated due to stagnating global gross domestic product in the second quarter of 2022 and declining output for G20 economies. Several macroeconomic indicators support the downward outlook revision for growth. In 2023, consumer confidence has dropped to startlingly low levels, according to survey-based statistics, with the composite Purchasing Managers Index (PMI) for OECD economies reaching its lowest level since the global financial crisis of 2008 after modestly recovering after the start of 2022. Household income has decreased in several OECD nations as a result of nominal wage growth falling short of inflation growth, which has a detrimental effect on the expansion of private spending.

Global financial conditions have contracted due to the decision to increase nominal interest rates that most central banks took to combat the high inflationary pressures. Consequently, equity markets in a great part of the world have decreased significantly, bond yields in nominal terms have increased, the United States dollar continues to appreciate and risk appetite is reducing. In parallel, corporate bond spreads have increased and capital outflows from emerging markets have escalated. The differential between the 10Y and the 2Y treasury bond yields have turned negative in the United States which only happened before followed by cyclical downturns. High-interest rates are negatively impacting the housing market with mortgage lending and house sales experiencing a steep decline globally followed by house prices gradually around the world.

Another financial indicator supporting 2023's poor financial outlook is the global tightening of labour market conditions worldwide. In a lot of the OECD countries, unemployment is low and the ratio of job seekers to job vacancies is historically low. Notwithstanding, the pace of job growth in Europe and the United States has slowed down and vacancies started to decline globally with some unemployment rates reversing in some geographies.

Energy costs have significantly increased as a result of the Russian invasion of Ukraine, particularly for natural gas. Russia's reduction in natural gas exports to Europe leaves European economies with no choice but to purchase LNG (Liquefied Natural Gas) from the market, which has led to a spike in LNG prices. Since wholesale gas prices are correlated with power costs in Europe, an increase in electricity prices has also been observed. Surprisingly, Coal prices are close to record levels with electricity generators and several industrial sectors being replaced by gas to coal and oil not only in Europe but also in other regions such as Asia. As of today, gas prices in the Euro region have more than tripled over the last year and are approximately ten times the average price observed from 2010 to 2019. In turn, the ratio of economic expenses on energy to GDP has increased in many countries in 2022, in particular for European economies. The world, and more specifically Europe, is the cost bearer for the war in Ukraine and a lot of countries face a very difficult winter.

Before Russia invaded Ukraine in March 2022, inflation was already above central banks' targets in the majority of G20 economies. This surge was attributable to an initial increase in energy prices as global economies reopened after the COVID-19 crisis, increasing freight rates and the shift in private consumption towards goods. At the same time, food prices increased considerably and the war between Russia and Ukraine has increased the pressure that food and energy prices were already observing given that these both countries are important producers of commodities such as oil, gas, coal, industrial metals and agricultural commodities such as wheat, corn and edible oils which all spiked in March 2022 and remained high in the subsequent months. As inflationary pressures grew in scope over the same period, increasing costs for energy, transportation, and other expenses were passed on to the level of pricing for goods and services as a whole.

The tightening of monetary policy in most nations in reaction to inflation targets being exceeded in 2022 is a significant issue impeding global growth. Additionally, poor consumer confidence, a decline in real disposable household incomes, and rising prices for various energy goods, particularly natural gas in Europe, will hurt both private consumption and company investment. Inflation is anticipated to peak in the third quarter of 2022 and decline in the fourth quarter of 2022 as the global economic cycle reverses and lingering energy price inflation and monetary tightening begin to have an impact on global markets. Regardless of the aforementioned inflation evolution, annual inflation in 2023 will remain above target worldwide.

Despite Shopify being a Canadian-based company, the majority of its revenue is sourced through the United States of America which represents 64% of total 2021 revenue at USD 2.9bn. As of May 2022, 5.61 million live websites use Shopify and around 70% of these websites were located in the US with a total of 2.6 million live stores using Shopify. Additionally, 50% of Shopify merchants are located in the United States which totals 875,500 merchants out of a total number of merchants of 1.75bn in 2022.

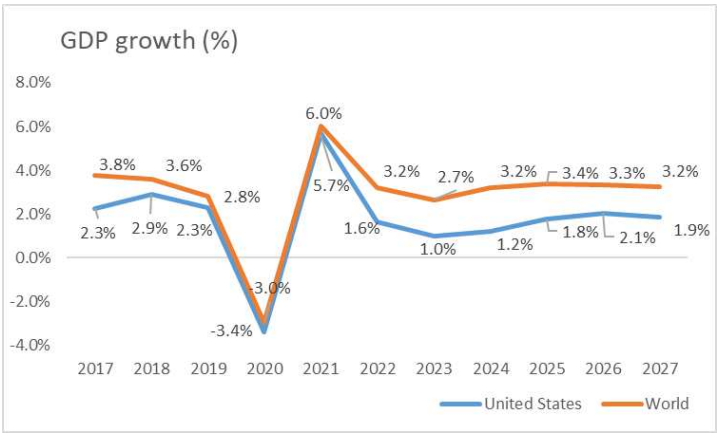
This means that Shopify's performance is highly influenced by the evolution of macroeconomic factors in the USA and a strong US performance is key to maintaining its global market position.

3.2- United States of America

As mentioned earlier, due to the importance of the US in the context of worldwide Shopify performance we are now going to take a look at US macroeconomic factors that historically influence consumer spending such as GDP Growth, the unemployment rate and inflation. According to the most recent International OECD data, the evolution of GDP Growth, Inflation and Unemployment is expected to have the following evolution until 2027.

GDP Growth: 2017-2027: As mentioned, the US saw its GDP contract by 3.4% in 2020 due to the spread of the coronavirus and the consequent global lockdown. In 2021 GDP has rebounded to 5.7% for the US broadly in line with the rest of the world at 6%. The growth of US GDP in 2023 is expected to stand at 1%, which is below the expected world GDP growth of 2.7% mainly due to the aforementioned inflationary pressures hindering consumer confidence and consequent spending levels. GDP in the United States is not expected to reach pre-pandemic growth levels until 2027, while global GDP growth is expected to almost reach pre-pandemic levels at 3.2% in 2027.

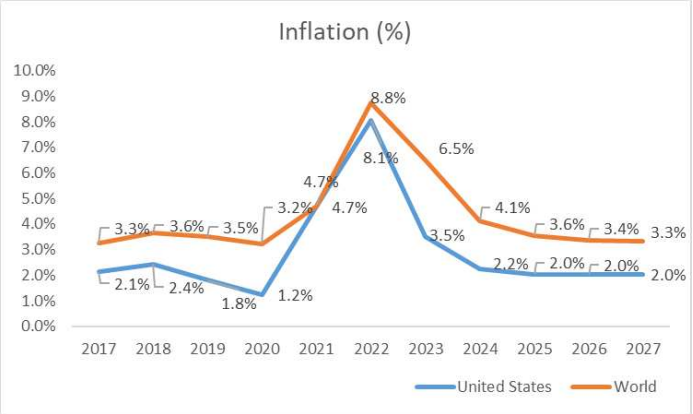
Table 1 -US Historic and Projected GDP growth (%) from



Source: World *Bank, OECD September 2022, IMF October 2022)*

Inflation Rate (%): 2017- 2027f: Inflation in the United States is anticipated to increase from 4.7% in 2021 to 8.1% in 2022, which is still below projections for the rest of the world of 8.8%, before falling to 3.5% in 2023 and 4.1% by 2024. According to the IMF, monetary policy should continue its current course to restore price stability, and fiscal policy should work to reduce cost-of-living pressures while keeping a sufficiently restrictive posture in line with monetary policy. Around 2025, the effects of COVID-19 and the conflict between Russia and Ukraine are predicted to have subsided, but worldwide inflation is predicted to remain higher than the US inflation rate through 2027.

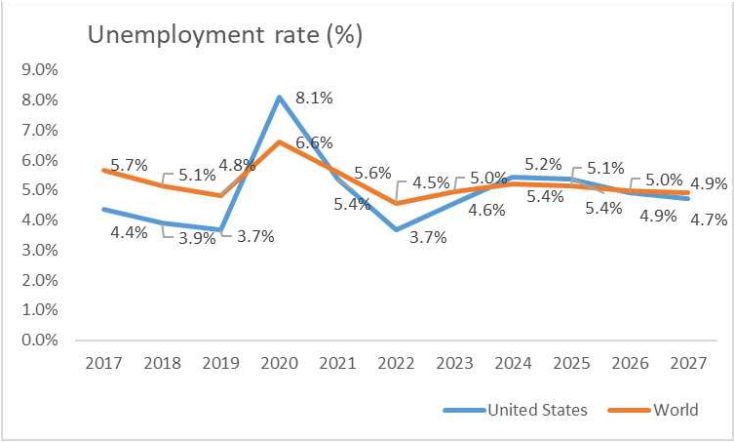
Table 2 -US Historic and Projected inflation rate (%)



Source: World Bank, OECD September 2022, IMF October 2022)

Unemployment Rate (%) – 2017-2027f: The unemployment rate in the US also jumped significantly from 3.7% in 2019 to a staggering 8.1% in end-2020. The expected unemployment rate for 2023 is 3.7% and is also expected to not return to pre-pandemic levels until after 2027. Notably, the unemployment rate in the US is expected to remain consistently lower than the global unemployment rate until 2027.

Table 3 -US Historic and unemployment rate (%)



Source: World Bank, OECD September 2022, IMF October 2022)

3.3 - Industry Overview (E-Commerce)

Selling goods or services beyond geopolitical borders from a company's home nation is known as global e-commerce. In the context of global e-commerce, this implies that goods are sold in non-native markets using online sales and marketing. A comprehensive definition of e-commerce provided by the United Nations Conference on Trade and Development ("UNCATD") is "the sale or purchase/procurement of

products and services (including estimating, negotiating, ordering, and structuring contracts); electronic data interchange (EDI); mobile commerce; integration of ordering system with that of customers/suppliers; integrated invoicing and payment by customers; full integration with back-end systems; use of an extranet and automated payment of suppliers".

The recent Covid-19 pandemic completely rocked the e-commerce world, with numerous brick-and-mortar shops swarming the e-commerce market during the government-imposed lockdowns as a means of coping with the global health crisis. In World Trade Organizations' "E-commerce, Trade and COVID-19 pandemic" report explains that the B2B and B2C online sales of physical goods have experienced an increased demand for certain products due to the COVID-19 pandemic. In the initial stages of the pandemic, consumers and businesses reacted by stocking up. Products that ranged from hand sanitizers, surgical masks to common household items such as toilet paper or non-perishable food were stockpiled. As a result of the pandemic, businesses were forced to adopt teleworking and consumers were also forced to communicate and entertain themselves from their own homes. World governments established social distancing measures and a global lockdown ensued.

All of the aforementioned facts led to a spike in online commerce and an increased demand for digital services as customers turned to the internet to do their shopping. Consequently, traditional Brick-and-mortar establishments and adopted strategies to enable e-commerce to keep on servicing their customer base. Due to how commercial activities are related and the supply chains operate, the relative shift to B2B and B2C sales is dependent on manufacturing activity and the availability of services. But the pandemic also deeply impacted manufacturing with production almost coming to a halt because of labour shortages and e-commerce goods sometimes faced supply chain disruptions often facing bottlenecks of orders negatively impacted by the disruption of international transport – by sea, land, and air cargo.

