BofA SECURITIES

Internet/e-Commerce

Let's Chat AI – Post(ings) at the intersection of Internet and AI

Industry Overview

04 March 2024

Equity
United States

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Double issue: January & February Internet AI Roundup

AI capabilities and sentiment has become an important driver for an Internet company stock performance. In our monthly AI Internet roundup, we review major developments at intersection of Consumer Internet & AI, which include: 1) Google facing Gemini concerns, 2) OpenAI developing a Web search product, 3) Meta's AI product roadmap, & 4) Amazon testing AI tool to improve shopping experience.

Gemini ramp takes a step back w/ image generation pause

Google continued the ramp of Gemini in Feb with the launches of Gemini Ultra & image generation features. However, issues with Gemini's people image generation had wide press coverage (now on pause), and early optimism regarding Gemini's potential has turned into concerns on functionality, reliability, & a biased user experience. *Our Take: Disappointing, as Google should be leading consumer adoption of AI (not following), and Gemini setback has rekindled last year's AI stock overhang. We still see strong AI potential at Google, with image generation relaunch, potential for 1Q search beat (major Online media companies guided to 1Q acceleration) and Google I/O as potential catalysts.*

OpenAI developing a web search product

Per reports, OpenAI is developing a web search product. The search service would be partly powered by Bing and could be a new feature for ChatGPT, or a potentially separate app altogether. The new search product is intended be faster than ChatGPT, without losing its summarizing abilities. *Our Take: Bing is already integrating AI into search results, so we will look for more details on improvements with OpenAI search. We continue to see Google's search distribution advantages as a strong competitive moat.*

Meta provides AI roadmap & adds Broadcom CEO to board

On 4Q'23 call, Meta highlighted plans to build: 1) advanced AI products, 2) custom in house AI chips, 3) new category of personal computing devices that allows frictionless interaction with AIs, & 4) open-source products to drive Meta ecosystem adoption. In Feb, Meta also added Broadcom CEO to its board, which should help with hardware development. *Our Take: We believe Meta's growing AI focus could lead to positive product surprises and advertising revenue upside (ad creative, targeting and measurement). Meta remains the top AI play in large-cap Internet (Amazon #2 for AWS).*

Amazon launches Rufus to improve shopping experience

Amazon is testing an AI tool (Rufus) that answers shopper questions by collecting information from product reviews & metadata. Rufus can help users shop by product category, find the best recommendation, and answer questions about specific products.

What's coming – potential AI catalysts

1) Amazon & Meta are developing new LLMs expected to be more powerful than ChatGPT-4, 2) Pinterest is developing an automated AI/ML driven ad-tech solution (similar to Advantage+ & PMax), 3) OpenAI is building a new web search product, 4) Airbnb is building a new AI interface, and 5) EU developing new LLM regulations.

AI: Artificial Intelligence
SGE: Search Generative Experience
ROAS: Return on Ad Spend
VC: Venture Capitalist
LLM: Large Language Model
ML: Machine Learnings
IG: Instagram
SFV: Short Form Video
Int'l: International
EU: European Union
CAGR: Compound Annual Growth Rate
GMS: Gross merchandise sales
GPU: Graphic Processing Unit
AR: Augmented Reality/Virtual Reality

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Refer to important disclosures on page 10 to 12. Analyst Certification on page 8. Price Objective Basis/Risk on page 7.
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Online Media

Google Gemini rollout continues

Google renamed its AI assistant from Bard to Gemini and introduced a premium LLM version called Gemini Advanced. Gemini Advanced excels in understanding and reasoning across modalities like text, images, audio, video, and code and outperformed human experts on the MMLU benchmark, showcasing impressive knowledge and problem-solving abilities. Gemini Advanced is available through a $20/month Google One tier, including 2TB storage and access to Gemini (Bard rebranded) in Google Workspace apps.

