CFRA

Industry Surveys

Interactive Media & Services

NOVEMBER 2022

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CHARTS & FIGURES

NEW THEMES

What's Changed: Could the metaverse be the next evolution of the internet? CFRA is cautiously optimistic. However, we do believe it would help to drive higher sales for devices related to AR/VR in 2022. Check out page 18.

What's Changed: Social media platforms have given rise to a new type of e-commerce: social commerce. What does it entail? Read more on page 19.

EXECUTIVE SUMMARY

CFRA has a neutral fundamental outlook on the Interactive Media & Services industry, dominated by Alphabet in internet search (Google) and user-generated video content (YouTube). In social media advertising, “Meta Platforms”—the corporate name for Facebook—includes the Facebook social network, its related quasi-independent Messenger app, the slightly more truly independent social network Instagram, and the more genuinely independent social messaging app WhatsApp. Combined, Alphabet and Meta Platforms account for ~97% of the S&P 500 Interactive Media & Services Industry by market cap. The other S&P 500 constituent is Match.

Customer Budgets Tightening Amid Tougher Macroeconomic Backdrop

Clear signs are emerging where advertisers are pulling back on digital ad spend, which is often an early indication that the macro economy could be ready for more challenging times. We expect quarterly growth rates to continue to decelerate and potentially turn negative before bottoming in the first half of 2023. We also note that the availability of more ad platforms (*e.g.*, Netflix) at a time where digital ad spend is slowing is creating a tougher landscape for existing players in the industry. We have seen just about all social media companies report lower average revenue per user metrics (excluding Pinterest, which is growing ARPU on better monetization efforts) in recent months, on lower bids per action, although daily active users on most of the key platforms continue to grow.

A Secular Shift Towards Online/Digital Advertising, Away From Traditional Advertising

Total global digital ad spending is expected to surpass $550 billion in 2022 (about 66% of total media ad spend). Within digital ad spend, we expect about 55%-60% will go to display advertising and the remainder will go to search, with consumer shifts toward social media and digital video accelerating the rise of display. We think annual digital media ad growth of at least mid-to-high single digit percentage can be sustained over the next three years, even after a 30% plus increase in 2021. Our outlook for this industry remains tied to multiple secular trends that have gathered considerable momentum in the last decade. There has been a shift in the advertising industry from purchases of relatively fixed time/space “slots” on traditional media, which entail a considerable degree of human negotiation, to digital/online, where time/space slots are becoming almost infinitely fungible. In terms of return on investment (ROI), it is almost impossible for traditional media to even compete with online/digital. The gap continues to widen as advertisers become more adept at using the tools provided by the media platforms and a growing number of third-party providers, employ more data-driven strategies, and learn from their campaigns, which they can measure with greater precision.

Alphabet and Meta Platforms Capture a Majority of Digital Ad Revenue While Amazon is Poised to Take Considerable Share, Creating a Triopoly

Together, Alphabet and Meta Platforms dominate digital/online advertising, holding more than 50% of the global online/digital advertising market with what might be called monopolistic power in their respective search and social media businesses, at least outside of China. Within the $200-billion-plus U.S. ad market, this triopoly is seen controlling nearly two-thirds of the market, with Amazon being the clear share taker and largely coming at the expense of Alphabet. In addition, we expect social media players to take an increasingly bigger piece of the pie, as advertisers look for more digital outlets that capture high levels of consumer attention and possess a large installed base.

Privacy Changes by Apple and Google are Disrupting the Social Media/Digital Ad Space

Privacy changes on iOS remain a lingering issue for ad vendors in terms of being able to properly measure/target users. The privacy change allows iOS users to opt-out of personalized ad tracking by any app. U.S. users opt into tracking only about 16% of the times they encounter the Apple privacy prompt, according to mobile app analytics provider Flurry. Facebook and Snap are among the social media giants that have appeared to be hit the hardest due to the major change. This is due to limited availability to obtain data on consumers’ habits and interests and to target ads at users as effectively. Google has seen a trivial impact on the change as it solely relies on its own advertising network and Android ecosystem (YouTube, however, has been more impacted).

INTERACTIVE MEDIA & SERVICES

Outlook: Neutral

MARKET CAP BREAKDOWN*

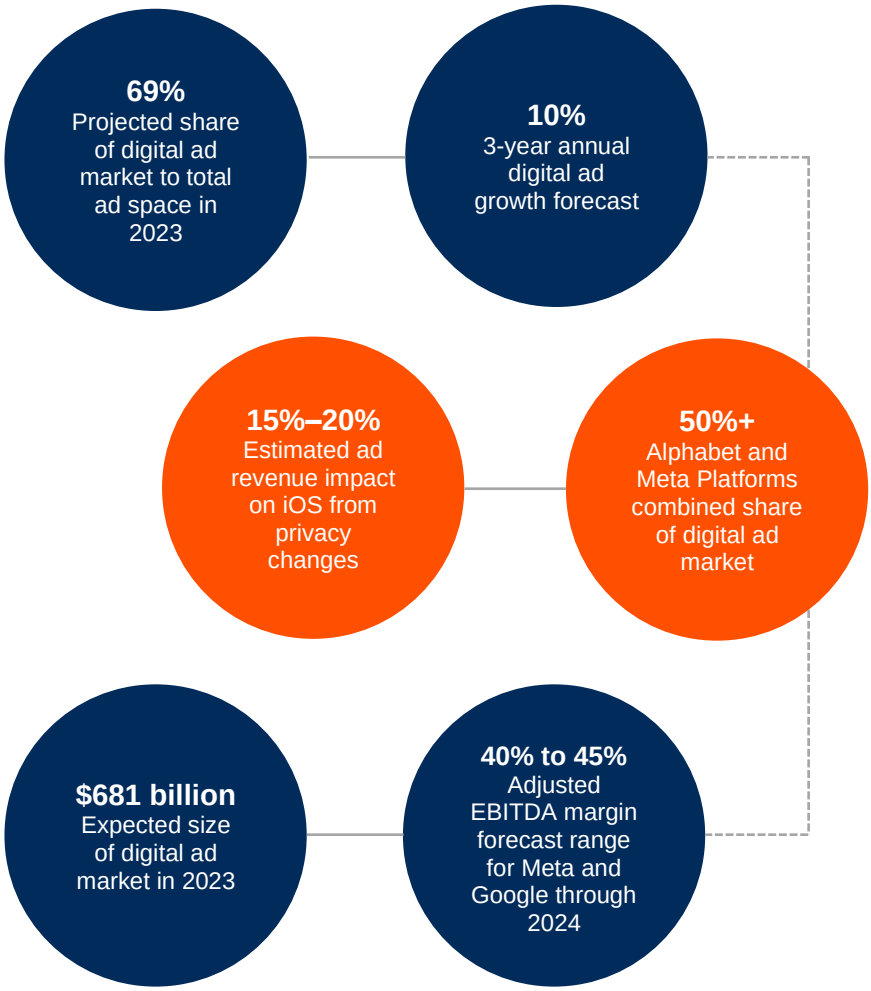
RANK NO.	COMPANY NAME	MARKET CAP ($ billion)
1	Alphabet	1,224.2
2	Meta Platforms	247.0
3	Pinterest	16.7
4	Snap	16.0
5	Match Group	12.2

Source: CFRA, S&P Global Market Intelligence.
**Data as of October 31, 2022.*
Note: Twitter was delisted after going private on October 28, 2022.

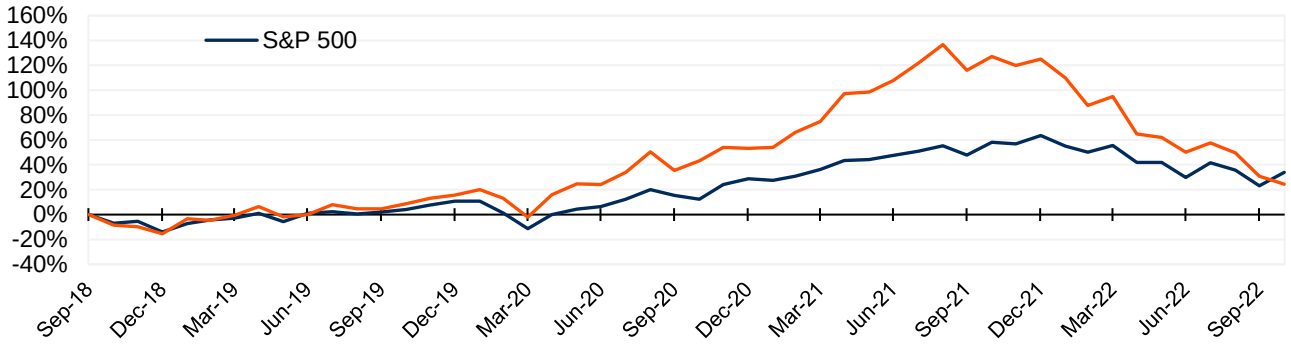
ETF FOCUS

XLC Communication Services Select Sector SPDR	AUM ($M) 7,902.3	Expense Ratio 0.10
IYW iShares U.S. Technology	AUM ($M) 5,992.0	Expense Ratio 0.39
FTEC Fidelity MSCI Information Technology	AUM ($M) 4,974.5	Expense Ratio 0.08
VOX Vanguard Communication Services	AUM ($M) 2,445.6	Expense Ratio 0.10
PNQI Invesco Nasdaq Internet	AUM ($M) 444.8	Expense Ratio 0.60

BY THE NUMBERS



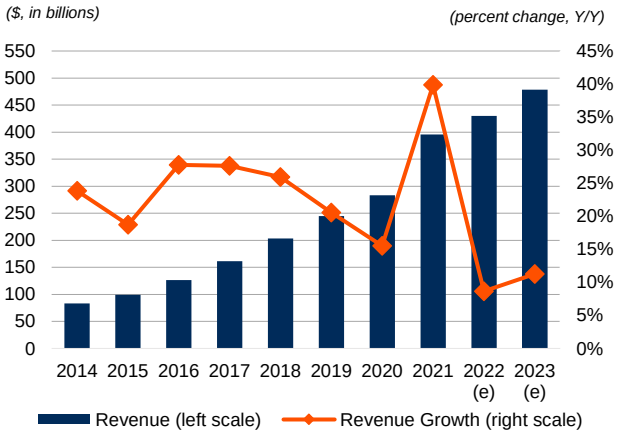
INDEX PERFORMANCE SINCE INCEPTION



*Data through October 31, 2022.
Source: CFRA, S&P Global Market Intelligence.

FINANCIAL METRICS

Revenue Growth

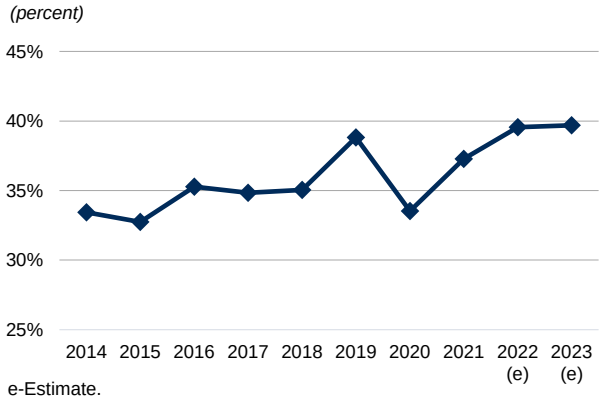


e-Estimate.

Source: CFRA, S&P Global Market Intelligence.

- Our data is based on the constituents of the S&P Composite 1500 Interactive Media & Services Index (Alphabet, Meta Platforms, and Twitter) as of October 16, 2022, plus Pinterest and Snap.
- CFRA revised projected industry revenue growth in 2023 from 16.1% to 11.3% due to macro issues, lower ad spend, and stronger U.S. dollar.
- We acknowledge revenue pressures in 2022, as the industry contends with iOS ad tracking privacy changes (impacting measuring/targeting), tighter customer budgets, and forex headwinds. We see increasing competitive pressures from TikTok and lower engagement levels in a post-pandemic environment as risks to ad impressions and pricing.
- Our forecast reflects continued global user growth and higher levels of engagement driven by an acceleration in the shift of ad spend toward online/digital from traditional media (TV, print, radio).

EBITDA Margin



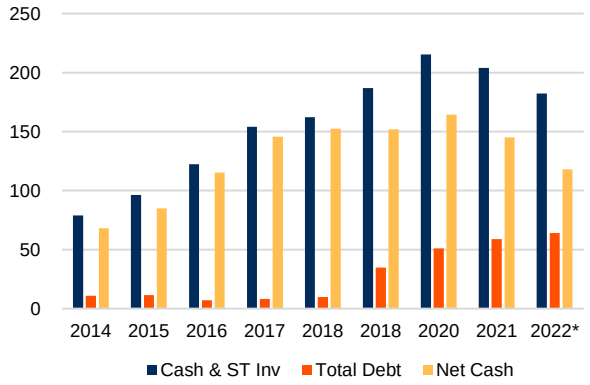
e-Estimate.

Source: CFRA, S&P Global Market Intelligence.

- Since 2014, EBITDA margins have been restrained by investments in innovation, new product launches/features, and data center capital expenditure to support growth.
- We project EBITDA margin to be flat at 39.7% in 2023 after an increase to 39.5% in 2022. Compression in 2023 is expected to come from inflationary pressures and macro softness, but now companies are starting to slow down spending and lay off employees. We expect companies to focus on slowing expense growth while others potentially look to reduce headcount. Meta appears to be the exception, increasing both opex and capex in 2023 as it seeks to aggressively invest in the metaverse.

Industry Balance Sheets

($, in billions)

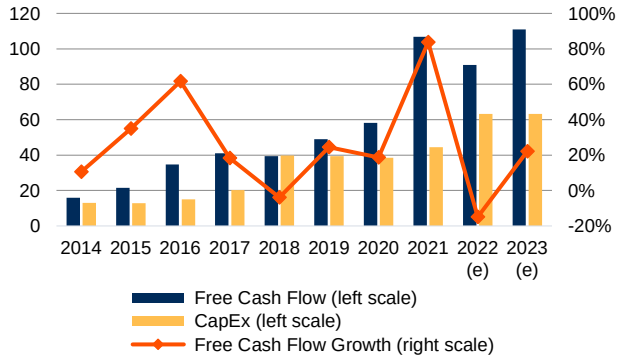


*As of Q2 2022.
Source: CFRA, S&P Global Market Intelligence.