E-commerce can be divided into two big groups, B2B ("Business to Business") and B2C companies ("Business to Consumer"). In the Business-to-Business e-commerce model, a company provides goods or services that address the needs of other businesses and it accounts for the bulk in value of e-commerce. B2B products could be digital versions of typical goods which are then sold to the customer via retail outlets. B2B also includes the provision of goods and services to support other businesses such as management software, cloud storage and communication tools. According to Marketwatch, in 2021 the global B2B e-commerce market was valued at USD 7.6 trillion and is expected to grow at a compound annual growth rate of 8% through 2027.

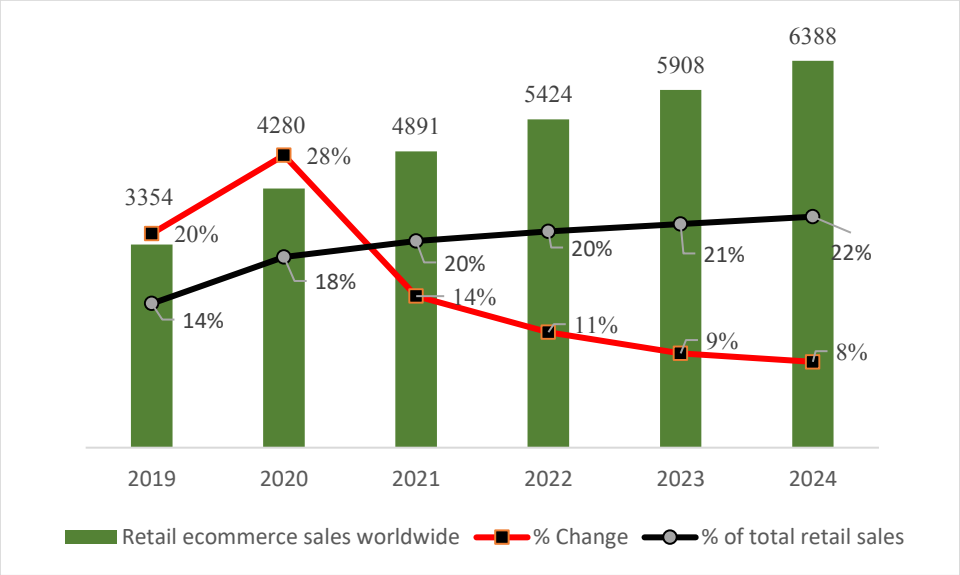
Business-to-consumer ("B2C") companies sell directly to the consumer with sales stemming from e-commerce enterprises to consumers and traditional brick-and-mortar retail or manufacturing online

transactions. There is a variety of channels in B2C the world, such as subscription services, social media, mobile applications, delivery services and more. The global B2C e-commerce market size is expected to reach USD 6.2 trillion by 2027 (Marketwatch, 2021) and is expected to expand at a compound annual growth rate of 9.7%.

The UNCTAD mentions two other types of e-commerce models, the Consumer-to-consumer ("C2C") and the Business-to-government ("B2G"). The C2C model covers all online transactions that occur in online marketplace platforms and online communities while the B2G models transactions are similar to B2B with the difference that the buyer is the government.

Remarkably, worldwide e-commerce sales had not yet surpassed USD 3 trillion in 2018 and 2023 is projected to almost reach USD 6 trillion in 2023 to further grow surpassing the USD 6 trillion mark at USD 6.4 trillion in 2024 (eMarketer, 2021).

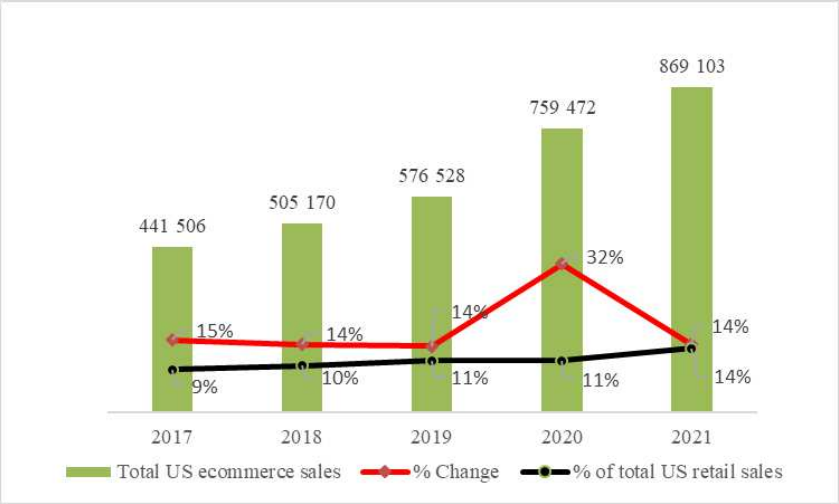
Table 4 – Worldwide e-commerce sale growth (%)



Source: eMarketer, Ecommerce market reports 2022

The increase in e-commerce was notable across the whole pandemic having jumped from 13.6% of total retail sales before the pandemic to 18% in 2020. In the United States, the pandemic-related government measures pushed for faster e-commerce adoption at the beginning of 2020 after steady growth across 2018 and 2019. One should highlight that e-commerce sales managed to remain high even after government lockdowns were gradually lifted. (US Census, 2021). In the second quarter of 2022, total e-commerce sales saw an increase of 6.8% compared to the same quarter in 2021 while total retail sales increased to 7.2% in the same period. According to the US Department of Commerce, total US e-commerce sales accounted for 14.5% of total sales.

Table 5 – US e-commerce sale growth (%)



Source: eMarketer, Ecommerce market reports 2022

4 – Shopify Inc.

4.1 – Company History

Like many companies, Shopify started as a solution to a problem the founders experienced in their personal lives. Created initially as Snowboarding online store under the name "Snow Devil" in 2004, Shopify has so far grown into becoming one of the world's biggest e-commerce platforms hosting more than one million businesses. In 2004, Daniel Weinand, Scott Lake and Tobias Lütke launched "Snow Devil, their first online store for selling snowboarding products. As existing online e-commerce platforms did not satisfy Lütke, a computer engineer, he decided to develop his e-commerce platform. In 2006, the company was re-launched with the name Shopify tapping into the market for the type of platform its founders one time required.

Shopify's relationship with the e-commerce global environment grew quite rapidly. In 2009, the company created the application programming interface (API) which allowed programmers to sell their applications to users of the Shopify platform on Shopify's app store. A year later in 2010, Shopify went mobile and the Shopify app was launched in the Apple store. From then on, business owners using the Shopify platform were able to have full visibility and management of their stores via their preferred devices (i.e. mobile phones, tablets, personal computers).

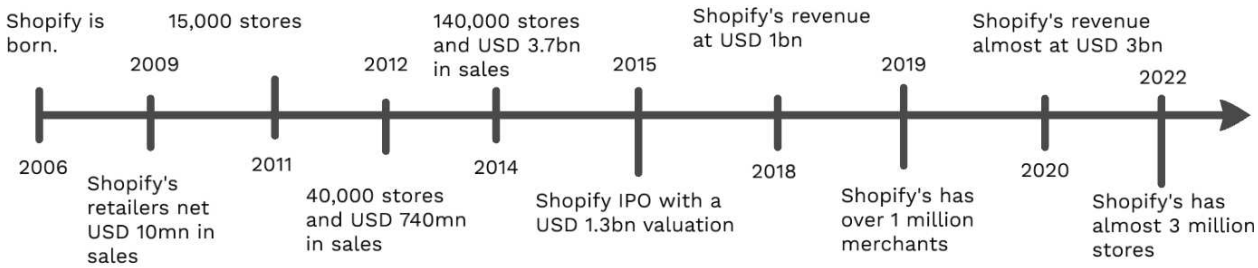
Probably the biggest change that Shopify introduced to the subscribers of its platform was re-shaping the point-of-sale for e-commerce ("POS"). Through the implementation of the new POS system in 2013, the company managed to fully remove the need for third-party payment gateways, allowing direct

relations between merchants and their customers. Years later in 2017, Shopify started to produce tablets with a POS system that accepts debit and credit card payments for brick-and-mortar establishments. The tablet POS is used daily by physical shops enabling access to this functionality even for smaller stores that typically do not have access to large-scale POS systems. A new and updated Shopify POS was introduced in 2020 to help merchants unify online and in-store sales during the COVID-19 period.

In sum, the presence of Shopify in the e-commerce environment enabled the process of running an e-commerce business to be fully transferred to the hands of merchants. After Amazon announced the closing of its merchant platform ("Amazon Webstore") in 2015, they appointed Shopify as the "preferred migration provider" which spiked the demand for Shopify's services its stock price increased significantly. Additionally, in 2017, Shopify announced the capacity to fully integrate Amazon's business into their platform which ultimately granted the possibility of Shopify store owners to integrate their products into Amazon's marketplace.

Needless to say, Shopify has permanently impacted the global e-commerce landscape and several big companies officially confirmed partnerships with the company to tap into the e-commerce's growth potential. Today in 2022, the platform has been used to create more than 6 million stores and as with Amazon, the company also announced its integration with other large platforms including Google, Facebook, Pinterest, Tik Tok, Walmart, Alipay and Microsoft.

Highlighted below are the key milestones of the Ottawa-based Company since its origin in 2006 until today:

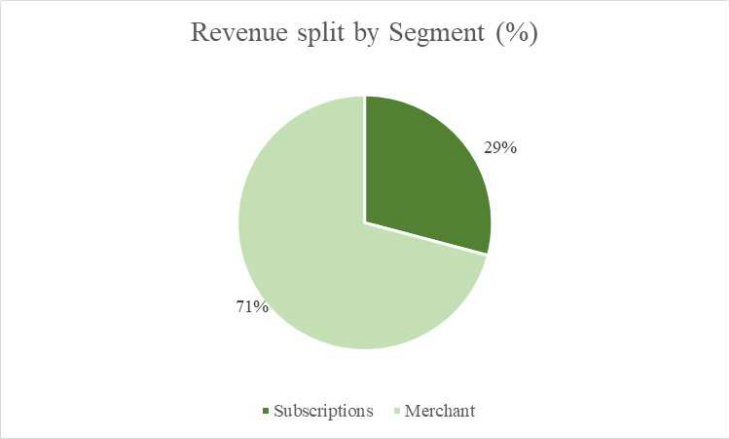


4.2 - Business model

Providing tools for any size retail business to launch, develop, market, and run itself, Shopify is a global e-commerce start-up. With a platform and services that are specially created for dependability while offering a better shopping experience for customers wherever in the world, the company's goal is to improve commerce for everybody. In addition to giving its merchant subscribers access to several ancillary services, Shopify enables its subscribers to quickly create an online store. Shopify makes money through subscriptions to their service ("subscriber") and the ancillary services provided to the merchants who subscribed to the platform in the modern era when new technological advancements for mobile devices, data analytics, and social media are opening up new possibilities for businesses worldwide. (“Merchant solutions”)

As of year-end-2021, total revenue stood at USD 4 612 million and was split as follows:

Table 6 – Revenue Split by Segment (%)



Source: Shopify Annual Reports

The main revenue source is merchants’ solutions representing 71% of total revenue or USD 3 269.5 million. The remaining revenue was sourced from subscriptions and stood at USD 1 342.3 million representing 29% of total revenue. However, in 2015 the revenue profile was quite different with subscriptions being the more dominant revenue stream accounting for 55% of total revenue. Nonetheless, the split of revenue by segment has stabilised and since 2020, the values have remained consistent averaging a 70% weight for Merchant Solutions and 30% for Subscriptions services

4.2.1 – Subscription model

Shopify offers four main subscription plans:

a) **Basic Shopify** starting from USD 29 a month: this subscription plan includes basic features recommended for entrepreneurs starting new businesses;
b) **Shopify** starting from USD 79 a month: this subscription model includes additional features recommended for growing businesses;
c) **Advanced Shopify** starting from USD 299 a month: this subscription model includes advanced features for businesses seeking a larger scale.
d) **Shopify plus** starting at USD 2000 a month: this subscription model is designed for merchants with higher volume and enterprise-level. It adds to the advanced Shopify subscription model more customization and control including higher access to Shopify's underlying code.

