

The Future of the Ad-Supported Internet Ecosystem

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Many of the most popular applications on the Internet, including Facebook, Twitter and Youtube, are provided free of charge, and derive their revenues from advertising. While the ad-supported model has enabled Internet innovation and adoption in the developed world, there is growing concern among Internet businesses that the model is not sustainable. Ad blockers, privacy policies, ad fraud, brand risk, and the rise of intermediaries all threaten the ecosystem. As well, a few firms (Facebook and Google) are capturing a majority of the revenues in most parts of the world, leaving less and less for many small players. With these trends as our backdrop, we provide a “follow the money” description of the advertising ecosystem, to show how much money is at stake, where it is going, and what might happen over the next few years.



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1. Introduction

Once the cost of Internet access is covered (whether a broadband connection in the home, a wireless plan, or wifi in a café or library, etc.) and assuming a user has a computer (desktop, laptop, or smartphone), the online experience has much to offer consumers at no additional cost. The collection of “free” online services includes not just access to content (news and entertainment), but interpersonal communication services (email, text messaging, voice and video calls), search and navigation tools, web hosting, social networking, etc. as well. The cost of these services is, for the most part, subsidized by payments received from advertisers buying targeted access to users’ attention.

While the ad-supported model has enabled Internet innovation and adoption in the developed world, there is growing concern among Internet businesses that it is not sustainable. In addition to the fact that the pool of ad money is limited, several key trends stand to negatively impact ad revenues, directly and/or indirectly. The most salient of these include ad blockers, privacy policies, ad fraud, brand risk, and intermediaries.

All ad-supported businesses face these threats, but the more immediate risk to most of them is the loss of ad revenue to a handful of dominant players rather than the overall shrinking of the pie. Facebook and Google currently collect over half of digital ad revenues in most parts of the world, and online retailers are now entering the market. Alibaba already accounts for close to 30% of the ad market share in China,¹ while in the US, Amazon is moving up in the ranks. Market concentration has persisted over the last decade and is expected to continue.

Furthermore, we observe that in the pre-digital economy, the bulk of ad spend funded the content or “media” industries including TV, radio, magazines and newspapers, with TV eventually capturing most of those ad revenues. However, in the Internet economy, it is currently search (the modern-day equivalent of directories), social media (which includes myriad services, many of which are difficult to classify), and increasingly giant retail aggregators that get most of the ad revenue. This leaves the traditional “attention merchants,” i.e., providers of our news and entertainment, disproportionately underfunded. It remains to be seen if television will reclaim its dominance in the digital ad market as video distribution continues to move online via pure play OTT and connected TV platforms.

With these trends as our backdrop, the primary purpose of this short paper is to evaluate how much advertising money is at stake. We begin by providing an overview of the frameworks used to report ad spend. We then explore global ad spend trends followed by a discussion on market structure. We then present data on economic losses attributed to the above-mentioned trends. Finally, we explore new sources of subsidization beyond B2C advertising and look briefly at user-pay models as an alternative or complement to

advertising. We conclude by discussing the evolving composition of the ad-supported economy. This paper will thus serve as framing for further research questions.

The work advances and expands on a body of research launched in 2013 by Dr. David Clark and Israel Valentin, “Money Flows in the Internet Ecosystem.”² At that time, the main motivation for the research was an interest among ISPs in capturing some of the advertising dollars flowing into the ecosystem. In attempting to evaluate the economic opportunity posed by digital advertising, a hypothesis emerged; that the ad-supported business model is not sustainable and user fees will have to replace ad revenue. Five years later, this concern has only heightened, as has the interest in alternative sources of funding. As above, we have adapted this hypothesis by suggesting that market concentration is the bigger threat to the free Internet experience, content-services in particular, at least in the short-term.

2. Ad spend reporting frameworks

The digital environment comprises an increasingly complex array of advertising platforms and media formats. There is no consistent reporting taxonomy. Therefore, for the purposes of this study we consider the advertising space primarily in terms of paid, owned, and earned media. The boundaries between these categories of advertising, and between marketing activities in general (not to mention between advertising and content) have always been fuzzy, and the ways in which they work together complex. In the digital environment, there are far greater opportunities for confusion and complexity. We nonetheless use this triad of reporting categories as the basis of assessing money flows while recognizing the need for new ways to model the ad-supported ecosystem.

