Enhancing Valuation for Telcos

A Strategic Approach to Business Valuation

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Abstract

This thesis delves into the strategic and operational factors influencing the valuation of telcos, focusing on MNOs and ISPs. Through qualitative analysis in the form of literature study and expert interviews, it identifies EBITDA multiples and DCF models as key valuation methods, highlighting revenue, EBITDA, and free cash flow as crucial metrics. The study emphasizes the importance of customer centricity, network investments, and growth, in driving valuation. It explores the perspectives of executives and shareholders on valuation factors, revealing insights into market dynamics, regulatory impacts, strategic positioning, and operational efficiency. Recommendations for telcos include leveraging new revenue streams, enhancing customer experiences, and strategic risk management to improve valuation in the competitive telecom landscape. This study contributes to the existing literature on subscription based business by exploring their applicability to the telco sector. It paves the way for further inquiry into the effect of different broadband networks on customer satisfaction, and into the link between bundled services and propensity to churn.

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List of abbreviations

Abbreviation	Full Term
AI	Artificial Intelligence
ARPU	Average Revenue Per User
CAPM	Capital Asset Pricing Model
CCA	Comparable Company Analysis
CCO	Chief Commercial Officer
CE	Customer Equity
CFO	Chief Financial Officer
CLV	Customer Lifetime Value
CMO	Chief Marketing Officer
CNO	Chief Network Officer
COO	Chief Operating Officer
CSR	Corporate Social Responsibility
CTO	Chief Technology Officer
DCF	Discounted Cash Flow
DSL	Digital Subscriber Line
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EPS	Earnings per share
ESG	Environmental, Social & Governance
EV	Enterprise Value
FCF	Free cash flow
FCFE	Free cash flow to equity
FCFF	Free cash flow to firm
FMC	Fixed Mobile Convergence
FTTC	Fiber to the Cabinet
FTTH	Fiber to the Home
FTTO	Fiber to the Office
FWA	Fixed Wireless Access
GSM	Global System for Mobile communication
HFC	Hybrid Fiber Coaxial
IoT	Internet of Things
ISP	Internet Service Provider
KPI	Key Performance Indicator
MLA	Master Lease Agreement
MNO	Mobile Network Operator
MVNO	Mobile Virtual Network Operator
NPS	Net Promotor Score
NR	New Radio
P/B	Price to Book
P/CF	Price to Cash Flow
P/D	Price to Dividend
P/E	Price to Equity
P/S	Price to Sales
PE	Private Equity
QoS	Quality of Service
ROA	Return on assets
ROC	Return on capital
ROE	Return on equity
SHV	Shareholder Value
Telco	Telecommunications company
Towerco	Tower Company
UMTS	Universal Mobile Telecommunications System
VOIP	Voice Over IP
WACC	Weighted average cost of capital

1. Introduction

In the rapidly evolving landscape of the telecommunications industry, the strategic positioning of a company is critical to its valuation. The valuation of a telecommunications company (telco) reflects not only its current financial health and market position but also influences its future growth prospects and relationships with investors. In the context of this thesis, the term 'telco' is used exclusively to denote Mobile Network Operators (MNOs) and Internet Service Providers (ISPs). This definition deliberately omits entities such as Mobile Virtual Network Operators (MVNOs) and manufacturers, which fall outside the scope of this study. The objective of this thesis is to pinpoint the key metrics influencing the business valuation of telcos and explore potential variations in importance as perceived by shareholders and management.

MNOs and ISPs are part of the telecommunications industry, which is characterized by its high capital intensity, rapid technological advancements, and stringent regulatory environments (Cambini & Jiang, 2009, p. 560; Ghezzi et al., 2015, pp. 346–347). Their subscription-based business models result in predictable revenue streams, allowing to estimate the company's shareholder value (SHV) in various ways like comparable company analysis (CCA), discounted cash flow valuation (DCF), or by analyzing its customer equity (CE) (De Franco et al., 2015, p. 85; McCarthy et al., 2017). Central to all these valuation methods is the company's revenue. In case of subscription-based business models, revenue is primarily driven by the size of its customer base and average revenue per user (ARPU) (McCarthy et al., 2017, p. 17).

A customer base is fluid, experiencing acquisitions, retentions, and churn at all times. The same goes for ARPU, being influenced by – mostly – marketing activities. It is of no surprise that plenty of research into valuating subscription-based businesses takes margin per customer, acquisition costs, and customer churn into account (Schulze et al., 2012, p. 18). A wide body of research has dived into factors directly influencing these key performance indicators (KPIs) for subscription-based businesses. Research has shown that corporate social responsibility (CSR) and customer satisfaction significantly impact ARPU and acquisition, churn, and retention rates, thereby indirectly influencing SHV (E. W. Anderson et al., 2004; Homburg et al., 2005; Luo & Bhattacharya, 2006). Furthermore, factors directly affecting SHV are well-documented. The valuation multiples assigned to a firm are generally influenced by its risk profile, growth prospects, and cash flow generating potential (Damodaran, 2012, p. 441).

Although there is plenty of research into these factors for subscription-based businesses, there is very little into the specific application within the telecommunications sector. Understanding the influence of different factors influencing SHV in this sector is crucial for a telco aiming to enhance its valuation. These factors might carry different weights to management and shareholders, indicating the presence of agency problems (Kor & Mahoney, 2005). Therefore, this research aims to explore these factors and how they might differ between different groups of the telco's stakeholders. The following research question is formulated to reach this understanding:

What strategic and operational factors contribute to the financial valuation of Mobile Network Operators (MNOs) and Internet Service Providers (ISPs), and to what extent do the perspectives of financial market actors and internal management differ on this?

By dissecting and understanding the determinants of firm value, this study aims to uncover the key drivers that influence these firms' valuations and the agency problems that may arise. Using a combined approach of extensive literature study and interviewing valuation experts and telco management, this research aims to validate the developed framework of valuation while revealing potential agency problems.

This research contributes to the existing body of knowledge in business valuation, strategic management, and finance. It bridges the gap between valuation theory and the specific dynamics of the telecommunications sector, marked by rapid technological change and regulatory considerations. This study seeks to validate the applicability of established factors influencing valuation specifically in the context of telecommunications companies.

Practically, the findings of this thesis are intended to provide tangible benefits to telcos aiming to enhance their valuation. This research offers a guide for enhancing company valuation by making decisions that impact market perception, financial performance, and investor confidence. The recommendations will be particularly valuable for company executives and shareholders. By providing an

understanding of the factors influencing business valuation, this thesis aims to equip them with the knowledge to make informed decisions that optimize their company's market valuation.

In the following chapters, this thesis will explore the theoretical foundation of valuation methods, a detailed analysis of the sector's dynamics, and recommendations for telcos. The ultimate goal is to bridge the gap between academic research and practical application, contributing valuable insights to both the academic community and industry practitioners.

2. Literature review

To understand the factors that influence a telco's valuation requires deep understanding of the different aspects of the sector itself. This chapter starts with discussing the characteristics of the telecommunications market and goes on to different business valuation methods. The section then dives into literature about strategic and operational factors that are of interest to this study and concludes with a paragraph about agency theory.

2.1 Telecommunications market

The telecommunications market holds a special place in the domain of subscription-based businesses. This is mainly for two reasons: the asset-heavy approach of most major telcos, and the pace of technological advancement which impacts the business in several ways.

The business of a telco in the sense of this study is selling subscriptions to customers, who can then make use of the network of the provider. Acquiring spectrum licenses, building, operating, and upgrading a network requires significant investments which have a long payback time (Sheikh et al., 2022; Skoufis et al., 2023; Smith, 2022). The turn side of this long payback time, however, is that the costs-per-user are very low, leading to very high margins per customer (McCarthy et al., 2017). This is contrary to most other subscription-based businesses, where variable and fixed costs are more balanced. This asset-heavy approach not only influences their capital structure but might also play a role in shaping their positioning in the market and, consequently, their valuation (Smith, 2022).

Telcos' positioning is partly the result of the quality of their service: connectivity. This directly relates to the quality of its network, and therefore, the investments that preceded it. Network investments are essential for a telecommunications company. While optimizing revenue with minimal costs is advantageous, investing in network infrastructure is crucial to maintain competitiveness in a market with multiple players.

Advancements in networks are generally different between wireless and fixed networks. In wireless networks, there has been obvious and well-known development in network technology, most notably 2G (GSM), 3G (UMTS), 4G (LTE), and 5G (NR) (Sheikh et al., 2022). Unlike mobile technologies, where newer generations typically succeed and often replace the previous ones, fixed networks such as copper, fiber, and coaxial cable continue to coexist. This is due to the diverse infrastructure requirements, deployment costs, and technological capabilities of fixed networks. While fiber offers high-speed connectivity, copper and coaxial cables still remain relevant for areas where fiber deployment is not feasible or too costly (Lappalainen & Rosenberg, 2022). At this moment in time, telcos generally make use of one or two technologies. With fiber to the home (FTTH) assumed to be superior to the others, this is the most popular option, and often the replacement of copper. Despite its superiority, it is not available in all households, mainly due to the high costs of deployment. Its biggest competitor in terms of speed is the hybrid fiber coaxial (HFC) network, where the line between customer and street cabinet (point of presence, POP) is made of a copper COAX cable, and the rest of the network from fiber. Although this technology has less available bandwidth and therefor lower speeds, it is less costly to upgrade this compared to the copper-to-fiber transition since upgrading does not require digging new cables. Altogether, the ownership and current state of mobile and fixed networks is an important factor when valuing a telco, and makes the industry stand out compared to other subscription-based businesses.

Technological advancement is, apart from costly, also relevant to valuation in other ways. Firstly, it is a way for telcos to differentiate themselves, hence that network leadership[1] is assumed to be a factor of interest in terms of valuation. Secondly, advancements in network technology opens doors to other technological advancements, e.g., the internet of things (Iot) and Artificial Intelligence (AI). These technologies would probably not exist (yet) without the internet availability provided by telcos, but also offer

[1] A telco's superiority over competitors in network quality and coverage, nationally or globally.

new market opportunities to telcos themselves. Examples of this are AI-controlled drones that deliver medical supplies to hospitals, or surgeons operating from another country via high-speed fiber connections (Damoah et al., 2021).[2] All of these facts present a tradeoff between costs and benefits in terms of investing in new networks and could in this way influence a telco's valuation.

Next to leveraging network quality and price, telcos differentiate themselves by bundling services (Al-Mashraie et al., 2020), and in terms of customer satisfaction (Cronin et al., 2000). Bundling services allows the telco to sell more, but also offers benefits to customers who would otherwise buy the bundled services independently (Hitt & Chen, 2005). Customer satisfaction is not only a means for differentiation, but it also leads to higher ARPU and retention rates, making it a very important KPI (Gustafsson et al., 2005; Homburg et al., 2005). Whether it is through network leadership, bundling services, or customer satisfaction, the ability of a telco to differentiate itself from competitors and leverage it to perform better than the market, is highly likely to be of influence on business valuation.

Telcos can become too powerful if they have full control over a local market, therefore there is need for competition. It should not come as a surprise that many countries have antitrust law. For instance, mergers and acquisitions in the EU require approval of the European Commission.[3] Some countries even oblige MNOs to offer bandwidth for resale to providers without a network (Mobile Virtual Network Operators, MVNOs) (Godlovitch et al., 2023). Regulation of wholesale tariffs that MNOs charge MVNOs has also been requested (and denied) before.[4] Without this induced and maintained competitiveness, technological advancements might come to a halt or consumers would pay a bigger part of the price. This shows MNOs to exert quite some market power, and thus profitability, and that valuation might partly depend on the number of big players (i.e., MNOs) in the market. Regulations that alter this power are therefore likely to have an effect on a telco's profitability and valuation.

Another way of impact from regulatory frameworks is direct impact on an individual telco. An example of this is regulation around the use of customer data, whether it is for commercial gain or simply to enable the customer to be serviced. Since customer data is privacy sensitive and most regulators are very strict in the use of this data, it is of upmost importance for telcos to oblige the law strictly.[5] Complying to new regulations can be costly, think about training staff. Not complying can be even more costly, because of the fines resulting from it (Arcuri, 2020). Hence, the risk of changes in regulations might be considered when valuing a telco.

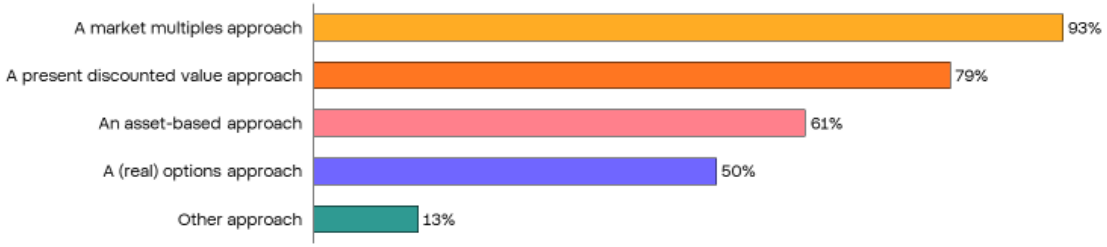
In conclusion, the multifaceted dynamics of the telecommunications market, encompassing asset-heavy business models, technological advancements, network quality, regulatory frameworks, and strategic differentiation, collectively contribute to the intricate landscape shaping a telco's position in the industry. Understanding these factors is pivotal for a comprehensive assessment of a telco's valuation.