The majority of merchants subscribe to the Basic and Shopify plans but the main source of the gross merchandise value ("GMV" represents the dollar amount of products sold within the platform) comes from merchants paying the advanced Shopify plan which are typically bigger merchants which push a higher volume of products.

According to Shopify's annual report, retention rates are also higher on Shopify's advanced and Shopify plus. All of Shopify's subscription plans typically have a one-month term, however, those who wish to sign up for the Shopify Plus plan have annual or multi-annual subscription plans. The subscription plan is automatically renewed unless notification of service cancellation is provided. All subscription payments are non-refundable and invoiced at the beginning of the subscription period and are processed directly to Shopify.

Last year, in 2020, Shopify introduced its new POS system with expanded functionality and features that unify online and in-store sales. This POS system was made available for free to eligible merchants from May until the 1st of November 2020 as a means to aid merchant adaptation during COVID -19 and worldwide government restrictions.

4.2.2 – Merchant Solutions

Merchant solutions are essentially additional services offered by Shopify on top of the platform. In this segment, revenues are sourced from the payment of processing fees from Shopify payments, transaction fees, Shopify capital, Shopify Shipping, referral fees from partners and sales of POS hardware. Hereafter, a description of the merchant solutions available to their subscribers.

a) **Shopify Shipping**: this service allows the various merchants to select from a wide range of shipping partners to buy and print incoming and outgoing shipping labels and track orders directly in the Shopify payments;
b) **Shopify Capital**: this service allows eligible merchants to seek secured financing and accelerate the growth of their businesses by providing them with fast and simple working capital.
c) **Shopify Payments**: this service is a fully integrated payment processing system within the platform that enables merchants to accept and process payment cards online and offline also intended to increase merchant subscriber retention.
d) **Shopify POS**: a mobile application that allows merchants to sell their products in a retail or physical setting.
e) **Shopify app store:** Developers sell apps on the Shopify App Marketplace, and assist merchants with their storefront development needs.

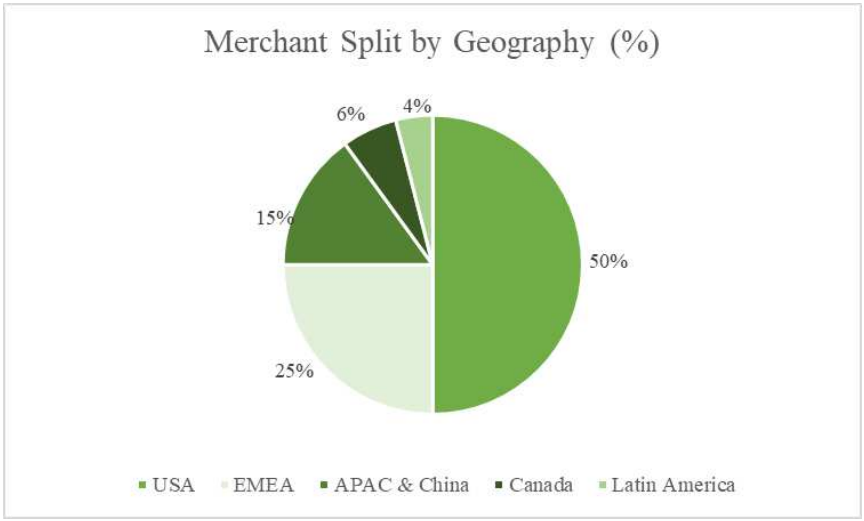
In conclusion, merchant solutions are important to sustain its merchant's activities which in turn strengthens its core business by attracting more users to its platform. By enabling these services to their subscribers, Shopify aims to increase its recurring subscriber retention rate.

4.3– Geographical Presence

4.3.1 –Merchant split by Geography

As of the second quarter of 2022, Shopify had around 1.75 million merchants in their platform across 175 countries split as follows:

Table 7 – Merchant split by geography (%)



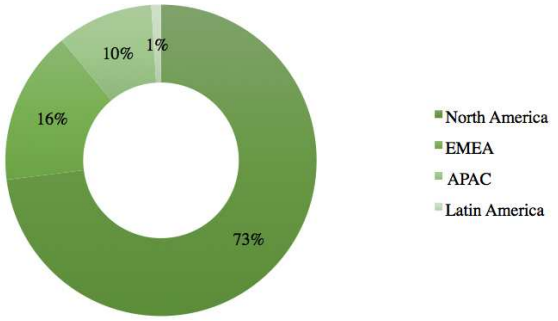
Source: Backlinko

The main geographic concentration is in North America with 56% of total merchants and around 981,000 thousand merchants. The USA represents 50% out of the 56% with 875,000 merchants and remaining the 6% or 105,136 merchants concern Canada. Shopify's origin country. At 25% with 437, 500 merchants, the EMEA ("Europe, the Middle East and Africa) represented the second largest geographical concentration with 437,282 merchants. APAC ("Asia Pacific, Australia and China") and Latin America represented the third and fourth largest geographical exposures with 6% (262,460 merchants) and 4% (70,111 merchants) respectively.

4.3.2– Revenue split by Geography:

As per Shopify's annual report, the revenue split by region was as follows:

Table 8 – Revenue split by geography (%)



Source: Backlinko

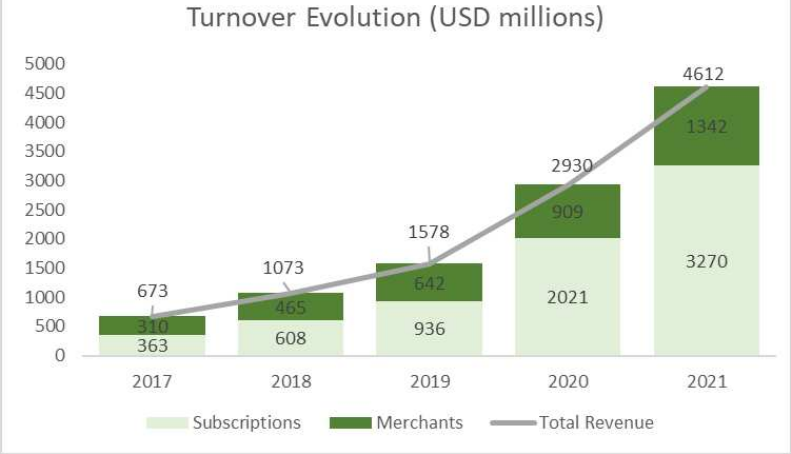
The turnover split by geographies is more concentrated in North America accounting for 73% of total revenue in 2022 or USD 2.15 billion. The EMEA region only accounted for 16% of total revenue as of 2020 with USD 454.7 million and the third biggest revenue by geography relates to APAC with 10% or USD 292.2 million. The smallest contributor to the net revenue is Latin America with USD 36.2 million or 1% of total revenue.

4.4– Financial Performance

4.5-Turnover

From 2017 to 2021, Shopify's total year-end turnover grew from USD 673 million to USD 4 612 million which corresponds to CAGR_{17-21} of 61.7%. The CAGR_{17-21} of the merchant segment stood at 73.2% and exceeded the CAGR_{17-21} of revenues sourced through the subscriptions business which stood at 44.2%.

Table 9 – Turnover evolution in USD millions

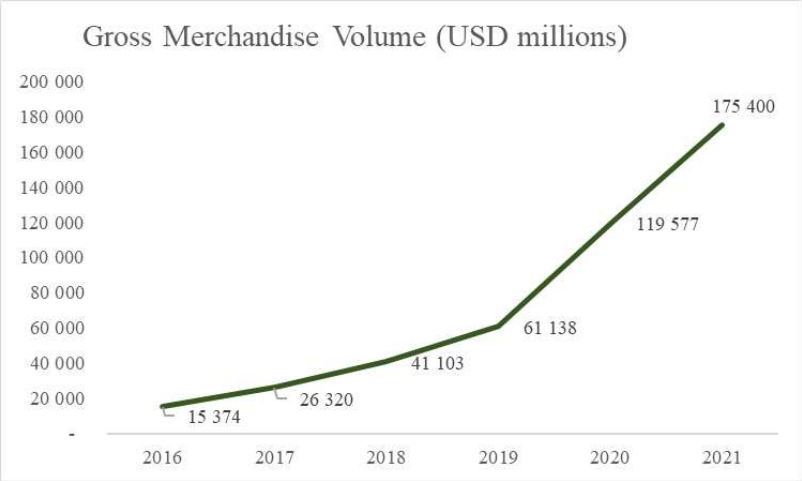


Source: Shopify Annual Reports.

Given that Shopify provides software that is accessed through a digital platform, the cost of maintaining the platform increases as the number of subscribers rises and, as a result, more merchants are added to the platform. According to the 2022 annual report, the costs associated with the subscription solutions segment primarily stem from third-party infrastructure and hosting expenses, payments to third-party partners for the registration of domain names and theme creations, credit card processing fees, and employee-related expenses.

The entire dollar amount of processed orders in Shopify's shop is represented by the gross merchandising volume. The number of products being transacted in the platform and the Gross Merchandising Value (or "GMV") grow in tandem as the subscriber base expands. This means that the scalability and flexibility of Shopify's platform are dependent on the functionality of their technology, network infrastructure and ability to handle increased traffic and demand for bandwidth. More merchants using Shopify's platform means more data and requests to process which means that Shopify needs to keep on devoting additional resources to improve the operational infrastructure of the platform to maintain the performance of the platform as the business scales. Shopify is aware that the hosting costs for cloud services have increased over time and may continue to increase over time as they require more computing and storage capacity to respond to increased volume on the platform. As of 2021, Shopify's GMV grew 47% annually from USD 119.5bn to USD 175.4bn, and if we annualize the GMV registered until Q3 2022 (USD 136.3bn), the expected GMV for 2022 will exceed 2021's GMV.