Paid media refers to any marketing content an advertiser pays to have placed on any number of third-party platforms and channels. In terms of formats, paid media has traditionally comprised TV and radio commercials, printed ads placed in newspapers, magazines and directories, billboards, posters, etc. In the digital realm, paid media includes a variety of audio, audiovisual, and text-based formats that themselves are typically categorized in terms of search, display ads, and video. The latter (video), although a form of display advertising, is often considered separately and includes advertising on OTT and connected TV platforms as well as social media. Mobile is usually considered as a separate category, although sub-divided into the same formats as desktop ads. Social media is also often considered separately as a relatively new sphere of paid advertising.

Another relevant classification scheme within the paid media category distinguishes native advertising, defined as “advertising that matches the form and function of the platform upon which it appears.”³ Native ad content ranges from sponsored content, aka infomercials and advertorials, where the user is more or less aware they are viewing a marketing message, to branded content that effectively masquerades as regular news or entertainment and is valued by viewers as such. In extreme cases, there is no explicit or

perceivable brand identification and viewers are largely unaware that they are paying attention to a brand message. This approach to advertising has gained renewed attention in the age of ad blockers and declining film budgets, with many issues remaining regarding both effectiveness (ROI) and disclosure practices and policies.

From an ad revenue standpoint, some native advertising comprises paid-for spots, e.g., sponsored posts on Facebook that are integrated into the flow or stream of content (not unlike the early days of newspapers when informational ads were treated as a form of news⁴). But in a growing number of cases, advertisers play the role of executive producer of content, which they distribute through regular content channels. If the distribution platform or channel is owned by the brand itself, it is considered *owned media*, discussed below. Interestingly, if viewers pay to watch such content in the theaters or on Netflix or premium cable TV, (or a brand-owned distribution hub as predicted for the future), they are in effect paying twice—with their money and their attention. Equally curious is the experience of watching branded content on an AVOD channel like YouTube, and having to watch another advertiser’s promotional message as part of the experience of watching what is essentially a marketing message.

Owned media is advertising content (blogs, short- and long-form videos, etc.) created by brands and published on their own channels. In the traditional world, owned media included displays on the sides of a firm’s trucks and buildings, for example.⁵ In the digital world, it includes brand websites and other digital channels that distribute the content brands produce. For example, car company Lexus produces videos that are viewable on the L/Studio website.⁶ (They are also distributed via online video distribution channels like YouTube, and even on traditional television. The L/Studio’s series “Web Therapy” for example was picked up by premium TV network Showtime in 2011.) As mentioned above, there is some speculation that advertising and film production will converge such that brands will become the distribution hubs for original content they produce. Rather than buying temporary access to someone else’s audience, brands will thus cultivate and engage their own audiences. Branded content is generally aimed at creating brand awareness and loyalty, and is typically complemented by other advertising activities that promote the brand explicitly (e.g., tie-in commercials) and are typically closer to the “buy” end of the sales funnel.

Earned media (aka free advertising) includes any content about a brand or product that has been created by third-parties and/or distributed through channels not controlled by the brand, including journalists and, more significant in today’s world, individual consumers on social media. Typically, brand managers work with journalists to recommend stories that include the brand’s products while social media provides an efficient word-of-mouth marketing platform, where socializing and conversation effectively becomes “media.” Earned media, in addition to being cheaper than advertising, is considered to appear more authentic or credible and thus more persuasive. Influencer marketing is also rampant on social media where account holders with a large following and are paid to promote products to their fan base.⁷ One report

claims that every dollar spent on influencer marketing returns an average of \$7.65 in earned media.⁸

For the purposes of this study, we assume that the data presented in the following sections corresponds to paid media while acknowledging that it may not reflect all current or future advertising activities, or the only ad revenue funding the “free” Internet experience.

3. Evaluating the size and structure of the ad-supported Internet economy

The following data provides the basis for gauging the economic impact of various threats to the ad-supported system. They also provide some insight into the advertising opportunity for those firms looking to find a role in the ecosystem. Although there were inconsistencies in the data among the various reports we examined, the impressions they gave regarding the state of the ad supported economy were consistent. We have noted any major discrepancies. All dollar amounts are in US dollars unless otherwise specified.

3.1. The growth of digital ad revenues

Global digital ad spend is currently just over \$200 billion (Figure 1).⁹ E-marketer’s projections made in 2017 noted that digital ad spend was growing faster than expected and predicted it would rise to \$228.44 billion by the end of that year and up to \$375.80 by 2021.¹⁰ Other reports by Zenith and Magna¹¹ put actual 2017 revenues at \$204 billion and \$209 billion respectively.¹²