Google pauses Gemini image generation

Also in early Feb, Alphabet launched a new image generation feature for the Gemini conversational app (formerly known as Bard), which included the ability to create images of people. Image generation lead to significant negative press on inaccurate images, and in a blogpost, Google acknowledged that some of the images generated were inaccurate and even offensive. In late Feb, Google decided to pause Gemini's image generation of people to improve the accuracy of its responses. ***Our Take: Disappointing outcome as Google should be leading consumer adoption of AI (not following), and Gemini setback has rekindled last year's AI overhang on the stock. While we expect ongoing concerns on Google's execution and bias with image generation, we still think: 1) AI as very early and all LLMs are facing accuracy and hallucination challenges, 2) Google has best combination of assets and developers to lead consumer adoption of AI, and 3) Google has a strong track record of balancing conservative and liberal views in query results and will be able to navigate AI bias concerns. We see image generation relaunch, potential for 1Q search beat (major Online media companies guided to 1Q acceleration, but no acceleration expected in Street 1Q search estimates) and Google I/O as potential catalysts to reduce the AI overhang. Despite issues with image generation, Google has made significant progress with AI that we outline below.***

Google expands access to Gemini models for Cloud Vertex AI customers

In Feb, Google expanded access to its Gemini models to customers with new updates and expanded availability. The company noted Gemini 1.0 Pro was generally available to all Vertex AI customers and Gemini 1.0 Ultra, a more sophisticated and capable model for complex tasks was generally available on Vertex AI for customers via allowlist. The company also introduced a new generation of Gemini models (Gemini 1.5), which deliver improved performance on a more efficient architecture. Google also highlighted that customers like Samsung and Palo Alto Networks have been building sophisticated AI agents with Gemini models in Vertex AI.

Google launches a new family of open LLMs, Gemma

Google launched a new family of lightweight open LLMs, Gemma, which is built from the technology that powers Gemini models. To help developers to better leverage the new models, Google provides support including a Generative AI Toolkit, and optimization across multiple AI hardware platforms. The pre-trained and instruction tuned Gemma models can run on laptops, workstations, or Google Cloud with deployment on Vertex AI, and Google Kubernetes Engine (GKE).

Gemini powers Google Assistant

Google with give users access to Gemini powered Google Assistant through the new Gemini app for Android devices and Google app on IOS, though Google Assistant devices including Nest and Home speakers won't be updated with Gemini for now. The Gemini powered Google Assistant can accept commands in text, images and videos, and carry out generative tasks like answering questions regarding the articles that users are reading.

Google integrates Gen AI to Google Map

With the new Gen AI integration, users can better discover places on Google Map. The LLMs integrated with Google Map will analyze detailed information about more than 250mn places and insights from 300mn contributors to recommend where the users can go to. For example, users can send the prompt "activities for rainy day", and Google Map will show relevant places on map.

Google's Circle to search (AI)

In Jan, Google released the 'Circle to Search' feature where users can circle, highlight, scribe, or tap the element they are interested in, and Google will show related search results. The users could ask follow-up questions on the selected elements through the 'Multisearch' feature. Circle to Search feature will be available on the Pixel 8, Pixel 8 Pro, and the Samsung Galaxy S24 series soon.

Meta CEO shares more on AI goals for the company

On 4Q'23 earnings call, Meta's CEO highlighted plans to build: 1) advanced AI products and services for users, creators, and businesses, 2) custom in house developed AI chips, 3) new category of personal computing devices that allows frictionlessly interactions with AIs, and 4) focus on building general intelligence & open-source products to drive Meta ecosystem adoption. *Our Take: We believe Meta's growing AI focus could lead to positive product surprises in coming quarters & drive multiple expansion if the company can evolve into a content and business services platform (such as for content creation, branding and marketing, customer service via messaging. Meta remains the top AI play in large-cap Internet (Amazon #2 for AWS).*