- Alphabet and Meta Platforms possess very strong balance sheets with large net cash positions that continue to grow. Relative to their sizes, Pinterest and Twitter also maintain healthy balance sheets.
- CFRA sees net cash remaining relatively elevated, given that present regulatory scrutiny likely limits large-scale mergers and acquisitions. We expect both Alphabet and Meta Platforms to sustain high cash levels given the uncertain regulatory landscape and potential need to settle outstanding cases, if needed.

Free Cash Flow

($, billions) *(percent)*

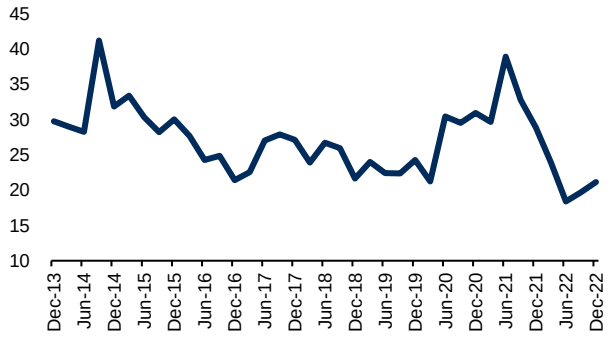


e-Estimate.
Source: CFRA, S&P Global Market Intelligence.

- We expect free cash flow to rise 22% year-over-year in 2023 after a 15% drop in 2022, driven by the ongoing shift to digital ad spend as well as from a growing addressable market for both Alphabet and Meta Platforms.
- We believe capex for 2023 will be roughly flat to slightly up, digesting recent capacity purchases and increases. We expect Meta Platforms will continue to invest in the creation of the metaverse, where it is releasing new AR/VR products and services to help develop the next generation of online social experiences.

Forward Price-to-Earnings (P/E)

(quarterly, multiples)



Data for December 2022 is an estimate.
Source: CFRA, S&P Global Market Intelligence.

- The market cap-weighted forward P/E for the companies in the Interactive Media & Services industry has ranged in the mid to high 20x range since the start of the pandemic.
- However, in the last 12 months, multiples have compressed on decelerating growth expectations, partially reflecting Apple's iOS privacy changes. As CFRA previously expected, growth rates bottomed out in the first half of 2022 and are now expected to reaccelerate again in the middle of 2023.

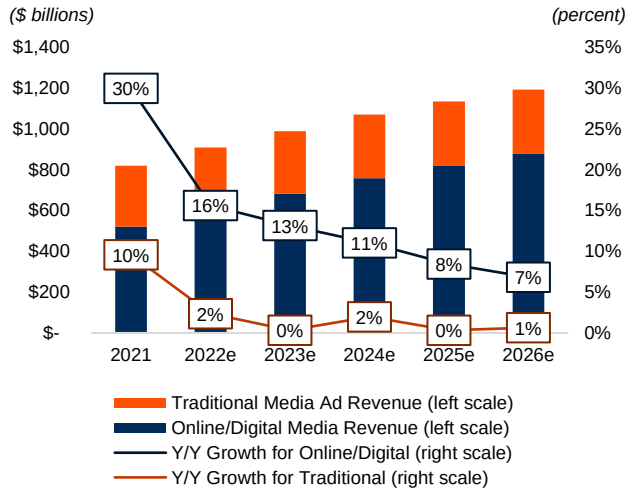
Comparable Forward Multiples

Company Name	Market Cap	P/E		EV/EBITDA		EV/Sales		Price/Sales	
		2022	2023	2022	2023	2022	2023	2022	2023
Alphabet Inc.	$ 1,318,265	19.6	17.1	10.7	9.6	4.2	3.8	4.6	4.1
Bumble Inc.	$ 2,911	42.9	37.1	17.9	13.7	4.4	3.6	3.1	2.6
IAC Inc.	$ 4,504	NM	134.5	24.4	12.3	1.1	1.0	0.8	0.8
Match Group, Inc.	$ 13,012	19.3	16.3	15.1	13.5	5.1	4.7	4.0	3.7
Meta Platforms, Inc.	$ 356,906	13.7	12.2	6.4	5.8	2.8	2.6	3.0	2.8
Pinterest, Inc.	$ 15,705	42.0	31.8	32.3	24.7	4.7	4.1	5.6	4.8
Snap Inc.	$ 17,479	140.5	26.9	48.3	21.7	3.6	3.1	3.7	3.2
Twitter, Inc.	$ 39,562	49.3	64.8	37.8	29.3	7.6	6.5	7.5	6.4
Yelp Inc.	$ 2,618	16.3	12.8	8.4	7.2	2.0	1.8	2.2	2.0

NM: Not meaningful.
Source: CFRA, S&P Global Market Intelligence.

KEY INDUSTRY DRIVERS

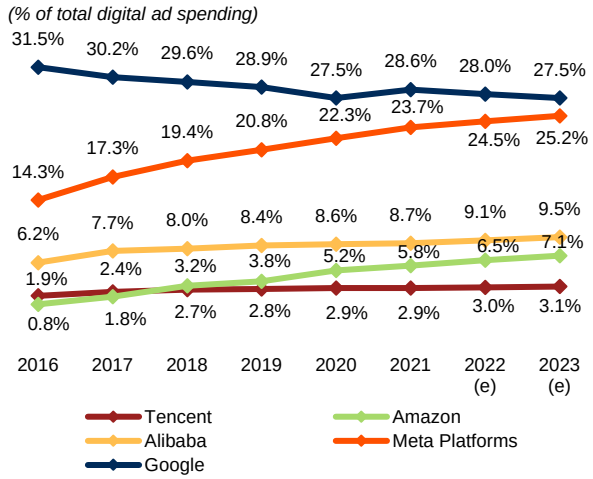
Global Advertising Spending: Online/Digital vs. Traditional



e-Estimate.
Source: eMarketer, March 2022.

- According to advertising industry research firm eMarketer, total global ad revenue is forecasted to increase 9% in 2023, while digital/online ad revenue is estimated to grow about 13% in the same period. For 2023, digital ad spend is expected to continue to outgrow the broader ad market, reaching 74% of the total market by 2026 (compared to 64% share in 2021). This is mainly contributed by the surge in e-commerce, higher social media engagement, and ongoing improvements in targeting precision and automation of ad placements.
- The trend line for future spending is projected to be on track, with total media ad spending forecasted to rise above $1 trillion in 2024 (digital ad spend estimated at $876 billion by that time).

Net Ad Revenue Share Worldwide 2016-2023, By Company



e-Estimate.
Data compiled in March 2021.
Source: eMarketer.

- Together, Alphabet and Meta Platforms dominate digital/online advertising, holding more than 50% of the global online/digital advertising market with what might be called monopolistic power in their respective search and social media businesses, at least outside of China.
- Over the next few years, we foresee the upward trend in digital/online advertising to continue with growing share from other competitors as the industry gradually shifts away from traditional advertising.

INDUSTRY TRENDS

Much of the talk about stocks and companies in the Information Technology and Communications Services sectors – especially the Interactive Media & Services industry (now under Communications Services, following the 2018 GICS reclassification) – often centers on valuation, whether there is a bubble, and, if so, when it will burst. CFRA believes investors should always be on the lookout for bubbles and stretched valuations, especially in high-growth segments, such as those businesses based on internet advertising that feature a wider "cone of plausible outcomes" and potentially very different long-term trajectories.

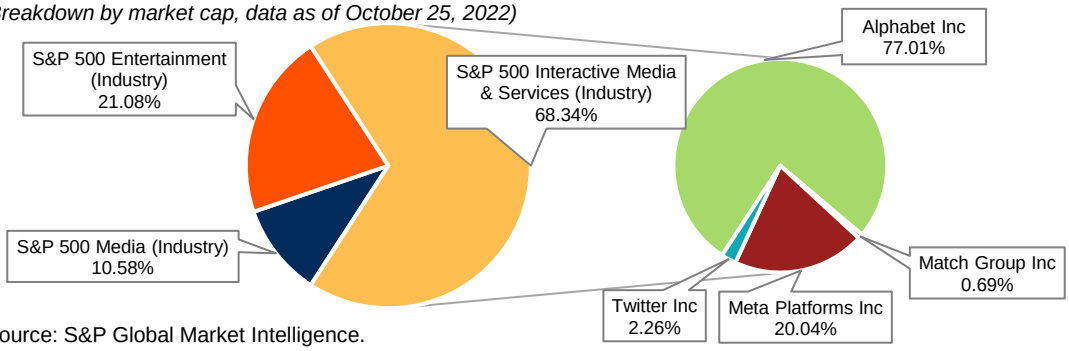
At the same time, we think many of the publicly traded Interactive Media & Services companies are, in fact, attractively valued relative to the top-line growth that they are already demonstrating. Based on the second quarter of 2022 results for the two most prominent and dominant players, Alphabet and Meta Platforms, we now project three-year revenue compound annual growth rates (CAGR) of 12% and 7% for both companies, up from our previous forecasted three-year CAGR of 15% for Alphabet and 13% for Meta Platforms, respectively. Though revenue growth decelerated for each company in the second quarter of 2022, the slowdown was not as dramatic as first expected. Meta Platforms is expected to have 6% to 7% year-over-year (Y/Y) growth in 2023 versus our view for a 1% to 2% decline in Y/Y growth in 2022, while Alphabet is expected to hit 9.4% revenue growth in 2023 versus 10% in 2022.

We project a negative 7% three-year EPS CAGR for Meta Platforms, as growth in Asia Pacific was more than offset by declines in the Americas and Europe. We expect a 5% three-year EPS CAGR for Alphabet, which is lower compared to historical averages, to reflect growing risks which include macro, geopolitical, competitive, and legal aspects. Given the competitive advantages both companies wield, a reasonable expectation of long duration double-digit revenue growth, and significant additional margin expansion for the existing revenue streams for each company, not to mention the potential of their "moonshot" opportunities (*e.g.,* AI, auto-driven vehicles, quantum computing, AR/VR), we see the forward P/E of 19.4x for Alphabet and 15x for Meta Platforms at present as quite reasonable. The biggest offsetting risk for both is regulatory, and on this front, we view Alphabet as better positioned than Meta Platforms.

Of course, it should be kept in mind that Alphabet and Meta Platforms represent 77% and 20%, respectively, of the market capitalization for the S&P 500 Interactive Media and Services industry, which in turn is 68.3% of the market capitalization for the S&P 500 Communication Services sector, followed by the Entertainment Industry at 21.1% and the Media Industry at 10.6%. Alphabet, Match Group, and Meta Platforms are members of the S&P 500 Interactive Media and Services industry (Twitter was delisted after going private on October 28). However, outside of the S&P 500, there are two other notable constituents of the Interactive Media & Services industry, namely Pinterest and Snap, which are both advertising-based, social media businesses.

S&P MEDIA & ENTERTAINMENT (INDUSTRY GROUP)

(Breakdown by market cap, data as of October 25, 2022)



Source: S&P Global Market Intelligence.

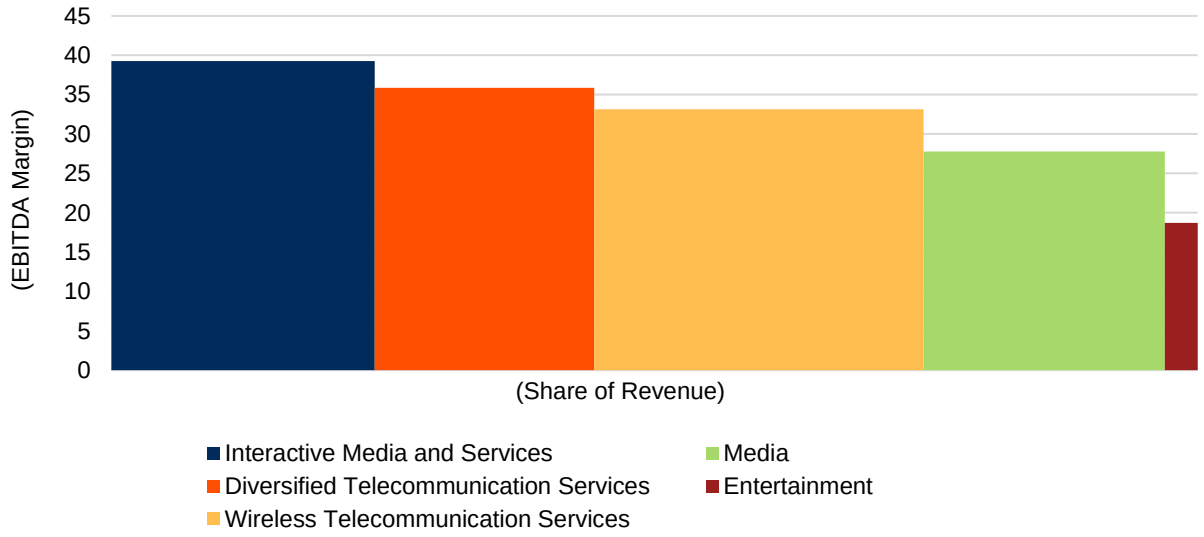
Profit Pools

Sector and Industry Profit Share Maps

The Interactive Media & Services industry accounts for 30% of total revenue for the Communication Services Sector with an EBITDA margin of 39.3%. Diversified Telecommunication Services' projected (consensus) EBITDA margin of 35.9% and Wireless Telecommunication Services' 33.1% are the highest among the industries within the sector.

