Equity Research Division

Duolingo, Inc.

Leader in digital Language Learning

Target Price: $225.46
Current Price: $350.72
Downside Potential: -36%

Recommendation: SELL

Vienna, 31.01.2024

Agenda

Team Overview

Jan Niziolek

Head of Equity Research

- Story Guidance
- Task Distribution

Rothschild & Co

RAYMOND JAMES

AURELIUS

Livingstone

BSc. (WU)

Felix Friedrich

Senior Associate

- Financial & Market Analysis
- Valuation

KPMG

WU ACCOUNTING & AUDITING

KPMG

BSc. (WU) – 3rd Sem.

Matthias Wedl

Associate

- Strategy
- Valuation

ERSTE

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BSc. (WU)

Juliane Freund

Analyst

- Challenges
- Valuation

Heinrich&Mortinger Global Financial Services

BAWAG

BSc. (WU) – 5th Sem.

Cristina Crespo

Fellow-Analyst

- Social Media
- App Reviews
- Risks

Deloitte.

BAL

MSc. (WU) – 1st Sem.

Roman Gavrylchenko

Fellow-Analyst

- Strategy
- Peer Benchmarking

BSc. (LBS) – 5th Sem.

Adrian Hellmig

Fellow-Analyst

- Product
- Regulation
- Insider Activity

FALKEN STEG

BSc. (WU) – 1st Sem.

Investment Thesis

Duolingo's valuation is dependent on unsustainable growth

Key investment highlights

1 — Leading Language learning App
Being a leader in a digital education market, Duolingo utilizes its momentum with its innovative AI technology approach and global brand recognition

2 — Marginal Benefits of Premium Versions
Free users can access most of the content and, as a result, Duolingo Super and Max offer only marginal improvements despite their price

3 — Drop in User Growth not properly priced-in
A slowdown in acquisition and conversion rates is not fully reflected in the company's valuation, making Duolingo vulnerable to price corrections

4 — Short User Lifetime
Unlike other subscription-based products, users often stop using Duolingo after learning one language, limiting their lifetime value and possible retention

5 — Current Social Media Hype
Duolingo has benefited from strong brand engagement through TikTok and social media marketing, but fully relying on hype-driven user additions is not sustainable

6 — Opaque Reporting
Critical user- and performance metrics necessary to properly forecast financial performance are not reported, making it difficult to intrinsically value the company

Share Price Performance

Duolingo's share price development has been heavily influenced by management guidance

Major Events

- [1] November 2022 (-40%) - Launch of new Duolingo "learning path", which got negative feedback at first, in addition to massive losses in the quarterly report

- [2] March 2023 (+16%) - Launch of GPT-4-powered "Duolingo Max" subscription

- [3] November 2023 (+31%) - 63% increase in DAUs and a 43% increase in revenue compared to the same quarter the previous year

- [4] May 2024 (-28%) – lower than expected guidance led to sharp drop in a share price

- [5] September 2024 (+16%) - Announcement of AI-powered feature - interactive video calls with Lily

Key Stats

- IPO: July 28, 2021

- Ticker: DUOL (NasdaqGS)

- Market capitalization: $14.45 bn

- Price Range: $145.05 – $378.48

Duolingo

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Business Overview

Company Overview

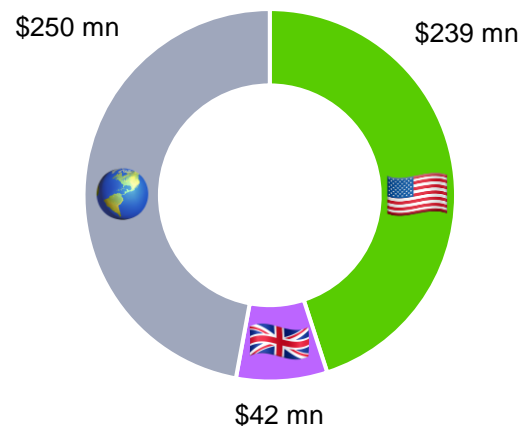Enabling accessible global language learning through affordable and engaging education

Company Description

Duolingo, Inc. operates as the globally leading **mobile language learning platform**

Headquarters: Pittsburgh, USA
Employees: 720

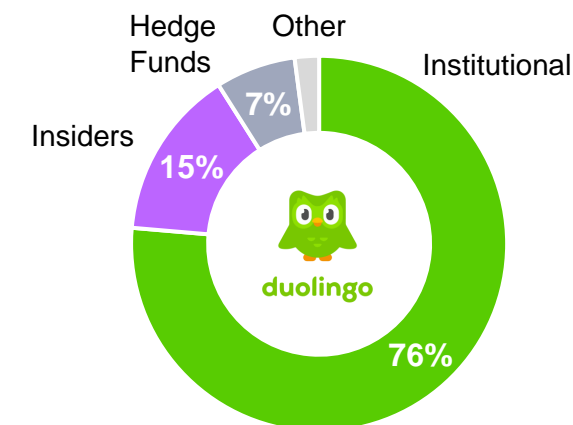**Ticker:** DUOL (NasdaqGS)
IPO Date: 2021

Revenue Split

$250 mn
$239 mn
$42 mn

Executive Management

Luis von Ahn
Co-founder and CEO (2011)

Severin Hacker
Co-founder and CTO (2011)

Robert Meese
CBO (2016)

Matthew Skaruppa
CFO (2020)

Shareholder Structure

Hedge Funds
Other
Insiders
Institutional
7%
15%
76%

Key Financials

in $m	FY 2020	FY 2021	FY 2022	FY 2023	Q3-24 LTM
Revenue	161.7	250.8	369.5	531.1	538.5
YoY (%)	128.5%	55.1%	47.3%	43.7%	42.5%
EBITDA	(13.7)	(57.3)	(61.0)	(6.2)	55.1
Margin (%)	(8.5%)	(22.8%)	(16.5%)	(1.2%)	10.2%
Net Income	(15.8)	(60.1)	(59.6)	16.1	74.7
DAUs (m)	8.4	10.1	16.3	26.9	37.2

Duolingo Mobile App
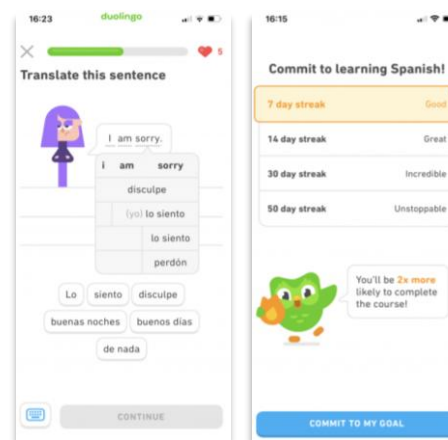
37.2m ⟩ Daily Active Users

40+ ⟩ Available Languages

~8.5% ⟩ Subscribed Users

800+ ⟩ Total Downloads (m)

Product Overview

Duolingo offers several premium versions besides the free standard version with marginal benefits in terms of features

Version Offering

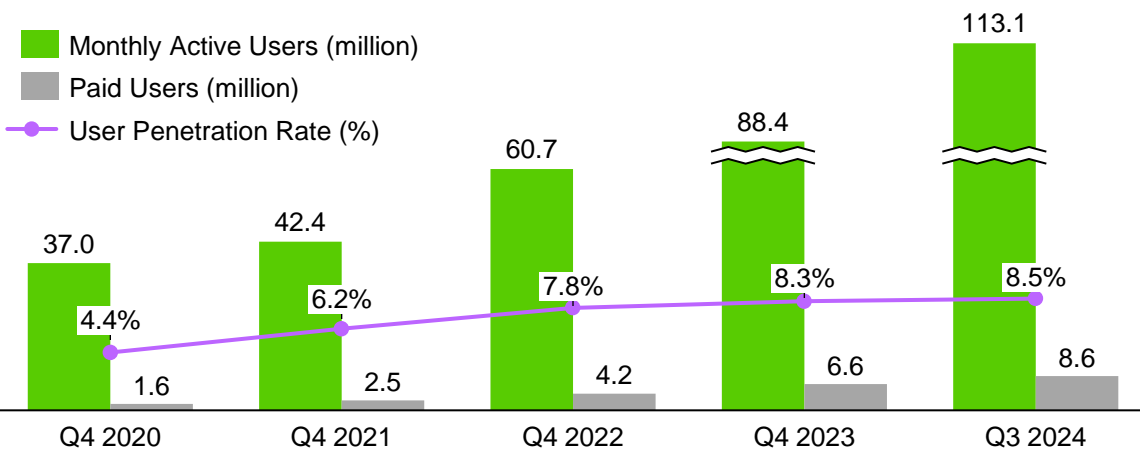| Basic	Premium Versions			Additional
Free	**Super**	**Family**	**Max**	**English Test**
$0.00	Monthly: $12.99	Yearly: $119.99	Monthly: $19.99	Worldwide: $65.00
✓ 40 languages	✓ No Advertisement	✓ 2 - 6 Users	✓ AI powered conversation	✓ Results within 2 days
✗ Limited Attempts	✓ Unlimited Attempts		✓ AI Analytics	✓ > 5500 Institutions
✗ Advertisement				✓ 100% Online

User Development

Legend:
- Monthly Active Users (million)
- Paid Users (million)
- User Penetration Rate (%)

	Q4 2020	Q4 2021	Q4 2022	Q4 2023	Q3 2024
Monthly Active Users	37.0	42.4	60.7	88.4	113.1
Paid Users	1.6	2.5	4.2	6.6	8.6
User Penetration Rate	4.4%	6.2%	7.8%	8.3%	8.5%

Comments

Marginal learning benefit from paid Versions
The content across all tiers remains largely the same, with no additional resources that would support learners in reaching advanced levels.

Lack of grammar explanations
The app provides little to no detailed grammar instruction, limiting users' ability to build a deeper understanding of the language.

Inaccurate answer validation
Frequent errors in evaluating user responses reduce trust in the platform's reliability and hinder learning progress.

Business Model - Strategy

Gamifying the language learning experience - Duolingo's strategy to attract, engage, and monetize users

Strategy

1 — **Attract free users** —

Free and gamified lessons to make learning accessible and enjoyable.

80% of Duolingo's users are acquired organically, through word-of-mouth

2 — **Convert to paid users** —

Adoption of Duolingo Super and Max by offering competitive pricing and features that significantly increase user comfort.

Optimization of pricing strategies to balance accessibility in emerging markets as AI costs decrease.

3 — **Maintain user retention** —

Gamification through leaderboards, streaks, and rewards to sustain long-term engagement.

Localized humor and regional social media campaigns to deepen user connections.

Resurrection of inactive users

Growth model

Reactivated Users	New Users	Resurrected Users
RURR	NURR	SURR

Current Users

Reactivation rate

Resurrection rate

At Risk WAUs

WAU loss rate

At Risk MAUs
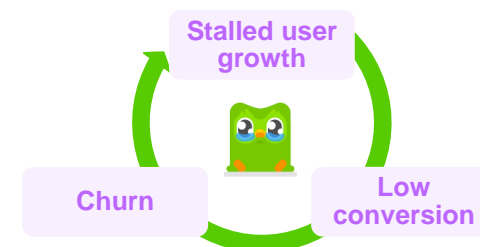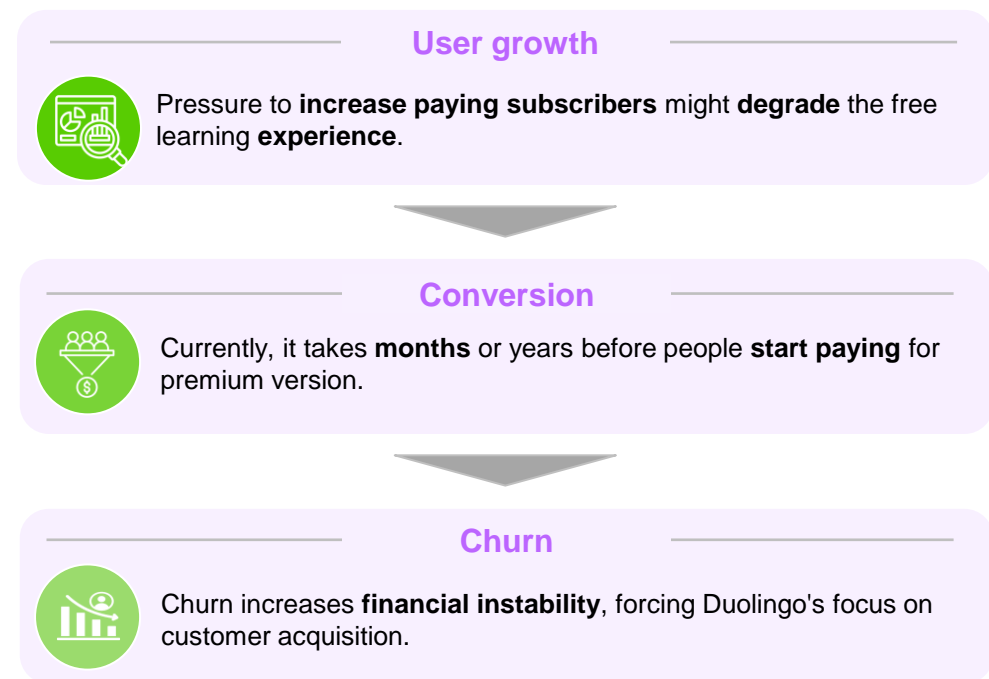
MAU loss rate

Dormant Users

WAUs = Weekly Active Users   *MAUs = Monthly Active Users*   *RR = Retention Rate*

Main Headwinds for Duolingo

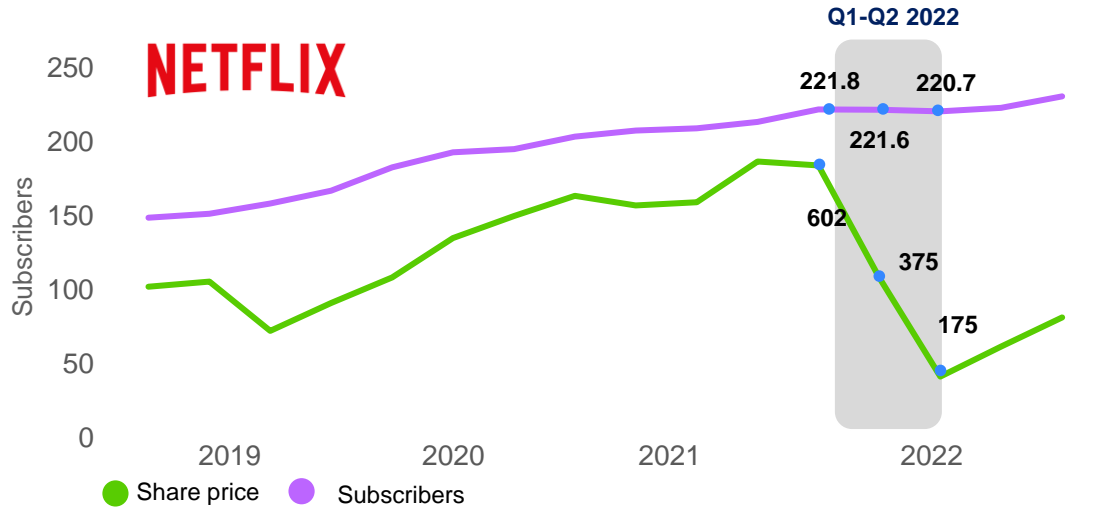Duolingo is facing severe issues in sustaining user addition, conversion and retention rates in the long run

Low User Switching Cost
The language learning market is very **competitive** with **low switching costs** for users. Furthermore, already high penetration in language-learning community.