Meta adds Broadcom CEO to Board

In February, Meta added Broadcom CEO, Hock Tan to its board of directors. Meta CEO said, "As we focus on building AGI (Artificial general intelligence), having directors with deep expertise in silicon and energy infrastructure will help us execute our long-term vision." Broadcom is one of the Meta's key partners for both chips and data center designs and per press reports, Meta had spent $500mn on components and design services from Broadcom in 2023. *Our Take: As race to develop leading Gen-AI capabilities intensifies & given industry-wide AI chips shortage/inflation, we think having Board expertise from a key chipmaker could be a good fit for Meta's long-term AI goals.*

Meta training Llama 3 & plans to increase investments in hardware

In January, CEO Mark Zuckerberg provided an overview of his AI plans for Meta in a post on Threads. He highlighted that Meta will be increasing its investment in hardware, which will include building a massive tech stack, arguably larger than any other individual company. Meta is also training a more advanced LLM, Llama 3 that will have code-generating capabilities. He said, "With Llama 3 and beyond, our ambition is to build things that are at the state of the art and eventually the leading models in the industry." He highlighted that the next stage of AI development for Meta would involve increased creative capacity through AI interaction, including, potentially, the ability to create whole new VR environments, by simply speaking to them into existence. He mentioned that he sees a future in which virtual worlds are generated by AI and filled with AI characters that accompany real people. He also suggested a new platform is coming this year to let anyone create their own AI characters and distribute them across Meta's social apps.

Alphabet restructures to sharpen focus on AI

In January, Alphabet eliminated hundreds of positions from its core engineering division, Google Assistant (voice-operated virtual assistant), and hardware division that makes Pixel phone, Fitbit watches and Nest thermostat. Most of the employees affected in the hardware team included those working on augmented reality projects. In the statement, Alphabet said "We're responsibly investing in our company's biggest priorities and the significant opportunities ahead." Alphabet is also reorganizing its ad sales unit (~30,000 employees) as a result of company's recent advances in AI and strong advertiser

adoption of automated tools such PMax. Many of the jobs in the ad sales unit could become redundant because of new AI/ML tools that can automatically suggest & create new ads.

Samsung's Galaxy S24 will feature Google Gemini-powered AI features
Google and Samsung announced that a family of Gemini powered AI features will be available on new Galaxy S24 smart phones. Gemini Pro will power the features including Samsung's Notes, Voice Recorder, and Keyboard apps. Meanwhile, Gemini Nano will power the new 'Magic Compose' feature in Google Messages, which could craft messages in different styles without connecting to the internet. Google's Imagen 2 model, which can do text to image tasks, will be integrated to Galaxy S24 as well. The Imagen 2 Model will enable the photo editing feature in Galaxy S24 Gallery App, which includes the Generative Edit feature that automatically fill in parts of images based on surrounding contexts.

Android Auto adds new AI-powered features
Google released several new AI-powered features for Android Auto (the app can mirror features of an Android device on car's dashboard info and entertainment head unit). Android Auto can automatically summarize texts and group chats while the user is driving, and the App will suggest relevant replies and actions.

TikTok testing new AI Song feature
TikTok is testing a new "AI Song" feature, leveraging Gen-AI can create songs based on text prompts. The new feature is currently only available to a select number of users. TikTok's AI model will generate lyrics related to entered prompts and pair it with music.

eCommerce

Amazon's new tool, Rufus, responds to shopper queries
Amazon is testing an AI tool named Rufus that answers shopper questions by collecting information from product reviews and metadata. Rufus can help users shop by product category or occasion, find the best recommendations, and answer questions about specific products. Rufus is currently in beta testing before being rolled out to additional US customers "in the coming weeks". *Our Take: A shopping assistant makes sense for Amazon, and Rufus is a natural extension to Amazon's initiative from June 2023 where the eCommerce platform began showing AI-generated summaries for product reviews.*

Amazon uses AI find customers' right fit for clothing
On Jan 8th, Amazon introduced Fit Insights, an AI tool that aggregates user reviews on fashion listings to help customers understand fit. Coresight Research indicates the average return rate for Online clothes is 24% (8pts more than the overall Online return rate) with TechCrunch indicating fit is the primary reason for return. Fit Insights will also provide feedback to sellers so brands can better understand customer fit issues, improve how they communicate sizing to customers, and incorporate feedback into future designs and manufacturing. *Our take: Reducing returns with Fit Insights could be an incremental driver for continued retail margin expansion, with MWPVL calling out return logistics as a key area for efficiency improvement (see takeaways from our MWPVL call).*

Amazon joins AI Safety Institute
In February, Amazon joined a consortium under the National Institute of Standards and Technology focused on AI safety that includes members like OpenAI, Anthropic, and Meta. The consortium's goal is to provide a hub for parties to work together in "building and maturing a measurement science for trustworthy and responsible AI".