PROFIT SHARE MAP OF THE COMMUNICATION SERVICES SECTOR*

(as of the third quarter of 2022)

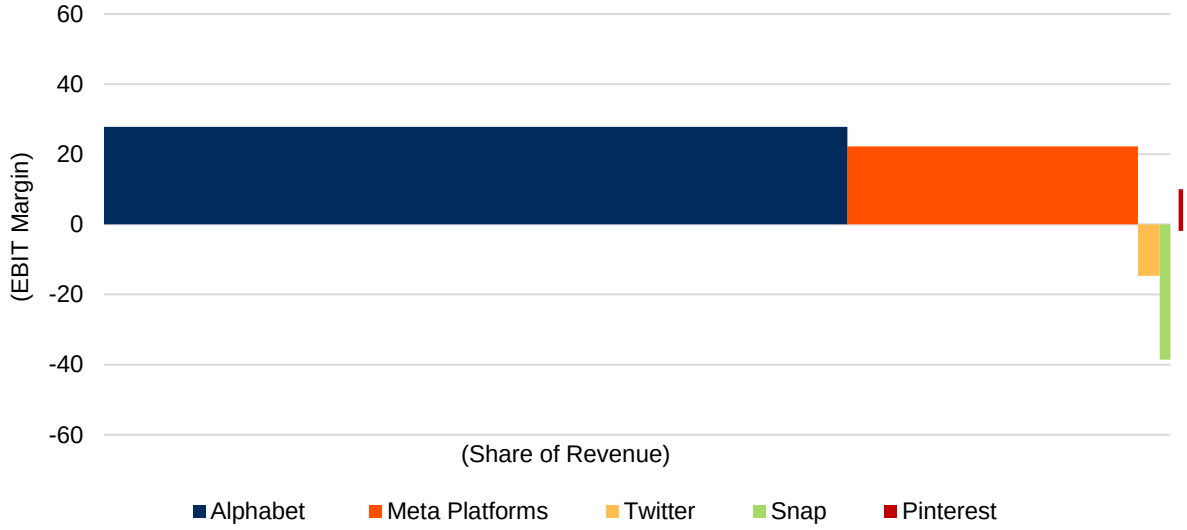


*Companies within the S&P Composite 1500 Index as of October 22, 2022.

Source: CFRA, S&P Global Market Intelligence.

As expected, and as seen graphically on the next chart, the industry's two largest revenue contributors as of the third quarter of 2022 were Alphabet at 69.9% and Meta Platforms at 27.1%. This does not include revenue generated from Chinese social network and messaging giant Tencent and the dominant search engine in China, Baidu. We foresee Meta Platforms and Alphabet maintaining their aggregate revenue share. Though there is the possibility that either or both companies are broken up through regulatory action and forced divestiture, such an action is unlikely to occur before 2023, in our view. Nevertheless, at present, these two companies account for most of the industry's revenue within the U.S., suggesting a lack of competition.

PROFIT SHARE MAP OF THE INTERACTIVE MEDIA & SERVICES INDUSTRY SECTOR*
(as of the third quarter of 2022)



*Companies within the S&P Composite 1500 Index as of October 22, 2022.
Source: CFRA, S&P Global Market Intelligence.

Competitive Environment

The Interactive Media & Services industry is one of the world's most dynamic and competitive areas, in CFRA's view. However, larger businesses seem to dominate due to the very strong network effects that can be generated with multi-sided platforms such as those in search and social media. Multi-sided platforms effectively amplify standard network effects, which follow some version of what is known as Metcalf's Law (named after Eric Metcalf, the co-inventor of the Ethernet networking standard and the co-founder of local area network equipment pioneer, 3Com). Metcalf's law states that the value of a network is proportional to the square of the number of the "nodes" in the network. Nodes can be computers, fax machines, or members of a social network like Meta Platforms. The idea is that a single fax machine is not useful at all. One thousand fax machines would have some value, enabling, say, a large multinational company circa 1973 to send documents to all its branches around the world almost instantly. However, with millions of fax machines enabling instant document transfer among all companies and organizations around the world, that network represents a far greater aggregate value for all companies – so valuable in fact that, by the 1980s, the fax machine became practically a minimum required purchase to start most types of businesses.

Meta Platforms' social network clearly exhibits network effects, with each member being a node on the network. However, for any given member, the value of Meta Platforms' social network is much more highly weighted toward nodes that are "friends," which is why Meta Platforms constantly recommends other members with whom you should become friends, no matter how tenuous the connections. When a member adds a friend, that addition can add as much value to the network as the addition of a completely new member. Further, one can view each piece of content, a post, a comment, a photo, a video, or even just a "like" as adding incremental value to the network. As marginal as the addition of an individual piece of content may be, in aggregate, the value of all the content contributed by all members is substantial, and it continues to grow.

For Google's search engine service, the network effects are a little subtler but nonetheless powerful. Google's page rank algorithm determines the relevance of and, therefore, the order of the web page links presented for a given search string – *i.e.,* what you type in the search bar. The relevance of the search results is refined and improved by what entries are clicked on and host of other changing filters and data points. That accumulated data makes it difficult for new entrant search results to be as relevant as Google's search engine. Higher quality, more relevant results attract more users and more searches, which, in turn, further hone relevance and quality in a mutually reinforcing feedback loop between the data and the users. Given the consistent presence of Google users and the rising number of searches, advertisers flock to Google and pay a premium for the search terms they bid on (versus, say, Bing with fewer users) to be included in the "paid-for" section of the search results page, also with increasing relevance, which, in this case, means more clicks and/or a price/click and more revenue for Google search over time.

Porter's Five Forces

Harvard Professor Michael Porter developed a methodology to understand the competitiveness of industries by identifying and assessing "five forces" that shape and drive them. Porter's five forces are industry rivalry, new entrants, threat of substitutes, power of suppliers, and power of customers.

PORTER'S FIVE FORCES ANALYSIS OF THE INTERACTIVE MEDIA & SERVICES INDUSTRY	
RIVALRY AMONG EXISTING COMPETITORS	MEDIUM - Bigger and better-capitalized companies can spend more to attract and retain talent, create and refine new offerings, attract more users, and make acquisitions. However, there continues to be friction, indirect competition, competitive positioning regarding future opportunities with large potential (various cognitive computing applications, autonomous vehicles, quantum computing, virtual and augmented reality, etc.), and even points of very direct competition (*e.g.,* cloud services, search engines, OTT subscription video services, etc.), among other tech and media giants, such as Microsoft, Amazon, Apple, Netflix, and Disney – all trying to protect their flanks and/or disrupt each other's core franchises.
THREAT OF ENTRY	MEDIUM - Relatively low barriers to entry, especially now that new entrants no longer need to build or operate their own physical infrastructures or even their own software infrastructures, by utilizing Infrastructure-as-a-Service (IaaS) offerings. There are vast libraries of open source code organized by the likes of GitHub. Developments in software and cloud services have dramatically lowered the bar for new entrants. Yet, it is quite difficult and unlikely to dislodge or take share from the two dominant giants, Alphabet and Meta Platforms. This can also be said of several the smaller players that dominate their niches in this industry (Yelp, Match Group, Pinterest). Over time, we see the pool of money allocated to companies in the industry increasing on an absolute basis as the targeting, effectiveness, and ad-spend ROI continue to improve, which will surely attract new entrants.
THREAT OF SUBSTITUTES	MEDIUM - Substitution on the user or "audience" side of a multi-sided platform, which most of the businesses in this industry are, occurs with regular frequency. Substitution on the "monetization" side of a multi-sided platform, mostly in the form of advertising spend, is more difficult and takes more time. Though they vary in effectiveness as ad platforms and depend on what is being advertised, all digital forms of interactive digital media are superior to non-interactive digital or analog forms of advertising. Competence and expertise in search engine optimization (SEO) produce very clear and real ROI but represent a much more quantitative and data-driven approach to marketing and advertising than the more qualitative and purely creative advertising culture of traditional media advertising.
POWER OF SUPPLIERS	LOW - The two largest constituents by market value by far in the industry, Google and Meta Platforms, procure billions of dollars in hardware and software annually -- along with Amazon and Microsoft in the U.S. in the last decade. Often, these companies do not think the mainstream vendors of servers, storage systems, and even some network equipment specifically deployed in large data centers can meet their needs, so they skip over their suppliers, order the components, and custom build the hardware for their own internal deployment. Telecom network services would be another category of a critical input required to maintain the service. However, there are multiple network service providers large enough to connect their data centers to the internet and that can even be mixed and matched by portion of the network and by geography.
POWER OF BUYERS	MEDIUM - Companies in this industry, including both Google and Meta Platforms, are multi-sided platforms with extremely large and continually growing user bases, and the value to other users and to advertisers of the user base "side" of the platform is amplified or reduced by the level of user engagement. However, both Google and Meta Platforms have just enough competition in their respective search and "general purpose" social network categories to maintain an equilibrium and put a cap on prices and therefore profits for Google and Meta Platforms. Most advertisers actively allocate ad spend from/to Meta Platforms to/from Twitter, Snap, and now TikTok and perhaps tangentially with LinkedIn. Alphabet and Meta Platforms face other limits on pricing and share, as high ROI on ad spending has enabled advertisers to cap the ability of both companies to arbitrarily set pricing parameters.
Source: CFRA.	

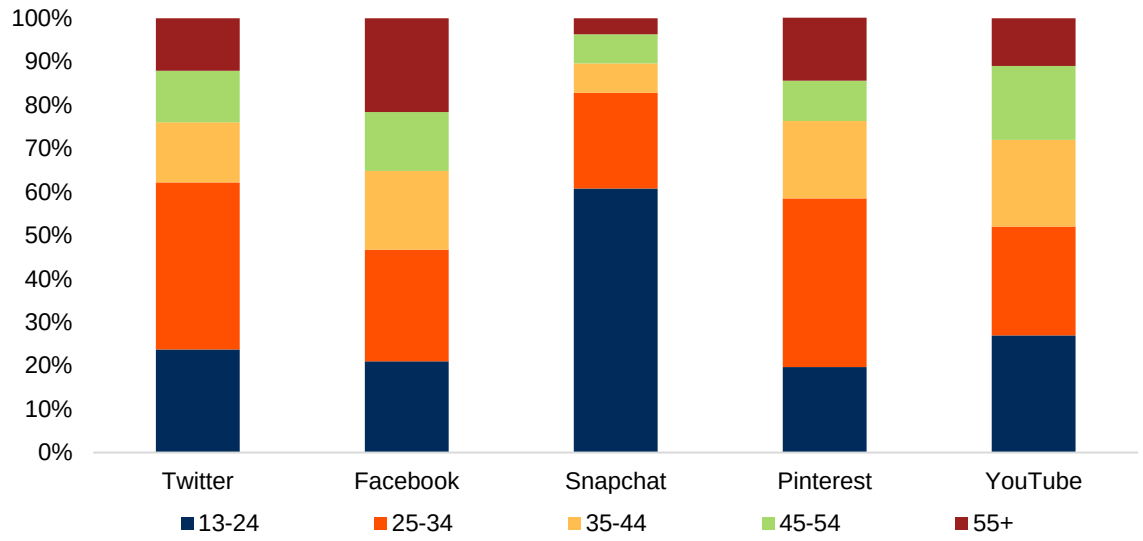
Social Media Breakdown by Key Components

Social media platforms with a growing installed base and high engagement levels are poised to outperform over time. Meta Platforms and Google have been successful in capturing over half of the digital ad spend given the large audience/consumer eyes they cater to. Meta Platforms is exposed to half the global population when looking across its four social networks (Facebook, Messenger, Instagram, and WhatsApp), while Alphabet dominates with its near monopolist exposure across the search arena along with its YouTube offering. We expect advertisers to increasingly devote more resources to other social media providers (*e.g.,* Pinterest, Snap, and Twitter) but will gravitate to those that have the most engaged audiences.

Age Profile Across Different Platforms

Consumers experience critical first-time milestones from the age of 13-34 that make that category most appealing to consumers. We compare the age profile of users across different social media platforms in the figure below and found that Snapchat has by far the most attractive installed base, with over 80% under 35 years. Maybe, more importantly, about 60% of Snapchat's installed base is under 25 years old, capturing an increasing amount of time from teens spend (TikTok being the other) given its more mobile-friendly exposure, with no other platform under our coverage even coming close to this audience representation.

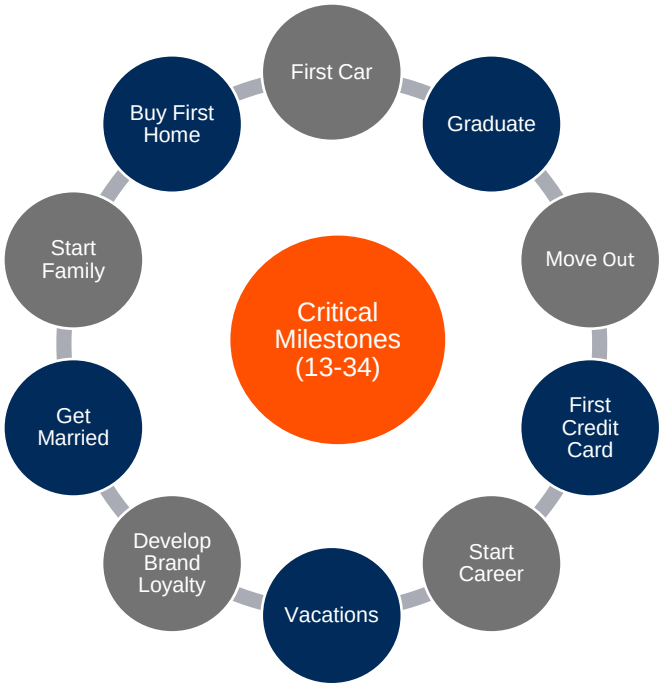
AGE PROFILE OF KEY USERS ACROSS SOCIAL MEDIA PLATFORMS



Source: CFRA and Company Data.