2.2 Valuation methods

There are several methods to value companies, most using different figures, granting different results and being subject to different influences. A survey amongst financial experts was conducted to reveal which approaches are most popular. The many methods were divided into five approaches: market multiples, present discounted value, asset-based, (real) options, and other. It should be noted that most analysts use several methods simultaneously, to achieve robust results. This chapter will dive deeper into the different methods and characteristics of the two most popular approaches, as shown in figure 1 (Pinto et al., 2019).

[2] https://www.huawei.com/en/huaweitech/industry-insights/outlook/mobile-broadband/wireless-for-sustainability/cases/worlds-first-remote-operation-using-5g-surgery
[3] https://competition-policy-ec-europa-eu.ezproxy2.utwente.nl/sectors/electronic-communications/legislation_en
[4] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_4463
[5] https://gdpr-info.eu/

Figure 1. Analysts' choice of valuation method



2.2.1 Market multiples approach

The market multiples approach is a relative approach to valuation. Damodaran (2012, p. 34) describes the value of an asset to be "derived from the pricing of comparable assets, standardized using a common variable such as earnings, cash flows, book value, or revenue". This approach acknowledges individual firms to be priced incorrectly, but the market or sector as a whole (the average of all relevant individual firms) to be priced correctly. This allows for comparing the individual firm to the market average, and thereby judging its value. There are different multiples used for comparison, which can generally be split into two categories: price (P) and enterprise value (EV) multiples. These figures are used as the numerator in the multiple's equation. On the denominator side of the equation we find most often dividend yield (P/D), book value (P/B), cash flow (P/CF), sales (P/S), and (a measure of) earnings (P/E) for the price-multiples, and EBITDA (EV/EBITDA) for the EV multiples (Pinto et al., 2019). The two most popular multiples are EV (e.g., EV/EBITDA) and P/E, as shown in figure 2. These standardized values are then used in comparison to other firms, or to past multiples the company at interest has traded at.

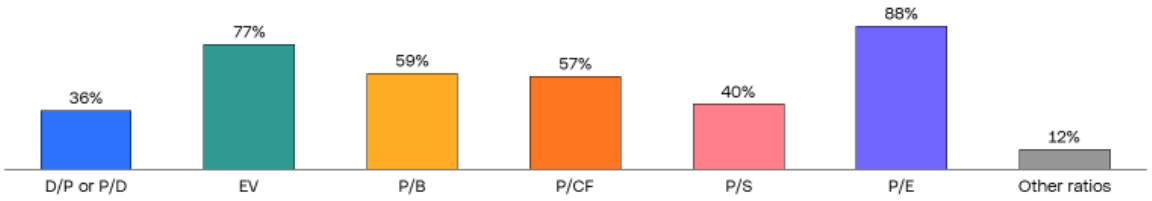


Figure 2. Analysts' choice of ratios in relative valuation

The P/E multiple is the most popular method for valuating companies but is mostly limited to public companies. Price in this context is the market price of stock (shares) and is therefore not available for private companies. A workaround to finding this multiple is by using a recent trade of shares as a proxy for price, which is possible when the company at interest has experienced a recent takeover. The denominator earnings can be any type of earnings, e.g., net income, operating income, or earnings per share. Research indicates that net income is much preferred to operating income (Pinto et al., 2019), and that assessing the long-term value of a company is done best by using several years of earnings (K. Anderson & Brooks, 2006). Deriving a private firm's value using the P/E ratio can be done by assuming a public firm's or market's multiple and combining it with the firm's earnings to find the price but note that finding a truly comparable firm can be hard (Damodaran, 2012).

The other popular multiple uses Enterprise Value (EV) over some measure of earnings, usually EBITDA. The enterprise value is calculated as:

$$EV = Market\ value\ of\ Equity - Market\ value\ of\ Debt - Cash.$$

EBITDA stands for earnings before interest, taxes, depreciation, and amortization, and is therefore much more specific than the earnings in P/E ratios. A major difference from P/E is that EV/EBITDA is more suited to compare firms with different leverage since it looks at firm value and pre-debt earnings. Another difference is regarding depreciation: P/E ratios are affected by different depreciation methods, where EV/EBITDA ratios are not since EBITDA excludes depreciation. These two differences favor EV/EBITDA over P/E for a telco valuation, given their large investment in network infrastructure and the accompanying capital structure (Damodaran, 2012).

Whether P/E, EV/EBITDA, or both ratios are used in the valuation, it is only a part of the outcome, with the multiple being the other part. A firm's multiple is based on expected growth, risk, and cash flow

potential. This means that similar firms in terms of these factors should trade at the same multiple, and their values can only differ due to their P/E or EV/EBITDA ratios. This also goes the other way around: firms with similar ratios but different expected growth, risk, or cash flow generating potential should trade at different multiples and hence have different values. This immediately shows the importance of a proper estimate of these factors, i.e., finding truly comparable firms.

Risk can be expressed in various ways, but ultimately it boils down to the risk of default. There are several measures used by accountants to express risk, like solvency ratios or the amount of leverage (Damodaran, 2012). Risk can also be measured in the stock market or on individual stock performance, by looking at the variance of (a bundle of) investments. A more subjective way to express and compare risk is to look at qualitative factors like demographic, economic, or legal risks, and map these in e.g., a DESTEP model. A way to mitigate some risks is by utilizing a risk framework, allowing the company to anticipate on risks or effectively cope with the consequences of it. In comparable company analysis, like the multiple approach, it is important to compare the company at interest to other companies that are similar in these terms of risk.

Expected growth and cash flow generating potential are intertwined. To express the latter for a company, analysts might use return on equity (ROE), return on capital (ROC), or earnings per share (EPS). When judging a company's expected growth, the same KPIs are used, but focus shifts to the growth rate they show. There is also a qualitative perspective on expected growth, like the prospects of a firm's product or service, the quality of management, or marketing strengths. Although these factors matter, they ultimately must be quantified and present themselves in the quantitative factors (Damodaran, 2012).

2.2.2 Discounted cash flow models

This paragraph will focus on discounted cash flow models. Given that many analysts prefer a discounted cash flow (DCF) approach for valuation, it is crucial to understand its components and implications. We will dissect the key aspects of two DCF models: free cash flow (FCF) and customer equity (CE).

Almost 80% of analysts indicated that they used a DCF for (a part of) their analysis, and that almost 90% of these analysts prefer an FCF approach. These models assume that the value of a company is the sum of its future cash flows and therefore discounts these to the current date. The rationale here is that excess cash in a firm ultimately finds its way to shareholders (e.g. FCF to Equity, FCFE) or all stakeholders (e.g. FCF to firm, FCFF), by either buying back stock, paying dividend, or repaying debt. The difference between FCF and CE is the use of a growth rate: the former assumes a terminal growth rate into perpetuity, while the latter calculates periodic revenues for a period so long that they are discounted to zero. These methods of valuation rely on assumptions regarding future cash flows and the cost of capital, which is used to discount these future cash flows.

FCF models, assuming a stable growth rate for cash flows, can pose challenges in valuing high-growth companies whose rapid expansion will not persist indefinitely. Analysts often turn to a two-stage model for such companies, featuring both high-growth and constant-growth phases. The dynamic nature of the telco sector complicates the choice between constant and two-stage growth models. While many companies have moved beyond their growth phase, expansion into new markets (be it fixed or mobile) could place a firm (partially) in a growth stage. Three critical elements in FCF valuation are the accuracy of free cash flow forecasts, the terminal growth rate, and the discount rate used for cash flows. These factors will be discussed in subsequent sections.

Forecasting cash flows typically involves breaking down various elements: revenue, costs, changes in working capital, depreciation, debt, and taxes. The reliance on multiple factors makes forecasting a cautious task for most companies. However, in the telco market, factors like predictable costs, significant investments, and high margins may alleviate some concerns. Given that revenue is a primary driver of cash flow, a more in-depth discussion is warranted.

As mentioned earlier, revenue for telecom companies depends on the customer base size and ARPU. Forecasting revenue involves modeling the customer base's development and anticipating changes in ARPU. This task becomes challenging when firms do not disclose essential data like customer base size or churn and retention rates. However, for public companies, this data is often accessible, enabling more sophisticated revenue modeling. Traditional methods rely on historical trends in revenue growth, considering broader industry and economic factors. A more precise method was proposed by

McCarthy, Fader, and Hardie (2017) in “Valuing subscription-based businesses using publicly disclosed customer data.

While Free Cash Flow to Firm (FCFF) and Free Cash Flow to Equity (FCFE) focus on immediate cash flows and operational efficiency, they are often complemented by the Customer Lifetime Value (CLV) model for a more comprehensive analysis. CLV reflects the total value a customer brings to the company over their entire relationship. This approach shifts the focus from short-term transactions to long-term customer relationships, offering a more detailed view of potential revenue streams.

McCarthy et al.’s model, which refines the Customer Equity (CE) method initially proposed by Gupta, Lehmann, and Stuart (2004) and later enhanced by Schulze, Skiera, and Wiesel (2012), is particularly relevant here. It integrates CLV into the broader context of company valuation. By considering factors like seasonality, demographic changes, customer heterogeneity, and duration dependence, this model allows for more detailed and accurate projections of the customer base and, consequently, revenue. These projections are crucial for long-term forecasts of revenue and customer acquisition, which inform monthly, quarterly, or annual cash flow estimates.

Unlike a market multiple approach, which primarily relies on comparing a company to its peers based on metrics like price-to-earnings ratios, the CLV-focused method delves deeper into the intrinsic value of the customer base itself. In this model, CLV is used to estimate the future revenues that a customer base will generate, which is then factored into the company's overall valuation. This method requires data on the number of active customers, customer acquisition, churn rates, and periodic revenues - information that, while not always publicly disclosed, is critical for a detailed analysis.

Consider a telecom company planning an IPO. Such a company often discloses detailed customer metrics to shareholders and underwriters. Applying the McCarthy et al. model to this data allows for more precise future revenue forecasts than traditional FCFF methods. This forward-looking approach, combining CLV with cash flow analysis, provides a robust valuation, reflecting both the current financial health and long-term customer base value. This comprehensive view is essential for investors and company management in decision-making processes.

Understanding FCF and CE methods is crucial for valuing telcos because they provide insights into both immediate financial health and long-term customer value. FCF captures current operational efficiencies and cash flow dynamics, essential for assessing financial stability and investment potential. CE delves into the future revenue potential from customer relationships, a key aspect given the high customer acquisition costs and competitive nature of the telco industry. These methods, therefore, offer a holistic view, aligning with the varied perspectives of financial market actors, internal management, and staff in understanding what drives the financial valuation of MNOs and ISPs. The weights assigned to the results of both methods by financial analysts are important to understand, as the value of an FCF analysis can be altered with different KPIs than one of a CE analysis.

Discounting rate

The discounting rate in FCF models is one of the major differences between FCFF and FCFE. In case of FCFF, the total cost of capital is often used, whereas the cost of equity is more common in case of FCFE. The cost of capital can be defined as the weighted average of the costs of the different sources of capital used by a firm, including equity and debt, which reflects the opportunity cost of making an investment of a similar risk profile. It is representing the minimum rate of return that a company must earn on its investments to satisfy its shareholders and debt holders, and to maintain its current market value. The formula is basically the weighted average of a firm’s cost of equity and cost of debt, and subtracts the tax shields from this:

$$WACC = (\frac{E}{V} \times R_E) + (\frac{D}{V} \times R_D \times (1 - T_c))$$

Where:

E = Value of the firm’s equity
D = Value of the firm’s debt
V = E+D
R_e = Cost of equity
R_d = Cost of debt
T_c = Corporate tax rate

Naturally, investors require a higher rate of return in risky investments compared to riskless ones. This interest is the cost of debt to the firm and can vary due to different risk levels between firms or time periods. This explains the varying interest rates on debt, but therefore also must have a link to the cost

of equity. One way to calculate the cost of equity is by using the capital asset pricing model (CAPM), which assumes three variables: the riskless rate of return, the market beta, and a risk premium. Although no investment is truly riskless, a riskless rate of return is always expected, often being the return on state obligations. On top of this, investors require a risk premium for the additional risk they take on when investing in a company instead of state obligations. In the CAPM, this risk premium is multiplied by a market beta, which represents the volatility of the investment compared to the market. Calculating and forecasting the cost of equity therefor means one must assume the risk-free rate of return, the applicable beta(s), and a suitable risk premium (Brealey et al., 2020).