Table 10- GMV (USD millions)

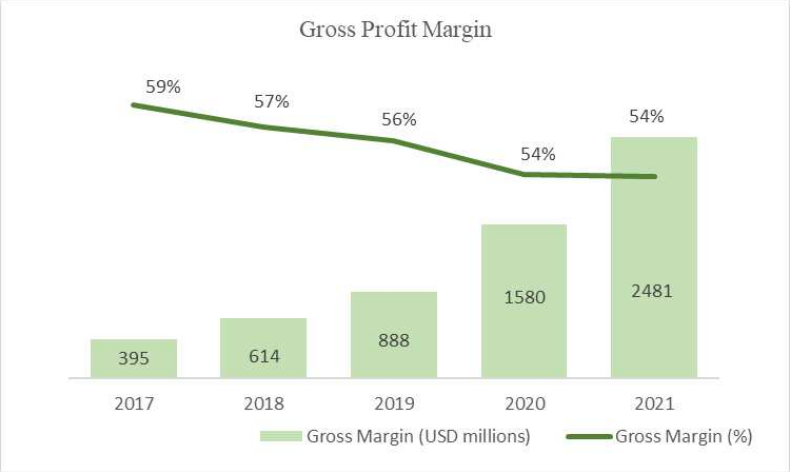


Source: Shopify Annual Reports

Costs associated with the production of the new line of POS hardware units, infrastructure and network costs, product costs for expanding their offer, credit card fees for processing merchant billings, and payment processing and interchange fees were just a few of the expenses associated with Merchant Solutions in 2021. These expenses rose by 56.3% annually to USD 65.4mn and continued to rise as of September 2022 (+32.6% compared to September 2021) as a result of higher processing costs linked to the rising GMV seen. The cost of Shopify's subscription services increased by 29.8% in September 2022 compared to September 2021 and by 36.6% in 2021 compared to the end of 2020. More expenses were required to support a larger number of merchants on the platform, which led to the increase in expenditures, specifically, employee-related costs, cloud infrastructure costs and credit card fees for processing merchant billings

The COS ("Cost of Services") CAGR_{17-21} stood at 85%. The main contributor of the COS CAGR_{17-21} was the merchant segment which stood at 71% while the COS CAGR_{17-31} of the subscription segment stood at 49%. The gross margin exhibits a positive trend and it increase from USD 210 million in 2017 to USD 2130 million in 2021 which corresponds to a CAGR_{17-21} of 86%.

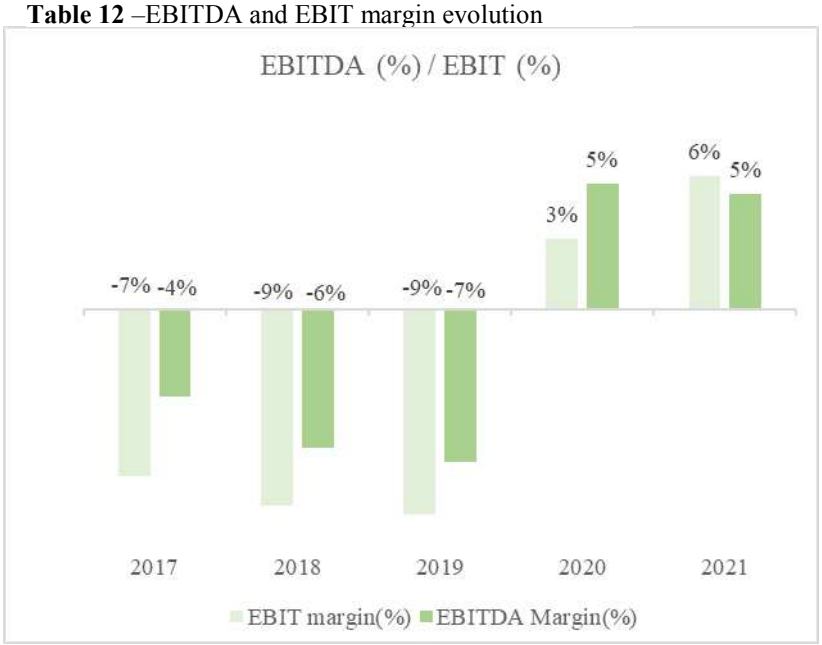
Table 11 - Gross Profit Margin (USD millions and %)



Source: Shopify Annual Reports

The impact that COVID-19 had on Shopify's earnings is visible in the evolution of the company's EBIT, and EBITDA from 2020 to 2021. From 2017 to 2019, profitability margins remained below zero which meant that Shopify was struggling to generate positive results up until the pandemic hit. The government imposed lockdowns and social distancing measures resulting in a lot of brick-and-mortar establishments turning to Shopify to keep selling their products and also an increased demand for online shopping also increased on the customer side.

Table 12 –EBITDA and EBIT margin evolution

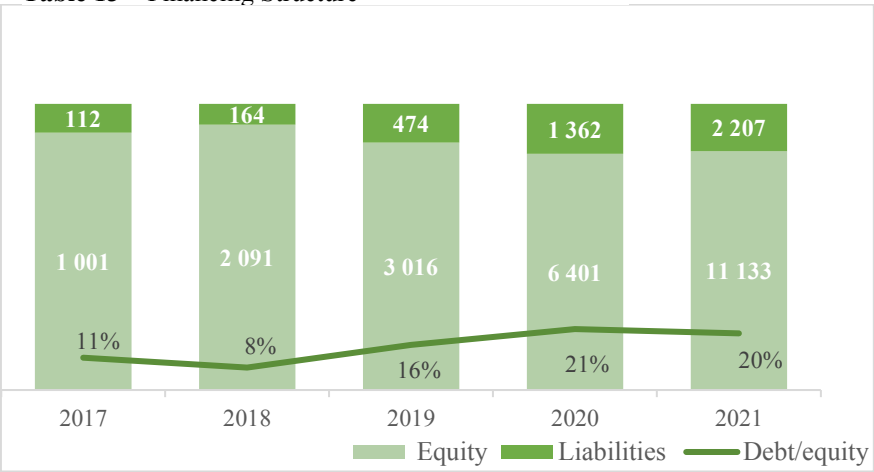


Source: Shopify Annual Reports

4.6 – Financing Structure

As of the end of 2021, the asset side of the balance sheet at USD 13.3bn was 83% or USD 11.1bn financed through equity (2020: 83% of total assets or USD 6.4bn), 9% of Debt at 1.13bn (2020:12% or USD 913mn) and 3% or USD 457mn of Account Receivables (2020: 4% of total assets or USD 300mn). Total debt at USD 1.13bn as of 2021 was 78% composed of Convertible Senior Notes at USD 910mn (2020: USD 758mn or 83% of total Debt), 21% of lease liabilities at USD 247mn (2020: USD 144mn or 16% of total debt) and 1% of current lease liabilities at USD 15.7mn (2020: USD 10mn or 1% of total debt). As of September 2022, the debt structure remains broadly in line with equity financing at 79% of total assets at USD 8,6bn and Debt financing at 12% of total assets at USD 1.3bn (+8.9% compared to the end of 2021) with convertible senior notes increasing to USD 913mn due to the reduction of unamortized offering costs from USD 9mn to USD 7.3mn. Shopify initially released its 0.125% convertible senior notes due 2025 in September 2020 for an aggregate principal amount of USD 920 million. After deducting underwriting fees and offering expenses, the corresponding net proceeds from the issue of the Notes were USD 907 million. Common Stock, unrestricted Class A voting shares, and unrestricted Class B voting shares made up USD 8 million or 73% of the equity. With an equity ratio (also known as the "Equity to Asset Ratio") of 83% in 2021 (up from 83%) and 78% in the third quarter of 2022, solvency has remained high and stable during the period under review.

Table 13 – Financing Structure

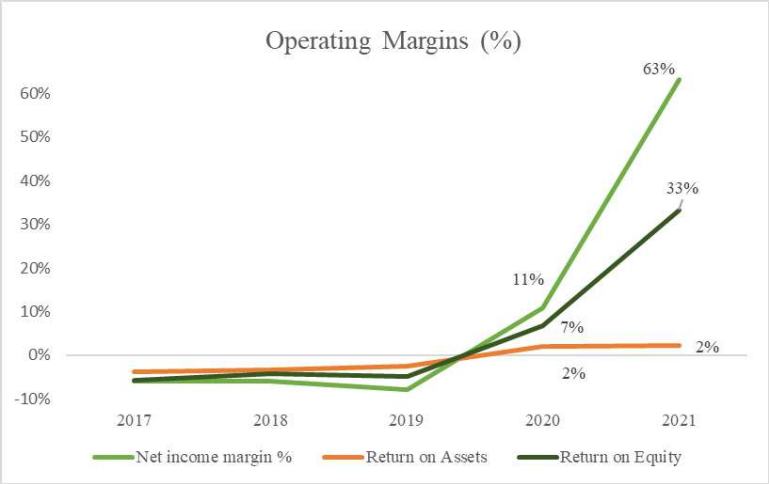


Source: Shopify Annual Reports

As exhibited by the above graph, Shopify has consistently managed to keep its level of debt low as exhibited by a very low Debt to Equity Ratio from 2017 to 2021. In terms of leverage, the Net Debt/EBIT and Net Debt/EBITDA ratios stood at -17.4x (2020: -31.5x) and -14.7x (2020: -23.4x) with Shopify observing negative Net Debt levels from USD -942mn in 2017 to USD -6.6bn in 2021.

4.7 - Operating Margins

Table 14- Operating Margins



Source: Shopify Annual Reports

The total net income grew from a loss in 2017 of USD 40 million to a profit of USD 445 million at the end of 2021 and as a result the net income margin increased from -6% to 63% across the same time frame. The net income margin, return on assets (stable year on year) and return on equity (7% in 2020 and 33% in 2021) only started to become positive in 2020. As of September 2022, the net income for the quarter was negative due to a big loss on equity investments at USD 1.6bn resulting in a net loss for the period at USD 1.65bn.

4.8- Stock Performance, Shareholder structure and Dividend Policy

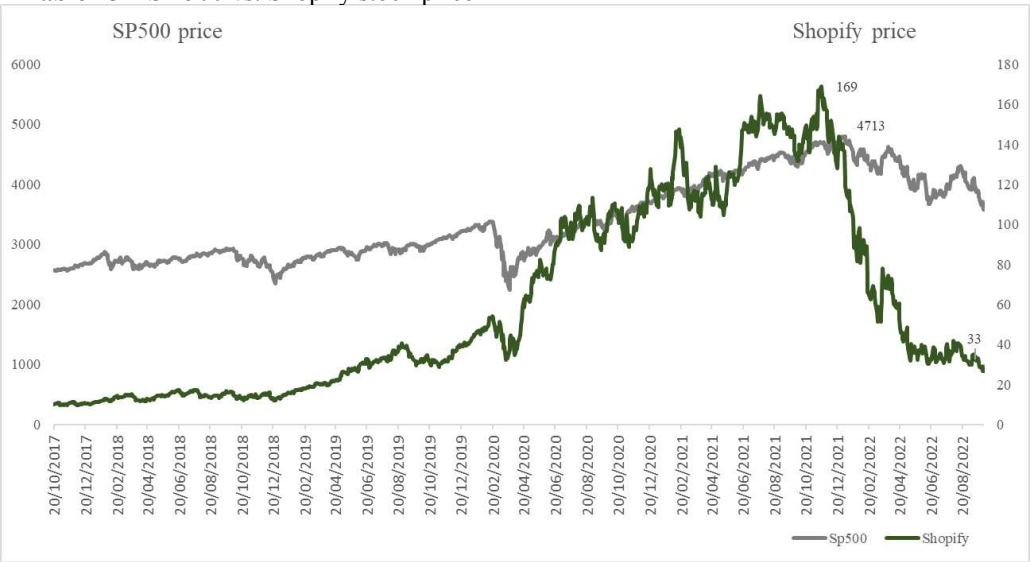
4.9 – Stock Performance

Shopify is listed on the NYSE since May 2015 and on the Canadian Index TSX since November 2016. In 2020, the company became the largest Canadian company with a market capitalization of USD 121.3 billion exceeding the capitalization of the Royal Bank of Canada which was the leader at the time with USD 120.5 billion in market capitalization. Initially valued at USD 17 in the initial IPO, the stock price peaked in 2021 at USD 1 690.6 as of November 2021. On June 29th 2022, a 10-to-1 stock split occurred when the stock was trading at USD 315.6 which corresponded to a year-to-date decrease of 77% from USD 1363.1mn in January 2022. On the same day, the stock price stood at USD 31.5 which corresponds to an 81% price decrease from the after stock-split all-time high of USD 169.06 in November 2021.