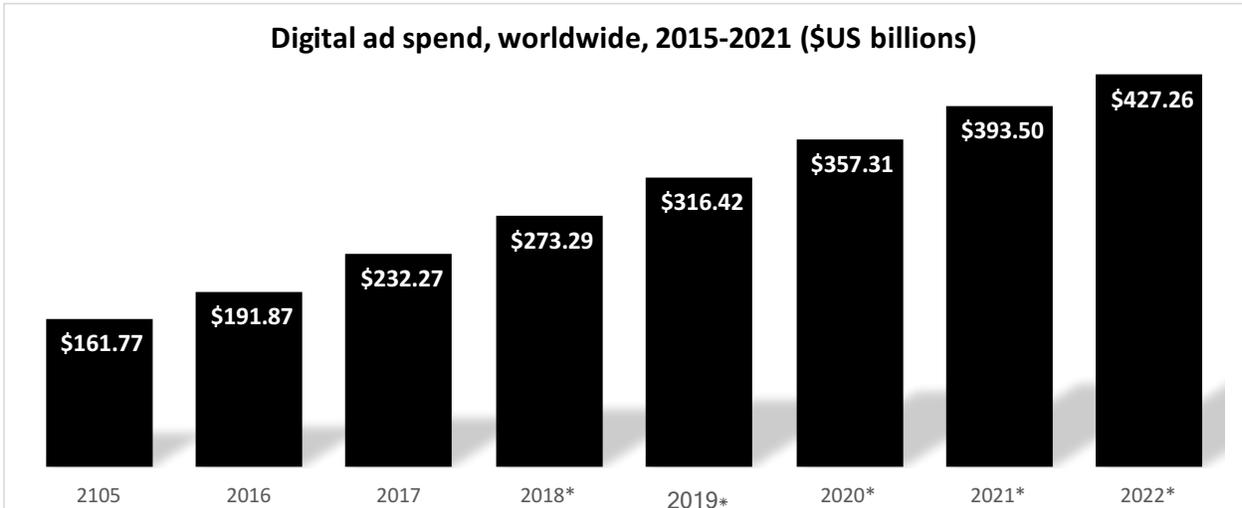


Figure 1: Digital Ad Spend Worldwide, 2015-2022¹³

Figure 2 shows 2017 digital ad spend per country for the top 5 countries.¹⁴ The US leads at \$88 billion. China is second, at \$50.31 billion. Digital ad spend in both Japan and the

UK was just under \$11 billion, and \$6.2 billion in Germany. Looking ahead, the Asia-Pacific region—China in particular—will experience the fastest growth in digital (and total) ad spend, mostly fueled by mobile advertising.¹⁵

Digital Ad Spend, Top 5 Countries, 2017		
Country	Total (\$US billions)	Market share
United States	\$88.0	33.0%
China	\$50.3	20.0%
United Kingdom	\$10.8	4.6%
Japan	\$10.7	4.6%
Germany	\$6.1	2.6%

Figure 2: Digital Ad Spend, Top 5 Countries, 2017⁶

A common reference point for weighing the significance of digital advertising growth is TV ad spend, which represents more than half the non-digital ad market. At the worldwide level, digital surpassed TV in 2017.¹⁷ According to Magna, TV ad spend was \$178 billion compared to \$209 in digital ad spend.¹⁸ In the US, digital surpassed TV one year earlier with TV spend at \$71.3 billion and digital at \$72.5 billion.¹⁹ As television moves online, this comparison will become more complex and confusing since a portion of television advertising will in fact be digital advertising.

As a percentage of total ad spend, digital has grown from 32% in 2015 to 40% in 2017, and is expected to reach 50% of total ad spend by 2020 (Figure 3).²⁰ We note here that a certain amount of digital ad spend is organic, i.e., new ad spend, mostly by small and medium businesses that have unprecedented access to convenient and affordable advertising options through self-serve platforms like those offered by Facebook, Google, and Amazon.²¹ Facebook, for example, has 6 million advertisers, which according to *The Economist*, is equivalent to a fifth of all American small firms.²² A study in 2015 by Standard Media Index (SMI)²³ calculated that, in the US, new ad spend accounted for a \$1 billion increase in digital spend, which, while small compared to total digital ad spend, was up 16% for the period October 14 to June 2015.²⁴