We demonstrate the importance of that age range for potential advertisers, given the "many firsts" that those consumers experience in their life. It is also a time in a consumer's life where they develop significant brand loyalty and should be perceived as highly valuable to advertisers. Meta Platform's biggest issue is its older installed base (average age about 40) relative to others and, hence, recent rebranding efforts and greater investments into the metaverse. Google's YouTube platform appeals to all age ranges but has witnessed much higher usage from the under 35 age range.

CRITICAL MILESTONES CONSUMERS EXPERIENCE FROM AGE 13 TO 34



Source: CFRA, Snapchat.

Higher engagement levels are key to driving greater monetization of social media platforms. Age does play a factor in engagement, as we find younger individuals to be more engaged on the social media sites that they use. In the next table, we highlight that TikTok, YouTube (video driven), and Snapchat as platforms witnessing a rising level of engagement with their audiences. YouTube is expected to launch ads in YouTube Shorts with a revenue share for creators. CFRA believes that this move will be a huge advantage for YouTube to catch up to TikTok's dominance in the short-form video format. If TikTok does not copy YouTube's revenue share program for its platform, we will potentially see the drop in TikTok's dominance in this space.

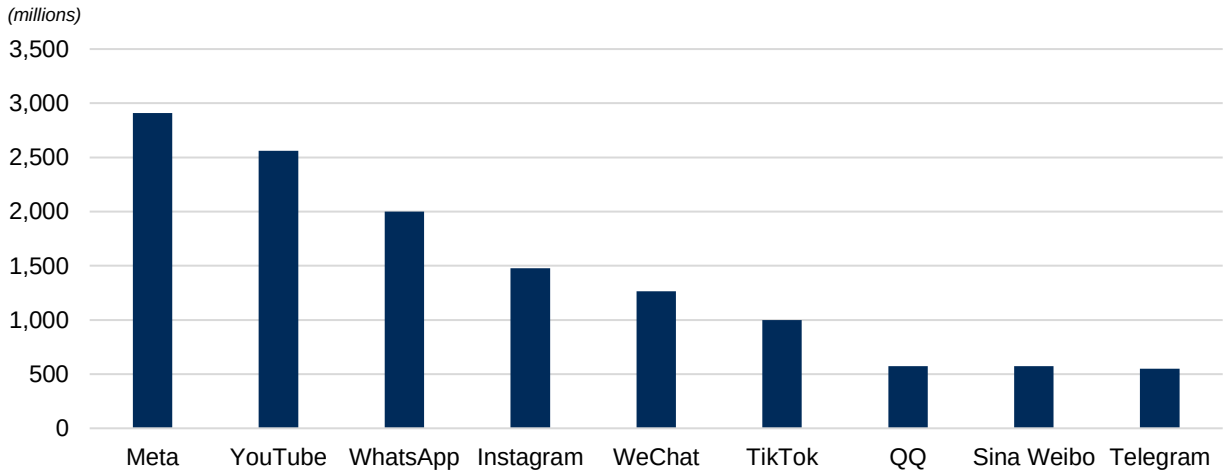
We would highlight that Pinterest has a niche with women/moms in the 25 to 40 age group, but engagement has dropped after peaking during the pandemic, as fewer individuals are likely focused on projects around the house and would rather spend more time outside the home. Facebook has also seen the average daily time spent on its platform decline in recent years, partly reflecting an aging and less active audience, but Meta Platforms is seeing better results from Instagram. Twitter's age profile appears attractive, but the firm's biggest issue is driving greater engagement from those users, as the company has been unable to increase the time spend on the platform by users. We view Twitter as a high-quality asset with significant potential to monetize itself should it be successful with improving engagement levels. We also observe the top 10 social media sites by Monthly Active Users (MAU) in 2022 to better understand the reach each platform has globally (table on the following page).

ESTIMATED AVERAGE DAILY TIME SPENT ON KEY PLATFORMS

Platform	Daily Average	Trend
TikTok	48 minutes	+
YouTube	40 minutes	+
Meta	33 minutes	-
Snapchat	30 minutes	+
Instagram	28 minutes	0
Pinterest	14 minutes	-
Twitter	<10 minutes	-

Source: CFRA, eMarketer, Statista, and Company Data.

TOP 10 SOCIAL MEDIA SITES IN 2022, BY MONTHLY ACTIVE USERS



Source: Statista, Buffer, CFRA. Data as of January 2022.

The Secular Shift Towards Digital Ad Spend and Away from Traditional Sources

The Covid-19 pandemic has driven a secular shift towards digital ad spend, as traditional ad spend bore the repercussions of the pandemic. This is evidenced by a growth of 29% for digital ad spend in 2021 as opposed to a 6% growth for traditional ad spending in the same period, according to eMarketer. Nonetheless, the ad spending growth is expected to set a groundbreaking record in 2022, supported by dampened demand for traditional advertising, coupled with skyrocketed growth in e-commerce related ad spending and social media advertising. The total global media ad spending is estimated to reach $866.4 billion in 2022, with digital's share of worldwide media ad spending set to cross 65.9% for the first time in 2022 and on target to reach approximately 72% in 2025.

Implications from Apple's Privacy Change

In April 2021, Apple rolled out a privacy change to its iOS that restricts how users are tracked on their mobile devices, severely hitting tech and e-commerce companies. The privacy change now allows iOS users to opt out of personalized ad tracking by any app. Meta Platforms and Snap are among the social media giants that have appeared to be hit the hardest due to the major change. This is due to limited availability to obtain data on consumers' habits and interests and to target ads at users as effectively. Nonetheless, Meta Platforms is currently working on rebuilding its ad stack to employ more machine learning and AI to be more effective at ads with less data. Meta Platforms did confirm the incremental headwinds from iOS15 and factored them into its near-term outlook. On the other hand, Twitter has been less impacted by the change, thanks to its different approach to advertising strategy that focuses more on

search terms and immediate context as opposed to targeted ads. On the contrary, Alphabet saw a trivial impact on the change as it solely relies on its own advertising network and Android ecosystem. Nevertheless, financial experts predict that it will take some time for the ad revenue space to be fully impacted by Apple privacy changes. Meta Platforms, in particular, could potentially be exposed to significant long-term risk to its small advertiser base and level of e-commerce exposure.

Metaverse Becoming a Reality or Is It Just a Dream?

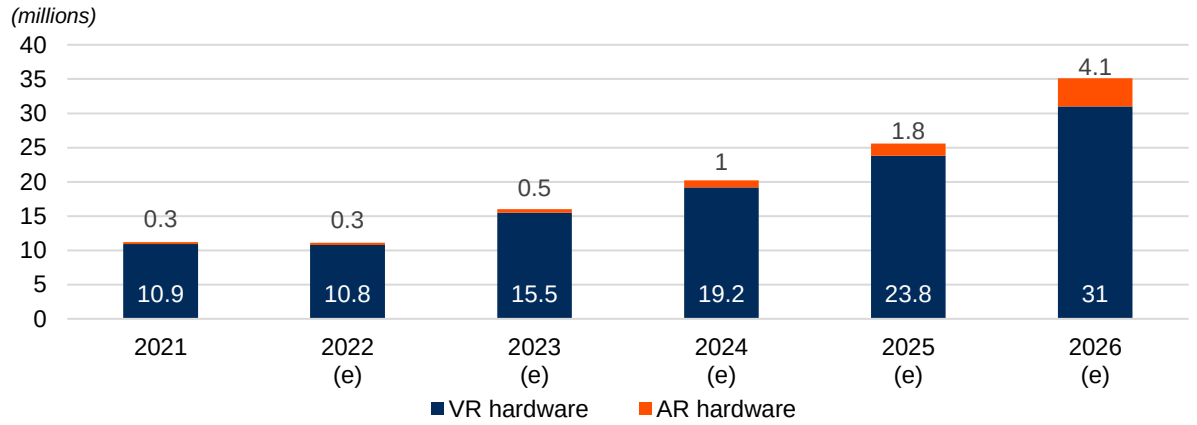
Meta Platforms CEO Mark Zuckerberg announced in October 2021 that Facebook had changed its name to Meta, which aims to explore online digital realms under the evolution of the metaverse. The company envisions creating an online virtual world with a combination of multiple elements, including technology, virtual reality, augmented reality, and video, where users can go "live" within the digital universe. The company also visualizes its users working, playing, and staying connected with each other, from attending concerts and conferences to taking virtual trips around the world through the metaverse. The company has already begun investing in virtual reality back in 2014 through its acquisition of Oculus and is currently stepping up its game to dominate the virtual world. Although it is highly likely that it will take many years for the company's ambitions to come to fruition, it firmly believes that the evolution of virtual reality through the metaverse will be the future of the internet.

Despite the hype surrounding the metaverse, we have observed Meta Platforms' share prices are down around 60% year-to-date. Investors are not happy with the performance – Altimeter Capital chair and CEO Brad Gerstner wrote an open letter on October 24, 2022, that Meta Platforms has lost its focus. "Meta has drifted into the land of excess – too many people, too many ideas, too little urgency. This lack of focus and fitness is obscured when growth is easy but deadly when growth slows and technology changes," wrote Gerstner. In that scathing letter, Gerstner proposed Meta Platforms should reduce headcount expenses by 20%, cut its annual capital expenditure by at least $5 billion, and limit investment in the metaverse to less than $5 billion per year.

Catch You in the Metaverse! Gaming to Propel Consumer Interest

Although the concept of the metaverse is not new, we believe device sales related to AR/VR could increase significantly in 2022 (11.2 million units sold in 2021) given the commitment by Meta Platforms to drive consumer awareness along with our belief that Apple is poised to finally unveil its own mixed reality headset (design issues could push a release into 2023). Many believe the metaverse could emerge as the next evolution of the internet (CFRA is cautiously optimistic), presenting trillions of dollars of opportunities, and will be seen as a tangible revenue opportunity for hardware/semiconductor companies over the next year while it represents a longer tail for social media firms.

WORLDWIDE AUGMENTED AND VIRTUAL REALITY HARDWARE SHIPMENTS



Source: IDC, October 2022.

Deriving Advertisement Revenue Through Social Commerce

The proliferation of social media platforms has led to the evolution and growth of a new subset of e-commerce: social commerce. Social commerce uses social media networks such as Instagram or Twitter as platforms to sell products and/or services to users. According to Accenture, the social commerce opportunity is expected to triple by 2025. Worldwide sales made through social commerce in 2021 were estimated to have reached $492 billion and are expected to cross $1.2 trillion by 2025 while growing at a CAGR of 26%. Social commerce engages in three key areas: through brands, influencers, or individuals themselves.

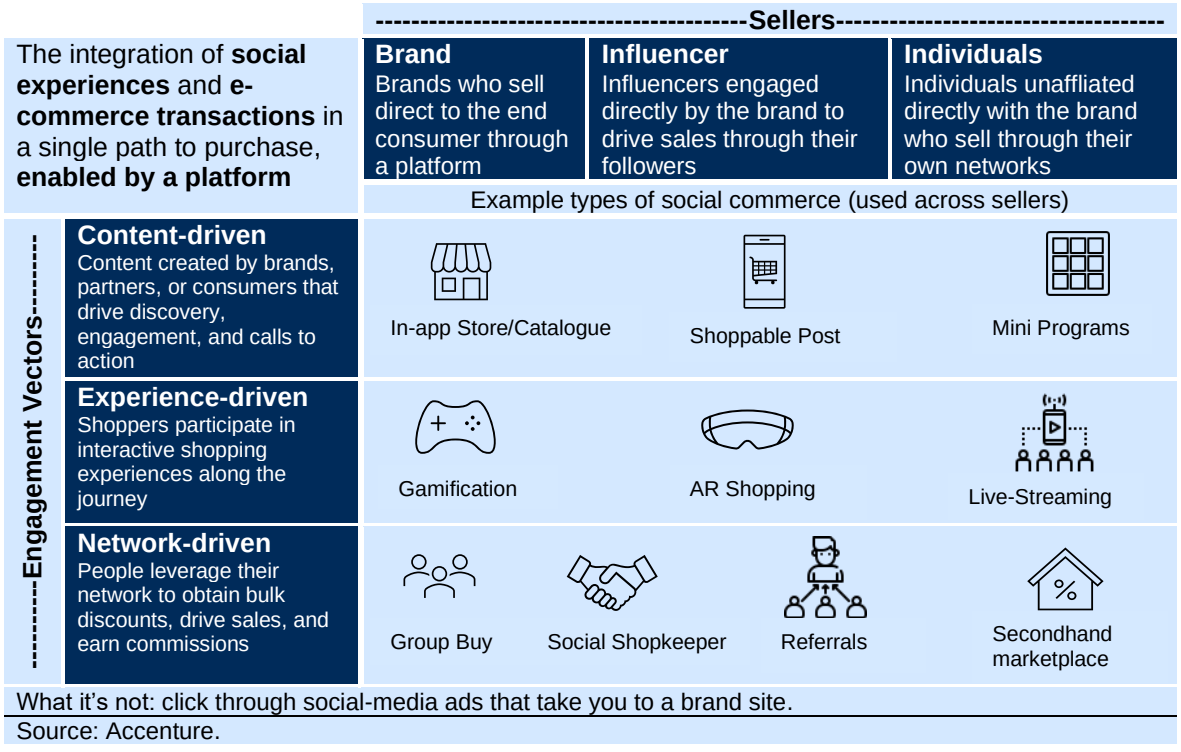
There are three main forms of engagement for social commerce: Content-driven, experience-driven, and network-driven.

Content-driven: Unique content created by brands, influencers, or individuals drives authentic discovery, engagement and action. For example, social media users can discover the latest goods and experiences via shoppable posts and in-app stores, such as TikTok, Pinterest, YouTube, Meta, and Instagram.

Experience-driven: Experience-driven channels enable shopping within an overall experience, most commonly livestreaming, which could also include AR/VR experiences. One example is Snap's AR shopping tool Lenses. Some of the more popular AR shopping experiences include Home Depot, IKEA, Target, and Nike.

Network-driven: People are utilizing their existing social networks to buy and/or sell products. That could mean getting together to procure bulk discounts – a model used successfully by Pinduoduo in China that it surpassed Alibaba in terms of active buyers. Or it could mean individuals using their influence and network to drive sales and earn commissions. India's Meesho now has more than 13 million entrepreneurs who connect with their customers on social media platforms like WhatsApp.