Only knowing the cost of equity and debt, and the corporate tax rate, is not sufficient: one must also know the proportion of equity and debt in the firm's capital structure. To calculate this, we can assume either book or market values. Book values are usually present in the company's financial statements, specifically the balance sheet. These values represent the historical cost of equity and debt. However, for a more accurate and current assessment, especially in a dynamic market, it is often recommended to use market values. Market values of equity can be determined by the current stock price multiplied by the number of outstanding shares, while market values of debt may be estimated through methods such as observing the market prices of tradable debt, calculating the present value of debt using current interest rates, or using the book value as a proxy when market data is unavailable. The choice between book and market values depends on the availability of data and the specific context of the valuation (Brealey et al., 2020).

Terminal growth rate

The terminal growth rate represents the rate at which a company's free cash flows are expected to grow at, indefinitely, after the forecast period. This rate should be conservative and typically is set at the long-term growth rate of the economy or the industry, reflecting a mature stage of the company. It is crucial that this rate is not higher than the growth rate of the economy to ensure realism in the valuation. The terminal value is calculated using this growth rate and is then discounted back to the present value using the WACC. The choice of the terminal growth rate can significantly impact the valuation, since it is often a big portion of the total value in a DCF model, and thus, it requires careful consideration and justification (Damodaran, 2012).

2.3 Strategic and operational factors influencing valuation.

The previous paragraphs have shown that there are many variables influencing valuation that can come up in this thesis. This paragraph provides a clear distinction between strategic and operational factors within the telco industry. Furthermore, it concisely explains and operationalizes some factors that may arise in the study.

2.3.1 Strategic vs. operational factors

Strategic factors are high-level, long-term considerations that shape the direction and scope of the entire organization. They often involve decisions made at the top management level and have a significant impact on the company's future. Strategic goals are sometimes communicated in a company's mission and vision statement, and broadly carried out to the world. Telco examples of strategic goals are 'network leadership' and being 'customer champion,' representing respectively owning the best network and having the best customer satisfaction.

Operational factors are more about the day-to-day management and efficiency of the business. They are concerned with optimizing the company's resources and processes. These include activities that ensure the smooth functioning of the organization on a daily basis, such as effective resource allocation, process optimization, and quality control. Operational goals are typically more specific and measurable, focusing on aspects like reducing operational costs, improving service delivery times, and enhancing customer service quality. They are essential for translating strategy into tangible outcomes and are often reflected in the company's performance metrics and operational KPIs.

In between strategic and operational factors, but out of scope for this study, are tactical factors. Tactical factors bridge the gap between high-level strategy and daily operations. They involve the application of strategies through specific, actionable plans and projects. I decided to exclude tactical factors from the scope of this research, as it will broaden the study significantly, increase complexity, and can be hard to measure.

2.3.2 Strategic factors

Telcos can have strategic goals across multiple axes. Up until now, we saw that certain financial, technological, and marketing decisions can impact a telco's valuation. Although there will certainly be more aspects that become clear in this study, I will for now dive deeper into the above-mentioned ones.

Financial factors

The essence of strategic financial management in this context encompasses a range of practices, including revenue diversification, cost management, capital structure, risk management, investment planning, and dividend policies. These components will shortly be explained below.

Revenue diversification is a critical strategic factor in valuation. It involves expanding service offerings or entering new markets to reduce dependency on a single revenue stream. In the telecommunications sector, this can mean venturing into new (digital) services or geographical markets, or expanding to the broadband market (for MNOs) or mobile market (for ISPs) (Ghezzi et al., 2015). Diversification strategies are linked to enhanced financial stability and growth potential, impacting overall valuation (Berger & Ofekb, 1995; Chan-Olmsted, 2001; Damodaran, 2012).

Cost management strategies in telcos focus on optimizing operational efficiency to improve profitability. This includes streamlining processes, adopting new technologies for efficiency, and cost-effective resource allocation (Kwon & Lee, 2019). Efficient cost management directly influences the EBITDA margins, which is essential in valuation (Damodaran, 2012).

Capital structure, i.e., the mix of debt and equity, affects a company's risk profile and cost of capital. A balanced capital structure is important in ensuring financial flexibility and stability, influencing the firm's valuation. Strategic decisions regarding leveraging and equity financing play a crucial role in determining market valuation (Damodaran, 2012).

Robust risk management refers to the approach organizations use to identify, assess, and mitigate various risks that could affect their financial performance and objectives. Robustness is defined by Behzadi et al. (2018) as "the ability to reduce sensitivity to uncertainty and emphasize its importance in ensuring the consistent performance of supply chains". This definition, although used in supply chain management, can be used in corporate finance as well, where it contains strategies to deal with uncertainties in financial markets, operational challenges, and external events, ensuring the stability and sustainability of the organization's financial standing (Zhao & Huchzermeier, 2015).

Investment planning involves decision making about where and how much to invest based on the organization's long-term goals and market opportunities. These investment decisions can be internal, like network investments, and external, like acquisitions (Damodaran, 2012). Especially for telcos this is an important part of strategic financial management, as network investments are significant and the major ones only happen once every few years, when a new technology (e.g. 5G, XGSPON) is being rolled out. The level of investment is a key consideration in planning; insufficient funds might suggest the need for larger future investments, while excessive funding can negatively impact the firm's cash flow.

Dividend policy alignment pertains to the decisions regarding the distribution of profits to shareholders, which can significantly impact investor relations and corporate strategy. The firm's dividend policy is particularly relevant for business valuation because it is a cash-out flow, and different methods of valuation can yield different results due to dividend payouts. For instance, an FCFE valuation can differ from a dividend discount model valuation while using the same assumptions (Damodaran, 2012).

Technological factors

Technological factors are integral to telcos' strategic financial management and overall valuation. Relevant factors in this context are network infrastructure advancements, service innovation and digital transformation, operational efficiency through technological advancements, and sustainable and green technologies. These factors will shortly be discussed below.

Network infrastructure advancements such as 5G for MNOs, are crucial for enhancing service quality and expanding customer reach. Bangerter, Talwar, Arefi, and Stewart (2014) discuss the evolution from 4G to 5G, highlighting the importance of network topology innovations and new terminal capabilities in improving coverage, user experience, and reducing costs, which can significantly boost a telco's competitive edge and valuation (Bangerter et al., 2014). On the broadband side, there are also factors

influencing valuation apart from the choice between copper, coax, or fiber: each technology has its own set of protocols, e.g., ADSL, VDSL (copper), docsis 3.0, docsis 4.0 (coax), or GPON, XGSPON, 50G-EPON (fiber). These different protocols all have their own costs and benefits. For instance, a simulation by Jaworski and Marciniak illustrates the costs of different fiber protocols by bit rate demand, showing that GPON and XGSPON are more expensive in high-demand scenarios compared to 50G-EPON and NG-PON2 (Jaworski & Marciniak, 2020).

Service innovation and digital transformation into areas like cloud computing and IoT solutions can provide new revenue streams for telcos. The introduction of 5G already opened doors to this, as illustrated in the introduction and by Bangerter et al. (2014).

Fixed mobile convergence (FMC) refers to the integration of fixed and mobile telecommunications networks, enabling seamless connectivity and enhanced user experiences across different devices and network environments. This convergence lowers costs through network optimization and opens new market opportunities and competition among network operators, driven by the increasing demand of integrated services (Meddour et al., 2009). Additionally, providers often offer (monetary) benefits to customers combining fixed and mobile services, which could influence customer satisfaction and therefor churn behavior.

Operational efficiency through technological integration of technologies like AI and machine learning can significantly reduce operational costs. Taleb (2014) discusses network virtualization and cloud computing techniques as enablers for mobile network enhancements and cost reduction, highlighting the role of technology in operational efficiency for telcos in particular.

Sustainable and green technologies can positively impact a telco's valuation. Energy efficiency is one of the top priorities in the development of new technologies. The impact of sustainable and green technologies is threefold: it increases firm value through reputation, through lower operating costs, and through lower costs of capital (Agiwal et al., 2016; Gianfrate & Schoenmaker, n.d.). With the continuously growing data consumption and environmental awareness among customers, this technological factor might be of increasing importance.

Marketing factors

Until now, there have been hints on marketing factors and decisions affecting business valuation on an operational level, like churn rates and ARPU. On a more strategic note, this field of study is concerned with broader marketing strategies that shape the company's brand positioning and overall market presence. Key strategic marketing decisions include branding and positioning in the market, pricing strategies, customer segmentation and targeting, and the development of new market offerings. These decisions are crucial as they directly influence customer perception, competitive advantage, and revenue streams. For instance, a telco's decision to position itself as a premium service provider or a cost-effective alternative has significant implications for its customer base, revenue model, and ultimately, its valuation.

The strong link between marketing, finance, and valuation led to the development of the marketing-finance research field (Edeling et al., 2021), and the interest in a firm's marketing excellence (Homburg et al., 2020). Marketing excellence is defined as "a type of firm strategy focused on achieving organic growth by executing the marketing ecosystem priority, the end-user priority, and the marketing agility priority." (Homburg et al., 2020, p. 3). A second study by the same authors dived into the link between marketing excellence and firm valuation, finding a positive relationship between the two. Though it might not be a term that immediately rings a bell, it is good to understand the meaning of it, as it links directly to some (measurable) strategic factors within firms.

The marketing ecosystem priority, as defined Homburg et al., is a firm's "strategic means of growing the business by developing mutually beneficial systems of networks." Diving deeper leads to examples like expanding activities and contacts beyond the firm's own industry, incorporating multiple partners in value creation, sharing knowledge in these networks, harmonizing, and aligning work streams, and developing integrated offerings. Telcos can do this for example by offering content services (Netflix, HBO Max, Amazon Prime, etc.) in combination with subscriptions, although this might not be as extensive as described in the article.

End-user priority is defined as "a firm's strategic emphasis on engaging with the final customer, who applies or consumes the offering, and leveraging the final customer insights for growing the business." (Homburg et al., 2020, p. 9). In summary, this means firms need to know, understand, and participate

with customers. This customer centric approach is likely to also result in improved customer satisfaction, which in turn leads to lower churn, higher retention rates, and higher ARPU (through willingness to pay) (Homburg et al., 2005). Although firms' internal process may not be obviously visible to the public, one can spot some signs. A senior executive of a strategic investor, interviewed in the study by Homburg et al. (2020, p. 6), was quoted: "Marketing has to look beyond existing paradigms within the industry and think...visionary. In particular, marketing has to be disobedient to create new products or think new business models from the end of the chain and bring out an offering the customer has never even thought of".

Lastly, Homburg et al. mention **marketing agility priority** as part of marketing excellence. Examples of this are managing learning cycles, cutting through complexity, flexible resource allocation, efficient decision making, and removing internal barriers to change. This is described by a head of department of a chemical company as "Marketing excellence is about cutting the hierarchies: Previously, we focused on delegating operational or tactical issues. To grow today, we need to flexibly coordinate tasks no matter on the strategic or operational nature of the topic." (Homburg et al., 2020, p. 7). This implies that the functional and hierarchical structure of a telco might be of interest to investors, as it is a precursor to the firm's ability to achieve marketing excellence and thereby contribute to value.

Marketing excellence directly contributes to firm value. For example, a telco that excels in its marketing ecosystem priority by forming partnerships with complementary businesses (e.g., service providers like Netflix) and developing integrated offerings can tap into new revenue streams, positively impacting its valuation. Similarly, emphasizing end-user priority and engaging customers effectively can enhance customer satisfaction, leading to higher customer retention rates, increased ARPU, and a stronger valuation.

In essence, marketing decisions not only shape a telco's market presence but also have tangible financial implications, making them a vital factor to consider when assessing the valuation of telecommunications companies.

2.3.3 Operational factors

Operational factors involve the day-to-day management practices that support and realize the company's broader strategies. The absence of literature suggests that operational factors of influence to valuation are mostly of financial nature, with the exception of FMC, customer satisfaction, and quality of service.

On a more operational level, **FMC** is used as a means for differentiation by offering bundled services. Many telcos reward customers who purchase both fixed and mobile services with additional data or monetary discounts. They (can) do this because of the operational efficiencies they receive from combining the networks, as well as reduced churn rates. All customers combining mobile and fixed services at the same telco can be viewed as the FMC market. A recent market research report expects the FMC market valuation to grow at a CAGR of 15.5% until 2030.[6] All of this offers good prospects for telcos with a well-defined and successful FMC strategy and might therefor be considered in valuation.