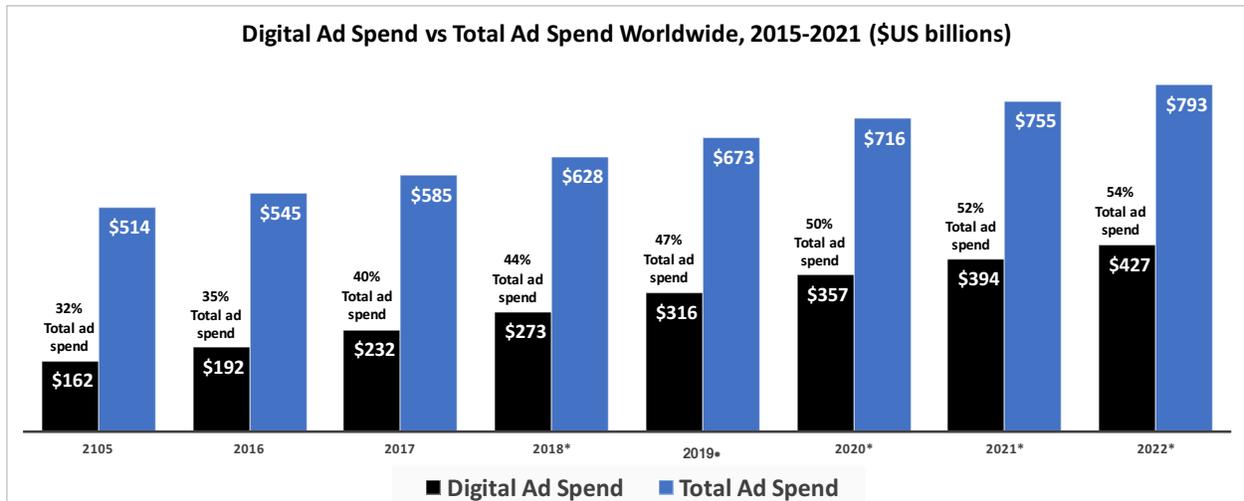


Figure 3: Digital Ad Spend vs Total Ad Spend Worldwide, 2015-2021²⁵

While a given country may have a high digital ad spend, it may comprise a much smaller percentage of total ad spend than a country with lower digital ad spend, and vice versa. Japan for example, generates about the same amount of digital ad revenue as the UK (see Figure 2), but it represents only about one fourth of total ad spend while in the UK it represents more than half.²⁶

Figure 4 shows digital ad spend as a percentage of total ad spend in 2016 and 2017 by region. The Asia Pacific region—China in particular—is poised to take the lead despite the US’s higher total ad spend.²⁷

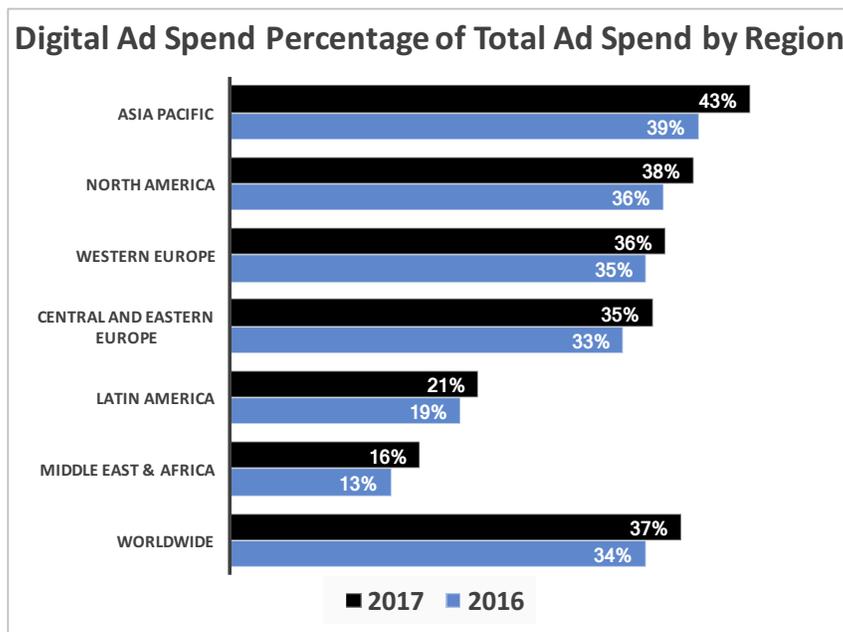


Figure 4: Digital Ad Spend Percentage of Total Ad Spend by Region, 2016 & 2017²⁸

To give these number more meaning, we looked at ad spend per Internet user. Note that the previous study by Clark and Valentin looked at digital ad spend per fixed broadband household, however, given the rise of mobile Internet access, we are using per Internet user in this study. Based on ITU’s data regarding number of Internet users worldwide²⁹ and ad spend data from Figure 1, global annual averages range from \$51.36 per Internet user in 2015 (\$4.28/month) up to \$68.85 per user in 2017 (\$5.73 per month). Not surprisingly, annual per Internet user numbers are above average in the U.S., ranging from \$229.37 (\$19/month) to \$303 (\$25/month) for the same time period.³⁰