The spread of sars-cov-2 worldwide made world governments put in place measures to prevent contact between individuals. Measures like a government-imposed lockdown and social distancing had a big impact on businesses that saw setting up a shop in Shopify as a means to cope with the looming

uncertainty surrounding worldwide retail trade in 2021. Investors, aware of the digital trend shaping worldwide commerce, saw acquiring Shopify stock as a way of tapping into the e-commerce sector. The stock saw a rapid decrease in 2021 followed by a big decrease from the beginning of 2022 to the third quarter of 2022.

Table 15 – SP 500 vs. Shopify stock price



Source: Yahoo Finance and Federal Reserve of Saint Louis.

4.10 – Dividend Policy

As per the company's 2021 end-of-year financials and most recent third quarter of 2022, Shopify has never declared or paid any dividends on its securities. Shopify assures that it does not have a present intention to pay cash dividends on its Class A subordinate voting shares nor does it have intentions to do so in the foreseeable future. The total proceeds of the net income generated are reinvested in the company to support future growth. Any change in the dividend policy will be at the discretion of the board of directors and will ultimately depend on the financial well-being of the company, operating results, contractual restrictions, capital requirements and business prospects.

4.11 – Shareholder structure

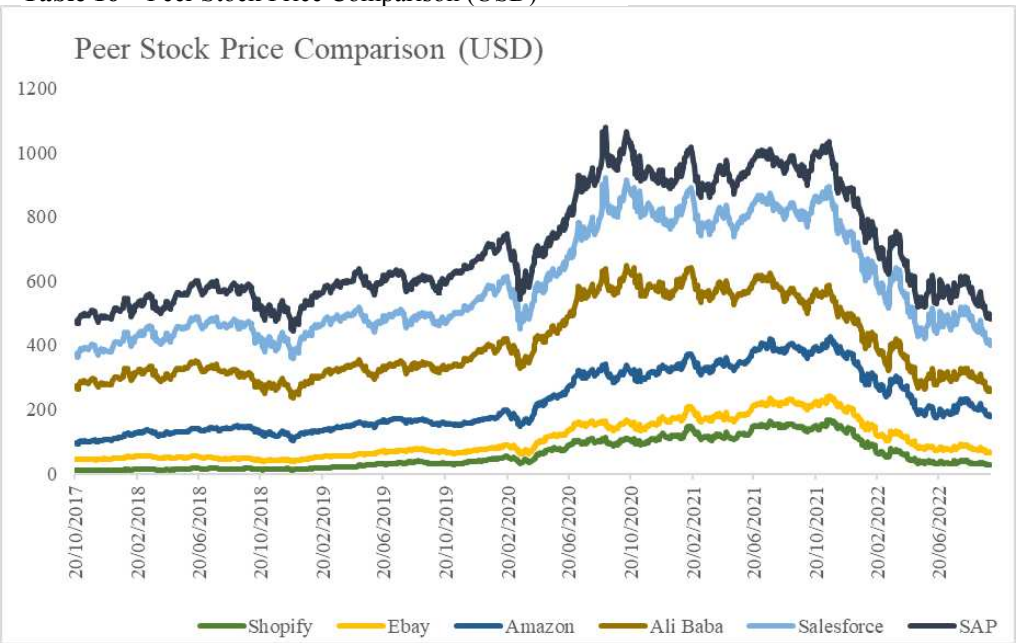
As of the third quarter of 2022 results release date (October 2022), the market capitalization of Shopify stood at USD 43.2 billion represented by 1.27 billion shares outstanding with a nominal value of USD 34 each. The main shareholders of Shopify are as follows: Institutional investors (59%), Individual investors (6%) and public and other investors (35%). Total company employee stock, Strategic

Corporate Investors, Untraded Shares and other Strategic Investors result in a total of 84 million shares excluded from the float. This means that 1.18 billion shares are in respect to floating capital with 93% of total shares. The main individual shareholder is Tobias Lutke, the CEO and founder of Shopify with 6.25% out of the total 6.4% stock held by individuals. The split of shares held by the Public and other investors is not disclosed. The top 10 main Institutional investor shareholders' participations stand as follows: Capital Research & Management (5.4%); Morgan Stanley Investment Management Inc. (5.4%), Baillie Gifford & Co (5.1%), Klister Credit Corporation (3.7%); Vanguard Group (2.93%); T.Rowe Price Group Inc. (2.4%); Sands Capital Management (1.78%); Loomis Sayles & Co(1.24%) and ARK Investment Management (1.14%). These top 10 Shareholders represent 35% of the total institutional investor shares (59% of total shares).

4.12 – Competitors

Shopify is part of the "Technology" sector GICS ("Global Industry Classification Standard") and the "Software" Industry given that it provides a "Software as a Service" ("SaaS"). SaaS e-commerce describes a model of distributing e-commerce software that relates to any application or platform created to help businesses sell their products online. In a SaaS ecommerce model, users can access the software to the internet through the payment of a monthly fee for the platform use. The SaaS-based businesses own the software and usually host it and license the use of the software to other businesses and companies which often include: 24/7 customer support, stock management, fulfilment assistance, payment gateway, fraud and risk analysis, social media integration, international domains and multichannel point of sales features. Given Salesforce and SAP offers business software solutions to their clients, these companies can be seen as Shopify's competitors. Despite 100% of revenues being linked to their "Software", it can be argued the company is linked to the Consumer Discretionary Sector competing with companies like Ebay, Amazon and Ali Baba. Hence, the selected industry peers are Ali Baba, Amazon, Salesforce and SAP.

Table 16 – Peer Stock Price Comparison (USD)



Source: Yahoo Finance

5. Valuation

5.1 – Methodology

Taking into account the valuation models presented in the literature review, the Discounted Cash Flow model presents itself as the most trustworthy and consensual approach among financial analysts to evaluate companies. In DCF theory, one of the most common approaches is the FCFF given it is flexible and easy to apply. (Damodaran, 2005). As a complement, the relative valuation is also an important model to consider when assessing a company's value given it helps produce more accurate forecasts through the comparison with a set of peers (Koller et Al. 2005). Hence, the models chosen to evaluate Shopify are: the FCFF model, the FCFE and Multiples valuation.

5.2- Assumptions

To reach the fair value of Shopify, several assumptions were considered for the explicit period of valuation from 2023 to 2027. All the assumptions as well as additional considerations are extensively presented below. Annualized data from the third quarter of 2022 was included in the valuation to include the most recent data.

5.2.1 – Turnover

Shopify's turnover is divided into two revenue classes: Subscription solutions ("SS") and Merchant solutions ("MS"). An accurate turnover forecast is an important step of Shopify's valuation and without an accurate prediction of future growth we cannot predict the future value of the firm. Another additional consideration is that the implicit period contains pre and post-pandemic data, given the pandemic can be considered as a one-off event (increased demand for e-commerce during the pandemic), forecasting revenues based on historical values could also result in a misevaluation of the firm. Data from the implicit period evidence that an increasing number of Shopify users, reflected by the increased revenue from the Subscription solution segment, leads to an increase in the firm's revenue in the Merchant solution segment. The weights of Merchant and Subscriptions revenue segments stood at 72% and 28% in 2022 after remaining broadly stable since 2019. In that sense, the weights for both revenue segments were forecast using the moving average of the past three years (2019, 2020, and 2021) and are predicted to decrease from 30% in 2023 to 29% from 2024 to 2027. On the Subscription revenue side is predicted to represent 70% of total revenue in 2023 and represent 71% of total revenue from 2027.

Despite no expectations on the future growth of segments being disclosed in the annual reports, we assumed that the Merchant solutions revenue segment increases at a moving average of the previous 5 years and is predicted to stand at 34% in 2023 and 30% in 2027, from USD 1 940.6mn to USD 2 650.3mn respectively.

The merchant solutions revenue segment is related to offering additional services (cross-selling) on top of the subscriptions (as seen in some Apple products like Apple Pay or iCloud as a matter of example). Shopify's goal is to increase its market share not only through user adoption but also through offering additional services to existing merchants already using its platform. Also, recent partnerships with Walmart, Facebook, Pinterest, Tik Tok and Instagram are seen as positive indicators to spike the interest of users on the platform and increase the number of products sold positively contributing to the Merchant and Revenue solutions growth. Since another driver for the turnover is the user or subscriber base, after having the composition of the segments pre-defined in the forecast, we consider that the only data needed to forecast total revenues is forecasting the subscription revenue. To do so, we consider Shopify will continue to gain market share as it still is in an early stage of maturity compared to its peers since the multiples of EV/Revenues are quite higher. This could mean that the market is expecting the company to increase its sales at a higher pace than its peers.

Table 17 - Turnover

	2023		2024		2025		2026		2027	
SS	1941	30%	1972	29%	2213	29%	2362	29%	2659	29%
MS	4632	70%	4820	71%	5416	71%	5731	71%	6487	71%
Turnover (USD mns)	6572		6792		7629		8094		9146	

Source: Own calculations

5.2.2- Cost of Revenue

As 2018-2022 data shows, revenue costs expressed in terms of total revenue ranged between 45% and 49%. We assume that for the explicit period, the percentage of the cost of revenue in terms of total revenue is computed through the simple average of total revenues to total costs observed for the previous 5 years at 40%. The split between Merchant (14%) and Subscriptions (86%) costs was obtained through the computation of the moving average of these weights between 2020 and 2022 as the costs for both segments look to converge into a stable split during this time frame.

Table 18 – Cost of Revenue

	2023	2024	2025	2026	2027
Subscription solutions	368	380	427	453	512
% of Cost of Revenue	14%	14%	14%	14%	14%
Merchant solutions	2229	2303	2587	2745	3102
% of Cost of Revenue	86%	86%	86%	86%	86%
Total Costs of Revenue	2597	2683	3014	3198	3614
% of Total Revenues	40%	40%	40%	40%	40%

Source: Own calculations

5.2.3- Operating Costs

Additionally to the cost of revenues, Shopify also has operating expenditures (such as sales and marketing, research and development, general and administrative costs, and irregular income items) (such as transaction or loan losses). Total operating costs as a percentage of total revenues are expected to from 40% in 2023 to 33% in 2027. From 2018 to 2021, the percentage of operating costs in terms of total revenue decreased from 64% to 48% only to increase in 2022 to 67% due to a big increase in General and Administrative expenses related to the acquisition of Deliverr, a fulfilment technology provider from San Francisco (California, United States). For the forecast, it is expected for the operating costs to substantially decrease and be positively impacted by scaled economies from 2023 to 2027 due to the incorporation of Deliverr[a]s fulfilment software. For the explicit period the operating expenses are expected to decrease to 40% in 2023, 39% in 2024, 38% in 2025, and 37% in 2026 at 33% in 2027.