Customer satisfaction, often measured by net promotor score (NPS), is a good measure for understanding the overall health of customer relationships and predicting future revenue streams. Satisfied customers have a higher willingness to pay and loyalty to the company, affecting churn and retention rates. Dissatisfied customers on the other hand have increased churn rates. Research has consistently shown that high levels of customer satisfaction lead to greater customer loyalty, which in turn reduces churn. For instance, the study by Gustafsson, Johnson, and Roos (2005) examines the effects of customer satisfaction, affective commitment, and calculative commitment on retention in telecommunications services. Their findings support the effects of customer satisfaction on retention, suggesting a strong relationship between satisfaction and customer loyalty (Gustafsson et al., 2005). Furthermore, a study by Sweeney & Swait (2008) investigates the role of brand credibility in managing customer churn and enhancing loyalty. Their findings indicate that brand credibility, which is closely linked to customer satisfaction, plays a significant role in reducing switching behaviors and enhancing word-of-mouth among customers (Sweeney & Swait, 2008). In summary, customer satisfaction serves as a critical indicator of long-term customer relationships and business sustainability and might therefor be of interest to analysts when valuating telcos.

[6] https://www.fairfieldmarketresearch.com/report/fixed-mobile-convergence-market

Quality of service (QoS) is a critical concept in the telco industry. It refers to the overall performance of a network service, encompassing network performance factors like bandwidth, latency, jitter, error rates and service reliability (Shafei & Tabaa, 2016). QoS is measured annually by firms like P3 and Umlaut, who conduct thorough assessments of telecom networks, and award prizes to the winners.[7] QoS impacts churn and retention rates through customer satisfaction, and therefor might be of interest when valuing a telco.

The biggest group of operational factors influencing valuation are the financial ones. Brealey, Myers, and Allen (2020) explain different financial ratios used by managers to monitor their own company's performance. They divide these factors into four categories: performance measures, efficiency measures, leveraging measures, and liquidity measures. As there are plenty of factors here possibly influencing valuation, this study will not go into specific factors, but rather group them similar to Brealey, Myers, and Allen (2020). The first group of factors discussed contains **performance measures**. They are used to evaluate the overall financial performance of a company. They help in assessing how effectively a company is generating profits and managing its revenues. The second group contains **efficiency measures**, which evaluate how well a company uses its resources and assets to produce revenue. The third group contains **leveraging ratios**, they assess a company's debt levels and its ability to meet financial obligations. Lastly, **liquidity ratios** determine a company's ability to pay off its short-term obligations (Brealey et al., 2020; Damodaran, 2006, 2012).

Table 1. Financial KPIs by category.

Performance Measures	Efficiency Measures	Leveraging ratios	Liquidity ratios
Market value added	Asset turnover	Long-term debt ratio	Net-working-capital-to-total-assets ratio
Market-to-book ratio	Inventory turnover	Total debt ratio	Current ratio
Economic value added	Days in inventory	Times-interest-earned	Quick ratio
Return on capital	Receivables turnover	Cash coverage ratio	Cash ratio
Return on equity	Average collection period		
Return on assets	Profit margin		
	Operating profit margin		

2.4 Agency theory

Agency theory in the scope of valuation examines the dynamics between principals (shareholders), and agents (company executives). It plays a vital role in identifying and addressing conflicts of interest that arise when agents are tasked with decision-making on behalf of principals. This is particularly pertinent in the telco industry, where management decisions, like substantial network investments, have a profound effect on shareholder value and overall company performance. However, challenges emerge when there is a misalignment between management's personal ambitions, like career goals or risk tolerance, and the objective of maximizing shareholder returns (Eisenhardt, 1989).

A key point in agency theory is that agents often possess more information than their principals, leading to an imbalance in knowledge. This disparity in information can sometimes result in conflicting goals. For instance, while a principal might favor a high-risk, high-reward strategy, an agent might opt for a safer path to secure their job. This information asymmetry can prevent principals from realizing that their agents are not pursuing the intended strategy. Conversely, overly incentivizing agents can lead to moral hazard, where they engage in risky behavior without fully bearing the consequences due to their information advantage.

To address these challenges, one effective strategy is contracting. This involves principals and agents agreeing on a set of terms and conditions that define their roles, responsibilities, and incentives. Such arrangements help align the interests of both parties, reducing the likelihood of opportunistic behavior. Another approach to mitigate information asymmetry is signaling. This involves actions, often undertaken by the agent, to communicate their abilities, intentions, or trustworthiness to the principal. Examples include voluntarily disclosing performance metrics, establishing a solid reputation both before and during employment, and making long-term commitments such as purchasing shares in the organization. These methods collectively help to reduce the gaps and misalignments that can arise in principal-agent relationships.

[7] https://www.accenture.com/us-en/services/communications-media/telco-benchmarking

An important example of a principal-agent problem related case is that of Nortel, a multinational telecommunications manufacturer. Fogarty et al. (2009) provided a detailed analysis of Nortel through the lens of agency theory. They highlight how executive compensation, board (dis)functionality, and financial irregularities exemplify the excesses and contradictions in corporate governance within the agency framework, particularly in complex situations involving short-term oriented investors. Nortel benefited from the fast-growing technology sector in its valuation, leading to their share price tripling in just four years. They grew aggressively by acquisitions and large R&D expenditures and tripled their sales in just five years. It was much later that financial analysts finally paid attention and noticed excessive perk consumption by executives, high priced acquisitions, and questionable spin-offs (Fogarty et al., 2009).

Furthermore, Krafft & Ravix (2005) argue that an evolutionary perspective is crucial in the governance of innovative firms like telcos. They contend that conventional economic approaches do not fully encompass the complexities of corporate governance, leading to major coordination problems and economic turbulences. It shows examples where principals become key-decision makers, and how their focus on short-term stock performance resulted in decay of long-term performance. Their paper suggests "[...] corporate governance in which managers are the key decision makers in production and innovation" (Krafft & Ravix, 2005, p. 140). It stresses, in this regard, that principals should not limit the power of their agent(s), but rather control this power by requiring information from them that allows the principal to evaluate the actions of the agent.

In summary, agency theory is crucial in understanding the complex relationships and potential conflicts between principals and agents in the telecommunications sector. It highlights issues like information asymmetry and the diverging interests of shareholders and company executives. Effective strategies such as contracting and signaling are vital for aligning these interests and mitigating risks. These insights reveal the need for a balanced approach in governance, where the power of executives is controlled through informed oversight by principals, ensuring decisions align with both short-term and long-term objectives of the company.

2.5 Porter's five forces model

Strategic positioning is crucial for a telcos competitive stance. This concept can be explained by Porter's Five Forces Framework, a well-known model used for evaluating the competitive landscape of a firm. The framework emphasizes the importance of not only understanding direct competition but also considering four additional competitive forces: the bargaining power of suppliers, the bargaining power of buyers, the threat of substitute products or services, and the threat of new entrants (Porter, 2008).

The first force is the threat of new entrants. Virtually every industry faces this threat, but they differ on the magnitude of this threat. Some industries have higher barriers to entry than others. This is due to several factors: supply-side economies of scale, demand-side benefits of scale, customer switching costs, capital requirements, incumbency advantages, access to distribution channels, and restrictive government policy (Porter, 2008). For instance, the threat of new entrants in telecom is significantly influenced by high capital expenditure requirements and regulatory barriers, which protect existing players from new competitors. Similarly, the economies of scale are an important factor as networks are big investments with very low marginal costs for additional customers.

The second force treats the bargaining power of suppliers. This power increases when there are more buyers (telcos) than suppliers (e.g. suppliers of network equipment). This power is also altered by the amount of substitute products available, or when suppliers have products that are heavily differentiated. Porter uses the example of pharmaceutical companies to illustrate this: offering patented drugs grants these companies significant power over their buyers (hospitals for example) (Porter, 2008). In case of telco, it might be the case that power of suppliers increases due to the high switching costs. One can imagine that switching of network equipment supplier brings considerable costs to the telco, as the entire network is built on equipment of one preferred supplier.

The third force is that of the buyers. When a firm has commoditized products such as a telco subscription, the power of buyers increases. Like the power of suppliers, this force is altered by switching costs. Customers with high switching costs have a lower propensity to switch and thus have less power of the supplier. Lastly, price sensitivity is a big topic here. Price sensitive customers are more likely to exert their power over a firm, whereas customers who deem quality more important are less likely to switch solely over costs (Porter, 2008).

The fourth force is the threat of substitutes. Porter describes the threat of substitutes to be high when the alternative “offers an attractive price-performance trade-off to the industry’s product” (Porter, 2008, p. 84). Also, this force is impacted by switching costs, as customers are less likely to switch to a substitute product when switching costs are high. For telco, it is unlikely that connectivity gets substituted for something else. However, on smaller parts of the business this impact is still possible. Consider here the impact of iMessage and Whatsapp on SMS revenues (Farooq & Raju, 2019).

Lastly, Porter examines rivalry amongst existing competitors. This competition increases when there are many competitors, or when competitors are of equal size. It increases even further when the market is saturated and mature, and if products of competitors are comparable. Most relevant here might be the fact that rivalry increases when fixed costs are high and marginal costs are low, like in telco (Porter, 2008).

In summary, Porter's Five Forces Framework provides a lens through which the strategic positioning of telecom companies can be assessed. By analyzing each force, telcos can enhance their strategies to adapt to the dynamic industry environment and thereby secure long-term profitability and growth, impacting their value.

3. Methodology

3.1 Research design

The research design for this study is a qualitative approach, combining literature on the general topics of business valuation with the industry-specific knowledge of experts. Its goal is to determine which factors are important to valuation of telcos. Extensive literature study provides a solid foundation for the semi-structured interviews with telco executives and shareholders. This interview format allows for a flexible yet focused discussion on factors we came across in the literature but is also essential for gathering insights into factors that we did not encounter yet. This methodology aligns well with the research question. The interviews with financial analysts and shareholders will help identify and understand the key factors influencing company valuation, while the interviews with management shed a light on the factors they find important. Together, they provide a clear view of both sides’ opinion on the strategic and operational dimensions of company valuation in the telecommunications sector.

3.2 Data collection methods

The semi-structured interviews will target executives, supervisory board members, and financial analysts specialized in the telco industry. These interviews, lasting 30-45 minutes, will be conducted in person when possible, and else via video conferencing. Participants will be chosen based on their role and expertise in the industry, ensuring a range of perspectives on company valuation. The goal here is to interview at least two executives or directors for each specific subject: finance, technology, and marketing. A marketing executive here can include a Chief Commercial Officer (CCO), Chief Operations Officer (COO) or Chief Marketing Officer (CMO). Similarly, the goal is to interview both supervisory board members and shareholders. The interviews consist of mostly open questions to ensure as much data as possible is extracted, and to avoid confirmation bias. To maintain data validity, the interviews will be recorded and transcribed for thorough analysis, with key themes compared across interviews to ensure consistency.

3.3 Analytical framework and limitations

The analytical framework for this study incorporates thematic analysis of the qualitative data. This process involves identifying, analyzing, and reporting patterns (themes) within the data, for which I will use the Gioia method. The initial step is to transcribe the interviews, followed by a careful reading to gain a deep understanding. Coding will be conducted iteratively, where data segments are labeled with codes that summarize their core content. These codes are then organized into themes that capture the essence of the collected data (Gioia et al., 2013). AtlasTI, a qualitative data analysis software, will be used to assist in managing, coding, and organizing the data.

The main research question will be answered by finding answers to a set of sub-questions:

1. Which valuation methods are commonly used by financial analysts in valuating telcos?
2. What are the key metrics used to evaluate the valuation of MNOs and ISPs?
3. How do strategic positioning and market dynamics affect the valuation of telcos?

4. How do technological advancements and regulatory environments shape the valuation of MNOs and ISPs?
5. In what ways do the perspectives on valuation differ between financial market actors (investors, analysts) and internal management within telcos?

The study is performed in the Netherlands, which has a telco market dominated by three players: Odido, KPN, and the joint venture VodafoneZiggo. The aim of this research is to retrieve insights from executives and non-executive directors from all of these firms. The results of this study might not be generalizable to other countries, especially because of the highly developed and saturated telco market in the Netherlands.

In summary, this study does not aim to provide a thoroughly tested framework for valuating telcos, but rather focuses on providing insights into drivers for value creation. The findings of this study can guide decision-making processes and strategic planning in these organizations or form the basis for a broader international study.

3.4 Ethical considerations

Several ethical considerations have been taken into account to ensure the integrity and ethical soundness of the study. The primary ethical issues relate to confidentiality and informed consent.

Given the sensitive nature of the information shared by participants in the interviews, strict confidentiality will be maintained. All data, including interview transcripts and survey responses, will be anonymized before analysis. Identifiable information will be removed or altered to prevent the identification of individual participants. Additionally, all digital data will be stored on secure devices, and backed-up in the (OneDrive) cloud for back-up purposes.