Marginal Benefit from premium features
Duolingo has to convince users that their paid plans are worth the money, as currently many users deem features unnecessary.

High Reliance on Social Media Hype
Since its foundation Duolingo has barely invested in Marketing and relies primarily on Word of Mouth.

Virtually No inorganic growth opportunities
Duolingo only focuses on organic growth with a lack of inorganic growth opportunities potentially harming future growth and leading to unused cash on the balance sheet.

Conversion to Paid Subscribers is key
While Duolingo experiences healthy user growth, the company is struggling with converting users to paying customers.

Challenging User retention and lifetime
The User lifetime is limited as people only learn 1 to 2 languages or will eventually use interest or motivation in learning.

Interconnectivity of growth, conversion and churn

User growth
Pressure to **increase paying subscribers** might **degrade** the free learning **experience**.

Conversion
Currently, it takes **months** or years before people **start paying** for premium version.

Churn
Churn increases **financial instability**, forcing Duolingo's focus on customer acquisition.
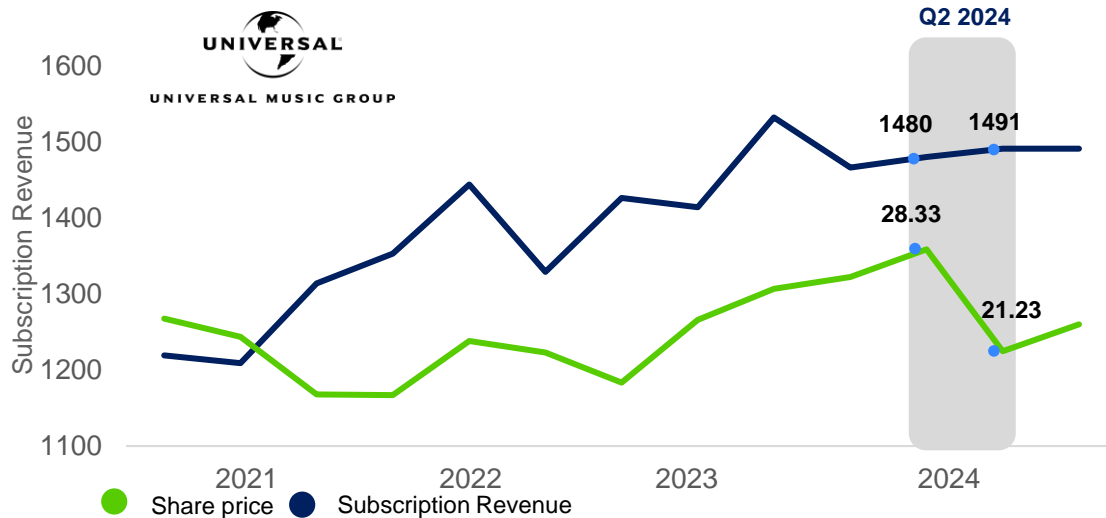
Stalled user growth

Churn

Low conversion

Missing Growth Expectations

Examples like Netflix and UGM show how investor sentiment changes once prior growth expectations are revoked

Q1-Q2 2022

NETFLIX

- Share price (green)
- Subscribers (purple)

221.8 — 220.7
221.6
602
375
175

Case Study results

NETFLIX → **Marginal** subscriber **loss** in two consecutive quarters → Share price **drops by over 60%** $602 → $176

UNIVERSAL MUSIC GROUP → Revenue growth only 6.9% → **4% below guidance** → Share price **drops by over 25%** $28.33 → $21.23

UNIVERSAL MUSIC GROUP

Q2 2024

1480 — 1491
28.33
21.23

- Share price (green)
- Subscription Revenue (dark blue)

Implications for Duolingo

Given Duolingo's very fast growth and very **ambitious expectations** of the public and analysts alike Duolingo has to **fulfil forecasts or** else feel a **heavy decline** in Market capitalisation

Failure to effectively **communicate** a **long-term growth narrative** could **compound** the **negative impact** of any short-term underperformance.

Given Duolingo's **high dependency** on their own **social media** channels, any disruption –like a TikTok ban in the US- could substantially the company's operations.

What after the Social Media Trend fades?

Duolingo has little control over topline growth with their complete reliance on Social Media marketing

Free Advertisement – but for how long?

Social media virality, especially TikTok (+4Bn views) drives word-of-mouth publicity.

Duolingo's popularity thrives on user-driven memes, **influencer engagement**, and **community interactions**.

~90% of DAU growth relies on users generating organic content.

Duolingo has benefited from this rare and cost-effective marketing. However, social media trends are unpredictable.

Duolingo on Social Media

TikTok

Memes

Duolingo's Design fuels Popularity

Features	Popularity
1 **Frictionless design:** its intuitive user face provides an intuitive and easy-to-use learning experience.	●
2 **Addictive gamification:** the short lessons combined with the use of rewards, streaks, and milestones keep users coming back.	◕
3 **Social features:** streak accountability, friend streaks, and a "learning buddy" dynamic build user loyalty.	◕

Trends are short-term

Following the announcement of TikTok's ban, a wave of people started learning **Chinese**. However, the ban was lifted soon.

After Duolingo's introduction of Scottish **Gaelic**, it recorded high interest for the language due to hype and news coverage. The number of learners declined after a few months.
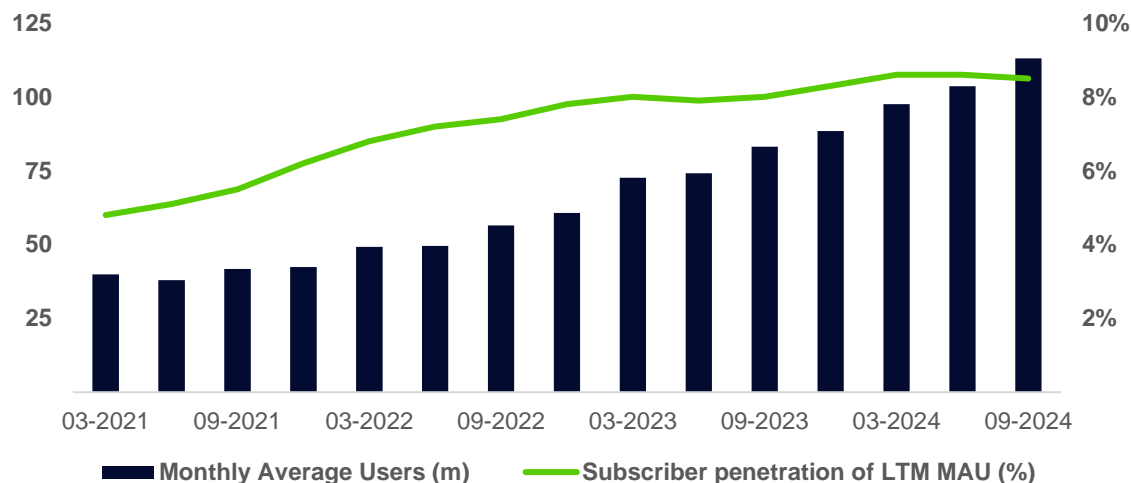
With Russia's invasion of Ukraine, there was a strong increase of people learning **Ukrainian.**

Duolingo's Growth Plateau: Challenges in Monetization and Engagement

Understanding the gap between exponential user growth and the limitations of its business model

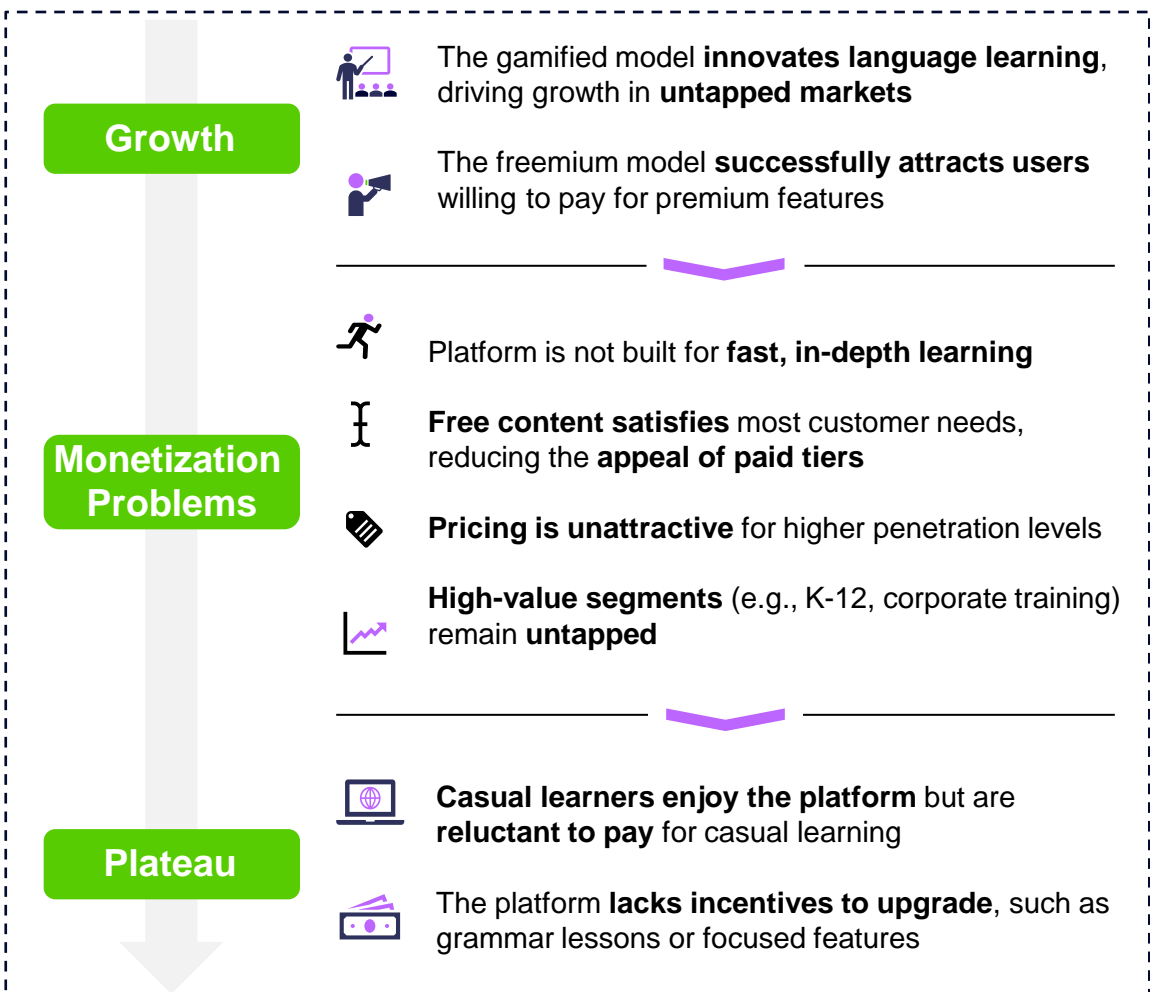## Platform User Performance Development

Monthly Average Users (m) — Subscriber penetration of LTM MAU (%)

Overarching Trends	Relevance
1 **Huge numbers of new users join monthly**, driving exponential active user growth	
2 User penetration rates are **leveling off**, suggesting the business model might soon **hit its monetization potential**	
3 Development now focuses on user engagement algorithms **more than on learning outcomes**	

Business Model Problems

Growth
- The gamified model **innovates language learning**, driving growth in **untapped markets**
- The freemium model **successfully attracts users** willing to pay for premium features

Monetization Problems
- Platform is not built for **fast, in-depth learning**
- **Free content satisfies** most customer needs, reducing the **appeal of paid tiers**
- **Pricing is unattractive** for higher penetration levels
- **High-value segments** (e.g., K-12, corporate training) remain **untapped**

Plateau
- **Casual learners enjoy the platform** but are **reluctant to pay** for casual learning
- The platform **lacks incentives to upgrade**, such as grammar lessons or focused features

Intransparency: Duolingo's Missing Links

Duolingo keeps critical information from the public, impairing proper valuation

Information Missing Imperative for Informed Decision Making

Strategy — Operational KPI's — Benchmark

Growth Plan	Key Metrics	Version Split	Regional Split	Relative Value
✓ International Expansion	✓ Subscribed Users	✗ Super Duolingo	✓ Country Pricing	✓ Qualitative Indicators
✓ AI Pathway	✗ User Lifetime	✗ Duolingo Max	✗ Country Revenue	✗ Private Comps
— Growth Strategy	✗ Churn Rates	✗ Family Version	✗ Country Cost	✗ Operational Metrics
✗ Segment Outlook	✗ Lesson Statistics	✗ Lifetime Customers	✗ Outside UK / US	✗ Qualitative Indicators
	✗ Renewal Rates	✗ Monthly / Yearly Split		

Duolingo has **not articulated a clear strategic roadmap**, including growth / user retention targets, regional expansion, or product differentiation, which leaves **investors and analysts uncertain** about how the company plans to **maintain its competitive edge in the EdTech market.**

The **lack of disclosure on critical KPIs**, such as churn rates, user lifetime, lesson completion statistics, and subscription renewal rates, makes it difficult to evaluate **the platform's operational efficiency**, user engagement, and **long-term revenue potential.**

Without **transparent comparability data**, private company benchmarks, or relative performance metrics like CAC and regional profitability, it becomes **challenging for stakeholders to assess Duolingo's market positioning** and overall valuation relative to peers.