If we look at per Internet user data by country (Figure 5) we see that Australia and the UK have ranked highest for several years, with the US and Norway battling for third place.³¹ Although China ranks second in total digital ad spend and percentage of total ad spend, per Internet user ad spend is less than \$20 per year (less than \$2/month) because there are so many Internet users. In terms of per capita spend, data from 2016 puts North America at \$165 per year and Western Europe at \$95, whereas Asia’s per capita spend is only \$15, again due to its huge population.³²

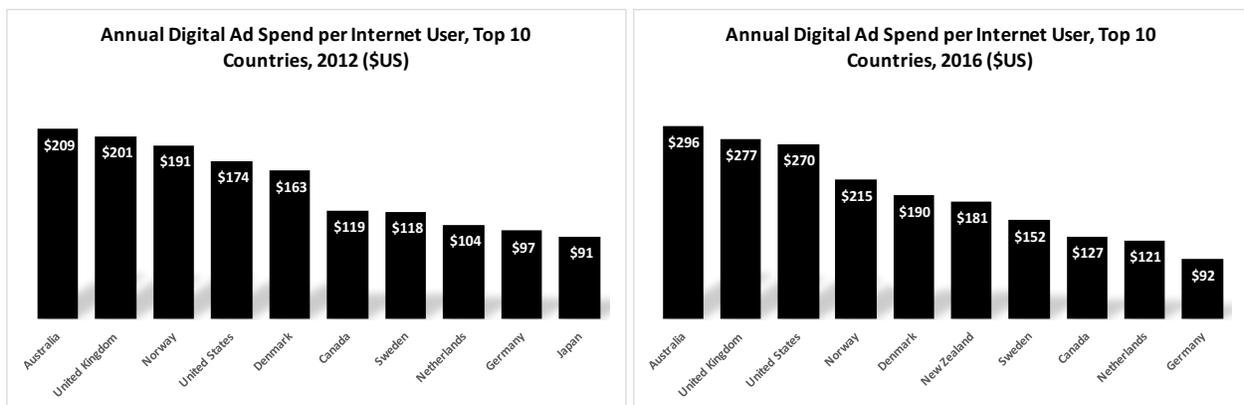


Figure 5: Digital Ad Spend per Internet User, 2012 & 2016³³

3.2. The explosion of mobile advertising

While digital advertising is the key driver of total ad growth, mobile is the key driver of digital advertising.³⁴ The percentage of global website traffic originating from mobile devices reached 50% in 2017 and continues to grow.³⁵ Research by ComScore conducted in 2017 indicates that “Mobile first” and “mobile only” audiences—users who no longer prioritize desktops among their digital devices, or use them at all—are growing rapidly in the majority of markets. Mobile devices represent over 60% of digital time in a selection of countries from around the world, with the UK at 61% and Indonesia at 91% (Figure 6).³⁶

Country	% Mobile Share of Total Digital Minutes
United Kingdom	61%
Canada	62%
Italy	64%
Spain	67%
USA	71%
China	71%
Brazil	72%
Mexico	75%
Indonesia	91%

Figure 6: The Rise of Mobile-First and Mobile Audiences, 2017³⁷

Mobile advertising will account for 67.7% of digital advertising worldwide in 2018, or \$185 billion, and reach 69.2% by 2020, or \$247 billion. (Figure 7).³⁸ In the US, mobile advertising accounted for over half of total digital advertising revenue (56.7%) by the end of 2017, compared to only 9.3% in 2012 (Figure 8).³⁹ eMarketer estimates that mobile ad spending in the US will grow 20% in 2018 to over \$70 billion or almost 75% of total digital ad spend. This represents 21,775% growth rate over the past 10 years.⁴⁰