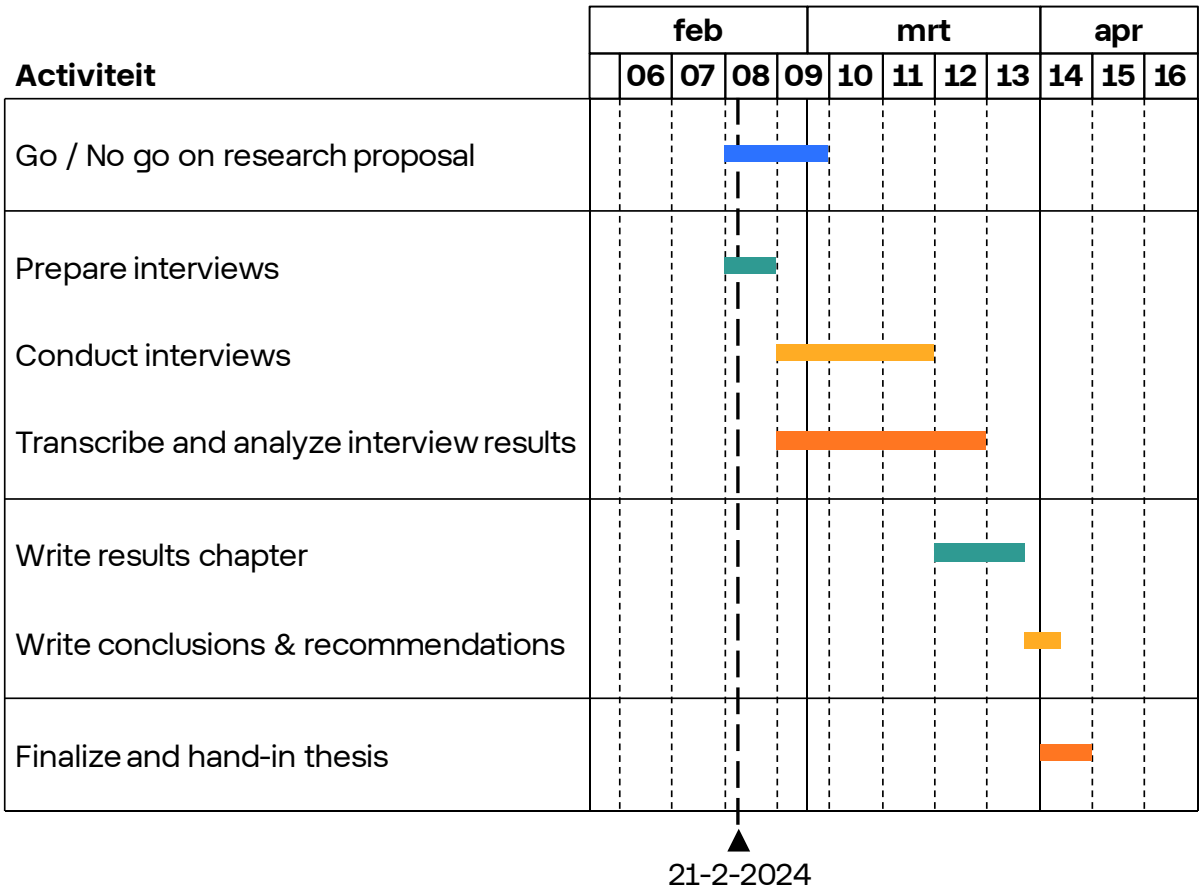
Prior to participating in the study, all respondents will be asked for consent regarding the recording, transcription, and usage of collected data. The invitational e-mail outlines the purpose of the research, the nature of their participation, and the use of data collected. The consent process will also include a discussion about the recording of interviews and the use of their anonymized quotes in the research.

During the interviews respect for the participants will be of upmost importance. This involves ensuring that no participant feels coerced to respond in a certain way. The questions in both interviews and surveys will be designed to be non-intrusive and sensitive to the professional context of the participants. These measures are designed to comply with ethical standards in conducting this research, ensuring the protection and respectful treatment of all participants while maintaining the integrity and credibility of the study's findings.

3.5 Project planning

The project planning focuses on preparing and conducting interviews, analyzing the results and finalizing the thesis. The main challenge involved in this part of the project is making appointments with the interview respondents, who are all very busy individuals in high-paced business environments. For this reason, a three-week period is planned for conducting interviews, allowing everyone to find a suitable moment for the interview. Simultaneously, the interviews will be transcribed and partially analyzed. The rationale here is that every interview can be transcribed directly after it has been conducted, and that each set of respondents' (supervisory board members, financial analysts, company executives) interviews can be analyzed once the set is completed. This parallel process allows for time saving, which is much needed given the timelines on completing the thesis project. After finalizing and handing in the thesis, a period is reserved for the supervisors to evaluate the project. Hereafter, the colloquium will take place in which the results will be presented and defended.

Figure 3. Project planning.



4. Results

In this chapter, we will dive into the results from interviews with nine experts in the telecommunications sector, varying from executives to shareholders and supervisory board members. For the purpose of this analysis, shareholders and supervisory board members will be grouped together due to the overlapping nature of their interests and roles in both the business context and within the scope of this study. This chapter lays out findings from expert discussions, examining valuation methods, key metrics, the effect of strategic positioning and market dynamics, and how technological and regulatory changes impact valuations. We also look at differences in valuation perspectives between financial market actors and telco management.

4.1 Overview of interview respondents

The executives interviewed have senior roles within the telecommunications sector, including a CEO, CFO, CCO, COO, and other C-level positions. With a combined telco experience of over 100 years in 10 different countries, these individuals bring significant depth to this study. Their expertise covers strategic planning, operations, marketing, finance, and technology.

The other group of interviewees consists of shareholders and experienced members of supervisory boards who oversee telcos. Their backgrounds include investment management, corporate governance, and industry analysis. With a focus on financial returns, risk management, and strategic oversight, these stakeholders offer a viewpoint centered on value creation and long-term performance, rather than operational and day-to-day business. Their contributions to the study highlight the external pressures and expectations that telcos navigate, like investor demands.

Sometimes there will be referred to financial experts, a group of respondents with a strong financial background, which are present in both the executive and shareholder group. They are addressed in this way to stress their expertise on certain topics.

4.2 Valuation methods

Answering the question about most used valuation methods should not be too hard, given the convergence of answers from both executives and shareholders: there is a clear preference for EBITDA multiples and DCF models. There is consensus about the simplicity of EBITDA multiples, which grants a quick benchmark against their peers and gives shareholders a 'feeling' about where the company stands. DCF models are used mostly internally to forecast the value of the company, including the value of strategic initiatives yet to come. Other methods such as (real) options or asset-based valuation did not come forward in any of the interviews.

EBITDA multiples as a means to valuation came across in every interview. All respondents find EV/EBITDA the most important multiple and use it to benchmark the company against competitors. One of the challenges here is finding comparable peers. One seasoned shareholder mentioned that these multiples are compared to a range of other telcos: *"And the multiple comparison is you just look at, okay, so company A publicly trades at 8.5 times EBITDA, whereas company B trades at 7 times EBITDA. Okay, company B has less fixed assets than company A, so we shouldn't be in that range, but company C, yeah, maybe in that range*". This subjective way of valuing a company is probably the result of a very complex valuation landscape, impacted by countries, markets, geography, regulation, and above all differences in assets and structures of telcos.

According to two interviewed executives, the DCF approach to valuation leads to the true value of the company. The approach they described has similarities to the CE method, as the customer base development for the next 5 years is modelled, using churn and retention rates. Additionally, ARPU development is modelled in, just as FMC rates and major strategic projects. This leads to a 5-year revenue forecast, which is then complemented by expenses and WACC to come to the value of the company. The reason executives find this to be the true value of the company is that it factors in growth, which is not visible in EBITDA and considered harder to value in a multiple.

Shareholders also find DCF an important method to assess company value due to its ability to factor in certain improvements in e.g. churn rates. One example of this is a telco's growth in its FMC base; customers with both a fixed and mobile subscription. If the prognosed growth in this customer base is believed to be realistic, given the proposed business plan, it will be included in the forecast model. Since customers with bundled services have a lower churn propensity, the total churn rate of the company decreases, positively affecting future revenue streams. One executive confirmed that by proposing a strategy to disproportionally grow the FMC base, shareholders potentially increase their valuation of the company, when they believe this leads to lower churn and thus higher revenue streams.

A final interesting insight in valuation method preference boils down to the saying that something is worth what someone is willing to pay for it. What a company is willing to pay for it, depends on what it thinks the investment will be worth at moment of exit. For this reason, funds with a lower IRR are willing to pay more for an investment than companies with a higher IRR. A shareholder exemplified it as: *"So private equity, they're looking for 18 to 22 percent IRR or three times the money back, which enables them to put a certain valuation here [at start]. The infrastructure fund is looking for an unlevered IRR of 10 to 12 percent, which means with leverage it's going to be 15 percent. So, it means that they can put a higher entry bid"*. This is in line with the explanation of another shareholder, who starts every valuation with an LBO (leveraged buyout) analysis before it continues with CCA and DCF: it combines the potential exit price with the possible leverage to come to the entry value to the company. The rationale here is that even if a project has an attractive IRR, it might come short to hit their requirement of 20%.

Three important groups of investors in private telcos are private equity (PE), infra funds, and pension funds. These groups differ in their required return and have according to an industry expert IRRs of respectively 18-22%, 12-15%, and 6-8%. Following above explanation, this means that pension funds are able to place an even higher entry bid than infra funds. A recurring theme in the interviews with the shareholders are differences in investment horizons. Where PE generally aims for a five-year period, infra funds and pension funds have much longer horizons, with the latter sometimes over 20 years. This leads to different requirements for their investments: stability and low risk are more important to those funds than risky investments with a (huge) potential upside.

In conclusion, the investigation into the valuation methodologies employed within the telco sector shows alignment between the preferences of executives and shareholders, with a preference towards EBITDA multiples and DCF models. This consensus not only highlights the practicality of these approaches in benchmarking but also emphasizes the challenges inherent to the valuation process.

These challenges stem from the interplay of factors such as market dynamics, regulatory landscapes, and the structural complexities of telcos. Despite the existence of alternative valuation methods, they are probably not as important as EBITDA multiples and DCF methods, as they were not mentioned in the interviews. Moreover, the emphasis on growth and increasing company value through initiatives like FMC base expansion reflect an important part of valuation beyond mere numerical estimations. This not only facilitates a deeper understanding of a company's fiscal positioning but also assists informed strategic decision-making aimed at optimizing valuation in the highly competitive industry landscape.

4.3 Key factors in valuation

Throughout the interviews, it became evident that revenues, EBITDA, and free cash flow stand as the most important metrics in the valuation of telcos. This aligns with expectations, considering the widespread application of these metrics across various valuation models. The journey to understanding EBITDA was described by one respondent through a personal anecdote:

"My first class on university, it was actually the very, very first one. And you still had these overhead projectors and these plastic sheets you need to put on it. And the guy showed me a sheet and there were only revenues, and then literally blah, blah, blah, blah, blah, blah, blah, blah. And then EBITDA in words, blah, blah, blah, blah, blah. And then cash flow. And that's now, I think, over 30 years ago. Still our main targets. So, revenue, EBITDA, cash flow."

This story not only illustrates the timelessness of these KPIs, but also the view on all other metrics: they are a means to an end. If EBITDA margins are on an expected level – one shareholder mentioned a range of 35-45% – there is no urgent and pressing need to investigate the KPIs in between. The same goes for free cash flow: if it is on an expected level given the EBITDA, there is no need to raise alarm. It became clear from the interviews that these 'means to an end' do tell investors something about the health and cost efficiency focus of a telco. The most important KPIs mentioned here are ARPU, customer base, capital expenditures (capex), various operational expenditures (opex), churn rate, fmc share (or bundled products share), fiber penetration, and NPS, as well as the historical and prognosed development of these KPIs.

4.3.1 Financial KPIs

To start with opex, the costs impacting EBITDA margin, one shareholder mentioned this is often too high when acquiring a company. Firms tend to become 'heavy' over time by hiring too many employees, paying for unused IT licenses, diverging onto different IT stacks and so on. Shareholders might see this as lacking a cost efficiency focus but can also view it as an opportunity to become more profitable and thus reach a higher valuation.

Continuing with capex, the cash out flow which mostly goes to network investments and spectrum licenses, this tells investors something about the health of the company's product: connectivity. An example from the interviews is that extraordinarily high amounts of capex in one year raises questions about whether the network has been underinvested for some time, or that it is overinvested now. This goes both ways: it probably leads to a relatively low amount of capex in subsequent years, raising questions about whether the strategy is sustainable, won't the network be underinvested at time of exit, and why are cash flows so irregular? An executive described network investments as crucial, since a good network has a knock-on effect on NPS, thus less churn, less calls to customer service and therefore less (operational) costs.[8] Another executive stressed the importance of network leadership, as this will charge employees with a winners mentality, subsequently translating into better company results. Likewise, the respondent argued that also customers have a better experience when they are "on the winners' team". Others mentioned it as more or less a hygiene factor: it should be good, but scoring 1 point over competitors will not suddenly grant all these benefits. As articulated by one of the respondents, *"So you have a normal mobile network, fine, as the other guy. There's no difference"*. These different perspectives underline the importance of balance in network investments: don't under-invest, don't over-invest, and critically weigh the costs and benefits of further investments.