Duolingo

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Market and Industry Overview
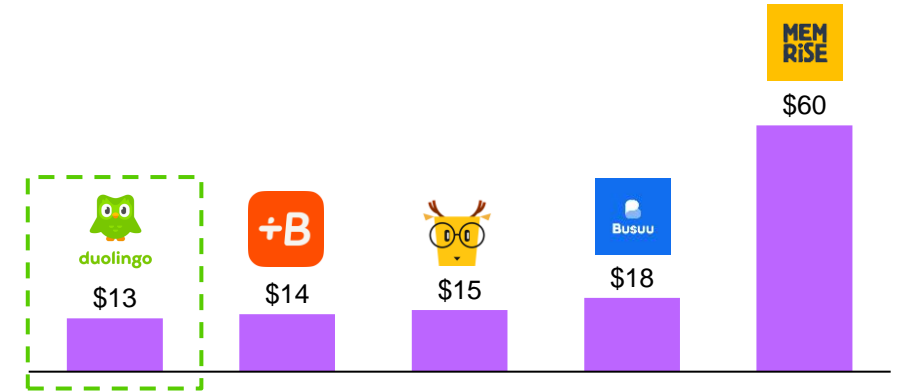
Qualitative Peer Benchmarking

Duolingo offers the best package for most customers for a comparably fair price

Peer Comparison

App Features	Duolingo	Babbel	LingoDeer	Busuu	Memrise
Freemium Possibilities	✔	✘	✘	—	—
Languages	**42**	**14**	**12**	**12**	**18**
Gamification	✔	✘	—	✘	—
Learning Approach	Gamified	Real world	Grammar	Interactive	Flashcards
Target Audience	Beginners & Casual learners	Adults to learn conversations	Learners of Asian languages	Intermediate learners	Visual & Vocab learners
Grammar Focus	✘	—	✔	—	—
Tutor Access	✘	✔	✘	✔	✘

✔ Yes   ✘ No   — Limited

Subscription Price Comparison (Monthly, in $)

- duolingo $13
- ÷B $14
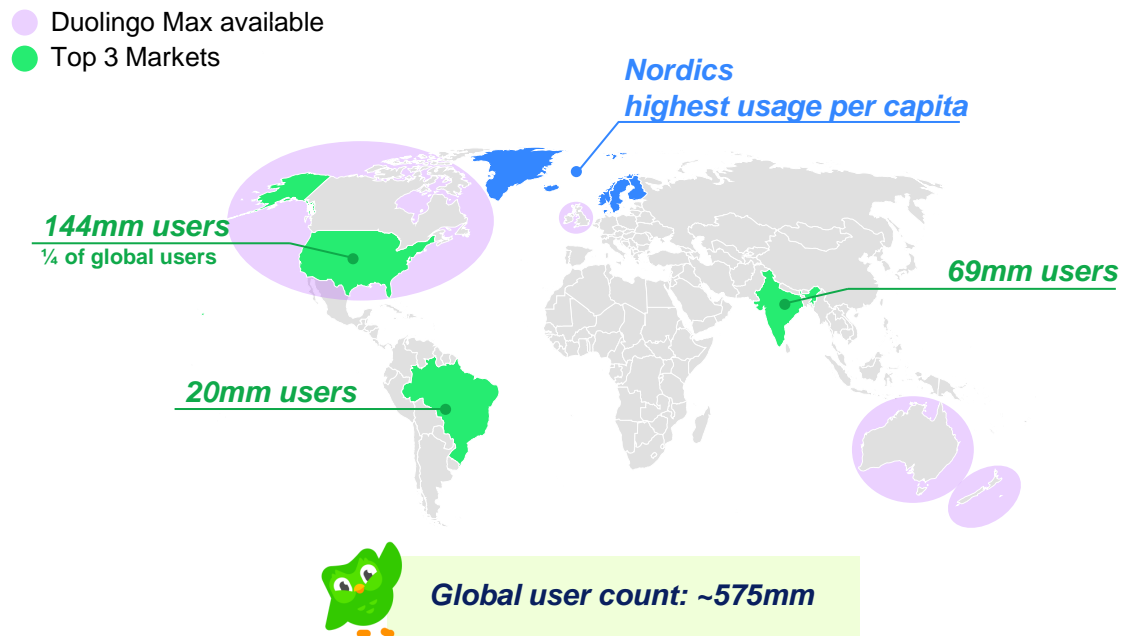- LingoDeer $15
- Busuu $18
- MEMRISE $60

Key takeaways

Duolingo offers comprehensive access to its **lessons and features for free**, supported by ads, making it one of the most accessible platforms globally.

Duolingo provides exceptional value at one of the **lowest price** points among competitors for the **beginners and intermediate learners**.

Duolingo offers quick, **easy-to-digest lessons** that fit seamlessly into a user's daily routine, making language learning possible even with limited time.

Navigating Growth Challenges: Duolingo's Saturation in the Americas

Understanding User Demographics and Barriers to Drive Global Expansion

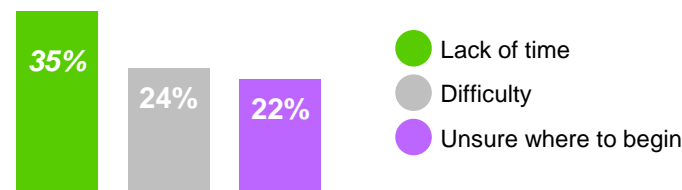### Duolingo needs to penetrate new markets to sustain growth

- Duolingo Max available
- Top 3 Markets

Nordics highest usage per capita

144mm users — ¼ of global users

69mm users

20mm users

Global user count: ~575mm

> The US accounts for **25% of Duolingo´s global users** and generates ~45% of its revenues, thanks to its high discretionary spending and strong purchasing power.

> With **144 million users,** Duolingo has already penetrated over 40% of the US population, an extraordinary achievement.

> This level of saturation suggests that **growth in the US will become increasingly difficult.**

Many Americans think of themselves as too old to learn

One third *(36%)* of Americans think they are *"too old to learn"*
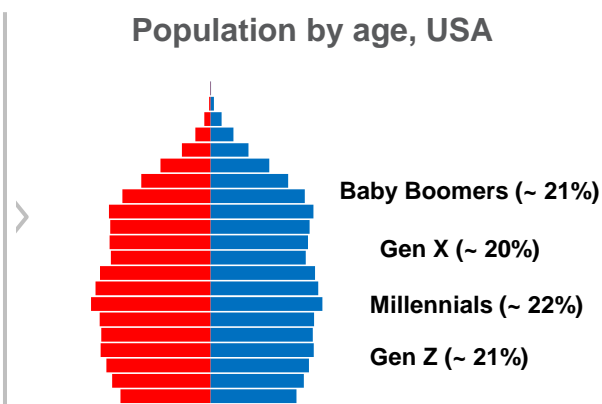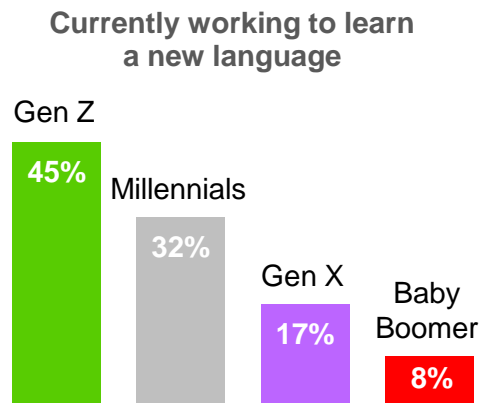*26* seen as the best age to learn something new

Other Insights

40% of American *baby boomers* report being interested in learning a new language

What is holding people back?

- 35% — Lack of time
- 24% — Difficulty
- 22% — Unsure where to begin

Less attractive age segments dominate US population

Currently working to learn a new language

- Gen Z — 45%
- Millennials — 32%
- Gen X — 17%
- Baby Boomer — 8%

Population by age, USA

- Baby Boomers (~ 21%)
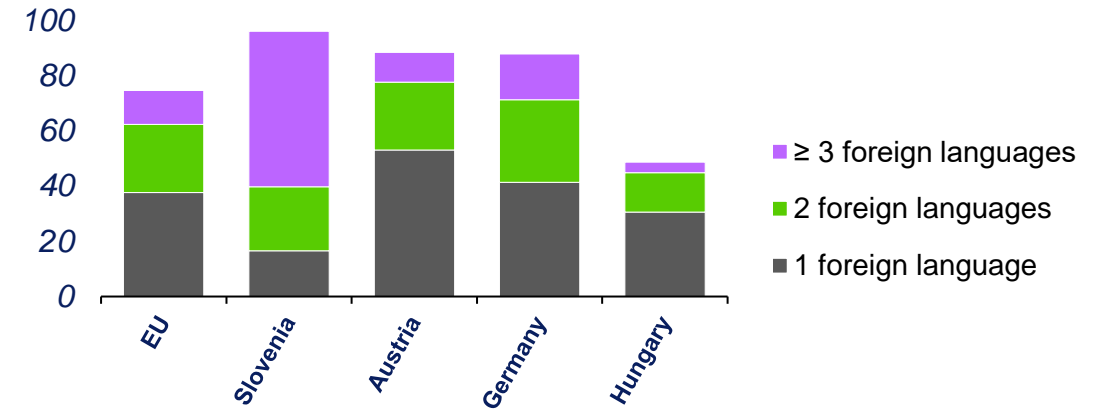- Gen X (~ 20%)
- Millennials (~ 22%)
- Gen Z (~ 21%)

Outlining limits to growth I

Motivators & languages spoken as natural constraints for digital language learning

Motivation behind Language Learning

Strength of Reason (Motivation) — High / Moderate / Low

Duration of Engagement Potential — Short-Term < 6m / Medium-Term 6m – 2y / Long-Term > 2y

Top reasons cited among language learners

- **31%** Cultural Interest
- **27%** Cognitive Health
- **27%** Travel
- **27%** Effective Communication

Other reasons might include:

- **A** Personal Hobby
- **B** Connecting with heritage
- **C** Career Advancement
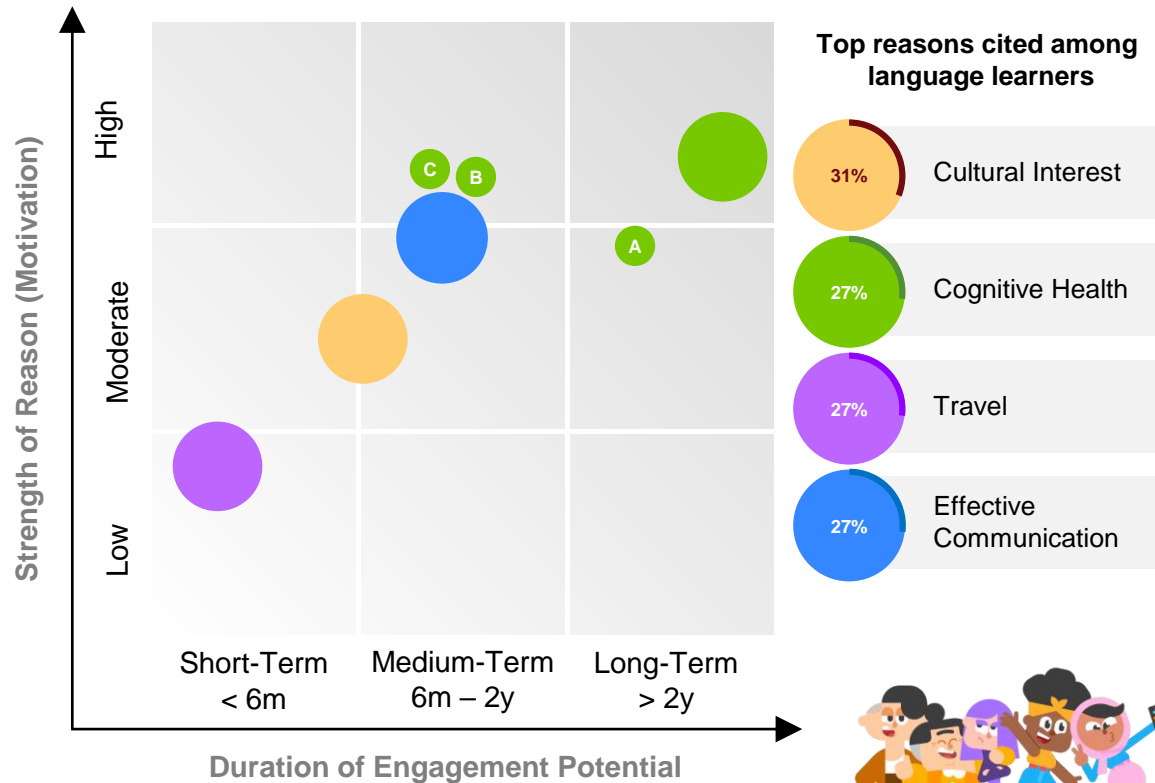
Foreign Languages spoken – EU (Age 25-64, 2022)

Legend:
- ≥ 3 foreign languages
- 2 foreign languages
- 1 foreign language

Categories: EU, Slovenia, Austria, Germany, Hungary

Natural cap on languages learned
In multilingual EU, free market and cultural diversity drive higher averages; global numbers likely lower.

Duolingo user behavior
The average user will learn 1-2 languages driven primarily by transitory motivators.

User engagement & churn risks
A committed learner can complete Duolingo´s ~200-300 lessons in 6-12 months, learning the basics of a language.

Most users may disengage or become inactive (fulfill minimum requirements to uphold streak) within 1-2 years, creating a churn wave.

Outlining limits to growth II

Limited learning & benefit, minimum effort – where frictionless becomes stagnation

What users say:

1 **Learning Effect**
Duolingo's gamification prioritizes habit-building over deep language learning, quick lessons maintain streaks but don't ensure fluency, making it insufficient as a substitute for traditional classes.
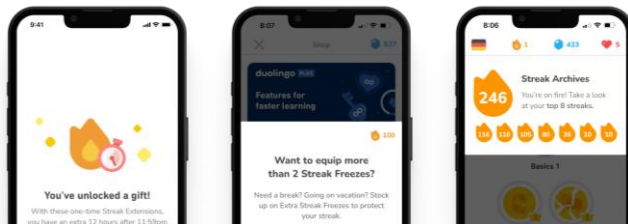
2 **Minimum effort**
Users often say they spend minimal time (e.g., 5 minutes daily) to maintain their streaks, which doesn't significantly advance their language skills.

3 **Paid Tier Benefits**:
Many feel the paid tier's perks, like ad-free use and unlimited hearts, don't justify the cost since the free version meets most casual learners' needs.