Etsy helps shoppers find personalized gifts

Etsy launched Gift Mode on Jan 24th, an AI-powered tool that crafts gift guides based on 200+ consumer personas determined by the occasion and recipient's interests. Gift Mode, which leverages a combination of machine learning, human curation, and OpenAI's ChatGPT-4, is designed to eliminate stress around gifting, with an Etsy survey indicating that 71% of respondents feel anxious while shopping for gifts. *Our take: according to a survey by INVIQA, 85% of respondents indicated suitability is the biggest factor that determines gift purchasing. While the launch missed the '23 holiday season, an AI tool may drive improved conversion for smaller gifting events this year (Valentine's Day, Mother/Father's Day, birthdays, etc.) and Gift Mode could drive incremental GMS on the platform in '24, which we project to grow only 1% y/y in 2024 (2pt accel).*

eBay doubling GPU capacity to support AI services.

Management anticipates more buyer and seller services will be powered by internal LLMs given AI's ability to "significantly impact conversion on eBay". Services thus far include Generative AI descriptions (which have rolled out to users in eBay's top-5 markets), AI-enabled recommendations, and image recognition/editor. As part of eBay's 2024 capex outlook, management plans to double the company's GPU capacity by the end of 1Q to support the ramp in AI investments.

Wayfair ports Decorify to Apple's Vision Pro

Wayfair will port Decorify, a virtual room styler that leverages Generative AI to reimagine living spaces, to Apple Vision Pro. Users can provide input variables like styles & price and find Wayfair products to put their spaces, which can then be purchased in-app. *Our take: Decorify is an extension of Wayfair's interactive interior design products including Room Planner and Wayfair Spaces. In our view, continued development of interior design products suggest sufficient usage and, longer-term, increasing use of AR/VR for design planning could reduce return rates.*

Online Travel

Airbnb working on developing personalized AI interface

On the 4Q earnings call (02/13) Airbnb highlighted accelerated efforts to build a personalized AI/Gen-AI based interface on the Airbnb platform. In November, Airbnb acquired GamePlanner.AI, an AI company led by the co-founder and original developer of Siri.

Priceline Debuts New AI-Powered Trip Intelligence Features

Priceline unveiled its Winter 2024 Product Release (02/13) featuring a new generative AI-powered slate of features, including major upgrades to Penny, its AI-powered travel assistant. The latest additions to Priceline's Trip Intelligence suite include more than 30 new features to streamline the travel planning and booking process. New AI features include: GenAI-powered travel assistant that suggest relevant properties and travel packages and GenAI Itineraries that help app users craft in-depth itineraries for their entire trip. Other features include Priceline wallet (one-stop portfolio feature enabling Priceline customers to save coupons, monitor expiration dates, and track airline credits in a single location), Price Watch (users can track desired flight itineraries and receive prompt notifications when prices change), and major design improvements implemented across all platforms, including overhauls for iPad and Android.

Other

OpenAI building its own search engine

According to press reports, OpenAI is developing a web search product that would bring the company into more direct competition with Google. The search service would be partly powered by Bing and could be a new feature for ChatGPT, or a potentially

separate app. The new search product is intended be faster than ChatGPT, without losing its summarizing abilities. *Our Take: Bing is already integrating AI into search results, so we will look for more details on incremental capabilities for OpenAI search. We continue to see Google's search distribution advantages as a strong competitive moat.*

OpenAI introduces text to video model, Sora

OpenAI launched a new text-to-video model Sora, which can generate videos up to a minute long while maintaining visual quality and adherence to users' prompt. According to the company, Sora can generate complex scenes with multiple characters, specific types of motion, and accurate details of subject and background. The model also understands how things in prompts exist in the physical world. However, OpenAI notes that Sora could struggle with accurately simulating the physics of a complex scene. Sora is currently available for red teamers for assessing risks, and Open AI also granted access to Sora to a number of creative professionals.