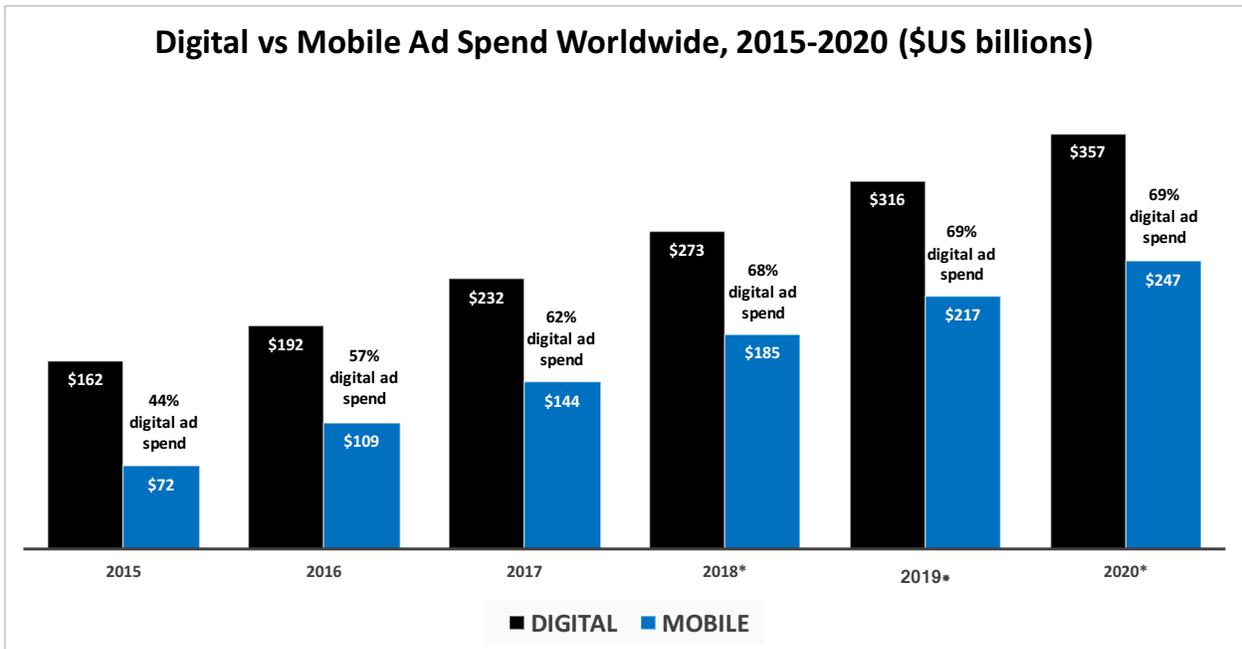


Figure 7: Digital versus Mobile Ad Spend Worldwide, 2015-2020⁴¹

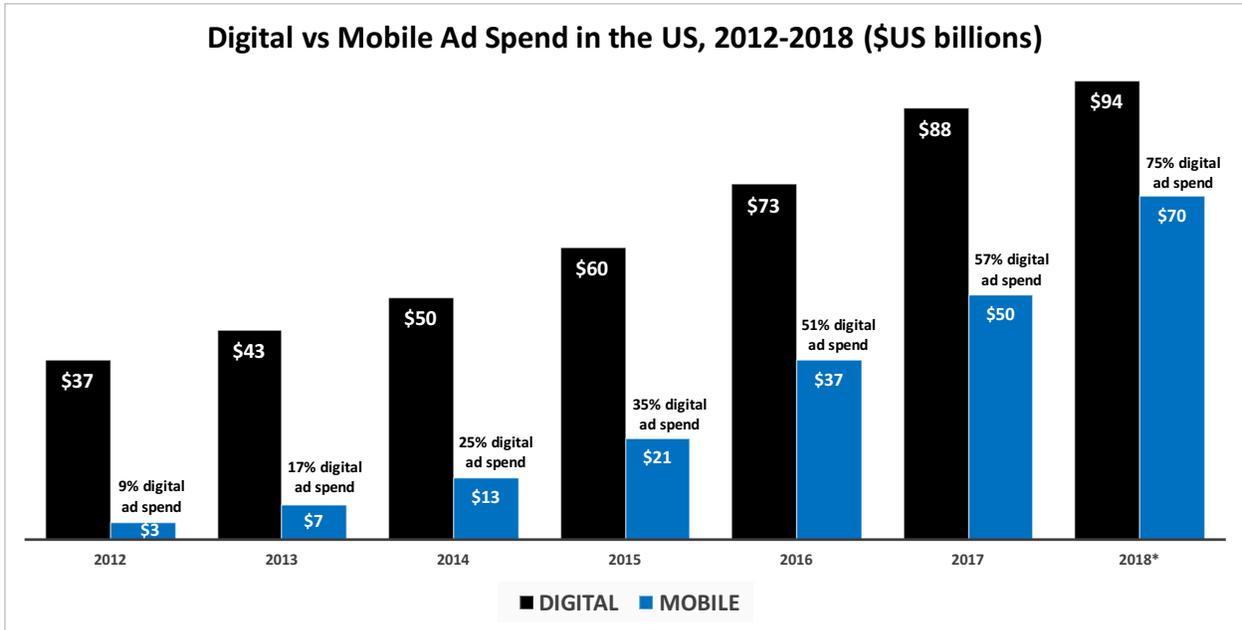


Figure 8: Digital versus Mobile Ad Spend in the US, 2012-2018

This is a huge leap, especially given the degree of uncertainty regarding the success of mobile advertising only a few years ago. Facebook in particular—for whom mobile was a “big question mark” in 2012—has come to rely primarily on mobile ad revenue, which went from 0% of total ad revenue in 2011 to almost 90% for Q4 2017.⁴² (Facebook total revenue for 2017 was \$40.65 billion.⁴³) Mobile advertising has also powered most of Google’s growth in the last 5 years, increasing from 35% of total digital revenues (\$16.27 billion) in 2014 to 60% (\$37.57 billion) in 2016 (more than double in 2 years), and 75% (\$61.26 billion) projected for 2018.⁴⁴