Self-experiment – would such a user be willing to pay?
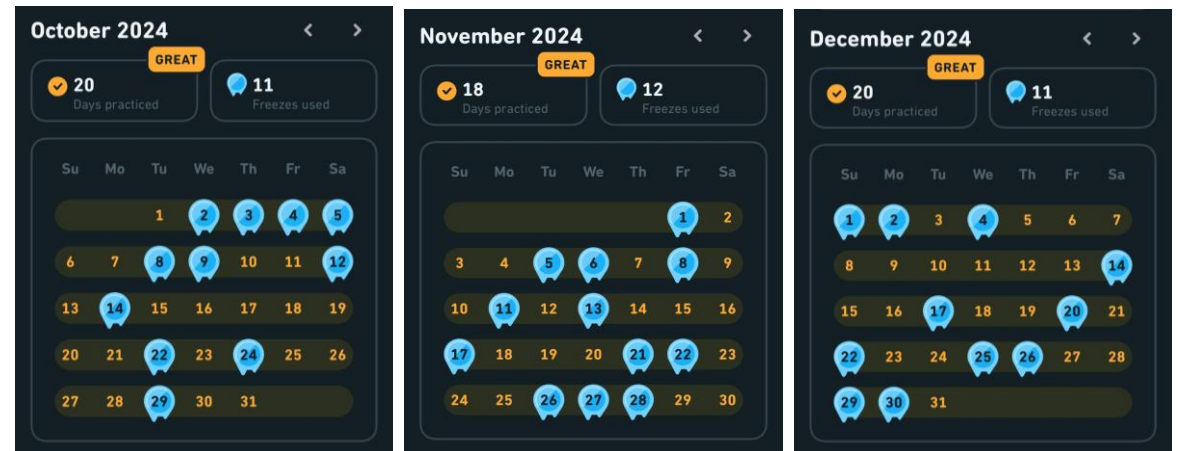
All freezes were obtained for free

Daily time spent with the app: ~ 5 min

Conclusion

Streaks aim to show commitment but are too easy to maintain, reducing their value, combined with minimal learning benefits and low SuperDuo appeal, this poses challenges for meaningful subscription conversions.

Outlining limits to growth III

Duolingo´s MAU will reach a critical saturation point

How Duolingo ensures User Acquisition and Engagement

Frictionless design
Intuitive and easy-to-use app experience lowers barriers to entry
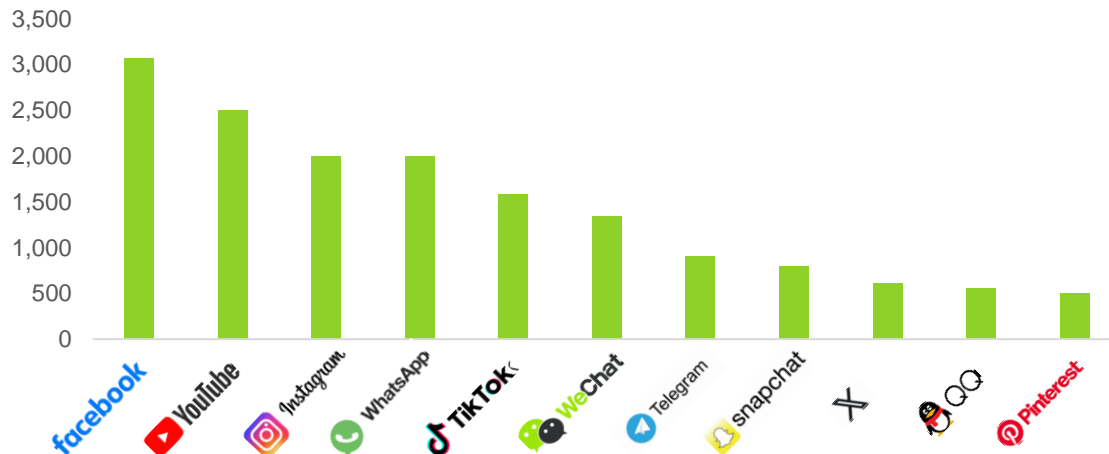
Addictive gamification
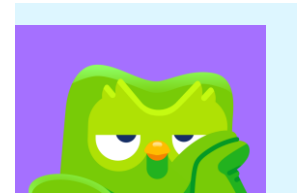Rewards, streaks and milestones keep users coming back

Social Features
Streaks, friend streaks and a "learning buddy" build user loyalty

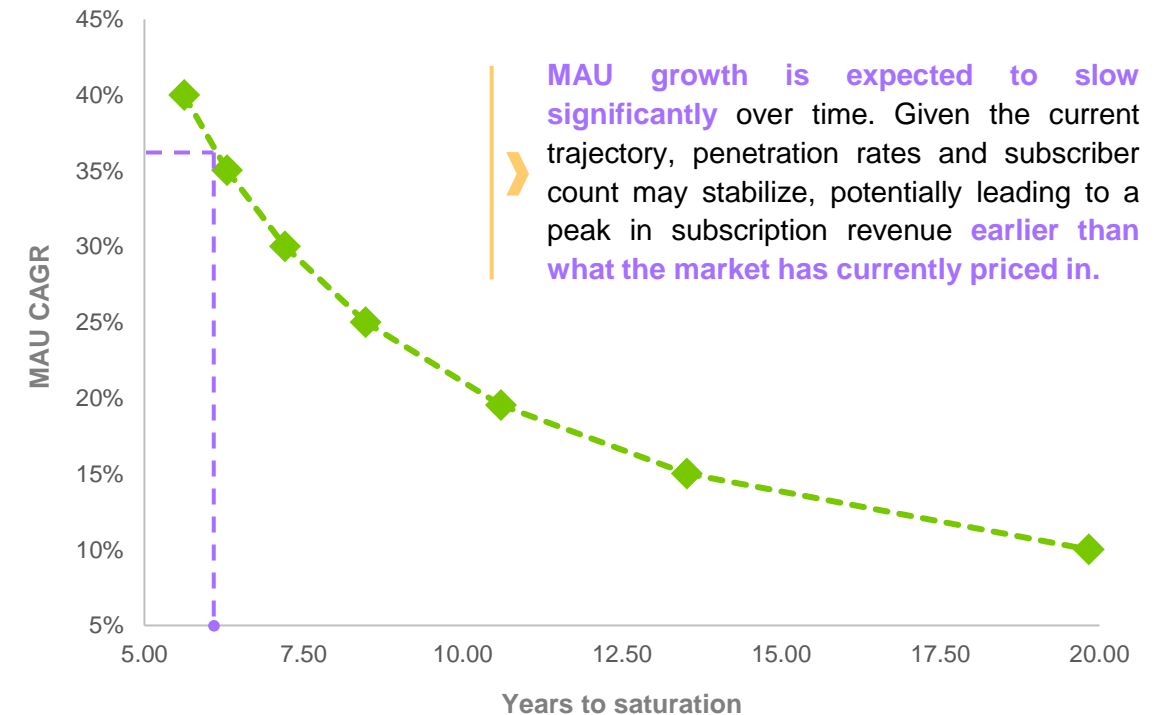### The pinnacle of Frictionless Engagement: Social Networks

Most used social networks 2024, by number of users (in millions)

Reasonable Saturation Estimate

Language learning lacks social media's engagement and even with a generous 750M MAU cap, **Duolingo's growth can't sustain the high market expectations.**

MAU growth is expected to slow significantly over time. Given the current trajectory, penetration rates and subscriber count may stabilize, potentially leading to a peak in subscription revenue **earlier than what the market has currently priced in.**

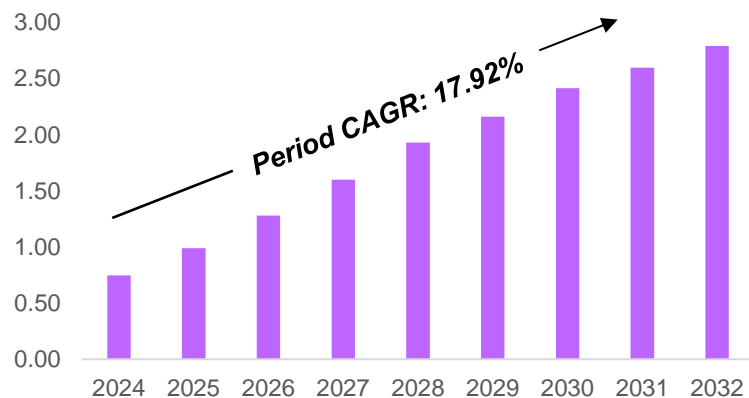# Duolingo
WUTIS – Equity Research

Financials and Valuation
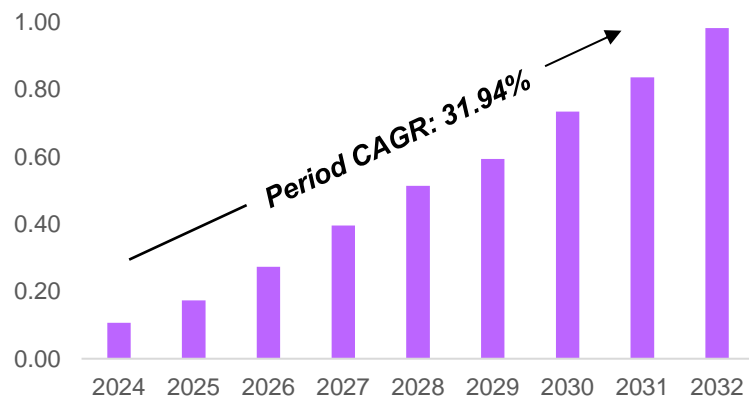
Financials & Valuation – Priced in Assumptions

Assumptions needed to arrive at a Hold Recommendation are striking!
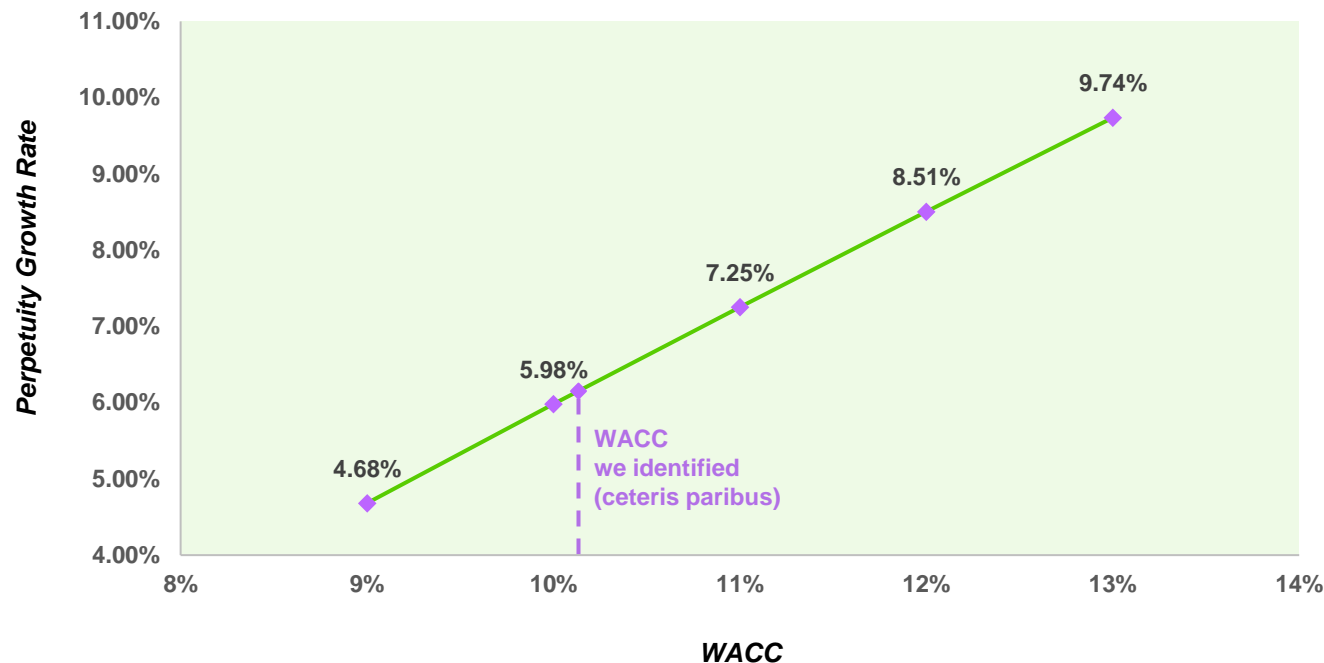
Model – Base Case

Revenue in bn. USD

Period CAGR: 17.92%

(bar chart: years 2024–2032, values rising from ~0.75 to ~2.80)

Unlevered Free Cash Flow in bn. USD

Period CAGR: 31.94%

(bar chart: years 2024–2032, values rising from ~0.11 to ~0.98)

Implied Perpetuity Growth Rate to reach a Hold Recommendation

(line chart: Perpetuity Growth Rate vs WACC)
- 4.68% at 9% WACC
- 5.98% at 10% WACC
- 7.25% at 11% WACC
- 8.51% at 12% WACC
- 9.74% at 13% WACC

WACC we identified (ceteris paribus)

WACC

Conclusion

> With **our base case projections** for **Unlevered Free Cash Flow**, that was derived by figures largely in line with management guidance, we arrive at an **implied perpetuity rate** of slightly **above 6%** to justify a hold.

Financials & Valuation – What attracts investors?

The other side of Duolingo's impressive numbers

Duolingo is a fast-growing Cash Cow

Financials ($ million)

Legend: Revenue, R&D costs, Net Income, % Gross margin
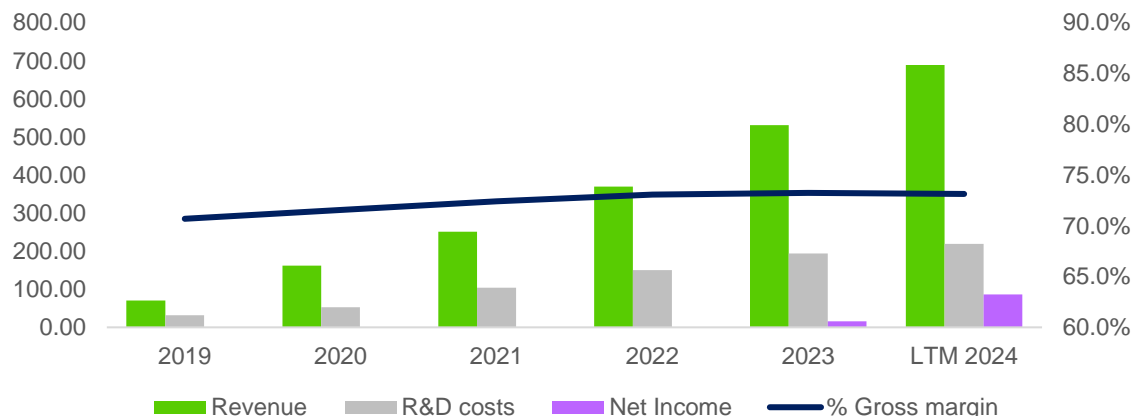
Capital-light Operations

2.8%
Return on Equity LTM

Most of their cash was generated after its IPO in 2021 through additional paid-in capital

0%
Debt/Equity ratio

As of Q3 2024 data Duolingo does not have any debt on their balance sheet

Cash alone makes up over 70% of Duolingo's assets

Problems

While Duolingo currently boasts strong growth rates we believe the market expectations to be unsustainable in the long run.