[8] Note the transfer from capex to opex here.

4.3.2 Operational KPIs

One saying often heard in the interviews is "It is simply PxQ. Customer base multiplied by ARPU". This shows the two important levers for revenue: price and quantity. One of the goals of this thesis is to find the factors that actually alter these two levers, and to see whether they directly add value (a premium) or indirectly (via higher revenues). There appears to be some disagreement about this. Answers about whether NPS, FMC share or fiber penetration add a premium value to the brand varied from *"Utterly convinced"* to *"[...] it will translate into customer growth and outputs, and that's what's going to be valued"*. These contradicting answers might be explained by two of the shareholders, who described these factors to indirectly add value through customer growth and increased ARPU, but also potentially directly decrease value of a company when they are too low. When asked whether NPS puts a premium on a brand, one shareholder explained:

"No, it's not that we would... I mean, it probably would be through the valuation strategy versus peers because for the other ones, we would put in additional costs to basically improve the brand positioning and what have you. So, yeah, but it's not that we say, okay, NPS of X equals premium of X."

The relations between various KPIs that came across this study so far can best be explained by the scheme in Figure 4.

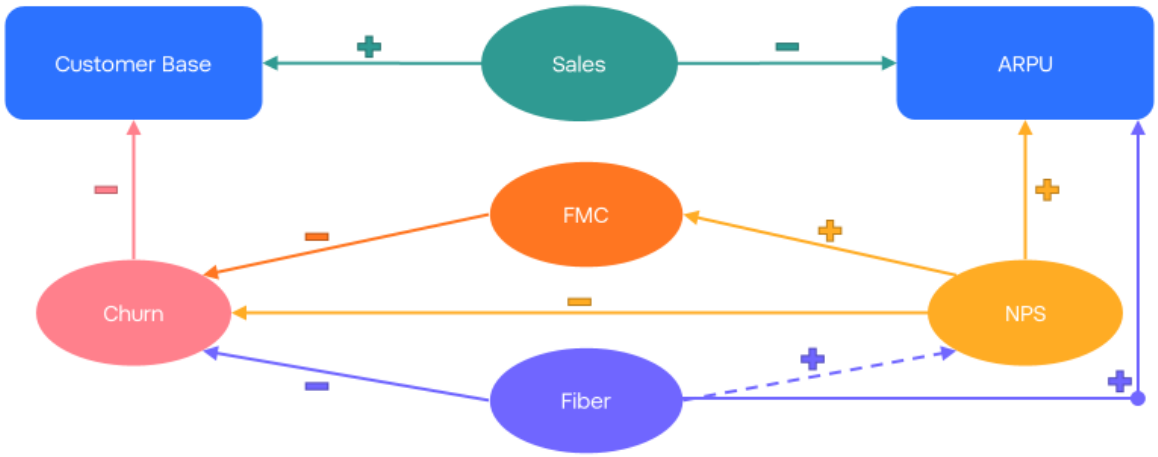


Figure 4. Schematic view of important KPIs

A part of this scheme can be explained by the literature:

- NPS has a positive effect on FMC, as customer satisfaction has a positive relationship on bundling services: satisfied customers have a higher propensity to do repeat purchases and are more loyal.
- NPS has a positive effect on ARPU through increased willingness to pay.
- NPS has a negative effect on Churn through increased customer loyalty.

Also, some relationships are purely logical:

- Churn has a negative effect on customer base, since customers leaving the base (increased churn) will reduce the number of customers in the base.
- Sales have a positive effect on customer base, since customers joining the base increases the size of the base.

The interviews also indicated more relationships which are not directly proven by literature, but which are observed in the business:

- FMC has a negative effect on Churn, as bundling services 'locks' customers.
    - Although the literature relates bundled services to higher retention rates, it does not specifically relate it to churn rates.
- Fiber customers have a lower propensity to churn compared to copper customers.

    - This is a driver for the so-called war on fiber, where providers try to grab a big part of the broadband internet market during the transition from copper to fiber.
- Fiber customers have a higher ARPU compared to copper customers.
    - An executive described this as *"[...] it's already proven that the ARPU of fiber customers is higher. The quality of the product is higher. You see a huge appetite for that product."*
    - The higher ARPU can be attributed to the fact that fiber subscriptions are often more expensive than the copper alternatives.
- Sales often have a negative effect on ARPU, as customer bases face inflationary pressures ('the back book'), which are then washed out when they sign a new contract ('front book'). This is described by executives, shareholders, and industry reports:
    - *"And because we have falling ARPU in this market, [...]"*
    - *"Then, everybody will discuss inflation back-book. So, the customer base that you already have. And a combination of inflation correction versus the front-book. So, what you bring out there into the market. Because currently, also in the Netherlands, they are a little bit disconnected."*
    - The ARPU in Europe has declined from €19.2 to €14.7 (-23%) between 2011 and 2021.

A relation which was not mentioned in the interviews is the effect of fiber on customer satisfaction. It would make sense that the effect of fiber on both churn and ARPU is the result of higher customer satisfaction. Increased customer satisfaction can be explained by the QoS of fiber connections, which was confirmed by most of the respondents. An executive described it as *"Fiber is endless. There is no limit to fiber"*, which is in contrast to e.g. HFC networks, which have often been mentioned as being end of life between 2030 and 2035.

4.3.3. Strategic factors

To start with strategic KPIs that came forth in the interviews: growth, ESG scores, network reliability, leverage, market positioning, and human capital. It quickly became evident that, apart from leverage, these KPIs are mostly mentioned by executives, not shareholders. The most prominent one was growth, which came forth as development of many KPIs: revenue growth, base growth, ARPU growth, NPS growth, and EBITDA growth, to mention a few.

It makes sense that growth is so important, no matter who your shareholders are, private or public. The ability to grow value is often the reason one invests in a firm. When asked which strategic factors play a pivotal role in telco valuation, an executive summed up:

"*So, it's our ability to maintain our [...] revenue growth. That's one. It's our ability to grow as fast as we are growing [...]. That's two. Our investments in the business currently [are] pretty high [...]. That's three. Our customer experience and customer scores. That would be extremely important because basically it indicates our ability to grow our revenues. That's four.*"

Another executive said:

"And in that process, I actually learned that the valuation of the company is very much based upon simply how you run your business. And the evidence that you can show that you can sustainably grow your revenue, sustainably reduce your cost, sustainably change your capex development".

Also on the shareholder side there is consensus about the importance of growth:

"First, you need to attract the right type of buyer, but once you're there, it's the growth rate of the company. It's how fast the revenue is growing. Let's say [cutting costs is straightforward] but not all people know how to create revenue growth in this sector".

These excerpts show the direct effect of growth on valuation. Together with leverage, these KPIs appear to be the most important to directly create added value. Network reliability, ESG scores, market positioning and human capital seem to have more of an indirect effect on value, as illustrated by an interviewee:

"In B2B, if you don't have your ISO certification in a good shape, you can be just simply ruled out for big bids. So in that sense, it's not for the investor world, it's for customers. They will either choose you or not choose you, right? Same goes for employees. There will be legislation on equal pay. If we don't make that happen, then also in recruitment processes, you will have to explain why you're not complying too. So, yeah, it is very much linked to what you do every day."

Although market positioning and human capital might not directly add value, one must certainly not underestimate the value it ultimately adds to the company. This was passionately explained by an executive as:

"People. Making sure that the foundation of all the things we talked about now, remember it gets delivered by people. The people who work here, the people who tirelessly come into the office or work from home on a daily basis.

All these things we talked about are great in Excel and are great on PowerPoint, but that doesn't create the value. The value gets created by the people. So being able to convey that mission that we want to be the customer champion with all the enablers that are underneath and getting that executed, that's done by people, and that's done by everybody.

So taking that seriously, making sure we have leadership on the right levels, making sure we have the culture where everybody can be part of, where we have psychological safety, where you can be diverse, where you can be yourself, and you can grow and excel. That's the nourishment that we need in order to get to the valuations. Everybody focuses on the outcome, and I think that's fair because it's very tangible.

What we sometimes forget is the how. What are the things that we need to have in place? Culture, in order to get there."

In a more qualitative way, there was a lot of attention from executives to specific parts of their expertise. To name an example which has a lot to do with Homburg et. al's marketing ecosystem priority: whereas strategic partnerships can lead to diversified revenue streams from a financial perspective, it translates into less churn and better customer loyalty from a marketing perspective (2020). From a shareholder:

"You look at operators in Spain, for instance, 10% of their top line now comes out from non-telco services."

Which was touched by an executive as

"[...] 5P combinations, for example, will never go away. [...] because FMC does about a halving of your churn. And then an extra product, will halve it again."

These answers imply that some initiatives add value to a company in multiple ways. This combination for example adds value by increasing customer base through less churn, increase revenues by adding value, and decreases risk by diversifying revenues.

Another example of a multi-facetted initiative is this telco's view on end-user priority (Homburg et al., 2020). A reminder to the definition of this concept: "a firm's strategic emphasis on engaging with the final customer, who applies or consumes the offering, and leveraging the final customer insights for growing the business". Respondents spoke about the importance of a customer centric model, in which departments are structured to best benefit the customer. The organizational structure should not have too many layers, so that what they call 'the voice of the customer' can still be heard in the board room.

Lastly, a big recurring topic in the interviews is the strategic unbundling of telcos. For the last decade, telcos have divested some of their assets. Network infrastructure can be a major part of a telco's assets, consisting of cell towers, radio equipment, datacenters, and POPs. Where the traditional telco was an all-in-one solution, comprising of above-mentioned assets and a retail part, telcos nowadays often decide to restructure into several companies. Many telcos have split off their towers into a tower company (towerco) for example. They then sign a master lease agreement (MLA) with the towerco, agreeing to lease the towers for 20-25 years. The towerco is considered a very safe asset, with plenty collateral (the towers) and stable and guaranteed cash flows for a long period of time due to the MLA. This leads to a high valuation of the towerco, often 25x EV/EBITDA, much higher than the 7-9x for an integrated telco. Respondents have noticed this trend mostly in towercos (e.g. Cellnex), also saw cases of datacenter companies (e.g. Equinix) and fiber companies (e.g. OpenDutchFiber), and are expecting radio access network companies soon. This unbundling leaves the telco asset-light, with free cash flow to invest in new projects.

The complexity of disintegration stems from the different multiples for each part of the company compared to the company as a whole. There is disagreement between respondents on whether the sum of the parts is equal to the whole. One executive described it as:

"it starts by thinking you can create money from thin air, because a multiple on the towerco is different than a multiple on the mobile. And after two sessions, I found you always find out, okay, it's not that easy. That might be nice. But effectively, no one is giving you money for that."

Though it makes sense that money can't be made out of thin air, there are other ways to either create or lose value. Another executive mentioned the loss of control to impact business on both sides. He exemplified a delta between the inflation chargerd by the owner of the cell site (e.g. rooftop) to the towerco, and inflation charged by the towerco to the telco, which can result in a loss for the towerco and a profit for the telco, or the other way around. The downside on such events is that the towerco can be forced to relocate to a more affordable position, which is not beneficial for the telco's network.

The rationale goes both ways. By divesting parts of the business which hold a lot of assets but are not 'core' business, telcos can focus their resources on what adds the most value. The divested business lines, say the towerco, gets purchased by an entirely different investor than the telco as a whole would attract, like an infra or pension fund. These funds are often willing to pay a premium price to such assets due to the longevity of the investment and its risk-free character. The telco, which becomes much lighter, might as well attract new and different investors, who have for example a higher risk-appetite. Whether if it adds value or it doesn't, it does add a new dimension to the peer comparison of telcos and should be carefully considered when valuating one.

4.3.4 Conclusion

Throughout the interviews, it has been consistently highlighted that revenues, EBITDA, and free cash flow are most important in valuing telcos. This is in line with the sector's usage of these metrics in CCA and DCF valuation frameworks. Furthermore, the discussions extended beyond these primary metrics to include operational and strategic KPIs like ARPU, capex, and NPS, which offer insights into customer base dynamics, network investment strategies, and quality of service. In this way, these KPIs play crucial roles in shaping a telco's market valuation. Lastly, strategic moves like diversification of revenues and unbundling initiatives reveal that strategic foresight, cost-efficiency, and a focus on customer-centricity are paramount for enhancing telco value.