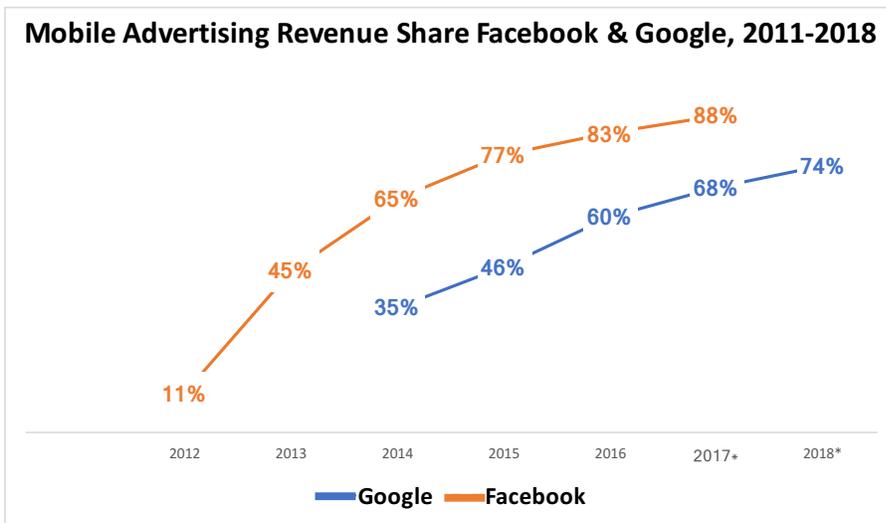


Figure 9: Mobile Advertising Revenue Share for Facebook and Google, 2011-2018⁴⁵

3.3. The Facebook + Google duopoly and the rise of online retailers

One of the more significant aspects of the digital advertising market concerns increasingly high levels of concentration. Google dominates the digital ad market with 33% market share as of 2017, while Facebook has 16%. Together, they have captured about half of global digital ad revenues (Figure 10).⁴⁶ The numbers are higher in the US with Google + Facebook capturing 59% market share in 2017.⁴⁷ According to the IAB, Facebook and Google accounted for 90% of US digital ad growth in 2017.⁴⁸

Global Market Share of Digital Ad Revenue, 2017

Google	33%
Facebook	16%
Alibaba	8%
Baidu	4%
Tencent	3%
Microsoft	3%
Other	33%

Figure 10: Global Market Share of Digital Ad Revenue, 2017⁴⁹

Facebook is growing faster than Google. In the US, Facebook's growth was 62% between 2015-2016 compared to Google at 20%.⁵⁰ Zenith reported that social media in general is the fastest-growing Internet advertising platform worldwide, growing 51% in 2016, and expected to grow at an average rate of 20% a year to 2019.⁵¹ In the US, platforms like Snapchat have huge growth rates that exceed Facebook's—74% vs 48% in 4Q 201 but actual revenues are still small. Facebook's average ARPU in the US was \$87.89 in 2017 compared to \$7.16 for Snapchat.⁵²

As discussed in our conclusions, Google and Facebook are taking ad dollars away from traditional ad sellers, namely content publishers, who can't compete on scale nor consumer data. But both are starting to face new sources of competition from online retail aggregators or marketplaces. It was recognized years ago that search was an effective advertising platform because users' activities were more purposeful. But online shopping platforms are increasingly the place where shoppers start their search for products,⁵³ and advertisers are channeling portions of their budgets to e-commerce sites.⁵⁴ In the US, that means Amazon. According to AdAge: "eMarketer forecast that it would generate \$3.7 billion in worldwide ad revenue this year [2018], but Amazon's earnings report from April 2018 suggests its ad business totaled more than \$2 billion in the first quarter alone."⁵⁵ The online retailer is expected to surpass both Oath (Verizon) and Microsoft in the US in 2020 (Figure 11).⁵⁶ Its share of the digital ad market (in the US) will grow to 4.5 percent from 2.7 percent in 2018.⁵⁷ Meanwhile, US market share of the Google-Facebook duopoly will decline from 60% in 2016⁵⁸ to an estimated 56.8% in 2018 and 55.8% in 2020.⁵⁹