WHAT IS SOCIAL COMMERCE?



Source: Accenture.

Metaverse is more than Meta Platforms

Metaverse is a word that was coined by author Neal Stephenson in his 1992 sci-fi novel Snow Crash. In the novel, Stephenson defined metaverse to be an all-encompassing digital world that exists parallel to the real world. Matthew Ball, a venture capitalist and angel investor, is one of the leading experts in the metaverse universe. In his own words, Metaverse is best understood as “a quasi-successor state to the mobile internet”; metaverse will not fundamentally replace the internet, but will build upon and iteratively transform it.

Metaverse is a massively scaled and interoperable network of real-time rendered 3D virtual worlds that can be experienced synchronously and persistently by an effectively unlimited number of users, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments, according to Ball. CFRA agrees with Ball’s prediction that a full-fledged metaverse is decades away. Nonetheless, the hardware ecosystem that supports emerging technologies and trends could bring about an experience never seen before.

CORE ENABLERS OF THE METAVERSE

Source: Ball Metaverse Index.

Operating Environment

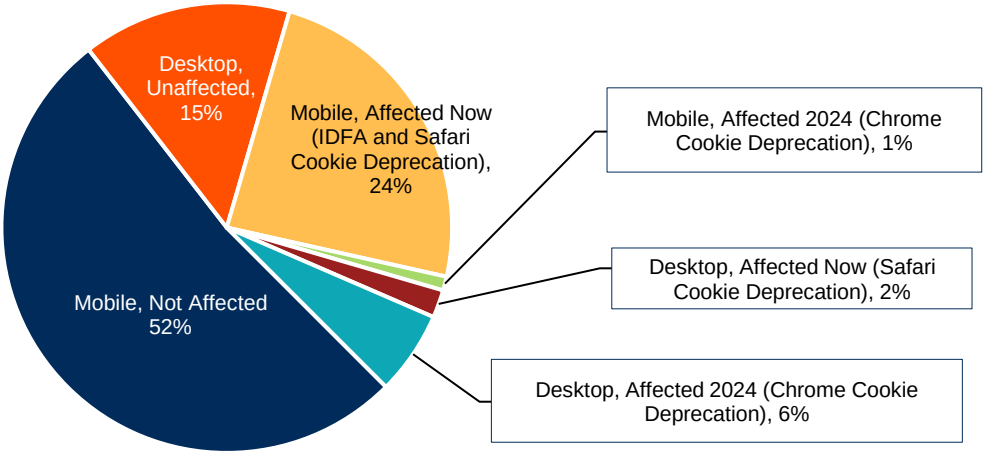
Social Media Advertising Growth Will Decelerate in 2022 and First Half of 2023
There's no denying that growth in spending on social media advertising has been decelerating. CFRA thinks this reflects the evolution and increasing maturation of the category, as well as the "law of large numbers" (*i.e.,* it is hard to sustain high levels of growth). The deceleration in growth across social media advertising spending is evident across the three main U.S. companies in this category. Meta Platforms, Twitter, and Snap were founded over a span of seven years, with different social media offerings and business models. Their revenue and related growth trajectories look quite similar. Revenue growth deceleration is clear for all three companies.

We think the deceleration of social media spending/revenue growth, as well as concerns about legal and regulatory scrutiny, contributed to multiple compression for the major social media companies, especially Meta Platforms. While revenue growth for these companies has decelerated, their balance sheets have remained relatively strong. With their relatively healthy balance sheets, social media companies have multiple options to invest in other synergistic revenue sources besides advertising, with subscription-based pricing potentially making a comeback in social networks, especially for those weary of the increasingly intrusive ad targeting.

Easier Comparisons and Adjustments Should Allow Growth Rates to Reaccelerate by H2 2023
The next chart depicts advertising spend that has been affected by Apple's privacy changes by format, with the biggest impact obviously coming from select mobile players. Apple has, of course, benefited from the moves as advertisers and marketers are increasingly using its SKADNetwork, which is Apple's privacy-friendly method of attributing ad impressions and clicks on iOS apps. SKADNetwork is able to share data with advertisers without revealing user-level or device-level data. However, many across the industry argue that Apple's ad tracking technology isn't as effective and useful for advertisers, which is forcing social media providers like Meta Platforms to derive new tools to better support its customers.

CFRA continues to believe that many of these issues will be addressed by the second half of 2022. Nonetheless, with mobile-driven platforms being the most affected by Apple's moves, they remain most at risk of seeing further downside consensus estimates in the first half of the year (*e.g.,* Snap's first half top-line revenue now seen only growing about 30% Y/Y, versus our view in the middle of 2021 that it would grow about 45%). We would also note that stock prices across the industry have largely been reset, and while another adjustment in estimates could put near-term pressure on stocks, the most pronounced declines have largely run their course.

U.S. DISPLAY AND AD SPEND AFFECTED BY PRIVACY MEASURES BY APPLE AND GOOGLE (BY FORMAT)



Source: CFRA and IDC.

Moves to Mobile

According to the Cisco Annual Internet Report, Cisco forecasts that the number of mobile devices in the world would increase at a CAGR of 8% from 2018 to 2023 (latest available). The firm projected that in 2023, there would be 8.7 billion mobile devices and 4.4 billion machine-to-machine (M2M) devices (*e.g.,* GPS systems, medical applications, asset tracking systems, etc.). The mobile M2M category is projected to grow at a 30% CAGR from 2018 to 2023 (latest available). Over the same period, the average mobile network connection speed (not including WiFi, only cellular connections) will only likely more than triple to 43.9 Mbps by 2023 from 13.2 Mbps in 2018 (latest available), according to Cisco. This is somewhat misleading, in our view, given that much higher speeds in urban areas are usually several times higher than the overall global average. Nevertheless, we see average connection speeds increasing much more than 3x with 5G, at least by 2025, providing a much higher capacity infrastructure close to delivering an all-you-can-eat video service anywhere, rarely glitching. Further, 5G enables even more immersive (and network intensive) media experiences that likely represent an entirely new paradigm for advertising, like radio-to-TV and TV-to-the-web, with clearly considerable long-term potential.

Accordingly, we see global advertising continuing to come through a widening variety of media delivered to the smartphone, primarily, and the tablet, secondarily. Continuing to fuel mobile growth will be the rollout of 5G and the increased speed at which consumers can download video and participate in multi-party real-time video conferences that we believe will expand from just business use. However, we note mobile's rate of growth has been slowing over recent years as worldwide smartphone penetration approaches a saturation level among the most valuable demographics for advertising.

While providing options and opportunities for mobile-first and mobile-only businesses such as Snap and Instagram, the shift to wireless has also presented challenges for established leaders, such as Alphabet. While mobile has likely contributed to gains in paid clicks (search advertising volume) for the company, it has also hurt price per click (search advertising pricing). Eventually, mobile will likely be an addition to search advertising prices, reflecting user shifts and the potential benefits of location information and payment capabilities.

Impact and Status of 5G

Video advertising will be the top gainer in a 5G-enabled world, in our view. Video is the most consumed content on the internet; and with the increase in mobile internet speeds, buffering and page load times will drastically decrease, leading to increasing mobile video consumption. Video traffic will amount to 79% of mobile data traffic by 2022, according to Cisco. With higher data processing rates, advertisers will have numerous opportunities to create compelling, creative, and high-resolution ads to engage consumers. With 5G interactive content like live-streaming, 4K videos will become more attractive.

5G will generate an unprecedented amount of data. Better access to high-quality data can help advertisers understand a customer's needs in real-time. Faster exchange and retrieval of data will enable more complex and personalized advertising. In-depth, granular, hyper-targeted, and advanced location-based advertising will help create personalized ads to woo customers at the right place and at the right time.

Augmented Reality (AR) is slowly becoming a mobile staple, though network connection speed and latency (*i.e.,* the response time for a single data packet) are limiting factors in AR adoption, both of which 5G will help alleviate. To create seamless, immersive experiences, a network with high system capacity, lower latency, and more consistency is required, and 5G is expected to solve all these issues, which is why 5G infrastructure deployment and service availability are key to unlocking a range of new opportunities in advertising, including technologies such as AR, as well as changing and expanding the fundamental nature of advertising.

M&A Environment

One Big Takeover but Otherwise A Quiet Environment
Companies in the Interactive Media & Services industry were among the most acquisitive in the world over the past few years, at least in terms of the total number of deals. In fact, at times over the past few years, the two largest constituents were buying multiple companies per month as they looked to bolster their positions in emerging technologies, add to their capabilities, and expand into adjacent areas.

On April 25, 2022, Twitter announced that it agreed to be acquired by Elon Musk for $54.20 per share in cash in a deal valued at $44 billion, representing a 38% premium to its price before Musk disclosed his 9% stake. The deal is expected to close by year-end, assuming necessary regulatory and shareholder approval. We view Musk's desire to complete the acquisition as a best-case scenario for investors, given our view that Twitter's standalone value was less than half this offer. We are somewhat shocked that Musk didn't look to at least settle at a discount, but it prevents a potentially ugly court battle. We think Musk likely realized the odds of a victory were slim to none, and steering away from a court battle helps prevent doing any further harm to Twitter (an asset he would ultimately be forced to own). Elon Musk has successfully completed the takeover of Twitter on October 27, 2022. CFRA think Musk's first order of business will need to be focused on repairing a damaged employee base and finding the right leadership team.

In a somewhat similar acquisition, Meta Platforms bought Kustomer, a cloud provider of Customer Relationship Management (CRM) apps. Meta Platforms also appears to be using its platform to test the waters for an expansion into enterprise apps, especially those targeted at small businesses, which make a large number of advertisers on Meta Platforms and are typically very tactically oriented (*i.e.,* they want ads to turn into leads, to turn into customers – compared with advertising that aims to establish brand, educate the customer, etc., and other campaigns generally associated with larger companies). On January 27, 2022, the European Commission approved the acquisition of Kustomer by Meta.

Given significant legal and regulatory scrutiny on Alphabet and Meta Platforms, we continue to expect both companies will refrain from attempting acquisitions much larger than a few billion dollars. However, we think smaller players, such as Pinterest and Twitter, might find attractively priced opportunities to expand their offerings or bolster technology through smaller "tuck-in" acquisitions, given that both have sizable net cash positions. Snap is also likely to continue pursuing smaller acquisitions, but it does not have the same financial flexibility as Pinterest and Twitter.

Regulatory Updates

The Digital Markets Act and Digital Services Act by the European Union
The Digital Markets Act (DMA) is expected to come into force sometime in 2023. The DMA will force new obligations on companies deemed to be "gatekeepers" – a category defined by the legislation as firms with a market capitalization of at least €75 billion ($82 billion), with at least 45 million monthly users, and a "platform" like an app or social network. Naturally, all the Big Tech names are at risk; however, we anticipate that the Act will also affect many smaller names that are not top-of-mind and lesser-known social media providers. Some of the biggest changes, in our view, include greater interoperability (*e.g.,* messaging across platforms), ability to uninstall pre-installed apps, end to self-preferencing by Big Tech, greater flexibility across app platforms, greater data access (*e.g.,* businesses able to access Amazon analytics about their performance), and more advertising transparency. The penalty? Up to 10% of a company's total worldwide sales in the preceding financial year, and 20% in cases of repeated infringements. In cases of systematic infringements, the Commission may even ban repeat offenders from acquiring other companies for a certain time.

The DMA essentially puts together a number of anti-trust fights that the regulatory agency has been looking at for years, bundling it into a single legislative act and strengthening the power to enforce these terms. On July 5, 2022, the EU Parliament adopted both the DMA and the Digital Services Act (DSA). All that's left is a perfunctory approval by the EU Council. The Council is one of two legislative bodies, along with the European Parliament, that serves to amend, approve, and/or veto the proposals of the European Commission, which has the power of legislative initiatives. Think of it as similar to the Senate passing what the House already voted out.

The DMA is a vast set of asymmetric regulations targeted at a small number of "gatekeeper" entities including Google, Amazon, Meta Platforms, and Apple. It is designed to curb their dominance by eroding many of their information gathering and platform competitive advantages. The EU Council formally adopted the DMA in September 2022. It will go into force 20 days after publication in the EU's Official Journal. It becomes applicable on May 2, 2023. We expect the "gatekeeper" designation process to begin next summer and after designation, companies will have six months to come into compliance. Consequently, enforcement could begin as early as the end of 2023, but more likely sometime in the first quarter of 2024.

The DSA, on the other hand, is a regulatory measure with three goals: 1) rules to enforce, for lack of a better term, user civility on digital platforms; 2) limit the proliferation of targeted digital ads; and 3) increase the responsibility of digital companies to verify the authenticity of goods and services sold on their platforms. In October 2022, the EU Council gave its final approval to the regulation on the DSA. It will go into force 20 days after publication in the EU's Official Journal. Affected service providers will have until January 1, 2024 to comply with its provisions.

Unlike the DMA, the DSA will be applied universally (with certain exceptions) to digital platforms. So-called "gatekeeper" entities, including the Big Techs, will be treated the same as companies like Snapchat and TikTok.

However, very large online platforms (VLOPs) and very large search engines (VLSEs) – those having 45 million users in Europe – will be policed by the EU. Enforcement for smaller companies will be handled by the EU member states individually.The DSA is on a similar timeline as that of the DMA. Formal Council adoption for the DSA happened on October 4, 2022. Six months later, around March 9, 2023 to April 30, 2023, or February 2, 2023 to July 20, 2023, the VLOP designation is to begin. All smaller entities will have to comply by January 2024.