Table 19 – Operating Costs

	2023	2024	2025	2026	2027
Total OpEx	2629	2649	2899	2995	3018
% of Revenues	40%	39%	38%	37%	33%

Source: Own calculations

5.2.4 – Sales and Marketing

As per the annual report disclosure, Shopify's investment in sales and marketing will continue to be a strategic vector for growing the number of merchants using their platform through advertisements on search engines, display ads and social media. As so, for the explicit period we assume that the weights of Sales and Marketing in terms of total operating expenses will follow the simple average from 2019 to 2021 and remain constant at 39% of operating expenses.

Table 20 – Sales and Marketing

	2023	2024	2025	2026	2027
Sales and Marketing	1036	1044	1142	1180	1189
% of Opex	39%	39%	39%	39%	39%

Source: Own calculations

5.2.5 – Research and Development

Shopify states in its annual reports that they intend to increase investments in research and development to order to maintain its high level of merchant service and support. Multi-channel commerce where e-commerce is included is a relatively new industry that is rapidly evolving through new mobile phone functionalities, more interactive media channels and merchants striving to create new ways to stand out in the digital economy. We assume that the weight of research and development in terms of total operating expenses will increase in value but remain constant as a percentage of total operating expenses and will correspond to the simple average from 2018 to 2022.

Table 21 – Sales and Marketing

	2023	2024	2025	2026	2027
Research and Development	942	949	1039	1073	1081
% of Opex	36%	36%	36%	36%	36%

Source: Own calculations

5.2.6- General and Administrative

According to Shopify's annual report, the company expects to incur additional general and administrative expenses as a result of its growth. Shopify explains that General and administrative expenses essentially consist of employee-related expenses for finance and accounting, legal, administrative, human relations and IT personnel, and impairment related to certain office leases among other costs. Hence, we assume the weights of General and Administrative to total costs to remain constant at 4%, increasing in dollar amount for each year of the explicit period.

Table 22 – General and Administrative

	2023	2024	2025	2026	2027
General and Administrative	552	556	609	629	634
% of Opex	21%	21%	21%	21%	21%

Source: Own calculations

5.2.7- Transaction and Loan Losses

The forecasted values for transaction loans and losses follow the assumption they will represent 4% of the operating expenses from the explicit period. Transaction and Loan Losses arise from the Shopify Capital segment, where small loans are given to Shopify's merchants.

Table 23 – Transaction and Loan Losses

	2023	2024	2025	2026	2027
Transaction and loan losses	105	106	116	120	121
% of Opex	4%	4%	4%	4%	4%

Source: Own calculations

5.2.8 – Depreciation and Amortization

The figures for Depreciation and Amortization concern the not only depreciation of intangible assets like intellectual property (i.e. Shopify's platform) but also the depreciation of property plants and equipment like basic equipment, transport equipment and buildings like storage units for order fulfilling. From 2018 to 2022, depreciation and amortization expenses have remained between 2.2% and 1.3% of total revenues. For the explicit period, it is assumed that the depreciation and amortization expenses are going to represent a flat 1.6% of total revenue, which corresponds to the average of the last three years.

Table 24 – Depreciation and Amortization

	2023	2024	2025	2026	2027
Depreciation and Amortization	81	94	103	112	122
% of Total Revenues	1.6%	1.6%	1.6%	1.6%	1.6%

Source: Own calculations

5.2.9 – Capital Expenditures

Capital expenditures ("CAPEX") concern not only the investment of the company through the acquisition, maintenance or improvement of fixed assets like PPE ("Property, Plant and Equipment) but also the investment in intangible assets which encompasses the investment in research and development. From 2018 to 2022, CAPEX as a percentage of total revenues has fluctuated between 2.8% and 1.4% in that sense, and the forecasted percentage of CAPEX in terms of total revenue corresponds to the moving average of the past 3 years which stood at 1.6%.

Table 25 - Capital Expenditures

	2023	2024	2025	2026	2027
CAPEX	124	144	159	172	188
% Total Revenues	1.6%	1.6%	1.6%	1.6%	1.6%

Source: Own calculations

5.2.10 – Working Capital

Net Working capital is a measure of short-term liquidity and is defined as the difference between current assets (minus cash and short-term investments) and current liabilities (less short-term debt). Trade and other receivables, accumulated income, inventories, and payments for other contracted services are examples of current assets for any given company. Trade and other payables, other current liabilities, and deferred income are all included in the current liability. The anticipated working capital was calculated as a percentage of total revenue seen from 2020 to 2022, which was 2.2%

Table 26 –Working Capital

	2023	2024	2025	2026	2027
Net Working Capital	-147	-152	-170	-181	-204
% of Revenues	2.2%	2.2%	2.2%	2.2%	2.2%
Change in Net Working Capital	37	-5	-19	-10	-23

Source: Own calculations

5.2.11- Tax Rate

Shopify discloses in its annual report that they expect for the statutory tax rate to remain in line with the American tax rate at 21% despite the company being based in Canada. The rationale for using the United States tax rate is that Shopify generates the majority of its revenue in the US. The forecast for adjusted tax is as follows:

Table 27 – Tax Rate

	2023	2024	2025	2026	2027
Tax Expense	-266	-287	-339	-376	-502
Tax Rate	21%	21%	21%	21%	21%

Source: Own calculations

5.2.12 – Debt and Interest Expense

To compute the future interest expense, and take into account that 95% of their current debt was contracted in 2020, it is assumed that the forecasted interest expense will be equal to the moving average observed from 2020 to 2022. Naturally, the forecasted level of Debt is also expected to increase for the explicit period, as the growth rate for Debt has been gradually decreasing in the implicit period, we take as a proxy for the debt growth rate of 2% which corresponds to the Debt growth rate observed from 2021 to 2022.

The computation of the forecast of interest expense after tax was done via the moving average of the interest expense observed from 2020 to 2022 and using the US tax rate of 21%. It is worth mentioning that despite increasing debt in the implicit period, interest expenses have consistently decreased as exhibited in 2021 and 2022 after annualizing Q3 2022.

Table 28 – Debt and Interest Expense

	2023	2024	2025	2026	2027
Debt	1216	1240	1265	1290	1316
Debt growth (%)	0.02	0.02	0.02	0.02	0.02
Debt change	24	24	25	25	26
Interest expense after tax	-4	-3	-3	-4	-3

Source: Own calculations

5.3- Estimating the cost of capital

The computation of the Enterprise and the Equity value through the FCFF methodology encompasses the discount of the forecast cash flows at the weighted average cost of capital ("WACC") as first mentioned in the literature review. For us to compute these values we need to determine the Capital Structure, Cost of Debt and Cost of Equity.

5.3.1 – Capital Structure

The D/E ratio used for the computation of the WACC takes into account weights of Debt and Equity (Market Value) observed in Shopify's balance sheet as of the release date for the third quarter of 2022 results. At that date, total equity stood at USD 169.3bn and total debt stood at USD 1.3bn. Hence, the weights resulting from the values observed were 99% for Equity and 1% for Debt. The capital structure for Shopify. The market value of equity at USD 169.3bn refers to the total market capitalization as of 30/09/2022.

5.3.2 – Levered Beta

Despite Shopify not being listed in the SP500, it is considered that the returns of the SP500 Index are reflective of North America's market operating risk and are often used as a benchmark, also Shopify sources the majority of its revenues through the United States. The Levered Beta at 1.57x for Shopify was computed using the CAPM ("Capital Asset Pricing Model") by regressing the daily return of Shopify's stock and the daily return of the SP500 Index from 20/10/2017 to 30/09/2022. The Levered Beta using monthly returns for the same period was also computed but ultimately was not taken into consideration as it exhibited a lower adjusted R squared (0.156 for the monthly regression vs. 0.287 for the daily regression). The returns were computed using the natural log of 1247 observations.

$$\beta_L = \frac{\mathrm{Cov}(R_s, R_m)}{\sigma(R_m)} = \frac{0.000285264}{0.000181737} = 1.56952 = 1.57$$

This means based on the historical data considered in the computation above, investing in Shopify is riskier than investing in the market.

5.3.3 – Market Risk Premium

The market risk premium is the risk premium that is required to invest in a risky security, Shopify, compared safe to investments like the 10-Y USA Treasury bill is computed as follows:

$$\text{MRP} = \text{E}(R_m) - R_f = 9.6\% - 4.07\% = 5.51\%$$

Where,

$$\text{E}(R_m) = Average\ Daily\ Returns\ SP500 * 30 * 12 = 0.000266077 * 30 * 12 = 9.6\%$$

5.3.4- Cost of Debt

The following cost of debt was computed by dividing the annualized interest expense of the third quarter of 2022 and the total debt expenses observed on the same date (30/09/2022). As of Q3 2022, the annualized debt expense and debt level stood at USD 1.29bn and USD 3.5mn which resulted in a cost of Debt of 0.27%

$$K_d = \frac{3.59}{1298.9} = 0.27\%$$

5.3.5- Country Risk Premium

As per recent Data provided by Damodaran, the country risk premium for North America is 0. Given that Shopify's returns are mainly sourced from the US, the country risk premium considered for the computation of the cost of equity is also 0.

5.3.6- Cost of Equity

The risk-free rate, the leveraged beta, the market risk premium, and the country risk premium were used calculate the cost of equity as follows:

$$k_e = R_f + \beta_L * [E(R_m) - R_f] + \text{CRP} = 4.07\% + 1.57 * 5.51\% + 0 = 12.7\%$$

5.3.7- Risk-free rate

The proxy for the safe investment used was the US T Bill 10Y as the company operates predominantly in the USA and their annual reports are expressed in United State Dollars. The 4.07% used as a risk-free return corresponds to the 10-Year yield observed on 03/10/2022 as per Federal Reserve of Saint Louis Data.

5.3.8 – Weighted Average Cost of Capital

Based on the inputs calculated, the WACC is computed as follows:

$$\text{WACC} = \frac{E}{E+D} * r_e + \frac{D}{E+D} * r_d * (1 - t)$$

$$WACC = 99\% * 12.7\% + 1\% * 0.27\% (1 - 21\%) = 12.6\%$$

As observed, not only is the entity mostly financed by equity but it also has a low a very cost of debt.

5.4 – Discounted Cash Flows

The forecast cash flows follow the assumptions described in chapters "5.2.1" to 5.2.12". The first model applied for Shopify's valuation is the Free Cash Flow to the Firm discounted at the previously computed WACC.