4.4 Strategic positioning and market dynamics

This paragraph explores the strategic positioning and market dynamics within the telco sector, applying Porter's Five Forces model as a lens to investigate the various risks that impact telco valuations. As stated by Damodaran, a firm's valuation is significantly influenced by its risk, growth, and cash flow generation capabilities. Whereas the importance of growth and cash flow generating potential became clear in previous paragraphs, risk has not received that much attention. There are however plenty of risks in this high paced, competitive, technologically driven sector.

4.4.1 Threat of new entrants

To start with one: the threat of new entrants. A recurring theme in the interviews is the number of players in a market. European legislation basically demands every nation to have at least four MNOs, which is detrimental to firm value: every respondent pressed that the Netherlands has a healthy market because there are only three MNOs. A shareholder exaggerated that an MNO in a three-player market is worth 100% more than an MNO in a four player market. A common example was the entrance of Tele2 to the Dutch telco market in 2013 (Telegraaf, 2013). Although the disruptive force of this new entrance was not scientifically proven, the visible trend in KPN's stock performance does at least not indicate the entrance of Tele2 had a positive effect on KPNs firm value.

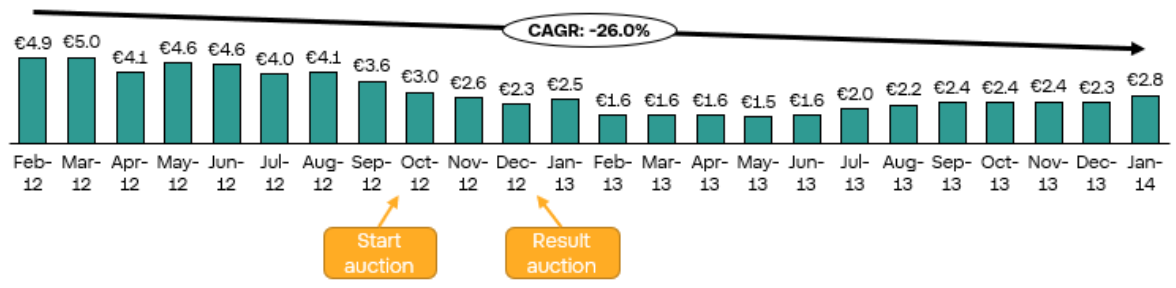


Figure 5. KPN Stock price: Closing numbers 2012-2014

The entrance of Tele2 into the Dutch market exemplified how new players can intensify competition, compelling incumbents to innovate and possibly reevaluate their strategic positioning. The risk of a new MNO entrant like Tele2 generally surfaces every 7 years, the period of validity of spectrum licenses. There can however also be MVNOs entering the market, posing a risk to the MNOs. Although MVNOs are not comparable in terms of size or maybe quality, they do pose a threat when they start selling at dump-prices.

Another risk of new entrants is on the fixed subscription business line. The Netherlands, like most European countries, has several fiber optic operators in the market: KPN Netwerk, Glaspoort[9], Delta Fiber, Primevest, E-Fiber, and OpenDutchFiber. Recently there has been consolidation in this market with the takeover of E-Fiber by OpenDutchFiber, and the takeover of Primevest by KPN (ICT Monitor Worldwide, 2023; Tweakers, 2022). These network operators offer infrastructure to telcos which can be used to supply fixed broadband services. Since this infrastructure is generally available to all providers willing to pay, so not just those who own a license, there might be an even greater risk of new entrants. In practice however this appears to not be the case, since the fixed internet market has been consolidating for several years now.

A relatively new front where new entrants are possible is the delivery of fixed internet via wireless subscriptions. The service here gets either delivered via 4G or 5G cellular networks (Fixed Wireless Access, FWA) or via satellite connections (e.g. Starlink). When questioned about these new types of fixed internet options, respondents found satellite technology a plausible solution for rural or hard to reach areas, like the ocean, and therefore not a threat in countries without such places. The rationale here is that the connection is only possible in areas with low user-density, not in cities. Their view on FWA was different, as it is a plausible method of offering an alternative to copper subscriptions in areas where fiber deployment is too costly. Common examples here are the vast use of FWA in Austria, known for its rough terrain. As mentioned by an executive who's been active in Austria:

"I mean, Austria has 20 or 30% of the total fixed market is FWA. And that was before the launch of 5G. Yeah, I mean, in Austria, cable had only 40% penetration, and A1, the incumbent, didn't build much fiber, so it was often copper, and FWA was simply better than DSL."

Luckily for existing MNOs, new entrances seldomly happen. Out of the seven barriers to entry as mentioned by Porter (2008), five are present in telco. Most importantly, the substantial capital requirements for network infrastructure, spectrum licenses, and regulatory compliance. Additionally, established telcos benefit from economies of scale due to their existing customer base. Building a customer base from scratch while investing in a new network and spectrum licenses is almost impossible, thus the real threat of new entrants comes from new ISPs and from MVNOs aspiring a network, like Tele2.

4.4.2 Bargaining power of suppliers

Telcos have multiple suppliers in every part of the chain, most importantly phone vendors, network equipment manufacturers, and network infrastructure suppliers. Although this subject did not come forward specifically in the interviews, one can imagine that these suppliers have some bargaining power. When the US decided to ban Chinese telecom equipment (mainly Huawei), obviously the bargaining power of Ericson and Nokia increased.

Likewise on mobile phones: the adoption of Samsung and Apple phones under consumers threatens telco's because it's forming a duopoly of those two suppliers, increasing their prices. Although increased phone prices are charged to the customer, it might still force MNOs to lower their service price, before losing market share to cheaper MVNOs.

Lastly, for ISPs without fixed infrastructure, it is necessary to rent this from network operators. Usually a telco decides to either use an HFC network, or a combination of DSL and fiber – supplying fiber when available. In many situations, including in the Netherlands, this leads to dependence on the network operator. Since most households only have one fiber line, the ISP is limited to only one fiber supplier in that household, giving the fiber supplier much bargaining power. The bargaining power of these suppliers still increases on some fronts. This is most likely to happen in consolidating markets, like the one for fixed network providers. Mergers and acquisitions in this market signal a movement where firms

[9] Glaspoort is a joint venture between KPN Netwerk and pension fund APG, which shows the interest of pension funds in such assets.

scale up to enforce their competitive stance. Luckily for telcos, the suppliers also depend heavily on the telcos as buyers, whether they sell phones, equipment, or internet lines.

4.4.3 Bargaining power of buyers

With increasing market saturation in both mobile and fixed markets, and plenty of different offerings, customers are becoming more price-sensitive, enhancing their bargaining power. Although buyers do not have the power to an extent as how Porter meant it, they can still leverage the cheap MVNO subscriptions, and 'vote with their feet'. Increasing churn will eventually drive MNOs to lower their prices.

These trends happen for many, if not all, MNOs, and therefore impact the whole market equally. It is the ability of telcos to mitigate buyer power to some extent which truly differentiates them from competitors and impacts valuation. Strategies mentioned by executives here are differentiating in terms of customer satisfaction and bundled services.

4.4.4 Threat of substitute products or services

The telco sector faces substitute threats that extend beyond traditional service boundaries. Respondents frequently highlighted Whatsapp and VOIP as past-threats. These digital alternatives offered communication solutions, namely messaging and voice calls, over the internet, bypassing traditional telco networks. The rise of platforms like WhatsApp and Skype showed a shift in consumer behavior, moving towards cheap alternatives to traditional minutes and texts. This shift not only hit revenue streams but also compelled MNOs to reassess their value propositions. Where MNOs were used to selling call-minutes, texts, and later data bundles, they now had to focus their mobile proposition almost completely on data. Another fear expressed by both executives and shareholders was the invention of E-SIM, an electronical SIM card substituting the need for a physical one. The fear here was simply that the major phone vendors would start their own MNOs or MVNOs, selling both the device and its subscription, effectively cutting out the middleman.

"So Apple, so eSIM, to what extent are you in danger that then Apple takes over the customer interface, the SMS killers? I mean, when WhatsApp came up and all the SMS revenue went away, so I think that's how technology is being evaluated, the danger of disruption going forward." – Shareholder

Examples of currently emerging substitute products are the previously mentioned wireless broadband options like Starlink, which serve as alternatives to traditional landlines, whether they be fiber, copper, or COAX.

4.4.5 Competitive rivalry

Competitive rivalry within the telco sector is fierce, shaped by a relentless pursuit of market share, technological superiority, and customer loyalty. The interviews revealed that competitive pressures are not only about price wars but also about differentiating on service quality, innovation, and excelling in customer experience, described by an executive as finding relevance in propositions:

"But in the broader sense, it's much more than just campaigning and the next sort of discount deal in the market. It's about positioning, it's about what do you offer to the market. How do you want to offer this to the market? It's about finding relevance in your propositions. Now if you are able to find relevance, there's a couple of things I think are must-haves. One is network performance. The other one is customer-centricity. To be the customer champion. That means you need to have higher NPS scores than anybody else."

The vast amount of MVNOs in virtually any (geographical) market is also making sure of competition by offering subscriptions at lower rates than their network-owning counterparts. These low rates are a real threat to MNOs, as explained by an executive:

"But the other element is the low-end market where you see a worrying trend now in the Netherlands, which has already been happening in other European countries. Where the low-end parties are, of course, increasing their bundle size. So the price per megabit is really dropping drastically. If that continues to happen [...] how will the low-end market pull everyone down?"

This rivalry can also lead to consolidation, a well known happening in the telco landscape. The merger between T-Mobile and Tele2 can be an example of such a consolidation on the mobile front, where they benefited from the synergy of their networks. These network synergies are a recurring theme in the interviews, and best described by a financial expert as:

"So if you get the chance to merge two mobile networks, highly synergistic, because you save capex, you save lots of running costs. Basically, you can switch off one network [...], and the other network has to carry twice the load. The marginal cost is really low."

Consolidations benefit incumbents by increasing their economies of scale and reducing competition. In valuing a telco, one must therefor carefully assess the potential added value from strategic moves like acquisitions and mergers.

Of all forces in Porter's model, this might be the most impactful. It checks all the boxes: competitors (MNOs) of equal size, many competitors (MVNOs), slow industry growth, high exit barriers[10], nearly identical products and services, high fixed costs and low marginal costs, and rivals who aspire leadership and have broader goals than economic performance. In such a competitive market, it is crucial to keep a close eye on competitor moves and make sure your retaliation preserves firm value.

4.4.6 Conclusion

The dive into strategic positioning and market dynamics highlights the significant role of market conditions in affecting risk, growth, and cash flow generating potential. Mitigating risks from new entrants, navigating the bargaining power of suppliers and buyers, addressing the threat of substitutes, and engaging in competitive rivalry underscores the complexity of the telco landscape. Legislation about market structures, technological innovations, and shifting consumer behaviors further increase these challenges, influencing strategies around market entry, supplier relationships, and customer base growth. It reveals that understanding of market forces and the ability to anticipate and adapt to change, is crucial. Whether through consolidation to leverage economies of scale or innovation to differentiate and capture market share, telcos are in a constant battle to sustain and enhance their valuation. This ongoing battle requires a balanced approach to investments in infrastructure and customer relationships, all while keeping an eye on potential disruptions, to secure a strategic advantage and ensure long-term value.

4.5 Technological advancements and regulatory environment

Technological advancements are always present in such a technological sector. We've discussed network technologies like 4G and 5G already, as well as the upgrade from COAX or copper to fiber optics. The question here is, how do these advancements influence the valuation of telcos? Advancements such as 5G, Internet of Things (IoT) connectivity, and cloud computing are not merely technical milestones; they redefine the scope of services telcos can offer, the efficiency with which they operate, and the competitive advantages they can secure. In this way, they could definitely have effect on the telcos value. The same goes for regulatory environments. Since telco is a highly regulated sector, one could argue this influences valuation in some way. Although most telcos are subject to the same regulation, it could still mean there is an effect on the valuation of the sector as a whole. It quickly became clear that there are several views of respondents on this topic. This paragraph will shed a light on each of these.

4.5.1 Technological advancements and their effect on valuation

Technological advancements present a dual-edged sword for telecommunications companies: they open new business opportunities but also necessitate significant investment. Consider the example of 5G technology, which enables IoT connectivity, improves fixed wireless access, and broadens the possibilities for mobile data usage, providing telcos with opportunities to increase and diversify their revenue streams. However, the flip side includes high costs associated with spectrum licenses and upgrading network equipment. For instance, Dutch authorities have proposed auctioning the 5G 3.5 GHz spectrum at a starting bid of €171 million, which will be auctioned to probably only three operators (Schouten, 2024).

From one perspective, investing in such technological advancements is seen as essential to remain competitive in the industry. An executive highlighted the importance of network performance as part of the company's value proposition, which was reinforced by another executive who argued that network leadership, proven by industry awards, correlates with higher Net Promoter Scores (NPS). Despite the consensus on requiring a good network, respondents disagree on the extent of how good this

[10] This can be attributed to barriers such as contracts and obligations, high capital investments and legal barriers.

should be. The same goes for other advancements: what starts as innovative will eventually become a commodity. That means that being first to offer a certain product (e.g. E-Sim, multisim) will result in a competitive advantage for the telco offering it, but eventually will simply be a disadvantage to the (only) telco who doesn't offer it.