In our view, the 2023 timeline for the DMA is quite aggressive for tech companies to be able to make the changes to their platforms in time to meet this timeline and will likely have to work with regulators for a more realistic time frame. It could be possible that some of the issues at hand are gradually implemented, with some taking place by year-end 2022 and others not until 2023 end. Clearly, a headwind for large cap tech companies and the repercussions are yet to be seen. CFRA thinks the biggest risk is among the Big Tech companies, especially for Apple given how it operates so secretly and within a "walled garden." Specifically, it could potentially lead to lost revenue within the App Store. We could also make a case for Google and potential lost revenue for its own products, especially given changes on the search side. CFRA thinks it's too early to say if any of this will have transformative implications on the growth profile of any of the Big Tech names. The great thing about the Big Techs is that they have so many levers to move to offset any potential lost revenue streams. CFRA believes that a positive takeaway is that it removes uncertainty for tech companies. The EU's intentions for Big Tech companies have always been an inherent risk and now that it's on the table and unlikely to upend any single business model, it could be viewed as a relief for investors. Tech companies will, to an extent, be required to change business practices across the entire ecosystem. Some of the changes will almost be impossible to be done for a specific region of the globe, and thus Apple, among others, will need to work with external parties to get its platform up to EU code.

Alphabet
The U.S. Department of Justice (DOJ) is in the middle of preparing for a monopoly anti-trust lawsuit against Alphabet, targeting its search distribution, Google, and claiming that the company used exclusive distribution deals with wireless carriers and phone makers to drive out competition. The investigation is currently still ongoing, with the trial set to commence in 2023. On top of that, several state attorneys general led by Texas have also filed anti-trust lawsuits against Alphabet, accusing the company of using unethical tactics and breaking anti-trust laws to further uplift its dominant presence in the digital advertising market. The states claimed that Google has established an illegal agreement with Meta Platforms to manipulate the online auctions where advertisers and website publishers buy and sell ad space. Although these lawsuits are currently in early stages and no trials are likely to begin until the second half of 2022, we anticipate that there will be a possibility for DOJ to file a new lawsuit against this allegation. First hearing of this trial occurred on September 8, 2022, where the DOJ and Google presented their views on Google's business.

Meta Platforms
Meta Platforms has submitted a request to dismiss the Federal Trade Commission's (FTC) complaint about its acquisition of Within Unlimited. The virtual reality firm makes Supernatural, a rhythm game-turned-workout app that uses VR technology. FTC raised concerns that this is an anticompetitive acquisition. In July 2022, FTC alleged that Meta Platforms and Mark Zuckerberg are planning to expand Meta's virtual reality empire with this attempt to illegally acquire a dedicated fitness app that proves the value of virtual reality to users. In other words, FTC argues that Meta Platforms' acquisition of Within would "create a monopoly" and "substantially lessen competition". However, Meta Platforms has since came out and said it would fight the lawsuit. Meta Platforms and FTC are scheduled for a hearing in December but the judge may rule to grant the request to dismiss prior to that.

Waiting for the Regulatory Smoke to Clear in the U.S.
The digital advertising market is essentially a duopoly consisting of Alphabet and Meta Platforms. With industry leadership comes scrutiny, and with scrutiny comes an "eyes watching you" mentality from legislators. Meta Platforms certainly did not help itself with the Cambridge Analytica fiasco in 2018 and its emergent role as a hub for news and political discourse during the 2016 and 2020 elections. In recent years, Alphabet has been under the microscope, especially in Europe, where the European Union levied over $10 billion in fines on the company in 2017 and 2019. It also faced threats of anti-trust actions from the Trump administration's DOJ under Attorney General William Barr. Yet, despite all the saber-rattling, cries of liberal bias, and announcements about potential future actions, the Trump administration effected little new regulation, although certainly, the public conversation around the power of Big Tech has gained substantial momentum.

So, while we see tremendous opportunities within this sub-industry, our optimism is kept in partial check by the ongoing threat of regulation regarding potential anti-trust violations, data privacy, and the potential use of social networks to spread disinformation and propaganda and to foment political and social unrest. These are very real issues with real implications regarding how search, social media, and online digital content should be regulated, given that most of the pertinent regulation is a rickety retrofit of existing regulatory and legal constructs from the pre-internet era. However, the present political climate has led to exaggeration, weaponization, and exploitation of positions on these issues, all of which obscures what is relevant and what is not, what is a problem and what is not.

We continue to see Meta Platforms as facing the greatest regulatory risk given the higher velocity with which disinformation and propaganda can spread on its platform vs. showing up in Google search results, as well as what we view as Alphabet's superior government relations efforts to date. The motivation for major regulatory actions, or for the legislation to give those actions teeth, usually has a strong emotional component, especially as an initial impetus. It is difficult to recall a time in modern American history when emotions about politics ran higher, and we argue that those emotions are pressure-cooked and

distributed more on Meta Platforms than any other platform – certainly more than Google. After all, a person does not “de-friend” someone they have been close to for 20 years since high school because of search results they did not like. However, political Meta Platforms posts seem to be breaking thousands of relationships every day in the U.S., which seems to have left a bad taste in people’s mouths for Meta Platforms in particular.

HOW THE INDUSTRY OPERATES

A HISTORY OF THE INTERNET

The origins of the internet date back to the late 1960s, when the U.S. Department of Defense's Advanced Research Projects Agency (ARPA) began to explore designs for a packet-switched communications network that could withstand the loss of any single part of the system. Called ARPANET, this network transmitted military data through various computer facilities across the U.S. These facilities, called nodes, were interconnected by a series of telephone lines in such a way that the nodes were largely independent of one another.

What made this network revolutionary was its reliability. If one node was rendered inoperable, data could still flow among the others. In addition, the nodes could detect whether certain connections were congested and then would route the data accordingly.

Below we have provided a timeline of key points in the development of the internet.

TIMELINE OF THE INTERNET	
1969	Arpanet was the first real network to run on packet switching technology (new at the time). On October 29, 1969, computers at Stanford and UCLA connected for the first time. In effect, they were the first hosts on what would one day become the internet. The first message sent across the network was supposed to be "Login", but reportedly, the link between the two colleges crashed on the letter "g".
1971	Email was first developed in 1971 by Ray Tomlinson, who also made the decision to use the "@" symbol to separate the username from the computer name (which later on became the domain name).
1983	January 1, 1983 was the deadline for Arpanet computers to switch over to the TCP/IP protocols developed by Vinton Cerf. A few hundred computers were affected by the switch. The name server was also developed in '83.
1984	The domain name system was created in 1984 along with the first Domain Name Servers (DNS). The domain name system was important in that it made addresses on the internet more human-friendly compared to its numerical IP address counterparts. DNS servers allowed internet users to type in an easy-to-remember domain name and then converted it to the IP address automatically.
1986	The so-called Protocol wars began in 1986. European countries at that time were pursuing the Open Systems Interconnection (OSI), while the U.S. was using the internet/Arpanet protocol, which eventually won out.
1987	By 1987, there were nearly 30,000 hosts on the internet. The original Arpanet protocol had been limited to 1,000 hosts, but the adoption of the TCP/IP standard made larger numbers of hosts possible.
1988	Internet Relay Chat (IRC) was first deployed, paving the way for real-time chat and the instant messaging programs we use today.
1989	When Apple pulled out of the AppleLink program in 1989, the project was renamed and America Online was born. AOL, still in existence today, later made the internet popular amongst average (non-academic, non-scientific) citizens.
1990	Number of internet users: 2.6 million.
1991	The first web page was created and, much like the first email explained what email was, the first web page's purpose was to explain what the World Wide Web was. Also, in the same year, the first search protocol that examined file contents instead of just file names was launched; it was called Gopher.
1993	The first widely downloaded internet browser, Mosaic, was released in 1993. While Mosaic was not the first web browser, it is considered the first browser to make the internet easily accessible to non-techies.
1994	Mosaic's first big competitor, Netscape Navigator, was released. Number of internet users: 44.4 million.

1995	While there were commercial enterprises online prior to '95, there were a few key developments that happened that year. First, SSL (Secure Sockets Layer) encryption was developed by Netscape, making it safer to conduct financial transactions (like credit card payments) online. In addition, two major online businesses got their start the same year. The first sale on "Echo Bay" was made that year. Echo Bay later became eBay. Amazon.com also started in 1995, though it didn't turn a profit until 2001.
1998	Google went live in 1998, revolutionizing the way in which people find information online.
2000	2000 was the year of the dotcom collapse, resulting in huge losses for legions of investors. Hundreds of companies closed, some of which had never turned a profit for their investors. The NASDAQ, which listed many tech companies affected by the bubble, peaked at over 5,000, then lost 10% of its value in a single day, and finally hit bottom in October of 2002. Number of internet users: 412.8 million.
2003	In 2003: Skype is released to the public, giving a user-friendly interface to Voice over IP calling. Also, in 2003, MySpace opens up its doors. It later grew to be the most popular social network at one time (though it has since been overtaken by Meta Platforms).
2004	Facebook launched in 2004, though at the time it was only open to college students and was called "The Facebook"; later on, "The" was dropped from the name.
2005	YouTube launched in 2005, bringing free online video hosting and sharing to the masses. Number of internet users: 1.026 billion.
2006	Twitter launched in 2006. It was originally going to be called twittr (inspired by Flickr).
2007	Hulu was first launched in 2007, a joint venture between ABC, NBC, and Fox to make popular TV shows available to watch online. The biggest innovation of 2007 was almost certainly the iPhone, which was almost wholly responsible for renewed interest in mobile web applications and design.
2008	The iOS App Store launched in July with an initial 500 apps available. Google releases the Google Chrome browser in September. The first version of Google's Android operating system is released. A month later, the Android equivalent to the iOS App Store - Android Market - is launched.
2010	Instagram was officially released on iOS in October. Number of internet users: 1.992 billion.
2012	The Android Market, Google Music and the Google eBookstore are combined and relaunched as Google Play. A "billion" year for Meta Platforms, starting with the $1 billion acquisition of Instagram in April. Meta Platforms' second billion milestone follows in October when the platform reaches a billion active users.
2016	Number of internet users: 3.408 billion.
2018	The Facebook-Cambridge Analytica data scandal emerged. The EU's General Data Protection Regulation (GDPR) takes effect, and although many websites and online services were ready, several prominent services simply blocked EU users rather than trying to comply.
Source: CFRA, WebFX, Visual Capitalist.	

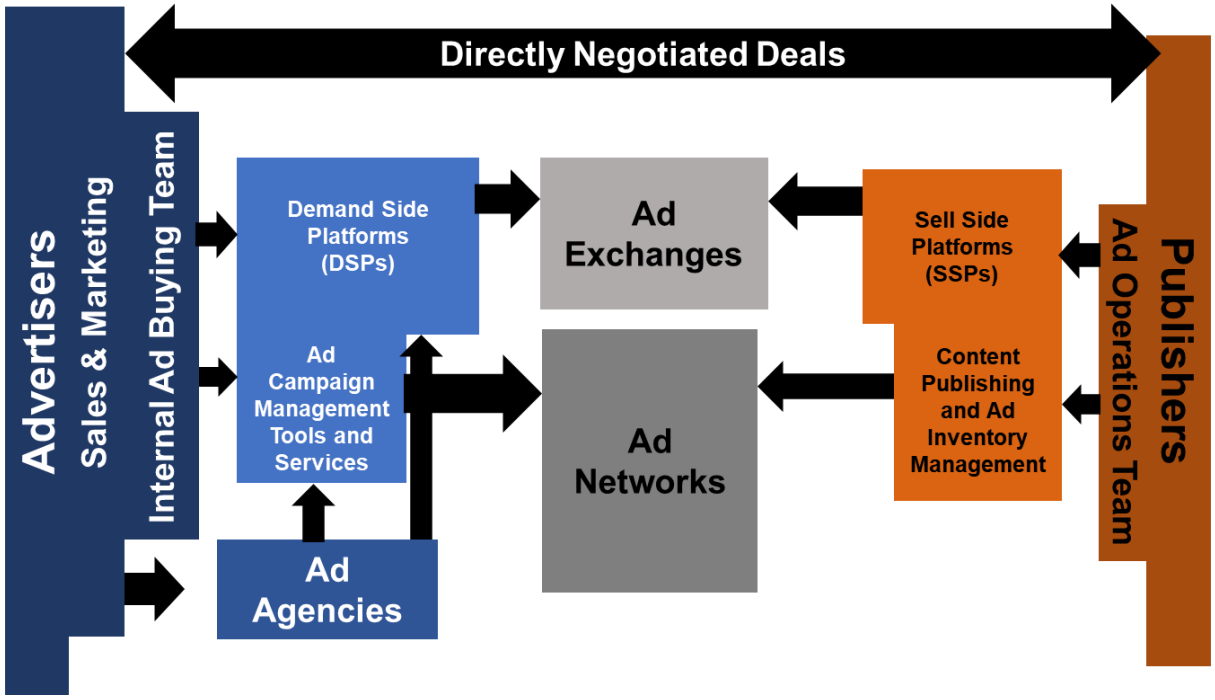
INTERNET ADVERTISING ECOSYSTEM

Internet advertising, which is now more often referred to as digital advertising with distinctions between mobile and non-mobile, has developed a far more complex ecosystem compared to the offline world of traditional media advertising. Even during the 80s and 90s – prior to the ascendance of the internet, e-commerce, digital advertising, etc. – information technology enabled traditional media to develop a more complex ecosystem for content with multiple supplier types, different kinds of distribution arrangements, some deep and hierarchical, others broad and flat; and a wide variety of monetization structures and licensing agreements.

However, within the traditional media paradigm, advertising remained fairly straightforward with the internal marketing departments and ad buying teams at a few large enterprises along with ad agencies comprising the primary decision-makers, buying ads directly from traditional media outlets (*i.e.,* TV networks, radio stations, periodical print media, billboards, etc.) based on the advertiser's target market. The feedback to the advertisers about their targeted market and how many saw their ad, what their

response was, and the effectiveness of the campaign came almost exclusively via sampled data that usually needed to be purchased separately from providers such as Nielson.

As digital advertising took off, it developed a much more complex and dynamic ecosystem vs. traditional media advertising. The digital advertising ecosystem, depicted in the graphic below in a highly simplified form, continues to grow more complex and evolve rapidly even though it just eclipsed traditional media advertising in global revenue in 2019.