5.4.1-Free Cash Flow to the Firm

Free Cash Flows to the firm are calculated by adding the forecasted depreciation and amortization to the forecasted after-tax operating profit (see appendix) and subtracting the reinvestment the needs to be estimated through the CAPEX and the gross variation of Working Capital. The forecast of Free Cash Flows to the Firm is as follows:

Table 29 – Free Cash Flow to the Firm

	2023	2024	2025	2026	2027
EBITDA	1347	1460	1716	1901	2514
Depreciation and Amortization	81	94	103	112	122
EBIT	1266	1366	1612	1790	2392
Adjusted Tax Expense	266	287	339	376	502
NOPLAT	1000	1079	1274	1414	1890
CAPEX	-124	-144	-159	-172	-188
Change in NWC	37	-5	-19	-10	-23
Depreciation and Amortization	81	94	103	112	122
FCFF (USD mn)	993	1024	1199	1343	1800

Source: Own calculations

5.4.2- Terminal Value

The terminal value represents the value of cash flows following the valuation period. This metric can be reached by computing the perpetuity of cash flows to the firm assuming that these cash flows grow at a constant rate. As such, the growth rate assumed in perpetuity will be the sum of expected GDP growth between 2022 and 2027 for the United States (source: Statista) and the expected inflation rate. This growth rate stands at 7% and is the sum between 3.2% (expected GDP growth) and 4% (expected inflation). The expected inflation for the USA in 2027 stands at 2.1% (source: Statista) but we assume it could be a bit higher given the current inflation figures as of 2022 standing at 7.7% and the long-lasting effects of the ongoing war between Russia and Ukraine.

The terminal value is then obtained by discounting the FCFF forecasted for 2027 by the difference between the WACC and the perpetual growth rate (g). The TV stands at USD 35.6 billion.

Table 30 – Terminal Value

USD mn	
FCFF 2028	1800
WACC	12.6%
g	7.2%
Terminal Value (USD bn)	35.6

Source: Own calculations

5.4.3 – Enterprise Value (FCFF)

In the end, the total enterprise value stands at USD 23.9bn. The enterprise value of the firm is obtained by adding the discounted free cash flows to the firm for each year at the WACC and the terminal value.

Table 31 – Entreprise Value (FCFF)

	2023	2024	2025	2026	2027
FCFF (USD mn)	993	1024	1199	1343	1800
Discount Factor	0.8879	0.7884	0.7001	0.5519	0.5519
Terminal Value					35599
PV Free Cash Flow to the firm	882	807	840	746	994
PV Terminal Value					19648
Enterprise Value (USD bn)	23.9				

Source: Own calculations

5.4.4 – Equity Value

After deducting the book value of debt and adding the book value of cash to the enterprise value we arrive at a final forecasted equity value for 2022 of USD 25.9bn. Taking into account the 1.26 billion shares outstanding the fair value for Shopify stock stands at USD 20.5.

Table 32 – Equity Value

USD (bn)	
EV	23.9
Cash	3.35
EQV	25.9
Shares	1.26
Share price (USD)	20.6

Source: Own calculations

5.4.5- Free Cash Flow to Equity

To arrive at the FCFE cash flows one should add the cash effect of debt to the cash flows as well as consider the forecasted interest expense after tax and the dividends. The assumptions for the debt and interest expense after tax were previously explained in chapter 9.2.12 and given that Shopify has never distributed dividends we assume 0 for the forecast.

Table 33 – Free Cash Flow to Equity

	2023	2024	2025	2026	2027
FCFF (USD mn)	993	1024	1199	1343	1800
Interest Expense after Tax	-4	-3	-3	-4	-3
Change of Debt	24	24	25	25	26
Dividends	0	0	0	0	0
FCFE (USD mn)	1013	1045	1221	1365	1823

Source: Own calculations

5.4.6- Terminal Value

Similar to the FCFF approach, for the computation of terminal value under the FCFE model, the same growth rate for perpetual cash flows is assumed. However, the discounting factor is no longer the WACC but instead the previously computed cost of equity of 12.7%. The terminal value is then obtained by discounting the FCFE forecasted for 2027 by the difference between the WACC and the perpetual growth rate (g). The TV stands at USD 37.7bn.

Table 34 – Terminal Value

USD mn	
FCFE 2028	1823
ke	12.7%
g	7.2%
Terminal value (USD bn)	37.7

Source: Own calculations

5.4.7 – Equity Value (FCFE)

By combining the free cash flows to the business at the cost of equity and the terminal value, the enterprise value of the firm in the FCFE is determined. In the end, the firm is valued at USD 24.9 billion.

Table 35 – Equity Value (FCFE)

	2023	2024	2025	2026	2027
FCFE (USD mn)	1013	1045	1221	1365	1823
Discount Factor	0.8873	0.7873	0.6986	0.6199	0.5500
Terminal Value					37683
PV Free Cash Flow to equity	899	823	853	846	751
PV Terminal Value					20726
Equity Value (USD bn)	24.9				

Source: Own calculations

5.4.8 – Equity Value

After adding the book value of cash we arrive at a final forecasted equity value for 2022 of USD 28.3bn. Taking into account the 1.26 billion shares outstanding the fair value for Shopify stock stands at USD 21.4.

Table 36 – Equity Value

USD (bn)	
EQV	24.9
Cash	3.35
EQV	28.3
Shares	1.26
Share price (USD)	21.4

Source: Own calculations

5.5 – Sensitivity Analysis

Based on the importance that forecasts exert on the valuation through the DCF model an additional step which is called the sensitivity analysis is often contemplated. In that sense, it is assumed that not only the WACC but also the growth rate could have a strong impact on the final value. By establishing a range for which the WACC and the growth rate can vary, analysts often reduce the uncertainty of their forecasts when it comes to the model. For the FCFF sensitivity analysis, it is assumed that the WACC can vary between 13.2% and 12% and the growth rate can vary between 6.6% and 7.8%.

Table 37 – Sensitivity Analysis (FCFF)

USD per share		g				
		6.60%	6.90%	7.20%	7.50%	7.80%
WACC	12.0%	21.0	22.0	23.0	24.4	25.8
	12.3%	19.9	20.8	21.8	22.9	24.2
	12.6%	18.9	19.7	20.6	21.5	22.6
	12.9%	18.1	18.8	19.6	20.5	21.4
	13.2%	17.3	17.9	18.7	19.4	20.3

Source: Own calculations

The sensitivity analysis for the fair value obtained through the FCFF model renders a maximum value of USD 25.8 and a minimum value of USD 17.3.

For the FCFE sensitivity analysis, it is assumed that the Cost of equity can vary between 13.2% and 12% and the growth rate can vary between 6.6% and 7.8%.

Table 38 – Sensitivity Analysis (FCFE)

USD per share		g				
		6.6%	6.9%	7.2%	7.5%	7.8%
Ke	12.1%	21.8	22.7	23.8	25.1	26.4
	12.4%	20.8	21.6	22.6	23.6	24.8
	12.7%	19.8	20.6	21.4	22.4	23.4
	13.0%	19.0	19.7	20.4	21.2	22.2
	13.3%	18.2	18.8	19.5	20.2	21.06

Source: Own calculations

The sensitivity analysis for the fair value obtained through the FCFE model renders a maximum value of USD 26.4 and a minimum value of USD 18.2

5.6. – Model Limitations:

The main limitation when constructing the model is the time frame considered for the forecasted period contains pre-pandemic and post-pandemic data. The world as we know it was deeply affected by COVID-19, demand for digital buying soared during lockdown periods and suggests a concept that is "the new normal" as digital sales remain high to this day. Forecasting data during this period of turmoil has presented itself to be a challenge. Also, the lack of disclosure in the annual reports regarding future business prospects in concrete terms resulted in all of the assumptions being derived taking into account data publicly available which may not necessarily reflect Shopify's growth strategy.

5.7. – Relative Valuation

Relative valuation intends to value an asset based on the market price of similar assets. In that sense, the chosen peer group concern firms that are operating both in the tech sector as well as online retailing. Relative valuation is viewed as a complement to DCF models.

5.7.1- Forward P/E and EV/EBITDA

The ratios of EV to EBITDA and Forward P/E Ratio were used. Since depreciation spreads out the cost of fixed assets over several years and accounting indicators like leverage costs and taxes are excluded, the EV/EBITDA gives a clearer view of a company's financial health.

The Forward P/E was the second multiple that was selected. The multiple is a prediction of what is anticipated to happen in the future rather than what happened since the market is forward-looking. As a result, prospective valuation multiples rather than historical multiples are often given more weight.

Table 39 – Forward P/E and EV/EBITDA

Company	Share price	EPS	P/E	Market Cap (bn)	Debt	Cash and Eq.	EV	EBITDA (bn)	EV/EBITDA
Ebay	39.6	18.5	2.1	21.8	3.46	7.3	17.9	3.5	5.2
Amazon	116.0	1.15	100.8	1180.0	139.4	96.1	1223.4	56.2	21.8
Alibaba	68.6	1.79	38.3	186.6	27.7	73.8	140.5	23.1	6.1
SAP	98.1	3.29	29.8	114.6	17.2	13.2	118.6	7.7	15.5
Salesforce	160.2	0.53	302.3	160.2	6.4	12.0	154.6	3.3	46.8
Median P/E			38.3					Median EV/EBITDA	15.5

Source: Own calculations

The reference date for the share price was 26/10/2022 and the Market Cap was as of October 2022. The value of Debt and Cash equivalents was based on the most recent financials for the peer group. (Q3 2022).

The values presented for net income, equity valuation, number of shares, enterprise value and net debt are expressed in USD billions.

Forward P/E

Table 40 – Forward P/E

Forward P/E	Net income	Median P/E multiple	Equity Valuation	Nº of Shares	Share price
Shopify	1.1	38.3	42.6	1.26	33.7

Source: Own calculations

The forward P/E multiple results in a share price of USD 33.7.

EV/EBITDA

Table 41 – EV/EBITDA

EV / EBITDA	EBITDA	Med. EV/EBITDA	E. Valuation	Net Debt	Eq. Valuation	Nº of Shares	Share price
Shopify	1.34	15.5	20.8	-2.24	23.1	1.26	18.3

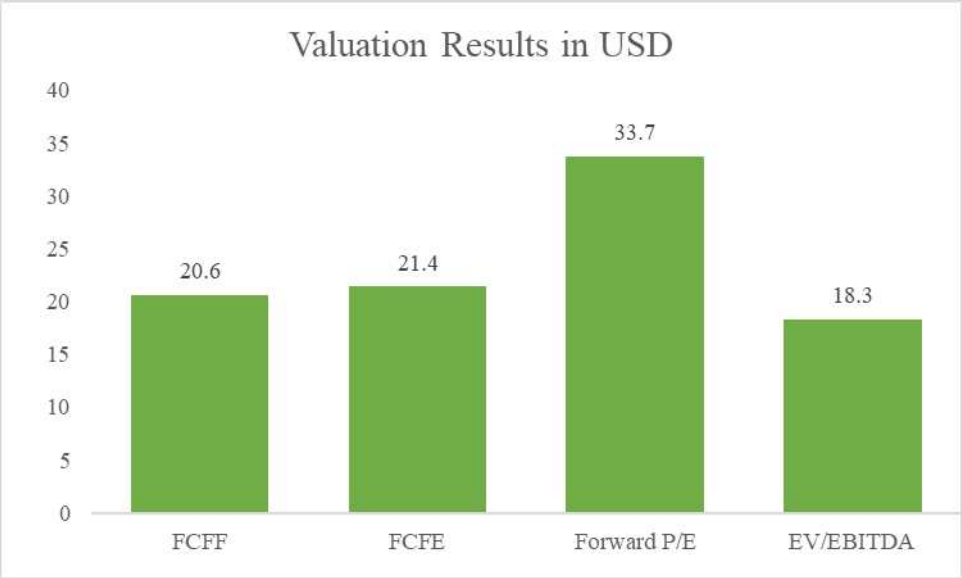
Source: Own calculations

The forward P/E multiple results in a share price of USD 18.3.