Duolingo already has a good penetration in its core markets limiting potential for future revenue expansion.

Furthermore, future churn of users could gravely impact user base making their current margins unsustainable.

While Duolingo has a very strong balance sheet the company is struggling with finding ways to deploy excess cash effectively.

To keep growing at current pace Duolingo would need to venture into broader education markets, which could lead to heavy cash usage.

Given that most their cash is generated through equity financing this has led to heavy dilution of Duolingo's shares.

Financials & Valuation – Relative Valuation

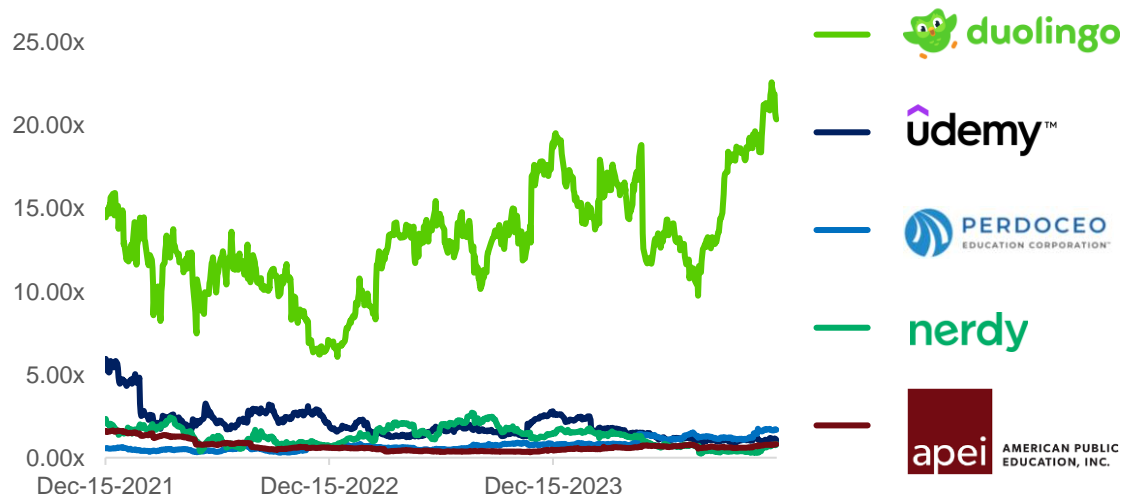While Duolingo deserves a high premium, its multiples leave any reasonable investor shocked

Duolingo trades at Record Premiums

178.6x
P/E

183.9x
EV/EBITDA

$18.7 per share
Book Value

$80.69 mm
LTM stock-based comp
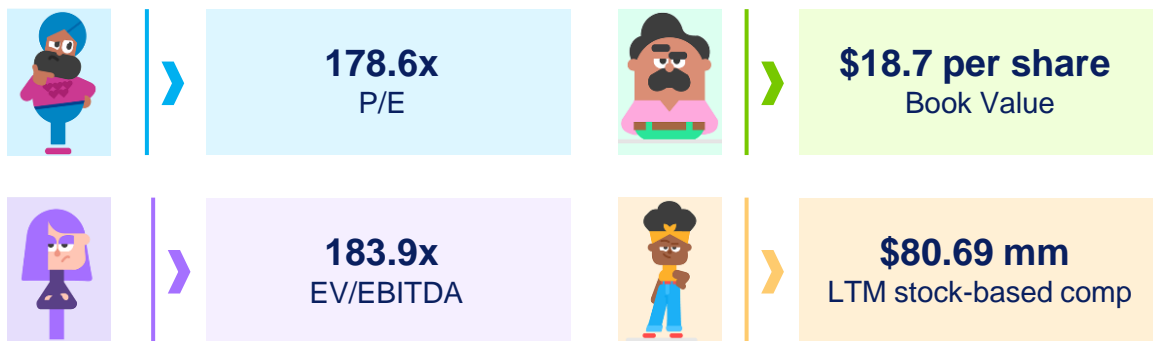
Quality of ARR: Why we expect serious Multiple Compression

— Duolingo, Inc.
— CrowdStrike Holdings, Inc.

EV/Sales for US-based EdTech Companies (past 3Y)

— duolingo
— ûdemy™
— PERDOCEO EDUCATION CORPORATION™
— nerdy
— apei AMERICAN PUBLIC EDUCATION, INC.

	CROWDSTRIKE	**duolingo**
Upselling opportunities	Modular solution adoption	Limited subscription-tier benefits
Long customer life-cycle	Consistent demand for cyber security	Demand is transitory
Customer spending power	B2B – primarily large corporates	B2C – everyday people
Growth profile	3Y – Topline-CAGR: 53.4%	3Y – Topline-CAGR: 60.6%

Despite CrowdStrike having much higher ARR quality, the two companies trade at similar multiples. We anticipate multiple contraction due to the extreme valuation and unfavorable benchmarking against superior companies.
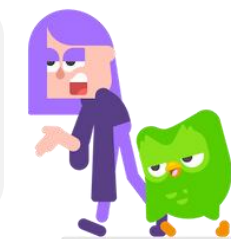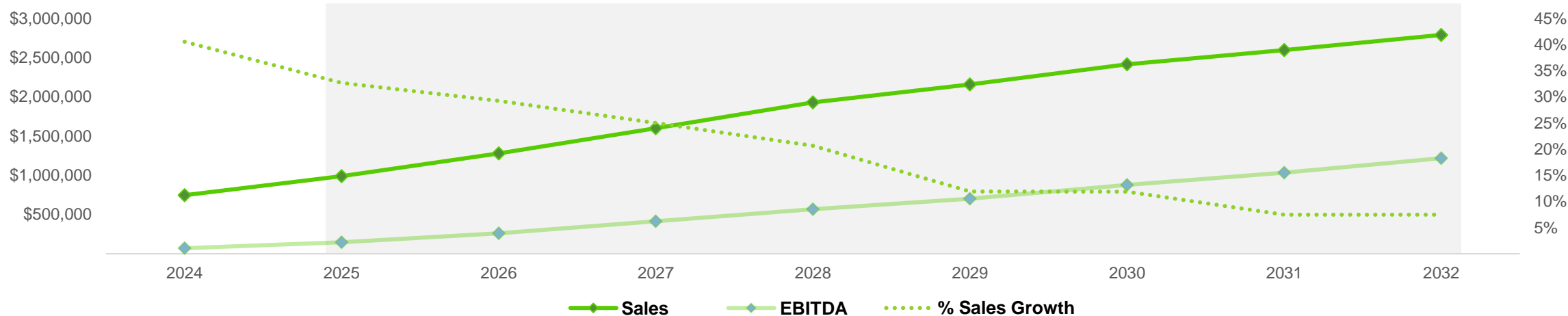
Financials & Valuation – DCF

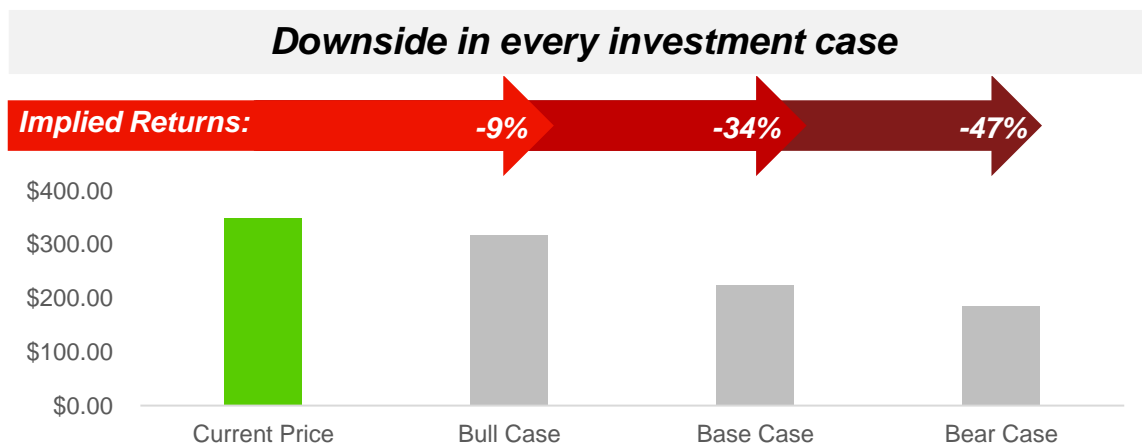## Our modelling assumptions lead to a clear sell recommendation in all three cases

Financial Forecast

Legend: Sales — EBITDA — % Sales Growth

Assumptions

WACC
We have estimated a WACC of 12.08%

TV Growth Rate
We set our terminal value growth rate to 3%

Margins & Growth
We have tried to take a balanced approach between management guidance, analyst consensus and our own view of the company
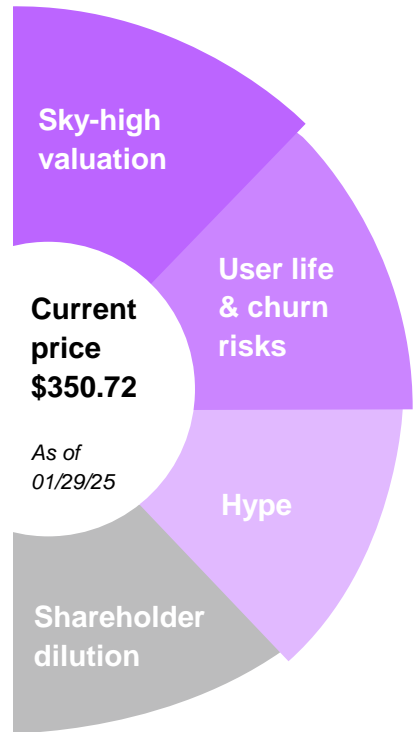
Valuation Outcome

Downside in every investment case

Implied Returns: -9% -34% -47%

Current Price | Bull Case | Base Case | Bear Case
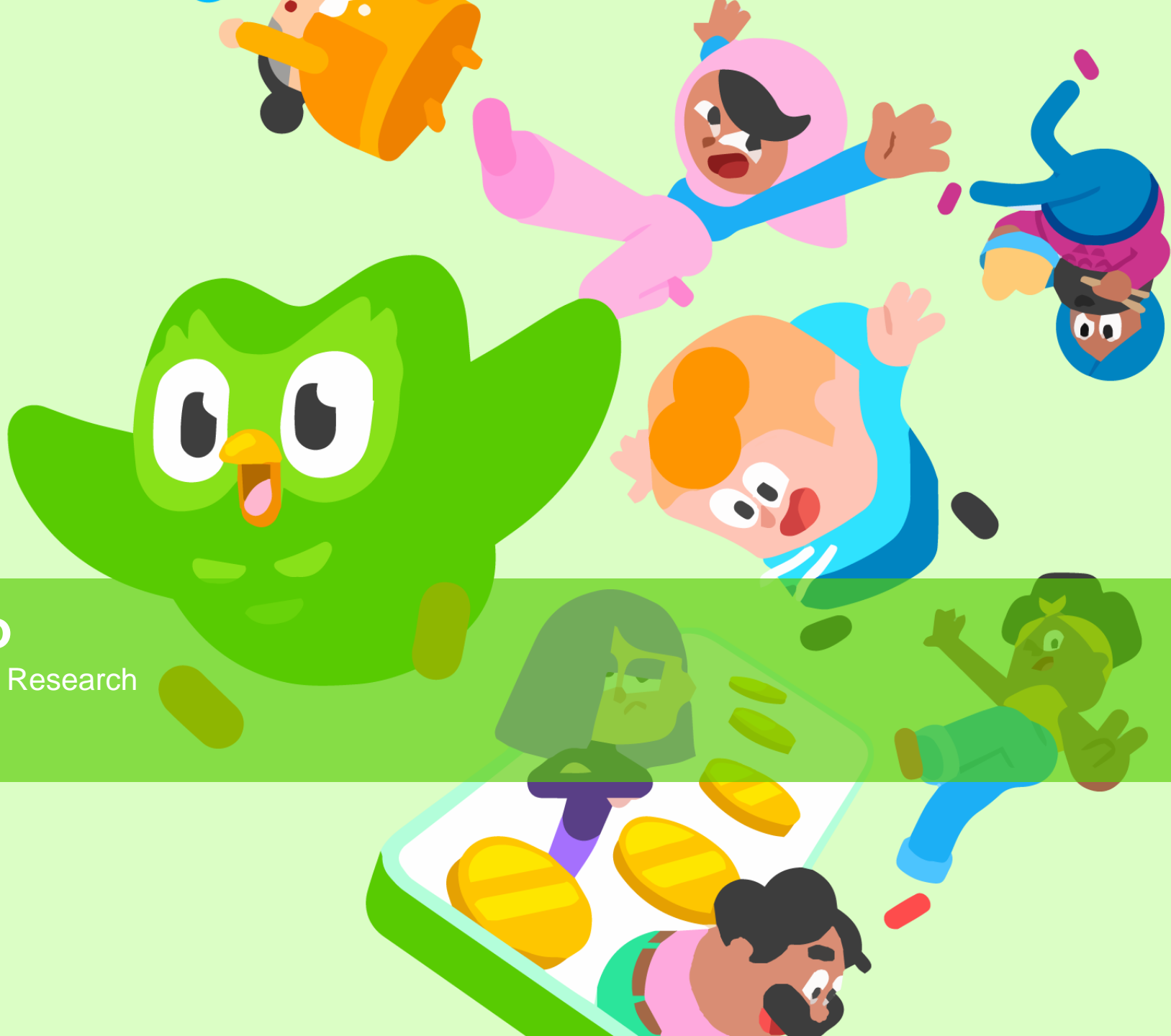
Duolingo