We see several reasons for the greater complexity and dynamism of the digital advertising ecosystem:

Growing Digital Trails. This should come as no surprise as all actions in the "digital realm" leave detailed data trails, but the data trails with the potential for "commercial intent" are the ones with value – *i.e.*, browsing online shopping web sites; a click on an ad; "likes" for a particular brand on social media; what videos were watched and how many times, not to mention the frequency they were shared, with whom, to what degree did that sharing cross demographic lines, etc. Further, as these data trails accumulate over time, they become more valuable by painting an increasingly detailed picture of a consumer and her/his preferences, not to mention track those preferences, and update that picture with each digital transaction and incremental contribution of new data consumers voluntarily contributes whether they recognize that they are doing so or not. As the richness and volume of digital trail data grow, advertisers continually look for new ways to analyze, glean insights, and reap value from this data. However, sometimes parts of that data trail or certain analytical conclusions from it may be more valuable to other advertisers and/or to brokers and players in other parts of the ecosystem, creating more opportunities for win-win trades, multi-party exchange deals, new monetization structures, etc. This, in turn, drives greater complexity in the ecosystem.

Software Cognition Augmenting and/or Replacing Human Cognition. This process is occurring across many areas of information technology, for both consumer-facing apps and enterprise apps. Each Moore's Law-driven improvement in hardware performance and capacity enables greater amounts of data to be processed faster, thus creating more opportunities for software to automate specific processes

within the digital advertising ecosystem or to improve and deepen insights from marketing/advertising campaigns. Increasingly, apps not only utilize some form of software cognition that replaces some aspect of human judgement (*e.g.,* recognizing a visual pattern such as a human face) but also make more rapid self-improvements via "learning" algorithms that compete to fulfill certain objectives. All else equal, feeding these apps and their algorithms more and more data leads to better outcomes for advertisers but also generates continuous disruption.

More Rapid Creation and Destruction of New Market Segments and Niches. Whether or not an app employs any machine-learning or deep learning techniques, if it adds enough value, say, by automating some specific time-consuming task, improving ad targeting precision, or improving ad campaigns, that app might lead to the creation of a new market segment soon to be teeming with startups or shift the power dynamics among the various areas within the digital advertising ecosystem. As is the case with any fast-evolving tech-driven area, these segments and niches within digital advertising can fade out of relevance as quickly as they emerged, with that functionality being absorbed by a broader functional category and the companies in that segment acquired by larger companies to advance or protect their competitive position.

Greater Data Exchange and Integration with Apps, Platforms, and Ecosystems Adjacent to the Digital Advertising Eco-System. There are several sub-trends at work here. First, and often overlooked, is the expansion of self-describing data (*e.g.*, JSON format) that enables much quicker on-the-fly analysis but also aids apps in knowing where to slot certain elements of a data set it received from a third-party app or data provider. Next, the proliferation of standard Application Programming Interfaces (APIs) allows for much quicker, more seamless but secure integration among different third-party apps. Lastly, as more apps and workloads are processed in the cloud, there is often data within large enterprises stuck inside legacy, "siloed" client-server applications that are often "set free" and can be better used in correlation with data from multiple cloud-based apps to generate more valuable and predictive insights. The result is that, more than ever, apps and elements from the digital advertising ecosystem are feeding and being fed by apps in areas such as Customer Relationship Management (CRM), e-commerce software and platforms (often included as a sub-set of CRM), digital payment ecosystems (which, in turn, bleed into the larger fintech area), digital content creation and content management apps, various machine/deep learning apps, tools, and platforms, and a range of apps focused on a growing number of analytical niches.

HOW TO ANALYZE A COMPANY IN THIS INDUSTRY

When analyzing a company in the Interactive Media & Services industry, it is important to remember that, compared to Metals & Mining or Banks, this industry is relatively new. Of all the new entrants, only a small number have managed to establish critical mass and sustain profitability. For these companies, investors can use traditional measures when conducting comparative analyses, but they must pay close attention to quickly evolving market dynamics.

Different techniques should be used to evaluate startup companies and those with more limited revenue and earnings profiles. Analyzing any relatively young business, especially one with a focus on the rapidly changing internet segment, poses special challenges. Traditional methods of determining financial standing and underlying value may not be readily applicable. As a result, companies are often valued largely on their prospects for future growth.

In addition to the uncertainty surrounding specific companies, it is often difficult to estimate the potential size of the markets in which they compete, and forecasting category growth may be something of a guessing game. For these reasons, we think qualitative judgments are crucial in helping to determine an internet company's competitive position, growth opportunities, and value.

Making Qualitative Assessments

Rigorous financial statement analysis should be part of a review of any publicly traded company. For internet-related firms, due emphasis should be placed on considerations regarding business models, competitive standing, and management expertise and ethics.

A Model Business Model
The most successful internet business models generally have diversified revenue streams, scalable expense structures, and limited capital requirements. Many online companies that were once high profile, including At Home, Pets.com, and Webvan Group, were able to garner noteworthy growth and brand recognition, but ultimately failed because they could not generate sustainable earnings.

Management Expertise and Ethics Are Key
When analyzing a company in the Interactive Media & Services industry, it is essential to focus on the quality of its management. As much as any area, the internet demands managerial excellence, with a particular focus on vision and execution. Being able to generate new ideas; market new products; and foster an entrepreneurial, innovative, and vibrant corporate culture are invaluable skills when managing a young business in a rapidly evolving new industry.

CFRA thinks that consideration of corporate governance is critical to investment analysis and decision-making, and consistently employs such considerations in making assessments related to stock recommendations.

Watch the Competitive Landscape
As with any high-tech industry, investors need to monitor the competitive landscape closely. Market positions shift rapidly, and new products and business models are developed frequently.

Market Position
The sheer size of a company has a significant bearing on its ability to succeed as an internet player. For example, Amazon.com bolstered its customer base by undercutting competitors on price and offering free shipping promotions and subscriptions. Google's No. 1 position in the search segment has enabled the company to generate substantial profits and invest in the enhancement of existing offerings, the

development of new products and services, and the acquisition of complementary technologies and businesses.

New Products and Services
Interactive Media & Services companies must convert new ideas into saleable offerings quickly in order to capture and retain market share. Given the entrepreneurial nature of most Interactive Media & Services companies, competition is cutthroat and the companies that can achieve expeditious “time to market” often win.

However, there is a caveat. A company that wins share initially does not necessarily thrive over the long term. As the internet evolves, a company’s vision could fall out of step with consumer tastes and/or market realities. Alternatively, an upstart could develop and provide a new and more compelling offering. Alphabet (formerly Google) is a good example of what a great new service and fortuitous timing can mean.

Interactive Media & Services companies place huge bets on their vision of the internet’s future. Therefore, in addition to monitoring which companies are the most nimble and effective over the short term, investors must be mindful of the long-term viability of these businesses.

Foreign Operations
Many Interactive Media & Services industry players have significant operations in international markets. Success in these markets is likely to play an important role in long-term competitive positions. Alphabet and Meta Platforms derive more than half of their revenues from international operations. CFRA expects both companies, as well as smaller constituents, to generate an increasing proportion of revenue ex-U.S. given the greater headroom for both user and ARPU growth outside of the U.S. Therefore, we expect much higher growth ex-U.S. vs. within the U.S. for both users and ARPU (Average Revenue Per User – the main measure of monetization).

Multinational companies are subject to foreign currency risk. For firms based in the U.S., overseas sales are translated from local currencies into dollars. A strong dollar hurts reported earnings; a weak dollar helps. Moreover, companies with global operations often benefit from lower corporate tax rates outside the U.S. Investors also should keep in mind other international risks, such as government regulation and political instability.

Financial Statements: Line by Line

Financial statement analysis offers important insights into a company’s current position and prospects for future growth. The following discussion highlights some of the key line items found on the income statement and the balance sheet, as well as some useful financial ratios. It then addresses valuation methods based on financial measures and other data.

Income Statement Analysis
The income statement portrays the operating results of a company over a stated period. Trends in growth rates, and any aberrations from the norm, should be assessed. In particular, investors look at sales, gross margins, and operating expenses.

◆ **Revenues.** Quarterly results should be compared with the year-earlier quarter and on a sequential basis (i.e., with the preceding quarter). Year-to-year changes reveal longer-term trends, while sequential fluctuations provide clues about sales momentum, seasonality, short-term events, and emerging trends. In reviewing these comparisons, an investor must remember that most internet-related companies enjoy healthier revenue growth in the short term because comparisons are made against a relatively small sales base. It is unrealistic to project continued growth at this pace over the long term.

It is helpful to analyze sales data by segments—which might include advertising revenues, license revenues, service revenues, and subscriber revenues, for instance—in order to focus on the specific contributions to sales growth.

Watch Out! *Companies may enter transactions in which they exchange rights to place advertising content on each other's web sites, publications, radio, or other media. In some cases, the barter agreements are entirely non-cash, and in some cases similar amounts of cash are exchanged between the parties. When companies engage in barter transactions that result in the recognition of revenues and expenses, the opportunity exists for: 1) both amounts to be overstated, thus causing reported revenue growth to appear stronger; 2) the timing of advertising placements can result in the revenues being recognized in one period, while the expenses recognized in a different period.*

Watch Out! *When companies accelerate revenue into the current period, they are essentially "stealing" revenue from future periods. As such, the reported revenue growth during a period in which revenue has been accelerated is likely unsustainable. There are many available tactics that management can use to accelerate revenue, some of which include allocating a higher proportion of transaction price to elements delivered upfront in contracts with multiple deliverables or performance obligations, faster recognition of deferred revenue, large shipments at period-end, a change in revenue recognition policy, or a change in the interpretation of the revenue recognition policy. For many companies, the adoption of the new revenue recognition guidance (ASC 606) resulted in more revenue being recognized upfront compared with the previous guidance. While the change in accounting policy is mandatory, investors should be aware of the significant discretion involved in the amount and timing of revenue recognition.*

◆ **Gross margin.** This measure—the percentage of revenues remaining after subtracting the cost of goods sold—is a key item to watch when examining income statement trends. Unlike other operating expenses, which are generally under the direct control of the company, costs of goods or services are more a function of demand for those products or services, as demand affects volume. Typically, a company with rising gross margins has either raised prices or achieved improvements in its supply chain.

In general, Interactive Media & Services companies enjoy high gross margins because their fixed costs are low. Historically, software and portal companies, for example, enjoyed gross margins of 80% or more. However, online retailers selling products over the internet have considerably lower gross margins, closer to those of traditional vendors. Gross margins are also affected by changes in shipping costs, in response to fluctuations in fuel prices.

When considering gross margins, it is important to know the components of cost of goods sold, particularly for purposes of peer analysis. Some internet companies, such as Amazon.com, do not include fulfillment expenses in cost of sales (it is indicated as a separate line item). Although this practice does not affect a company's bottom line, it does have a favorable impact on gross margins.

◆ **Operating expenses.** The major operating expense line items—SG&A expenses and R&D outlays—yield important information regarding the efficiency and technological leadership of an Interactive Media & Services industry company.

Balance Sheet Analysis
The balance sheet provides valuable clues about demand for a company's products. Areas to watch include inventories and the net cash position.

Watch Out! *A company can manipulate earnings by using the adjustment to fair market value of a target company's assets and liabilities in an acquisition to understate assets and overstate liabilities, thereby allocating a greater portion of the purchase price to goodwill.*

◆ **Net cash position.** The level of cash, cash equivalents, and marketable securities should be followed closely to assess the short-term liquidity of a company. Larger, more established companies with strong cash flows generally have cash available to repurchase shares and/or make acquisitions. A declining cash balance over time could signal competitive pricing pressures or company-specific operational problems.

In considering a company's cash position, the assessment of payment obligations—generally referred to on a balance sheet as long-term debt or convertible notes or securities—is increasingly important. These obligations need to be identified, aggregated, and subtracted from the value of liquid assets to calculate a company's true cash position (referred to as net cash). Although a company might carry significant cash on its books, this apparent balance sheet strength might be attributable to prior debt and/or convertible financing not yet paid off. CFRA advises investors to assess the dates when company obligations become due. This information is found in Securities and Exchange Commission (SEC) filings, especially 10-Ks.

Watch Out! *Some companies engage in supplier financing arrangements (aka reverse factoring). There are several variations of these programs, but basically, a company arranges for a financial institution to pay its suppliers and the company repays the financial institution later. Supplier financing arrangements can delay a company's payments to its suppliers. These arrangements can result in overstated cashflows and understated leverage ratios.*

Equity Valuations
The price-to-earnings (P/E) ratio, when calculable and material, can be compared with the estimated long-term earnings growth rate for an individual company (the PEG ratio). A company's shares may be undervalued if its P/E ratio is significantly below its long-term annual growth rate and if, after careful analysis, the investor concludes that the company's fundamental position is healthy. Historical considerations can also be helpful.

GLOSSARY

App—Short for application or application software (popularized by Apple and its iTunes App Store). Generally refers to a relatively small program designed to be downloaded to a mobile device (*e.g.,* iPhone) or tablet (*e.g.,* iPad).

ARPANET—The Advanced Research Projects Agency (ARPA) network, which was the precursor to the internet. Developed in the late 1960s and early 1970s by the U.S. Department of Defense, ARPANET was designed as a distributed network of computers that could survive a nuclear war.

Augmented Reality (AR)—A technology that aims to augment users' reality by placing data or digital objects into their existing reality. AR lets users continue to see and interact with their real-world surroundings *(e.g.,* Pokemon Go).

Browser—A software program that retrieves and displays information from the web, allowing users to interact with the internet.

Client—A personal computer (PC), workstation, personal digital assistant (PDA), wireless phone, or any other device that accesses data and programs from a server. Client computers are used to perform work, display images, and input data.

Data center—A centralized repository, either physical or virtual, for the storage, management, and dissemination of data and information organized around a particular body of knowledge or pertaining to a particular business.