Microsoft Copilot launched a Pro plan

Microsoft Copilot launched a new Pro plan, priced at $20 user per month. The paid tier plan includes 1) priority access to GPT-4 and GPT-4 Turbo including peak times for accelerated performance, 2) access to Copilot in select Microsoft 365 apps to draft documents, summarize emails, and create presentations, etc., 3) Create, edit, and resize AI images faster with Designer (former Bing Image Creator). This plan is priced below the $30/month full Copilot enterprise solution.

Microsoft Copilot App available on Android, IOS, and IpadOS

Microsoft released Copilot App on Android, IOS and IpadOS devices. The Copilot app can answer users' questions by leveraging gen AI models. Meanwhile, users can use the AI tool to draft emails, compose stories, summarize texts, etc. OpenAI's Dall-E-3 AI model will power Copilot's Image Creator feature, where users can implement tasks including developing brand motifs and generating logo designs. There are different versions of the Microsoft Copilot app, each with different features and pricing. The base version of Microsoft Copilot is free to use, but it has some limitations such as a maximum of five queries per day and no access to AI image generation. The more advanced Copilot Pro is $20 per person, per month on top of an individual or family Microsoft 365 subscription. It offers priority model access, faster image creation, and Copilot in select Microsoft 365 apps. For businesses, there is Copilot for Microsoft 365, which is generally a $30/month add-on for each user. It includes Copilot in Microsoft Teams and other business-specific features.

Microsoft partnership with Mistral

In late Feb, Microsoft announced a multiyear partnership with French startup, Mistral AI. As part of the deal, Microsoft will take a minority stake in the startup and make Mistral's LLM models available through its Azure cloud computing platform. Mistral AI's flagship commercial model, Mistral Large, will be available on Azure AI platform. Mistral Large is a general-purpose LLM that is proficient in code and mathematics, able to process dozens of documents in a single call, and handles French, German, Spanish, and Italian (in addition to English). Addition of Mistral AI's premium models into Azure's Models as a Service (MaaS) within Azure AI Studio and Azure Machine Learning provides Microsoft customers with a greater selection of open-source LLM models for developing custom AI applications.

EU states formally approve final text of new AI Act

In Feb, representatives from the European Union member states formally approved the final text of the EU Artificial Intelligence Act, which will be subject to final legislative approval in the coming months. The AI Act is the first set of comprehensive laws to regulate the use of artificial intelligence globally. The proposed legislation will apply new rules for AI "foundation models," subjecting providers of such models to new duties, distinct from the obligations applicable to all AI systems. Enforcement of the Act will likely be complex and disaggregated across various authorities in Europe.

FTC launches investigation into AI partnerships

In late Jan, the Federal Trade Commission launched an inquiry on Microsoft, Google and Amazon about their investments in OpenAI and Anthropic, respectively. Per the WSJ, the FTC's inquiry would allow regulators to gain a deeper understanding of the market, business practices, and competitive impacts, which may inform future actions.

Exhibit 1: Stocks mentioned
Prices and ratings for stocks mentioned in this report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
GOOGL	GOOGL US	Alphabet A	US$ 132.10	B-1-9
GOOG	GOOG US	Alphabet C	US$ 132.97	B-1-9
AMZN	AMZN US	Amazon.com	US$ 179.30	B-1-9
ETSY	ETSY US	Etsy, Inc.	US$ 68.66	C-2-9
META	META US	Meta Platforms	US$ 502.12	C-1-7
W	W US	Wayfair	US$ 61.06	C-1-9

Source: BofA Global Research

BofA GLOBAL RESEARCH

Price objective basis & risk

Alphabet (GOOGL / GOOG)

Our price objective of $173/$173 is based on 21x 2025E core Google GAAP EPS plus cash. Alphabet has traded at an average multiple of 22x GAAP P/E over the last ten years and we think our multiple is reasonable vs history given expectations for double-digit revenue growth, Cloud margin expansion, and opportunity to capitalize on strong AI assets.