5.8 - Valuation Results

For the valuation process for Shopify, the following were applied to estimate the fair value of Shopify: the DCF model (FCFE; FCFF) and the relative valuation using (EV/EBITDA; Forward P/E). The valuation technique that resulted in a higher fair value for Shopify's stock was Forward P/E at USD 33.7, followed by the FCFE at USD 21.4, the FCFF at USD 20.6, and lastly the EV/EBITDA valuation at USD 18.3.

Table 42 – Valuation Results



Source: Own calculations

6 – Conclusion

The goal of this thesis was to estimate the fair value of Shopify's shares, a global fast growing e-commerce giant. The global e-commerce market has seen its subscriber base grow exponentially over the years by providing quick solutions to merchants wanting to sell their products online. Its main market is the US and has amassed several partnerships with other big companies such as Walmart, Facebook and Instagram, Amazon and Tik Tok. Surprisingly, Shopify's stock remained resilient to the pandemic, and the stock has grown throughout 2020 and 2021. However, after peaking in 2021, the stock price decreased abruptly in 2022 with the stock valued at USD 34.3 as of the release date of the third quarter of 2022 results.

However, as per the valuation assessment of Shopify through FCFF (USD 20.6), FCFE (USD 21.4), Forward P/E (USD 33.7), and EV/EBITDA (USD 18.3), it becomes evident that the stock is currently trading above its fair value. Penetration in markets like Latin America and Asia could perhaps give the increase in value that Shopify needs to justify its current market valuation. By analysing not only the fair value of the prices estimated through the models and taking into account also other analysts' fair value consensus, the final recommendation is to **sell.**

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Appendixes

Appendix 1 – Income Statement.

Millions of Dollars	2018	2019	2020	2021	2022
Subscription solutions	465	642	909	1 342	1 450
Merchant solutions	608	936	2 021	3 270	3 705
Total Revenue	1 073	1 578	2 929	4 612	5 155
Subscription solutions	101	128	194	264	327
Merchant solutions	376	584	1 194	1 866	2 219
Total COGS	101	713	1 388	2 131	2 546
Total Gross Margin	**972**	**866**	**1 542**	**2 481**	**2 609**
Sales and Marketing	350	473	602	902	1 244
Research and Development	231	355	552	854	1 417
General and Adminitstrative	107	154	245	375	657
Transaction and loan losses	-	25	52	82	134
Total OpEx	**688**	**1 007**	**1 451**	**2 213**	**3 452**
Operating Income	**284**	**(141)**	**90**	**269**	**(844)**
Interest Income	29	48	23	15	53
Interest Expense			(9)	(3)	(3)
Unrealized gain on equity and other investments	-	-	135	2 860	123
Foreign Exchange gain	(2)	(3)	1	0	(11)
Income before Provision for Income Taxes	**311**	**(96)**	**240**	**3 141**	**(682)**
Income Taxes	-	29	79	226	(458)
Net Income	**311**	**(125)**	**320**	**2 915**	**(225)**

Source: Shopify Annual Reports

Appendix 2 – Consolidated Statement of Cash flows

Millions of Dollars	**2018**	**2019**	**2020**	**2021**	**2022**
Net Income to Stockholders	-65	-125	320	2915	-158
Depreciation & Amortization	23	28	61	65	28
Amortization of Deferred Charges	4	7	18	4	1
Stock-Based Comp	96	0	247	331	150
Change In Accounts Receivable	-33	-56	-29	-72	-20
Change in Other Net Operating Assets	-53	-85	-150	-581	-387
Other Operating Activities	37	301	-41	-2156	173
Cash from Operations	**9**	**71**	**425**	**504**	**-214**
Capital Expenditures	-28	-57	-42	-51	-14
Cash Acquisitions	-19	-266		-60	-1724
Other Investing Activities	-763	-247	-1890	-2237	-11
Cash from Investing	**-811**	**-569**	**-1932**	**-2348**	**-1749**
Long-Term Debt Issued	0	0	908	0	0
Other Financing Activities	1072	736	2649	1650	3
Cash from Financing	**1072**	**736**	**3557**	**1650**	**3**
Beginning Cash (CF)	142	411	650	2704	3351
Foreign Exchange Rate Adjustments	-2	2	3	-7	-13
Additions / Reductions	271	237	2050	-194	-1960
Ending Cash (CF)	**411**	**650**	**2704**	**2503**	**1378**

Source: Shopify Annual Reports

Appendix 3 – Balance Sheet

	2018	2019	2020	2021	2022
Cash And Equivalents	411	650	2704	2503	1378
Short Term Investments	1569	1818	3694	5287	3563
Accounts Receivable, Net	24	41	64	127	158
Prepaid Expenses	13	21	25	50	
Other Current Assets	113	212	392	573	913
Total Current Assets	2129	2742	6878	8539	6013
Property Plant And Equipment, Net	62	246	211	302	478
Capitalized / Purchased Software	18	12	2	0	0
Long-term Investments		3	173	3956	2422
Goodwill	38	312	312	357	1836
Other Intangibles	26	167	136	138	411
Other Long-term Assets	-18	7	51	48	43
Total Assets	2255	3489	7763	13340	11203
Accounts Payable	61	91	169	284	596
Accrued Expenses	19	84	116	138	0
Current Portion of Capital Lease	0	9	10	16	17
Other Current Liabilities	58	132	144	265	292
Total Current Liabilities	139	316	438	703	905
Long-term Debt	0	0	758	911	913
Capital Leases	0	143	145	247	369
Other Non-current Liabilities	25	15	21	346	323
Total Liabilities	164	474	1362	2207	2510
Common Stock	2216	3256	6115	8040	8653
Additional Paid In Capital	75	63	261	161	0
Retained Earnings	-188	-304	15	2938	101
Other Common Equity	-12	1	9	-6	-61
Common Equity	2091	3016	6401	11133	8693
Total Equity	2091	3016	6401	11133	8693
Total Liabilities And Equity	2255	3489	7763	13340	11203
Cash And Short Term Investments	1979	2468	6397	7790	4941
Total Debt	0	152	913	1173	1299

Source: Shopify Annual Reports

Appendix 4 –-Financial Indicators

	2017	2018	2019	2020	2021
Turnover	673	1073	1578	2930	4612
Gross Profit Margin (USD)	395	614	888	1580	2481
Gross Profit Margin (%)	59%	57%	56%	54%	54%
EBITDA (%)	-4%	-6%	-7%	5%	5%
EBIT (%)	-7%	-9%	-9%	3%	6%
GMV	26320	41103	61138	119577	175400
Debt	112	164	474	1362	2207
Equity	1001	2091	3016	6401	11133
D/E (%)	11%	8%	16%	21%	20%

Source: Shopify Annual Reports

Appendix 5 – Historical Macroeconomic Indicators for US and the World

	2017	2018	2019	2020	2021
Inflation (USA)	2.1%	2.4%	1.8%	1.2%	4.7%
Inflation (World)	3.3%	3.6%	3.5%	3.2%	4.7%
GDP growth % (USA)	2.3%	2.9%	2.3%	-3.4%	5.7%
GDP growth % (World)	3.8%	3.6%	2.8%	-3.0%	6.0%
Unemployment Rate (USA)	4.4%	3.9%	3.7%	8.1%	5.4%
Unemployment Rate (World	5.7%	5.1%	4.8%	6.6%	5.6%

Source: OECD, IMF

Appendix 6 – Projected Macroeconomic Indicators for US and the World

	2022	2023	2024	2025	2026	2027
Inflation (USA)	8.1%	3.5%	2.2%	2.0%	2.0%	2.0%
Inflation (World)	8.8%	6.5%	4.1%	3.6%	3.4%	3.3%
GDP growth % (USA)	1.6%	1.0%	1.2%	1.8%	2.1%	1.9%
GDP growth % (World)	3.2%	2.7%	3.2%	3.4%	3.3%	3.2%
Unemployment Rate (USA)	3.7%	4.6%	5.4%	5.4%	4.9%	4.7%
Unemployment Rate (World	4.5%	5.0%	5.2%	5.1%	5.0%	0.049

Source: OECD, IMF

Appendix 7 – Income Statement and Free Cash Flows Forecast

DCF	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Subscription Solutions	465	642	909	1342	1450	1941	1972	2213	2362	2659
Merchant Solutions	608	936	2021	3270	3705	4632	4820	5416	5731	6487
Revenues	1073	1578	2929	4612	5155	6572	6792	7629	8094	9146
Subscription Solutions	101	128	194	264	327	368	380	427	453	512
Merchant Solutions	376	584	1194	1866	2219	2229	2303	2587	2745	3102
Cost of Goods Sold	101	713	1388	2131	2546	2597	2683	3014	3198	3614
Gross profit	972	866	1542	2481	2609	3976	4108	4615	4896	5533
Sales and Marketing	350	473	602	902	1244	1036	1044	1142	1180	1189
Research and Development	231	355	552	854	1417	942	949	1039	1073	1081
General and Administrative	107	154	245	375	657	546	550	602	622	627
Transaction and LL	0	25	52	82	134	105	106	116	120	121
EBITDA	284	-141	90	269	-844	1347	1460	1716	1901	2514
Depreciation and Amortization	23	28	61	65	66	81	94	103	112	122
EBIT	261	-169	29	204	-910	1266	1366	1612	1790	2392
CAPEX	-28	-57	-42	-51	-57	-124	-144	-159	-172	-188
Change in NWC		44	-85	-11	-121	37	-5	-19	-10	-23
Depreciation and Amortization	23	28	61	65	66	81	94	103	112	122
Adjusted Tax Expense	0	0	6	43	0	266	287	339	376	502
FCFF	312	-129	211	287	-666	993	1024	1199	1343	1800
Interest Expense after Tax	0	0	-7	-3	-3	-4	-3	-3	-4	-3
Change of Debt	0	152	761	261	19	24	24	25	25	26
Dividends	0	0	0	0	0	0	0	0	0	0
FCFE	312	23	965	545	-650	1013	1045	1221	1365	1823

Source: Shopify Annual Reports and Own Calculations

Appendix 8 – Shopify Stock price

Date	price (USD)
20/10/2017	10.2
23/10/2017	10.3
24/10/2017	10.6
25/10/2017	10.3
26/10/2017	10.4
27/10/2017	10.7
30/10/2017	10.9
31/10/2017	9.9
(…)	
21/09/2022	30.5
22/09/2022	28.6
23/09/2022	28.8
26/09/2022	28.3
27/09/2022	27.9
28/09/2022	29.2
29/09/2022	26.8
30/09/2022	26.9

Source: Yahoo Finance

Appendix 9 – WACC

WACC	
Beta	1.57
Equity	169260
Weight of Equity	99%
Debt	1299
Weight of Debt	0.76%
Cost of Equity	12.7%
Interest Expense	3.49
Cost of Debt	0.27%
Tax Rate	21.0%
Expected Return of the market	9.6%
Expected Return of Rf rate	4.07%
Market Risk Premium	5.51%
WACC	12.6%

Source: Own calculations