WUTIS – Equity Research

Conclusion

Conclusion

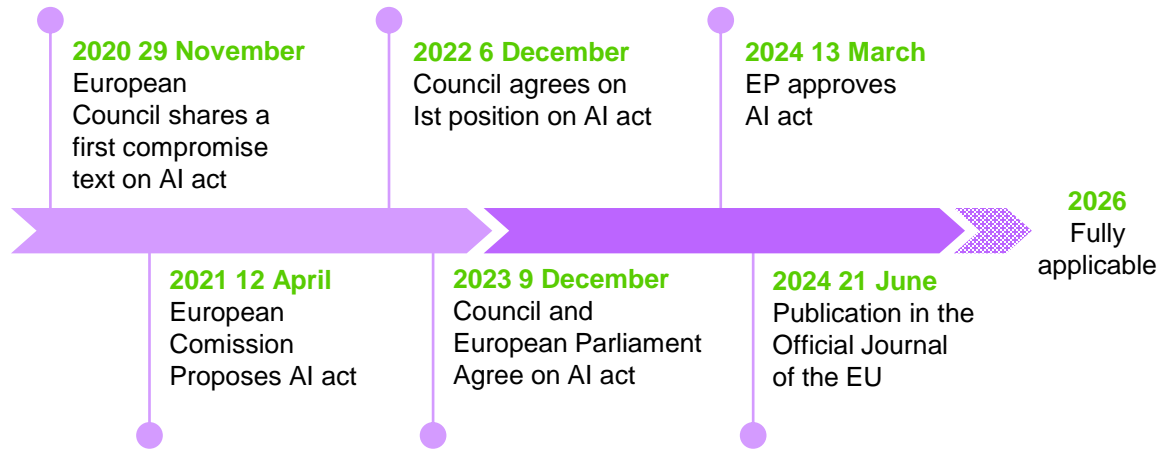Duolingo's high valuation raises concerns about long term sustainability and growth justification

Sky-high valuation

User life & churn risks

Current price $350.72

As of 01/29/25

Hype

Shareholder dilution

Target Price

$400

$350

$300

$250

$200

$150

$100

$50

$0

28/07/2021 28/01/2022 28/07/2022 28/01/2023 28/07/2023 28/01/2024 28/07/2024 28/01/2025

Current price: $350.72

Target price: $225.46

Downside potential of (35.71%)

Recommendation:

Sell

Duolingo

WUTIS – Equity Research

Appendix

AI Regulation in Europe

Compliance challenges and possible AI risks

Timeline AI act EU

2020 29 November
European Council shares a first compromise text on AI act

2021 12 April
European Comission Proposes AI act

2022 6 December
Council agrees on Ist position on AI act

2023 9 December
Council and European Parliament Agree on AI act

2024 13 March
EP approves AI act

2024 21 June
Publication in the Official Journal of the EU

2026
Fully applicable

AI risk categories according to the EU AI act

	CATEGORIES	EXAMPLES
	Unacceptable risk	Social scoring systems, manipulative AI
	High risk	Critical infrastructure, justice, education
	Limited risk	Chatbots
	Minimal risk	Video games, spam filters

According to the AI Act, Duolingo could be in the category high-risk

Compliance Costs
The need to implement new compliance measures, such as transparency requirements and risk assessments, could lead to significant financial and operational costs.

Data Management Challenges
Ensuring that the data used for training AI systems is free from bias and meets EU standards could be difficult and resource-intensive.

Liability Risks
If Duolingo's AI systems are deemed to cause harm or discrimination, the company could face legal liabilities and penalties.

Market Access Restrictions
Failure to comply with the AI Act could result in restrictions or bans on operating within the EU market, limiting Duolingo's user base and revenue..

Innovation Slowdown
The need to adhere to strict regulations might slow down the development and deployment of new AI features, potentially reducing the company's competitive edge.

Duolingo Test Scores Indicate Relatively Low English Proficiency

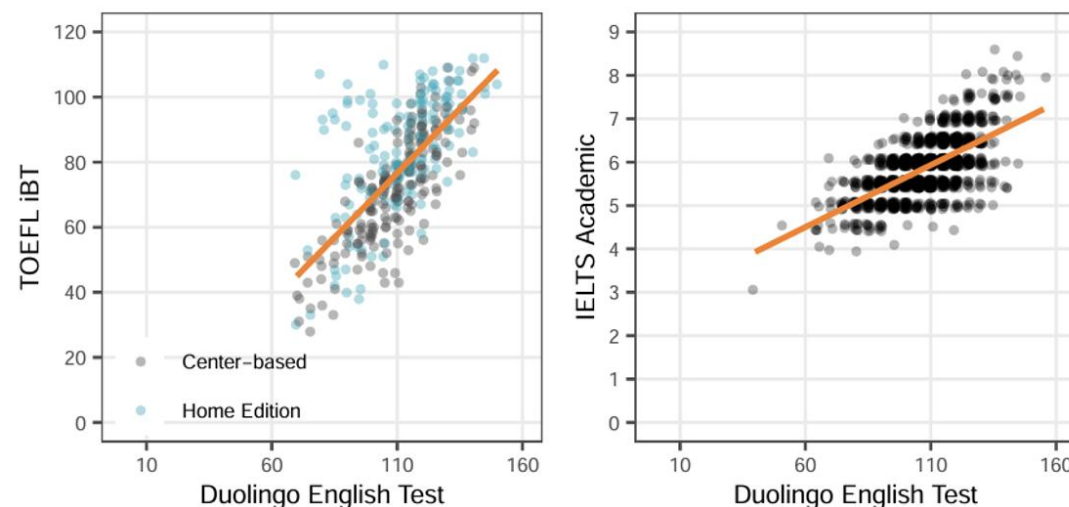Language test results suggest that Duolingo users are indeed only learning casually

Test Result Benchmark

DUOL - Stats	Reading	Listening	Speaking	Writing	Total
75th Percentile	125	125	125	125	125
Median	**109**	**110**	**110**	**109**	**110**
25th Percentile	95	95	95	95	95

TOEFL - Stats	Reading	Listening	Speaking	Writing	Total
75th Percentile	28	27	24	23	102
Median	**25**	**24**	**23**	**23**	**90**
25th Percentile	19	20	19	20	78

IELTS - Stats	Reading	Listening	Speaking	Writing	Total
Mean	6.2	6.6	6.3	6.0	6.4

Correlation to Duolingo

Duolingo language test results in combination with correlation to similar tests shows that the average Duolingo test taker is less proficient in English.

This provides some proof that the users perceived to be largely casual users are indeed only casual also for the language test. If only well-prepared people, took the test, the results would be different.

Monetization will be a major problem if Duolingo is not expanding Its target customer group, sets incentives to use premium subscription models or moves into adjacent market segments.

Porter's Five Forces

How competitive forces shape Duolingo's growth

(+) Strong brand recognition and large user base
(-) Competition with other language learning platforms
(e.g., Babbel, Lingodeer, Busuu)
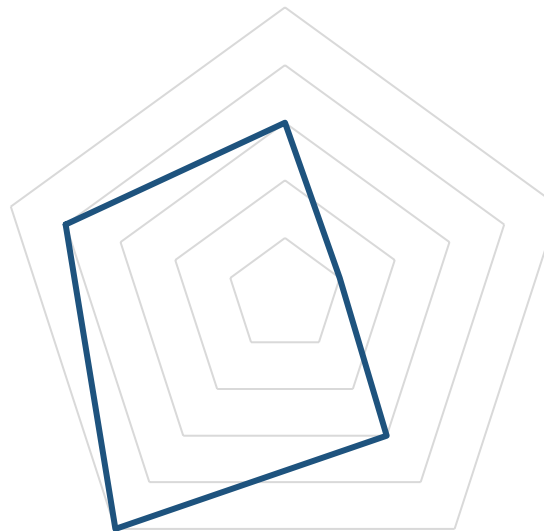
Industry rivalry - MEDIUM

Threat of substitutes - HIGH

Gamification approach makes learning engaging (+)
Many alternative learning methods: private tutors,
traditional language courses, YouTube, podcasts, etc. (-)
Free online tools (e.g., Google Translate) reduces
dependency on apps (-)

Bargaining power of suppliers - LOW

(+) Scalable platform with own R&D department
minimizes dependence on external suppliers
(-) Some reliance on third-party cloud providers (AWS)
and distribution platforms (AppStore, Play Store)

Bargaining power of buyers - HIGH

Revenue and user growths are driven by
word-of-mouth marketing (-)
Low switching costs = users can easily
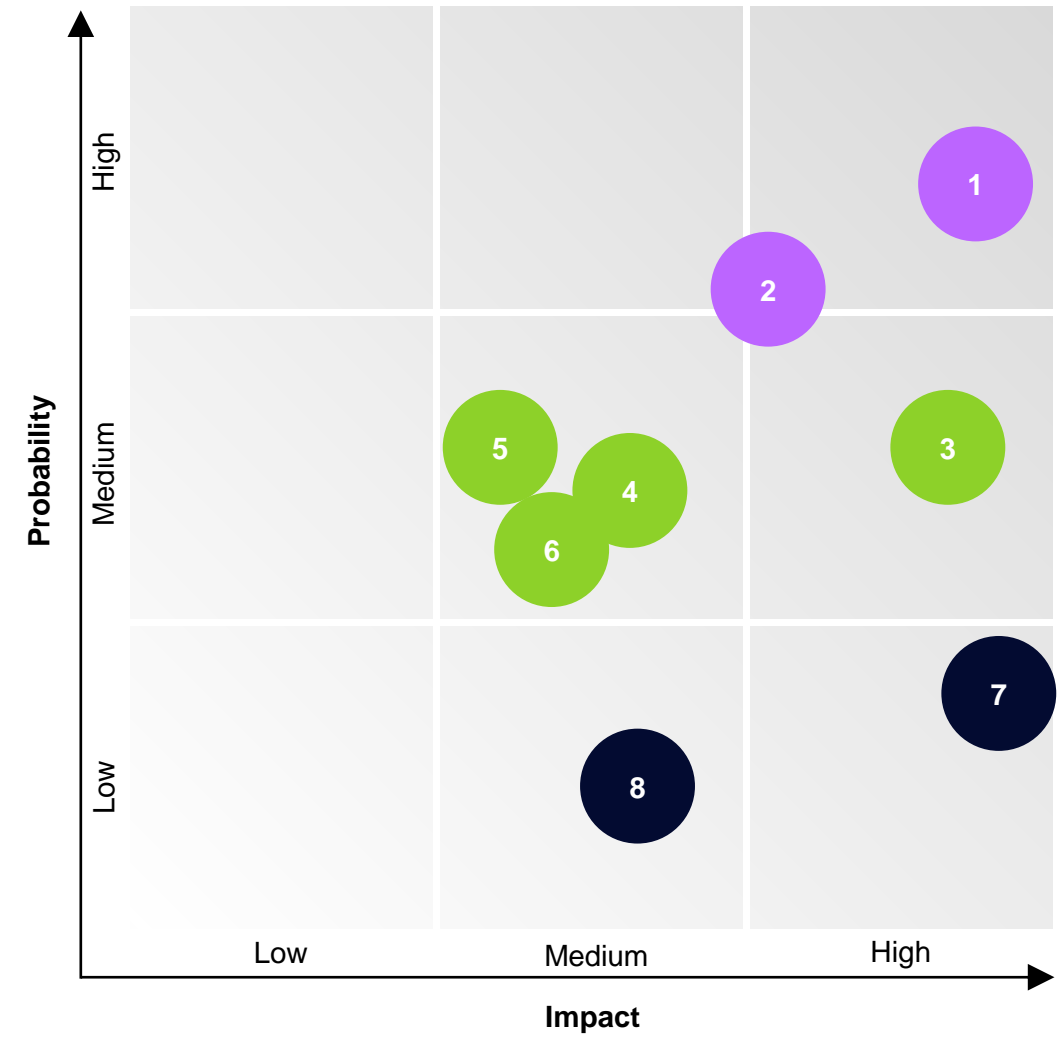switch to other apps (-)

Threat of new entrants - MEDIUM

(+) Strong brand loyalty makes it harder for new
players to attract users
(-) Open-source AI models lower the barrier for
new competitors
(-) Well-funded startups with strong marketing
can enter the market

Risk Analysis

Key Risks affecting the business

1 — **Failure to add new users or keep existing users** could significantly harm revenue and long-term growth.

2 — **Insufficient engagement or failure to convert** free users to paid subscribers could result in reduced revenue growth.

3 — **High competition and low switching costs** mean that users can easily switch to alternative platforms, impacting Duolingo's market share.

4 — **Future Uncertainty:** limited operating history and unpredictable operating metrics make it challenging to reliably project future performance.

5 — **Rising operational costs**, including investments in new products and technology, could reduce profitability if returns are not realized.

6 — **User metrics challenge:** dependence on internal user metrics, which may be prone to inaccuracies, could affect decision-making.

7 — **Heavy reliance on third-party platforms** like Google Play and Apple's App Store for user acquisition and revenue collection introduces risk if platform policies or conditions change

8 — **Dependence on third-party hosting providers (**AWS and Google Cloud) for infrastructure may lead to operational disruptions in case of failure

Operations (O) – Technical (T) – Financial (F) – Legislation (L) – Workforce (W)

App Platforms

User reviews and experiences

Platforms

App store
- 4.7/5
- Editors' Choice Award
- 55k ratings
- No. 1 in Education

Google Play
- 4.8/5
- 30M reviews
- Editors' Choice Recognition

X
- @duolingo
- 914.1 thousand followers
- Known for witty and viral tweets
- Engages with followers through humor and memes

Reddit
- r/duolingo
- 403 thousand members
- Top 1% of subreddits
- Memes and funny content with characters
- Sharing of achievements in leagues

Reviews

1 **Gamification keeps users motivated**
The use of streaks, leaderboards, rewards, and bite-sized lesson formats is consistently praised for making the learning process engaging.

2 **Great for Beginners:**
The app's interactive exercises, visuals and simplified content make in an excellent starting point for those new to language learning.