Risks for the stock are 1) loss of search traffic to AI tools from competitors, 2) LLM integration in search may take longer than expected or negatively impact search revenues, 3) revenue pressure from compliance with the EU Digital Markets Act (DMA), 4) adverse judge ruling on the ongoing Department of Justice (DOJ) search distribution trial, 5) potential for increasing Capex and lower FCF-given AI focus.

Amazon.com (AMZN)

Our PO of $204 is based on our SOTP analysis that values the 1P retail business at 1.1x 2025E Revenue (including subscription/Prime membership fees), 3P retail business at 2.6x 2025E Revenue, AWS at 8.0x 2025 Sales, and the advertising business at 5.0x 2025 Sales. For 2025E, our 8.0x AWS multiple is relatively below our SaaS comps at 8.9x, our 1.1x GMV multiple is a slight discount to our retail comps at 1.2x, and our 5.0x advertising multiple is a slight discount to our digital advertising comps at 5.2x. We think some conglomerate discount is warranted with elevated regulatory/antitrust risk, but long-term we believe that in-line to discount multiples are warranted given growth rates in-excess of peers.
Our PO of $204 for Amazon implies 3.0x P/Sales, a multiple toward the high end of Amazon's historical range of 1.0-3.5x. With improving margins long-term, we expect the revenue multiple should trend upward over time.

Downside risks to our price objective are increasing competition from offline and local retailers, AWS client cost optimization impact on revenues and margins, and regulatory pressure on the 3P marketplace. The stock has been subject to heavy volatility in the past, based on margin trends, and this volatility could increase due to economic uncertainty.

Etsy, Inc. (ETSY)

Our $82 price objective is based on 12x 2025E EV/EBITDA. This is a discount to Etsy's 5-year average of 25x (ranging from 11x to 50x). We believe a discount is warranted

given lower gross merchandise sales and total revenue growth relative to Etsy's historic average and less potential upside for EBITDA margins. We believe that Etsy should trade at a slight discount to overall eCommerce and marketplaces due to lower revenue growth, offset partially by higher margins and competitive barriers.

Upside risks to our PO are higher-than-expected order frequency and average order value due to improvements in search functionality, greater than expected shares gains across underpenetrated customer demographics, regions, and products and increase take rates from new services and higher fees.

Downside risks to our PO are that weakness in discretionary spending or a recession would likely have an outsized impact on the discretionary products sold on Etsy's marketplaces, continued pressure on GMS growth from lapping tough-COVID related comparisons over the next several quarters and softer-than-anticipated performance from non-Etsy marketplaces.

Meta Platforms Inc (META)
Our $510 price objective is based on 21x 2025E GAAP EPS, plus net cash. On a total company basis, including Metaverse investments, our valuation is largely in line with S&P 500 (over the past five years Meta has had a 2pt average premium to S&P). We think accelerating revenue growth and conservative expense management can lead to 3-year EPS growth above the S&P 500.

Downside risks are decline in user activity from competition, privacy or date issues impact revenue generation, potential for Street to assign a negative value to Metaverse (Reality Labs) given significant investments, and new regulations that impact monetization.

Wayfair (W)
Our PO of $75 is based on 0.8x 2025E EV/sales, which is below the historical average multiple of approx. 1x . We believe this is warranted given a significant improvement in EBTIDA and a return to revenue YoY growth, though below prior periods of expansion. If Wayfair were to achieve its target of mid-single digit EBITDA margins over the next few years, this would likely drive additional multiple expansion in our view.