Encryption—The process of scrambling data using keys of a specified length. Encryption makes a file unreadable by anyone not in possession of the key needed to decipher it.

Host—The name often given to an internet server.

Internet service provider (ISP)—An entity that provides access to the internet.

Metaverse—Currently the closest definition is that the metaverse is an evolution of today's Web that leverages mobile devices, AR/VR headsets, and some Internet of Things (IoT) devices, as well as next-generation networks, online data repositories, and cloud assets to create persistent, continuous user experiences that deliver a next-gen sense of presence (*e.g.*, a parallel universe of the reality people live in currently).

Network effect—The concept that a network becomes more valuable as its number of constituents, such as users, increases. An example is Uber; its growing population of would-be riders has attracted a larger number of drivers, which leads to even more prospective shared rides. This effect raises the value of Uber.

Search engine—A software application embedded within a website that is designed to aid users in searching for and retrieving information on the web. A search engine maintains a database of abstracts from hundreds of millions of web pages.

Server—A computer that allows other computers to connect to it. Servers store information and allow client devices to retrieve information for users*. (See Client.)*

Social media—Also known as social networking, a category of digital offerings (such as Meta Platforms and Twitter) that are notably social in nature, allowing users to create and share content. *(See Web 2.0.)*

Virtual Reality (VR)—A technology that aims to place users into a new reality other than the one they currently inhabit. VR isolates wearers from their real-world surrounding to create a more immersive experience.

Web 2.0—A second generation of online offerings that allow people to more easily collaborate and share information. According to Tim O'Reilly, who is largely credited with originating the concept, aspects of Web 2.0 include the internet as a platform, harnessing collective intelligence, the importance and use of data, web services, simple programming models, flexible software, and appealing user experiences.

Website—The virtual location for an individual's or organization's presence on the World Wide Web.

World Wide Web—A segment of the internet that combines graphics and text into interactive pages. Usually referred to simply as the web, it contains documents (or "pages"), most of which are connected via hypertext links.

INDUSTRY REFERENCES

PERIODICALS

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BOOKS

Alibaba: The House that Jack Ma Built
Duncan Clark
Ecco, 2016
"[I]nsider's account of how a teacher built one of the world's most valuable companies—rivaling Walmart and Amazon—and forever reshaped the global economy."

Newton's Telecom Dictionary
Harry Newton
CMP Books, 2018
Best-selling reference on telecommunications, computing, the internet, the Internet of Things, networking, and social media.

The Four: The Hidden DNA of Amazon, Apple, Facebook, and Google
Scott Galloway
Portfolio, 2017
"Amazon, Apple, Facebook, and Google are the four most influential companies on the planet. Just about everyone thinks they know how they got there. Just about everyone is wrong."

The Oxford Handbook of Internet Studies
William Dutton
Oxford University Press, 2014
Designed to provide a resource for academics and students, with scholarly perspectives on how the internet has been studied and how research should be pursued.

The Upstarts: Uber, Airbnb, and the Battle for the New Silicon Valley
Brad Stone
Back Bay Books, 2018
"Companies like Uber and Airbnb have redefined the way we live… They are the result of a generation of Silicon Valley entrepreneurs who used technology to upend convention and disrupt entire industries."

GOVERNMENT AGENCIES

Department of Justice (DOJ)
justice.gov
The DOJ is a federal executive department of the government tasked with the enforcement of federal law and administration of justice in the U.S.

Federal Communications Commission (FCC)
fcc.gov
Regulates interstate and international communications.

Federal Trade Commission (FTC)
ftc.gov
Ensures that the nation's markets function competitively, and are vigorous, efficient, and free of undue restrictions; educates the public about the importance of personal information privacy.

U.S. Department of Commerce (DOC)
commerce.gov
Manages resources to ensure sustainable economic opportunities; oversees national e-commerce policy; and works to provide all Americans with access to the internet and other crucial information technologies.

MARKET RESEARCH

Buffer
buffer.com
Provides consultation for customers to build brands and grow their businesses on social media.

comScore
comscore.com
Provides data, information, and insights regarding different aspects of the internet economy, with a focus on e-commerce and audience measurement.

eMarketer
insiderintelligence.com
Provides statistics, news, and other information on e-business, online marketing, and emerging technologies.

Forrester Research
forrester.com
Independent research firm that analyzes technology's impact on businesses.

Gartner
gartner.com
Researches and analyzes trends and developments in the information technology industry.

Interactive Advertising Bureau (IAB)
iab.com
Provides the quarterly "IAB Internet Advertising Revenue Report" (based on research by PricewaterhouseCoopers), which is an industry standard for online ad revenue data and information.

International Data Corp. (IDC)
idc.com
Leading provider of information technology data, analysis, and consulting services.

Accenture
accenture.com
A professional services company, provides strategy and consulting, interactive, technology and operation services worlwide.

COMPARATIVE COMPANY ANALYSIS

Operating Revenues

Ticker	Company	Yr. End	Million $ 2021	2020	2019	2018	2017	2016	2015	CAGR (%) 10-Yr.	5-Yr.	1-Yr.	Index Basis (2013=100) 2021	2020	2019	2018	2017	2016
Interactive Media & Services																		
GOOG.L	ALPHABET INC.	DEC	257,637.0	182,527.0	161,857.0	136,819.0	110,855.0	90,272.0	74,989.0	21.1	23.3	41.2	344	243	216	182	148	120
META	META PLATFORMS, INC.	DEC	117,929.0	85,965.0	70,697.0	55,838.0	40,653.0	27,638.0	17,928.0	41.3	33.7	37.2	658	480	394	311	227	154
PINS	PINTEREST, INC.	DEC	2,578.0	1,692.7	1,142.8	755.9	472.9	472.9	0.0	NA	NA	52.3	NA	NA	NA	NA	NA	NA
SNAP	SNAP INC.	DEC	4,117.0	2,506.6	1,715.5	1,180.4	824.9	404.5	58.7	NA	59.1	64.2	7018	4273	2924	2012	1406	690
MTCH	MATCH GROUP, INC.	DEC	2,983.3	2,391.3	2,051.3	1,729.9	3,307.2	3,139.9	3,230.9	3.8	(1.0)	24.8	92	74	63	54	102	97

Note: Data as originally reported. CAGR-Compound annual growth rate.
[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.
Souce: S&P Global Market Intelligence.

Net Income

Ticker	Company	Yr. End	Million $ 2021	2020	2019	2018	2017	2016	2015	CAGR (%) 10-Yr.	5-Yr.	1-Yr.	Index Basis (2013=100) 2021	2020	2019	2018	2017	2016
INTERACTIVE MEDIA & SERVICES																		
GOOG.L	ALPHABET INC.	DEC	76,033.0	40,269.0	34,343.0	30,736.0	12,662.0	19,478.0	16,348.0	22.8	31.3	88.8	465	246	210	188	77	119
META	META PLATFORMS, INC.	DEC	39,370.0	29,146.0	18,485.0	22,112.0	15,934.0	10,217.0	3,688.0	44.4	31.0	35.1	1,068	790	501	600	432	277
PINS	PINTEREST, INC.	DEC	316.4	(128.3)	(1,361.4)	(63.0)	(130.0)	(130.0)	0.0	NA	NA	NM	NA	NA	NA	NA	NA	NA
SNAP	SNAP INC.	DEC	(488.0)	(944.8)	(1,033.7)	(1,255.9)	(3,445.1)	(514.6)	(372.9)	NA	(1.1)	(48.4)	131	253	277	337	924	138
MTCH	MATCH GROUP, INC.	DEC	277.7	162.3	453.8	627.0	304.9	(41.3)	119.5	4.8	NM	71.1	232	136	380	525	255	-35

Note: Data as originally reported. CAGR-Compound annual growth rate.
[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.
Souce: S&P Global Market Intelligence.

Ticker	Company	Yr. End	Return on Revenues (%) 2021	2020	2019	2018	2017	2016	Return on Assets (%) 2021	2020	2019	2018	2017	2016	Return on Equity (%) 2021	2020	2019	2018	2017	2016
INTERACTIVE MEDIA & SERVICES																				
GOOG.L	ALPHABET INC.	DEC	29.5	22.1	21.2	22.5	11.4	21.6	21.2	12.6	12.4	13.2	6.4	11.6	32.1	19.0	18.1	18.6	8.7	15.0
META	META PLATFORMS, INC.	DEC	33.4	33.9	26.1	39.6	39.2	37.0	23.7	18.3	13.9	22.7	18.9	15.7	31.1	25.4	20.0	27.9	23.9	19.8
PINS	PINTEREST, INC.	DEC	12.3	NM	NM	NM	NM	0.0	8.9	NM	NM	NM	NM	NA	12.0	NM	NM	NM	0.0	0.0
SNAP	SNAP INC.	DEC	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MTCH	MATCH GROUP, INC.	DEC	9.3	6.8	22.1	36.2	9.2	NM	5.5	5.3	5.4	9.1	5.2	NM	NM	46.5	13.7	13.7	14.2	NM

Note: Data as originally reported. CAGR-Compound annual growth rate.
[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.
Souce: S&P Global Market Intelligence.

Ticker	Company	Yr. End	Current Ratio 2021	2020	2019	2018	2017	2016	Debt/Capital Ratio (%) 2021	2020	2019	2018	2017	2016	Debt as a % of Net Working Capital 2021	2020	2019	2018	2017	2016
INTERACTIVE MEDIA & SERVICES																				
GOOG.L	ALPHABET INC.	DEC	2.9	3.1	3.4	3.9	5.1	6.3	4.9	5.5	1.9	2.2	2.5	2.8	10.4	10.9	3.7	3.9	3.9	4.4
META	META PLATFORMS, INC.	DEC	3.2	5.1	4.4	7.2	12.9	12.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0
PINS	PINTEREST, INC.	DEC	12.2	11.5	11.7	8.2	11.1	0.0	0.0	0.0	0.0	0.0	0.0	NA	0.0	0.0	0.0	0.0	0.0	NA
SNAP	SNAP INC.	DEC	5.7	5.0	5.3	5.7	6.8	7.5	37.3	41.8	28.3	0.0	0.0	0.0	56.3	62.7	41.6	0.0	0.0	0.0
MTCH	MATCH GROUP, INC.	DEC	1.0	2.0	3.7	3.1	2.7	2.6	105.4	158.2	42.3	38.3	39.8	43.6	7665.4	738.4	107.1	119.5	149.3	140.1

Note: Data as originally reported. CAGR-Compound annual growth rate.
[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.
Souce: S&P Global Market Intelligence.

Ticker	Company	Yr. End	Price/Earnings Ratio (High-Low) 2021	2020	2019	2018	2017	2016	Dividend Payout Ratio (%) 2021	2020	2019	2018	2017	2016	Dividend Yield (High-Low, %) 2021	2020	2019	2018	2017	2016
INTERACTIVE MEDIA & SERVICES																				
GOOG.L	ALPHABET INC.	DEC	26 - 15	31 - 18	27 - 20	29 - 22	59 - 42	29 - 24	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 - 0.0	0.0 - 0.0	0.0 - 0.0
META	META PLATFORMS, INC.	DEC	27 - 18	30 - 14	32 - 20	28 - 16	33 - 21	37 - 26	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 - 0.0	0.0 - 0.0	0.0 - 0.0
PINS	PINTEREST, INC.	DEC	180 - 71	NM - NM	NM - NM	NA - NA	NA - NA	NA NA	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 - 0.0	0.0 - 0.0	0.0 - 0.0
SNAP	SNAP INC.	DEC	NM - NM	NM - NM	NM - NM	NM - NM	NM - NM	NA - NA	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 - 0.0	0.0 - 0.0	0.0 - 0.0
MTCH	MATCH GROUP, INC.	DEC	174 - 122	215 - 124	NA - NA	NM - NM	NA - NA	NA - NA	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 - 0.0	0.0 - 0.0	0.0 - 0.0

Note: Data as originally reported. CAGR-Compound annual growth rate.
[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.
Souce: S&P Global Market Intelligence.

Ticker	Company	Yr. End	Earnings per Share ($) 2021	2020	2019	2018	2017	2016	Tangible Book Value per Share ($) 2021	2020	2019	2018	2017	2016	Share Price (High-Low, $) 2021	2020	2019	2018	2017	2016
INTERACTIVE MEDIA & SERVICES																				
GOOG.L	ALPHABET INC.	DEC	5.6	2.9	2.5	2.2	0.9	1.4	17.2	14.8	13.0	11.3	9.6	8.6	151.9 - 85.0	92.4 - 50.7	68.3 - 50.7	63.7 - 48.5	53.9 - 38.8	40.8 - 33.2
META	META PLATFORMS, INC.	DEC	13.8	10.1	6.4	7.6	5.4	3.5	38.3	38.1	28.6	22.6	18.7	13.4	384.3 - 244.6	304.7 - 137.1	208.9 - 128.6	218.6 - 123.0	184.3 - 115.5	133.5 - 89.4
PINS	PINTEREST, INC.	DEC	0.5	(0.2)	(3.2)	(0.5)	(1.0)	0.0	4.5	3.6	3.5	(4.8)	(4.4)	0.0	89.9 - 34.1	75.4 - 10.1	36.8 - 17.4	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
SNAP	SNAP INC.	DEC	(0.3)	(0.7)	(0.8)	(1.0)	(3.0)	(0.6)	1.2	0.9	1.0	1.2	1.8	1.3	83.3 - 43.0	54.7 - 7.9	18.4 - 5.4	21.2 - 4.8	29.4 - 11.3	0.0 - 0.0
MTCH	MATCH GROUP, INC.	DEC	0.9	0.7	2.1	3.1	1.5	(0.2)	(11.9)	(10.9)	8.3	(3.0)	(4.6)	(2.5)	182.0 - 118.5	159.5 - 87.6	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0

Note: Data as originally reported. CAGR-Compound annual growth rate.
[]Company included in the S&P 500. †Company included in the S&P MidCap 400. §Company included in the S&P SmallCap 600. #Of the following calendar year.
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