3 **Best learning App:**
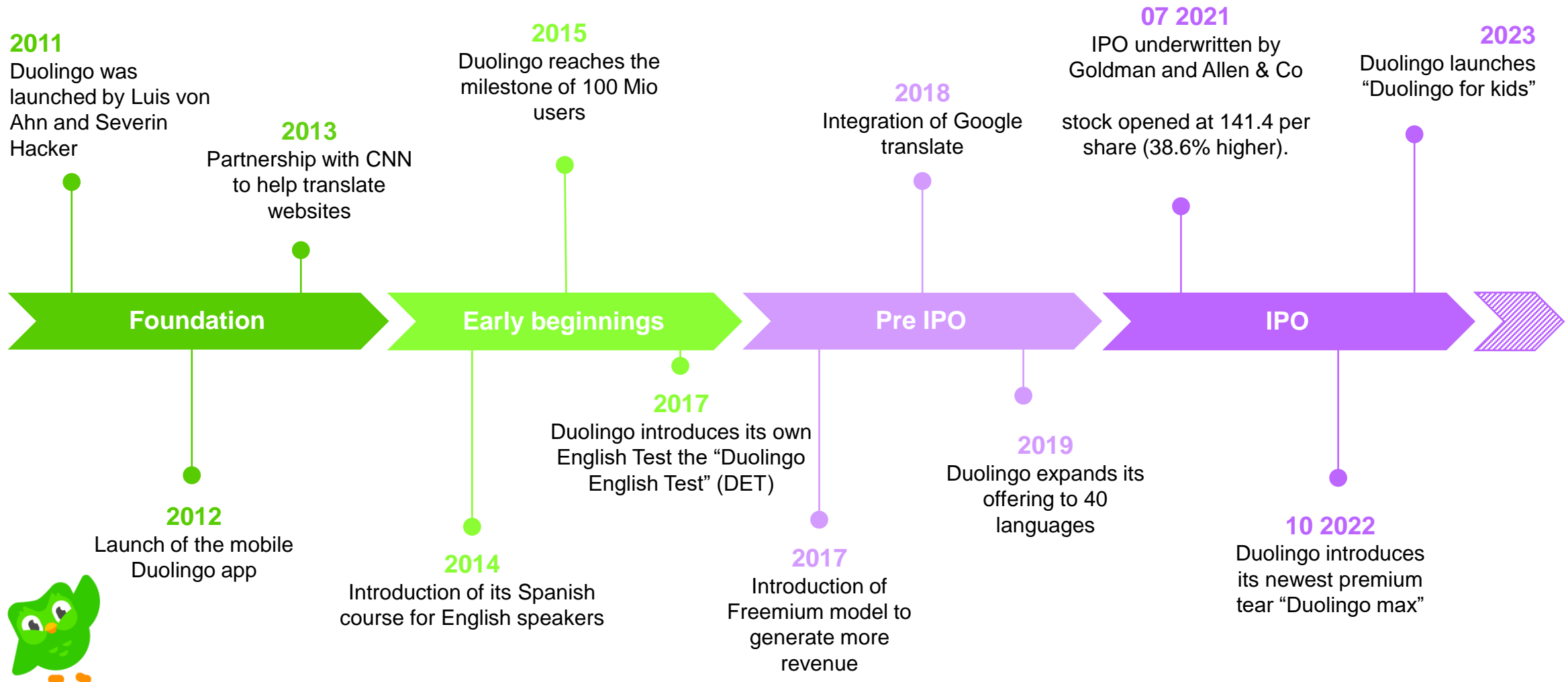Users often describe it as the best learning app for languages, especially for Japanese and Spanish.

1 **Dislike of new changes:**
Recent changes requiring users to follow a fixed lesson path and the introduction of the heart system frustrate long-term users.

2 **Not suitable for advanced learners:**
Users find the app lacks depth for intermediate or advanced learning, particularly in grammar explanations and real-world application.

3 **Monetization concerns:**
Ads disrupt the experience of free users, and the high cost of the premium subscription has been a popular point of criticism among users.

Appendix: Duolingo Company History

Duolingo experienced tremendous growth since its founding

2011
Duolingo was launched by Luis von Ahn and Severin Hacker

2012
Launch of the mobile Duolingo app

2013
Partnership with CNN to help translate websites

2014
Introduction of its Spanish course for English speakers

2015
Duolingo reaches the milestone of 100 Mio users

2017
Duolingo introduces its own English Test the "Duolingo English Test" (DET)

2017
Introduction of Freemium model to generate more revenue

2018
Integration of Google translate

2019
Duolingo expands its offering to 40 languages

07 2021
IPO underwritten by Goldman and Allen & Co

stock opened at 141.4 per share (38.6% higher).

10 2022
Duolingo introduces its newest premium tear "Duolingo max"

2023
Duolingo launches "Duolingo for kids"

Foundation **Early beginnings** **Pre IPO** **IPO**

Sell-side Sentiment

Analysts are mostly very confident in Duolingo

Date	Firm	Target	Upside/Downside	Rating
01/24/2025	Jefferies	$370	11.69%	Hold
12/19/2024	Needham	$385	14.57%	Buy
12/12/2024	J.P.Morgan	$400	19.03%	Overweight
12/11/2024	BofA SECURITIES	$375	11.59%	Neutral
12/05/2024	Scotiabank	$425	28.29%	Sector Outperform
11/14/2024	UBS	$408	23.16%	Buy
11/07/2024	D|A DAVIDSON INVESTMENT BANKING	$350	5.65%	Buy
11/07/2024	Goldman Sachs	$275	-16.99%	Neutral
11/07/2024	BARCLAYS	$295	-10.95%	Equal- weight
11/07/2024	PIPER|SANDLER	$351	5.96%	Overweight

Operating Model P&L

Income Statement	FY 2020A	FY 2021A	FY 2022A	FY 2023A	FY 2024FC	FY 2025E	FY 2026E	FY 2027E	FY 2028E	FY 2029E	FY 2030E	FY 2031E	FY 2032E
in $ thousand	31 Dez 2020	31 Dez 2021	31 Dez 2022	31 Dez 2023	31 Dez 2024	31 Dez 2025	31 Dez 2026	31 Dez 2027	31 Dez 2028	31 Dez 2029	31 Dez 2030	31 Dez 2031	31 Dez 2032
Net Sales	**161,696.0**	**250,772.0**	**369,495.0**	**531,109.0**	**746,507.4**	**990,259.5**	**1,279,776.7**	**1,599,820.5**	**1,929,981.4**	**2,159,767.1**	**2,415,792.0**	**2,596,146.0**	**2,790,387.5**
Revenue Growth %	*N/A*	*55.1%*	*47.3%*	*43.7%*	*40.6%*	*32.7%*	*29.2%*	*25.0%*	*20.6%*	*11.9%*	*11.9%*	*7.5%*	*7.5%*
Cost of revenues	(45,987.0)	(69,186.0)	(99,431.0)	(142,105.0)	(177,865.2)	(235,253.7)	(300,224.1)	(371,556.6)	(444,265.7)	(500,545.7)	(547,904.4)	(585,453.0)	(615,264.3)
Gross Profit	**115,709.0**	**181,586.0**	**270,064.0**	**389,004.0**	**568,642.2**	**755,005.8**	**979,552.6**	**1,228,264.0**	**1,485,715.7**	**1,659,221.4**	**1,867,887.6**	**2,010,693.0**	**2,175,123.3**
Gross Profit Margin %	*71.6%*	*72.4%*	*73.1%*	*73.2%*	*76.2%*	*76.2%*	*76.5%*	*76.8%*	*77.0%*	*76.8%*	*77.3%*	*77.4%*	*78.0%*
Research and development	(53,024.0)	(103,833.0)	(150,444.0)	(194,352.0)	(228,383.6)	(278,199.7)	(327,541.2)	(369,456.5)	(397,453.0)	(390,780.0)	(376,709.4)	(339,929.4)	(295,603.0)
Sales and marketing	(34,983.0)	(59,170.0)	(66,967.0)	(75,788.0)	(102,792.3)	(128,929.4)	(157,025.6)	(184,295.5)	(207,854.4)	(216,403.6)	(223,938.2)	(221,185.5)	(216,806.5)
General and administrative	(43,713.0)	(78,590.0)	(117,848.0)	(132,123.0)	(170,777.1)	(206,734.6)	(241,581.1)	(269,998.7)	(325,719.4)	(364,499.9)	(407,708.7)	(438,146.7)	(470,928.5)
Other (expense) income, net	72.0	30.0	(676.0)	(55.0)	(4,148.1)	(4,382.9)	(4,745.1)	(5,231.3)	(5,742.0)	(5,792.2)	(5,833.6)	(5,904.9)	(5,982.9)
EBIT	**(15,939.0)**	**(59,977.0)**	**(65,871.0)**	**(13,314.0)**	**62,541.1**	**136,759.1**	**248,659.8**	**399,282.0**	**548,946.9**	**681,745.7**	**853,697.6**	**1,005,526.4**	**1,185,802.3**
EBIT Margin %	*(9.9%)*	*(23.9%)*	*(17.8%)*	*(2.5%)*	*8.4%*	*13.8%*	*19.4%*	*25.0%*	*28.4%*	*31.6%*	*35.3%*	*38.7%*	*42.5%*
Interest Income	231.0	19.0	7,235.0	31,091.0	32,147.2	35,009.3	40,750.0	53,508.7	72,221.8	97,256.2	124,545.8	158,449.6	197,635.4
EBT	**(15,708.0)**	**(59,958.0)**	**(58,636.0)**	**17,777.0**	**94,688.3**	**171,768.4**	**289,409.7**	**452,790.7**	**621,168.7**	**779,001.9**	**978,243.4**	**1,163,976.0**	**1,383,437.7**
Provision for income taxes	(68.0)	(177.0)	(938.0)	(1,710.0)	(19,884.5)	(36,071.4)	(60,776.0)	(95,086.0)	(130,445.4)	(163,590.4)	(205,431.1)	(244,435.0)	(290,521.9)
Net Income	**(15,776.0)**	**(60,135.0)**	**(59,574.0)**	**16,067.0**	**74,803.8**	**135,697.0**	**228,633.7**	**357,704.6**	**490,723.3**	**615,411.5**	**772,812.3**	**919,541.0**	**1,092,915.8**
Profit Margin %	*(9.8%)*	*(24.0%)*	*(16.1%)*	*3.0%*	*10.0%*	*13.7%*	*17.9%*	*22.4%*	*25.4%*	*28.5%*	*32.0%*	*35.4%*	*39.2%*
D&A	2,256.0	2,726.0	4,870.0	7,095.0	8,160.3	9,423.5	11,056.0	13,256.7	16,281.9	17,884.2	21,191.5	25,759.0	30,668.2
EBITDA	**(13,683.0)**	**(57,251.0)**	**(61,001.0)**	**(6,219.0)**	**70,701.4**	**146,182.5**	**259,715.7**	**412,538.7**	**565,228.8**	**699,629.9**	**874,889.1**	**1,031,285.4**	**1,216,470.6**
Stock based compensation	17,031.0	42,457.0	75,822.0	99,226.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adjusted EBITDA	**3,348.0**	**(14,794.0)**	**14,821.0**	**93,007.0**	**70,701.4**	**146,182.5**	**259,715.7**	**412,538.7**	**565,228.8**	**699,629.9**	**874,889.1**	**1,031,285.4**	**1,216,470.6**
Adj. EBITDA Margin %	*2.1%*	*(5.9%)*	*4.0%*	*17.5%*	*9.5%*	*14.8%*	*20.3%*	*25.8%*	*29.3%*	*32.4%*	*36.2%*	*39.7%*	*43.6%*

Appendix

Operating Model Balance sheet

Balance Sheet	FY 2020A	FY 2021A	FY 2022A	FY 2023A	FY 2024FC	FY 2025E	FY 2026E	FY 2027E	FY 2028E	FY 2029E	FY 2030E	FY 2031E	FY 2032E
in $ thousand	31 Dez 2020	31 Dez 2021	31 Dez 2022	31 Dez 2023	31 Dez 2024	31 Dez 2025	31 Dez 2026	31 Dez 2027	31 Dez 2028	31 Dez 2029	31 Dez 2030	31 Dez 2031	31 Dez 2032
Current Assets													
Cash and cash equivalents	120,490.0	553,922.0	608,180.0	747,610.0	875,127.5	1,072,245.8	1,371,882.2	1,805,395.4	2,371,938.0	3,037,526.1	3,864,436.5	4,820,176.0	5,953,007.3
Short-term investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Accounts receivable	20,450.0	33,163.0	46,728.0	88,975.0	102,261.3	135,652.0	175,311.9	219,153.5	264,381.0	295,858.5	330,930.4	355,636.4	382,244.9
Deferred cost of revenues	13,585.0	24,219.0	35,041.0	53,931.0	75,803.4	100,555.0	129,953.8	162,452.4	195,978.3	219,311.7	245,309.5	263,623.4	283,347.5
Prepaid expenses and other current assets	3,855.0	7,967.0	7,234.0	7,282.0	14,316.6	18,991.3	24,543.7	30,681.5	37,013.3	41,420.2	46,330.3	49,789.1	53,514.3
Total Current Assets	**158,380.0**	**619,271.0**	**697,183.0**	**897,798.0**	**1,067,508.8**	**1,327,444.1**	**1,701,691.5**	**2,217,682.8**	**2,869,310.7**	**3,594,116.4**	**4,487,006.7**	**5,489,224.9**	**6,672,114.0**
Non-Current Assets													
Operating lease right-of-use assets	8,073.0	28,369.0	22,508.0	19,103.0	20,600.4	20,940.2	21,794.4	23,155.4	21,193.4	19,240.3	17,296.2	15,259.0	13,122.2
Intangible assets, net	2,296.0	4,566.0	8,497.0	15,995.0	20,426.9	23,632.4	27,968.6	34,865.2	42,859.0	50,963.3	59,183.2	66,768.9	73,676.3
Long-term investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property and equipment, net	6,428.0	8,211.0	12,969.0	11,792.0	21,595.0	18,868.6	16,274.2	13,719.0	12,603.0	12,531.7	12,109.9	12,515.0	11,214.4
Goodwill	0.0	0.0	4,050.0	4,050.0	4,050.0	4,050.0	4,050.0	4,050.0	4,050.0	4,050.0	4,050.0	4,050.0	4,050.0
Restricted cash	0.0	0.0	0.0	2,735.0	2,735.0	2,735.0	2,735.0	2,735.0	2,735.0	2,735.0	2,735.0	2,735.0	2,735.0
Deferred tax assets, net	0.0	0.0	633.0	766.0	766.0	766.0	766.0	766.0	766.0	766.0	766.0	766.0	766.0
Other assets	562.0	894.0	1,507.0	1,718.0	2,414.8	3,203.2	4,139.7	5,175.0	6,243.0	6,986.3	7,814.5	8,397.9	9,026.2
Total Non-Current Assets	**17,359.0**	**42,040.0**	**50,164.0**	**56,159.0**	**72,588.0**	**74,195.4**	**77,727.9**	**84,465.5**	**90,449.4**	**97,272.7**	**103,954.8**	**110,491.9**	**114,590.2**
Total Assets	**175,739.0**	**661,311.0**	**747,347.0**	**953,957.0**	**1,140,096.8**	**1,401,639.5**	**1,779,419.5**	**2,302,148.3**	**2,959,760.0**	**3,691,389.1**	**4,590,961.4**	**5,599,716.8**	**6,786,704.2**
Current Liabilities													
Accounts payable	2,196.0	7,818.0	1,177.0	2,447.0	2,923.8	3,867.2	4,935.2	6,107.8	7,303.0	8,228.1	9,006.6	9,623.9	10,113.9
Deferred revenues	54,792.0	98,267.0	157,550.0	249,192.0	350,255.2	464,621.6	600,460.8	750,622.7	905,531.5	1,013,345.1	1,133,469.9	1,218,090.5	1,309,227.0
Income tax payable	68.0	113.0	1,069.0	792.0	792.0	792.0	792.0	792.0	792.0	792.0	792.0	792.0	792.0
Accrued expenses and other current liabilities	8,634.0	12,933.0	21,970.0	20,987.0	31,187.3	41,250.0	52,642.0	65,149.6	77,898.6	87,766.9	96,070.9	102,654.8	107,882.0
Total Current Liabilites	**65,690.0**	**119,131.0**	**181,766.0**	**273,418.0**	**385,158.3**	**510,530.8**	**658,830.0**	**822,672.1**	**991,525.1**	**1,110,132.1**	**1,239,339.4**	**1,331,161.1**	**1,428,014.9**
Non-Current Liabilities													
Long-term obligation under operating leases	8,131.0	29,124.0	23,503.0	25,038.0	24,733.5	25,224.1	26,088.4	27,287.6	25,340.4	22,968.4	20,538.6	17,948.7	15,184.2
Deferred tax liabilities, net	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Non-Current Liabilities	**8,131.0**	**29,124.0**	**23,503.0**	**25,038.0**	**24,733.5**	**25,224.1**	**26,088.4**	**27,287.6**	**25,340.4**	**22,968.4**	**20,538.6**	**17,948.7**	**15,184.2**
Shareholders' Equity													
Convertible preferred stock	182,609.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Common stock (Class A & Class B)	1.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Additional paid-in capital	30,087.0	683,966.0	772,562.0	869,918.0	869,918.0	869,918.0	869,918.0	869,918.0	869,918.0	869,918.0	869,918.0	869,918.0	869,918.0
Retained earnings / (accumulated lossess)	(110,779.0)	(170,914.0)	(230,488.0)	(214,421.0)	(139,716.9)	(4,037.4)	224,579.1	582,266.5	1,072,972.5	1,688,366.6	2,461,161.4	3,380,684.9	4,473,583.1
Total Shareholders' Equity	**101,918.0**	**513,056.0**	**542,078.0**	**655,501.0**	**730,205.1**	**865,884.6**	**1,094,501.1**	**1,452,188.5**	**1,942,894.5**	**2,558,288.6**	**3,331,083.4**	**4,250,606.9**	**5,343,505.1**
Total Liabilities and Equity	**175,739.0**	**661,311.0**	**747,347.0**	**953,957.0**	**1,140,096.8**	**1,401,639.5**	**1,779,419.5**	**2,302,148.3**	**2,959,760.0**	**3,691,389.1**	**4,590,961.4**	**5,599,716.8**	**6,786,704.2**