Upside risks are 1) a larger-than-expected acceleration in sales post tough COVID compares in 2022, 2) better inventory availability as supply chain disruptions eases, 3) higher-than-forecast online growth for the industry as a whole, 4) stronger growth from newer initiatives including Wayfair Professional and, 5) EBITDA margin upside from COGS efficiencies, OPEX reductions and fixed cost leverage .

Downside risks are 1) High industry competition which could drive higher than expected investment in marketing or promotions, 2) brand complexity (five brands), 3) weaker than expected international segment performance, and 4) A softer than anticipated recovery in US furnishings in 2024/25.

Analyst Certification

We, Justin Post, Curtis Nagle, CFA, Michael McGovern and Omar Dessouky, CFA, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

US - Internet Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Alphabet	GOOGL	GOOGL US	Justin Post
	Alphabet	GOOG	GOOG US	Justin Post
	Amazon.com	AMZN	AMZN US	Justin Post
	AppLovin	APP	APP US	Omar Dessouky, CFA
	DoorDash	DASH	DASH US	Michael McGovern
	DoubleVerify Holdings, Inc.	DV	DV US	Omar Dessouky, CFA
	Electronic Arts	EA	EA US	Omar Dessouky, CFA
	Integral Ad Science Holding Corp.	IAS	IAS US	Omar Dessouky, CFA
	LegalZoom	LZ	LZ US	Michael McGovern
	Match Group	MTCH	MTCH US	Curtis Nagle, CFA
	Meta Platforms Inc	META	META US	Justin Post
	Pinterest	PINS	PINS US	Justin Post
	RH	RH	RH US	Curtis Nagle, CFA
	Roblox Corp. Class A	RBLX	RBLX US	Omar Dessouky, CFA
	Squarespace, Inc.	SQSP	SQSP US	Michael McGovern
	Uber	UBER	UBER US	Justin Post
	Udemy Inc	UDMY	UDMY US	Curtis Nagle, CFA
	Vivid Seats	SEAT	SEAT US	Curtis Nagle, CFA
	Wayfair	W	W US	Curtis Nagle, CFA
	Wix.com	WIX	WIX US	Michael McGovern
NEUTRAL				
	ACV Auctions	ACVA	ACVA US	Curtis Nagle, CFA
	Airbnb	ABNB	ABNB US	Justin Post
	Beyond Inc	BYON	BYON US	Curtis Nagle, CFA
	Booking Holdings Inc	BKNG	BKNG US	Justin Post
	Bumble	BMBL	BMBL US	Curtis Nagle, CFA
	Digital Turbine, Inc	APPS	APPS US	Omar Dessouky, CFA
	Duolingo	DUOL	DUOL US	Curtis Nagle, CFA
	eBay	EBAY	EBAY US	Justin Post
	Etsy, Inc.	ETSY	ETSY US	Curtis Nagle, CFA
	Expedia	EXPE	EXPE US	Justin Post
	Instacart	CART	CART US	Justin Post
	Magnite, Inc.	MGNI	MGNI US	Omar Dessouky, CFA
	Snap	SNAP	SNAP US	Justin Post
	Take-Two Interactive	TTWO	TTWO US	Omar Dessouky, CFA
	Zillow	ZG	ZG US	Curtis Nagle, CFA
	Zillow	Z	Z US	Curtis Nagle, CFA
UNDERPERFORM				
	Chewy Inc	CHWY	CHWY US	Curtis Nagle, CFA
	Lyft, Inc.	LYFT	LYFT US	Michael McGovern
	Opendoor Technologies	OPEN	OPEN US	Curtis Nagle, CFA
	Peloton	PTON	PTON US	Curtis Nagle, CFA
	Playtika	PLTK	PLTK US	Omar Dessouky, CFA
	Redfin Corp	RDFN	RDFN US	Curtis Nagle, CFA
	Shutterstock	SSTK	SSTK US	Curtis Nagle, CFA

Disclosures

Important Disclosures

Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

[R1] Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster[R2]
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Underperform	N/A	≥ 20%

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