This brings us to the second perspective, which views staying at the forefront of technological trends as a basic requirement rather than a differentiator. The challenge lies in striking the right balance between (network) investment and performance. According to four respondents, too little capital expenditure (capex) may suggest an underfunded network, whereas excessive spending could lead to inefficiencies, creating a disbalance between investment and network performance. Striving for network awards probably brings a company in this imbalance. When queried about the significance of technological advancements, one shareholder stated

"I don't [care a lot about specific network awards], really. I try to figure out what are the macro technical trends that could impact my exit valuation. Is that something I'm going to have to invest to protect in the beginning of my holding period, so that I'm safe over here [at exit] and there are no technological risks at exit."

This introduces a third perspective: viewing technological advancements through the lens of risk. It's common for stakeholders to be risk-averse, perceiving change as a threat. A financial expert remarked that any disruption risk, like from new technologies, incurs costs. This viewpoint emphasizes the importance of keeping a close look at innovations and the potential opportunity or risk that comes along.

4.5.2 Regulatory environment and its effect on valuation

Like with technological advancements, also the regulatory environment in which telcos operate can have influence on its valuation. Surprisingly this topic did not receive much attention in the interviews. Although multiple respondents mentioned the spectrum auctions, no one actually linked it to the value of a telco or the entire industry. The consensus is mostly that it is a simple cash out – capex – which will be written off in several years, then gets followed up by a new network technology, spectrum auction, and depreciation. One executive shortly touched the strategic impact of spectrum licenses:

"I think, as we are a tech company where our backbone of the beast is, of course, what is our strategy on the mobile network. [...] That are the real valuation drivers. Do you have your licenses in place? Are there auctions coming up, where there's a risk of an additional cash out?"

Another one pointed out the entrance of Tele2 after the 2012 spectrum auction:

"That converted from MVNO into an M&O with the 4G auction. So, spectrum in general needs to be considered at least. Maybe not today as much as two years back, because everything obviously comes in a trend."

This threat of a new entrant, as discussed in paragraph 4 of this chapter, became reality after the spectrum auction. Therefor, executives see a spectrum auction as a double risk: risk of new entrants, and risk for an additional cash out for the required license.

The other important regulation comes from the European Union (in some cases). According to an executive, there is a European policy that aims for at least 4 MNOs per country, impacting value because it increases competition:

"There is a horrendous policy from the European Union that we should be at least four MNOs, Mobile Network Operators, in each country, which is ludicrous. I think we've seen that here, going from four to three. But it's a scale business."

By now it is clear that the number of market players is an important part of valuing a company. This policy adds a dimension to this: the number of market players is impacted by regulations. One could deduce from this that a change in regulations potentially impacts telco value and can therefor be considered a risk.

4.5.3 Conclusion

Technological advancements and regulatory environments appear to significantly impact the valuation of telcos. Although some advancements offer new opportunities for revenue diversification, they do this at the cost of investments in e.g. spectrum licenses and network upgrades. While some view these

investments as essential for maintaining competitive advantage, others see them as a risk to financial stability, emphasizing the need for a balanced approach to capital expenditure. Similarly, the regulatory landscape, particularly spectrum auctions and EU policies aiming for a minimum number of MNOs, presents both opportunities and risks. These elements introduce financial and competitive challenges that can affect a telco's valuation. The perspectives on technological and regulatory impacts vary, but it's clear that both are critical factors in the strategic and financial positioning of telcos.

4.6 Perspectives from executives and shareholders

The subject of alignment between executives and shareholders was a recurring theme in the interviews. Most importantly, incentivization and shared vision were mentioned as prerequisites for proper alignment. An executive noted that financial incentivization is not what “drives you on a rainy Tuesday morning”, but that you really need shared vision with your investors:

“Investors buy their way into companies because they believe in the mission. If you have activists, and you'll get that from time to time, who will try and change that, find peace and try that. I [...] would want investors in that believe in our vision and our mission, what we want to do. And then they invest. If they don't like it, don't invest. Go invest your money somewhere else.”

I found that on a strategic level there generally is alignment between executives and shareholders on goals, strategy, mission, and vision. On a more operational level, the opinions diverged a bit, on subjects like the importance of network leadership. This can be explained by different ways of steering to the same goal: the goal of network leadership for example is having satisfied customers and it serves as a prove-point for a customer-centric strategy. The strategy, in turn, is meant to increase value through higher revenues. The importance of merely the award itself varies from person to person but the goal remains the same. The same goes for high customer satisfaction. Some respondents argued that having the highest NPS adds a direct premium to the company, while others disagree and say it adds value indirectly through higher revenues. Though these opinions diverge, the goal and method remain the same: add value to the firm through customer satisfaction, whether it is direct or indirect.

One executive shared a story where priorities did not align between the two groups. In this case, the executive aimed for long term investments, but his shareholders disagreed. They postponed the investment, because they were trying to sell the company on a short term. This sounds similar to a distinction made by a shareholder, who noted that goals are generally less aligned in public companies than in private companies, for the reason that public investors are more short-term oriented than the management of public companies. He explained it as:

“The driving forces for a management team in a publicly listed company is, can I keep my job? Do I get, like, sufficient social exposure? Am I recognized in society as an important person? Do I get a good annual bonus? Is my salary level good enough? Whereas, on the shareholder level, you kind of want as high dividend as possible. You’re short-term owners, as a publicly listed owner, you can go in and own it for a day, a week, a month, but very seldom you go in and own it like a pension fund. There's very few investors who go in and say, I'm going to own this stuff for 15 years in a publicly listed environment.”

This example has some similarities to the case of Nortel, where the combination of short-term oriented investors and long-term oriented executives resulted in a lot of problems. Although this was a very excessive case with more causes than just this, it remains important for telcos to beware of such potential agency issues. Horror stories such as Nortel’s indicate that agency issues can definitely impact valuation, but it does seem more like a hygiene factor. An executive mentioned that in a previous takeover the management team was part of the selling pitch, instead of being swapped for a new team. This indicates that not just the alignment between executives and shareholders is important but also the management team itself:

“So for a future valuation of a company, the management part is a crucial element. Is that going to be the same management or not? Is the CEO leaving, yes or no? These things, if a CEO leaves, that can immediately affect your stock price. So I think that's an important element to take into consideration as well.”

This leads to some conclusions: alignment based on incentivization appears effective, it is important to have a shared vision, and the (current) management team has impact on firm value. It is therefor crucial to consider whether the management team of a telco-of-interest shares strategy and vision

with the potential buyer and assess how the value gets impacted – positively or negatively – by installing a new management team.

5. Conclusion

This researched aimed to identify the strategic and operational factors which contribute to the valuation of telcos. Based on a qualitative analysis of existing literature and new insights from experts in the telco industry, namely executives and shareholders, it can be concluded that valuation is impacted by both strategic and operational factors. The most used valuation methods are comparable company analysis (mostly based on EBITDA) and a form of discounted cash flow analysis. Outcomes of such analyses are mostly influenced by EBITDA, revenue, and free cash flow, as well as perceived risk, the potential to grow and cash flow generating potential. Diving deeper into those factors, we see that they can often be divided into or attributed to three pillars: marketing, technology, and finance.

To start with revenues, we see that they are impacted by strategy in a couple of ways. Generating revenues in telco mostly happens by expanding the customer base, increasing ARPU, and tapping into new revenue streams. As sales generally have a negative effect on ARPU – due to differences between front-book and back-book – and a positive effect on base growth, this is an act of making sure the product of the two keeps increasing, which is hard in a highly competitive market with declining ARPUs. It is known that customer satisfaction has a negative effect on churn, and a positive effect on ARPU. Therefor, from a marketing perspective, it is advisable to reduce churn by increasing customer satisfaction. The impact of customer satisfaction on churn is both direct and indirect. Indirectly, customer satisfaction increases the likelihood of customers purchasing an additional service, e.g. a mobile customer also taking a fixed subscription. The lower propensity to churn of these bundled customers is an effect that all respondents noticed and acknowledged. The interviews show that telcos try to impact customer satisfaction by delivering quality of service. This can be visible in network investments, a flat and customer-centric organization, and preference for a fixed fiber network.

Moving to growth potential, it's important to understand that the telco industry's landscape is shaped by the ability of telcos to innovate and adapt to technological advancements and market movements. Growth in this sector is significantly driven by strategic decisions to enhance the service portfolio, including expansion into bundled services and fiber penetration. The telco's growth potential can be visible in high-over KPIs like revenues but are also looked at on a more operational level. Shareholders wonder what the churn, ARPU, base and fiber penetration development look like, and use this to assess future value in a DCF way. Likewise, they assess the market and its number of players, potential consolidation opportunities to create synergies, and the maturity of the country's fiber development, before they assign a certain multiple to the firm. Although telcos can't influence the market dynamics that much, they do have power over churn, ARPU and fiber penetration. Therefor, they should focus on these developments when trying to improve value.

Lastly, risk is an important part of valuation. Like growth, it translates into the chosen multiplier for a telco on the CCA side. When using DCF analyses, investors are likely to incorporate it in their required returns, or WACC. Risk for telcos means risk of disruption: disruptive technology, disruptive competitors, or disruptive regulations. These risks are something which can not per se be taken away by the telco, but their effect on valuation can be mitigated in some ways. The study showed that both shareholders and executives really value the way that a telco can handle disruptions. Bending disruptive technology into opportunities (e.g. roaming via Starlink) and benefiting from disruptive competitors' entrances (e.g. the merger of Tele2) shows to add value to the incumbent firm, whereas these disruptions might have been seen as a risk at first.

Concluding with some best practices: telcos ability to maneuver their intense industry by hitting multiple birds with one stone is the most important for increasing value. The biggest influencers here are investing in fiber, bundled customers, and tapping into new revenue streams, all with the goal of reducing churn, increasing ARPU, and diversifying revenues, thereby increasing revenues and growth potential, decreasing risk, and thus achieve a higher valuation. Combining the insights from both literature and experts also suggests that telcos should not invest irrational amounts of money into excelling at network leadership or NPS, but rather carefully weigh the impact these awards have on customers and employees against the costs of the investment.

6. Discussion

This study identified strategic and operational factors that contribute to the valuation of telcos. It revealed that valuation is influenced by both strategic and operational factors. The most commonly used valuation methods are comparable company analysis and discounted cash flow analysis. These analyses are influenced by EBITDA, revenue, free cash flow, perceived risk, growth potential, and cash flow generating potential. Marketing, technology, and finance are the three pillars influencing these factors. Telcos can influence these factors by increasing customer satisfaction, both on service and network quality.

The interviews suggested correlations between strategic factors like (market) expansion, ARPU growth, and new revenue streams, and operational factors like customer satisfaction, with the overall valuation of telcos. Patterns suggest a direct relationship between customer satisfaction and reduced churn rates, influencing revenue positively. These findings align well with the literature on the topics of valuation and marketing (excellence), and confirm the applicability of such theories about subscription based business to telcos. It shows that strategic factors which are important to valuation get influenced by several operational factors in a way that one might not directly presume. The strongest link here is the one between customer satisfaction and revenue, which appeared to be one of the cornerstones of creating value in the telco industry.

A topic of disagreement between several respondents, both executives and shareholders, is the significance of awards on network performance and customer satisfaction. One group suggests these are insignificant as it is pure quality, and not the award (i.e. possibly only slightly better than competition), that enhances value. The other group finds that these awards do add value, either directly as a premium or indirectly through significantly increased revenue streams. Despite this disagreement, all respondents acknowledge the importance of a strategy with end-user priority, focusing on excellent network and customer service quality.

These results build on existing evidence of the impact of customer satisfaction on valuation through the lens of marketing excellence, focusing on the marketing ecosystem priority, end-user priority, and marketing agility priority. It confirms the importance of QoS in telco and shows how it eventually impacts valuation, through customer satisfaction. Similarly, topics like revenue diversification, investment planning, cost management strategies, and capital structure came forth in the interviews with financial experts, confirming their applicability to telcos. It shows how all of these general factors influencing valuation are also applicable in a sector like telco, with its fast-paced technological development and long investment cycles.

The generalizability of the results is limited, since this study has been conducted in the Netherlands. Although there are no indications that telco valuation differs in other countries, it can also not be completely ruled out without further investigation. Furthermore, it is difficult to draw conclusions about the effect of certain factors on firm value without further quantitative analysis. Due to the absence of data, such as base development KPIs and private company valuations, it is difficult to perform such an analysis.

This research paves the way for further inquiry into the effect of different broadband networks on customer satisfaction and (therefor) firm value. Moreover, it clearly indicates a link between (the amount of) bundled services and propensity to churn, which offers opportunities for further research.

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