Operating Model Cash Flow statement

Statement of Cashflows	FY 202A	FY 2021A	FY 2022A	FY 2023A	FY 2024FC	FY 2025E	FY 2026E	FY 2027E	FY 2028E	FY 2029E	FY 2030E	FY 2031E	FY 2032E
in $ thousand	31 Dez 2020	31 Dez 2021	31 Dez 2022	31 Dez 2023	31 Dez 2024	31 Dez 2025	31 Dez 2026	31 Dez 2027	31 Dez 2028	31 Dez 2029	31 Dez 2030	31 Dez 2031	31 Dez 2032
EBT	**(15,708.0)**	**(59,958.0)**	**(58,636.0)**	**17,777.0**	**94,688.3**	**171,768.4**	**289,409.7**	**452,790.7**	**621,168.7**	**779,001.9**	**978,243.4**	**1,163,976.0**	**1,383,437.7**
+ Depreciation & amortization	2,256.0	2,726.0	4,870.0	7,095.0	10,490.2	12,043.3	14,030.0	16,684.0	20,162.7	21,985.8	25,540.2	30,381.2	35,584.3
+ Stock-based compensation (SBC)	17,031.0	42,457.0	75,822.0	99,226.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Operating lease payments	0.0	0.0	0.0	0.0	(4,126.2)	(2,470.2)	(2,966.3)	(3,592.4)	(3,870.2)	(4,525.7)	(4,840.1)	(5,181.1)	(5,550.6)
Cash Earnings	**3,579.0**	**(14,775.0)**	**22,056.0**	**124,098.0**	**101,052.3**	**181,341.4**	**300,473.4**	**465,882.3**	**637,461.2**	**796,462.1**	**998,943.5**	**1,189,176.0**	**1,413,471.4**
Change in NWC	14,273.0	25,982.0	38,981.0	30,467.0	69,547.0	62,555.5	73,688.1	81,364.1	83,767.7	59,389.3	63,227.5	45,343.0	46,796.1
Cash from Working Capital	**14,273.0**	**25,982.0**	**38,981.0**	**30,467.0**	**69,547.0**	**62,555.5**	**73,688.1**	**81,364.1**	**83,767.7**	**59,389.3**	**63,227.5**	**45,343.0**	**46,796.1**
Deferred tax assets		0.0	(633.0)	(133.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other assets		(332.0)	(613.0)	(211.0)	(696.8)	(788.5)	(936.5)	(1,035.3)	(1,068.0)	(743.3)	(828.2)	(583.4)	(628.3)
Deferred tax liabilities		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-current Operating CF Items	**0.0**	**(332.0)**	**(1,246.0)**	**(344.0)**	**(696.8)**	**(788.5)**	**(936.5)**	**(1,035.3)**	**(1,068.0)**	**(743.3)**	**(828.2)**	**(583.4)**	**(628.3)**
- Income Taxes paid	(68.0)	(177.0)	(938.0)	(1,710.0)	(19,884.5)	(36,071.4)	(60,776.0)	(95,086.0)	(130,445.4)	(163,590.4)	(205,431.1)	(244,435.0)	(290,521.9)
Net Cash Flow from Operating Activities	**17,784.0**	**10,698.0**	**58,853.0**	**152,511.0**	**150,018.0**	**207,037.1**	**312,449.0**	**451,125.1**	**589,715.6**	**691,517.7**	**855,911.8**	**989,500.6**	**1,169,117.2**
Capitalized software expense and purchases of intangible assets	(638.0)	(2,620.0)	(4,562.0)	(10,493.0)	(7,465.1)	(6,931.8)	(8,958.4)	(12,798.6)	(15,439.9)	(17,278.1)	(19,326.3)	(20,769.2)	(22,323.1)
Purchase of property and equipment	(3,376.0)	(3,586.0)	(5,562.0)	(3,191.0)	(14,930.1)	(2,970.8)	(3,839.3)	(4,799.5)	(7,719.9)	(8,639.1)	(9,663.2)	(12,980.7)	(13,951.9)
Proceeds from sale of software	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acquisition, net cash acquired	0.0	0.0	(4,050.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Cash Flow from Investing Activities	**(4,014.0)**	**(6,206.0)**	**(14,174.0)**	**(13,584.0)**	**(22,395.2)**	**(9,902.6)**	**(12,797.8)**	**(17,598.0)**	**(23,159.8)**	**(25,917.2)**	**(28,989.5)**	**(33,749.9)**	**(36,275.0)**
Proceeds from borrowings	0.0	426,191.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Repayments of borrowings	44,923.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proceeds from exercise of stock options	2,030.0	12,480.0	14,776.0	13,617.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payments of lease liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchase of treasury shares	0.0	(7,335.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dividends paid	0.0	(868.0)	0.0	(11,482.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Cash Flow from Financing Activities	**46,953.0**	**430,468.0**	**14,776.0**	**2,135.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Net change in cash and cash equivalents	**60,723.0**	**434,960.0**	**59,455.0**	**141,062.0**	**127,622.8**	**197,134.5**	**299,651.2**	**433,527.1**	**566,555.8**	**665,600.5**	**826,922.3**	**955,750.7**	**1,132,842.2**

DCF

DCF Valuation	FY 2022A	FY 2023A	FY 2024FC	FY 2025E	FY 2026E	FY 2027E	FY 2028E	FY 2029E	FY 2030E	FY 2031E	FY 2032E	TV
January 29, 2025	Dec 31, 2022	Dec 31, 2023	Dec 31, 2024	Dec 31, 2025	Dec 31, 2026	Dec 31, 2027	Dec 31, 2028	Dec 31, 2029	Dec 31, 2030	Dec 31, 2031	Dec 31, 2032	Dec 31, 2028
in $ thousand												
Net Sales	369,495.0	531,109.0	746,507.4	990,259.5	1,279,776.7	1,599,820.5	1,929,981.4	2,159,767.1	2,415,792.0	2,596,146.0	2,790,387.5	
Growth YoY (%)	n.a.	43.7%	40.6%	32.7%	29.2%	25.0%	20.6%	11.9%	11.9%	7.5%	7.5%	
Gross Profit	270,064.0	389,004.0	568,642.2	755,005.8	979,552.6	1,228,264.0	1,485,715.7	1,659,221.4	1,867,887.6	2,010,693.0	2,175,123.3	
Gross Profit Margin (%)	73.1%	73.2%	76.2%	76.2%	76.5%	76.8%	77.0%	76.8%	77.3%	77.4%	78.0%	
EBITDA	(61,001.0)	(6,219.0)	70,701.4	146,182.5	259,715.7	412,538.7	565,228.8	699,629.9	874,889.1	1,031,285.4	1,216,470.6	
EBITDA Margin (%)	(16.5%)	(1.2%)	9.5%	14.8%	20.3%	25.8%	29.3%	32.4%	36.2%	39.7%	43.6%	
EBIT	(65,871.0)	(13,314.0)	62,541.1	136,759.1	248,659.8	399,282.0	548,946.9	681,745.7	853,697.0	1,005,526.4	1,185,802.3	
EBIT Margin (%)	(17.8%)	(2.5%)	8.4%	13.8%	19.4%	25.0%	28.4%	31.6%	35.3%	38.7%	42.5%	
- Taxes	13,832.9	2,795.9	(13,133.6)	(28,719.4)	(52,218.5)	(83,849.2)	(115,278.8)	(143,166.6)	(179,276.5)	(211,160.5)	(249,018.5)	
Tax rate (%)	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	
NOPLAT	(52,038.1)	(10,518.1)	49,407.5	108,039.7	196,441.2	315,432.8	433,668.0	538,579.1	674,421.1	794,365.8	936,783.8	
+ Depreciation & Amort.	4,870.0	7,095.0	10,490.2	12,043.3	14,030.0	16,684.0	20,162.7	21,985.8	25,540.2	30,381.2	35,584.3	
- Change in NWC	38,981.0	30,467.0	69,547.0	62,555.5	73,688.1	81,364.1	83,767.7	59,389.3	63,227.5	45,343.0	46,796.1	
- Capital Expenditures	(10,124.0)	(13,684.0)	(22,395.2)	(9,902.6)	(12,797.8)	(17,598.0)	(23,159.8)	(25,917.2)	(28,989.5)	(33,749.9)	(36,275.0)	g = 3.0%
Unlevered FCF	(18,311.1)	13,359.9	107,049.5	172,735.9	271,361.6	395,882.8	514,438.7	594,037.1	734,199.3	836,340.1	982,889.1	13,928,175.0
in % of Net Sales	(5.0%)	2.5%	14.3%	17.4%	21.2%	24.7%	26.7%	27.5%	30.4%	32.2%	35.2%	
Reinvestment Rate, % NOPLAT	64.8%	227.0%	(116.7%)	(59.9%)	(38.1%)	(25.5%)	(18.6%)	(10.3%)	(8.9%)	(5.3%)	(4.9%)	
Partial Period Adjustment			0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adjusted UFCFs			0.0	172,735.9	271,361.6	395,882.8	514,438.7	594,037.1	734,199.3	836,340.1	982,889.1	13,928,175.0
WACC (%)			10.27%	10.27%	10.27%	10.27%	10.27%	10.27%	10.27%	10.27%	10.27%	10.27%
Periods for Discounting			0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	8.00
Discount Factor			1.00	0.91	0.82	0.75	0.68	0.61	0.56	0.50	0.46	0.46
PV of Adjusted UFCFs			0.0	156,650.2	223,174.8	295,264.8	347,958.2	364,380.6	408,417.3	421,911.5	449,667.3	6,372,077.2

PV Sum of Adjusted UFCFs	29.5%	2,667,424.7						TV g			
PV of Terminal Value	70.5%	6,372,077.2									
Enterprise Value (EV)	100.0%	9,039,501.9	WACC	2.0%	2.3%	2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%
- Total Debt												
+ Cash & ST Investments		880,763.0	9.27%	237.81	243.70	250.02	256.83	264.18	272.13	280.78	290.22	300.54
= Net Cash		880,763.0										
- Preferred Shares			9.77%	221.23	226.21	231.53	237.23	243.35	249.94	257.06	264.77	273.15
- Non-controlling Interests												
- Long-Term Provisions			10.27%	206.71	210.96	215.48	220.31	225.46	230.98	236.91	243.30	250.19
Implied Equity Value		9,920,264.9										
/ Shares Outstanding		44000.0	10.77%	193.91	197.56	201.43	205.55	209.93	214.61	219.60	224.95	230.70
Implied Price per Share		$ 225.46	11.27%	182.54	185.70	189.04	192.58	196.34	200.33	204.57	209.10	213.94

Appendix

WACC

Cost of Equity		
Risk-free Rate	4.63%	→ 10y US treasury bond
Levered Beta (β$_{UL}$)	0.90	→ Bloomberg adjusted Capital IQ beta
Implied D/E Ratio	0.00%	
Beta	0.90	
Market Risk Premium	5.13%	→ Average expected Market return (MSCI World)
Country Risk Premium (CoE)	1.00%	
Inflation Differential	0.00%	
Size Premium	0.00%	
Cost of Equity (CoE)	**10.27%**	

WACC Calculation	
Net Debt (EoP)	0.0
Market Cap as of 29.01.2025	14,453.0
Implied EV	**14,453.0**
Equity / Value *(capped at 100%)*	100.0%
Debt / Value	0.0%
WACC (Modigliani Miller)	**10.27%**

Disclaimer