Part of Amazon’s success has been attributed to its self-serve programmatic advertising infrastructure, which makes ad buying more convenient than going through agencies.⁶⁰ Another factor that makes Amazon attractive to advertisers is the fact that it offers better ROI metrics.⁶¹ With the increasing availability of data, there has been increasing pressure to prove ROI.⁶²

In China, Alibaba gets more than half its revenues from ads.⁶³ The online retailer dominates the digital ad market in China, and will account for more than a third of all digital ad revenue in 2018, or \$20 billion, according to eMarketer, while Baidu and Tencent together will account for 19% of ad spend in China.⁶⁴ And as noted in Figure 8 above, Alibaba has 8% global market share.

Net US Digital Ad Revenues by Company, 2016-2020 (\$US billions)					
	2016	2017	2018*	2019*	2020*
Google	\$29.43	\$34.87	\$39.92	\$45.51	\$51.66
YouTube	\$2.92	\$3.88	\$4.43	\$4.96	\$5.47
Facebook (+Instagram)	\$12.37	\$17.97	\$21.00	\$24.20	\$27.43
Microsoft (+LinkedIn)	\$3.34	\$3.74	\$4.16	\$4.46	\$4.47
Oath	\$1.27	\$3.60	\$3.69	\$3.77	\$3.84
Amazon	\$1.12	\$1.77	\$2.89	\$4.37	\$6.37
Twitter	\$1.36	\$1.17	\$1.12	\$1.18	\$1.22
Snapchat	\$0.30	\$0.57	\$1.03	\$1.81	\$3.08
Other	\$20.09	\$22.82	\$29.06	\$35.49	\$38.69
Total	\$72.20	\$90.39	\$107.30	\$125.75	\$142.23

Figure 11: US Market Share of Digital Ad Revenues, 2016-2020⁶⁵

3.4. Facebook as an example

These data come from a variety of sources. However, Facebook reports their actual estimate of ARPU (Average Revenue per User) in various parts of the world, which can serve as a cross-check to these numbers. Using the data for Q4 2017 from that year’s annual report (the latest available) as a source,⁶⁶ monthly ARPU globally was \$2.06. However, in the U.S. and Canada, the ARPU was \$8.92. In the developing world (what they call the “rest of world”), the ARPU is \$0.62. The range in these numbers points out an advantage of the advertising model for revenue capture. Facebook provides the service to all users for “free”, and sells the attention of each user to their advertisers according to the worth of that user. If Facebook had to set a global price for their service, it is not clear how they would serve both the developed and developing world.

3.5. Growth

Although digital ad spend continues to grow worldwide, the rate of growth is slowing down. According to eMarketer, growth rates will decline from 20.9% in 2017 to 17.7% in 2018, and down to 8.6% by 2022.⁶⁷ Total ad spend is also showing signs of slowed growth, from 7% in 2017 to and estimated 5% in 2022 (Figure 12).

Year	Digital Ad Spend	% change	Total Ad Spend	% change
2016	\$192	19%	\$545	6%
2017	\$232	21%	\$585	7%
2018*	\$273	18%	\$628	7%
2019*	\$316	16%	\$673	7%
2020*	\$357	13%	\$716	6%
2021*	\$394	10%	\$755	5%
2022*	\$427	9%	\$793	5%

Figure 12: Digital and Total Ad Spend Growth Rates Worldwide, 2016-2022⁶⁸

In addition to the threats to the value of the digital ad market, discussed below, there are limits to the available pool of ad money. One way to explore these limits is to consider digital ad spend as a percentage of total ad spend, which itself is a function of total commerce revenues.

Generally speaking, firms spend anywhere from 7-13% of total revenue on marketing, depending on company size, sector, and geography. The percentage of marketing budgets that goes towards advertising, including both digital and non-digital, also varies. While these amounts can increase, a firm can only spend so much on marketing and advertising before they cut into their profits.

Assuming most advertising is B2C, global retail sales have grown from \$22,050 billion in 2016 to an estimated \$23,450 billion in 2017, with projections for 2020 reaching \$27,730 billion (Figure 13).⁶⁹ E-commerce sales have risen from \$144 billion in 2008 to \$317 billion in 2013 to an estimated \$653 billion in 2018, representing a growing percentage of total retail commerce. However, growth rates for both total commerce and e-commerce are on the decline. Growth rates for digital ad spend, total ad spend, total retail and online retail for the period 2016-2020 are summarized in Figure 14.⁷⁰

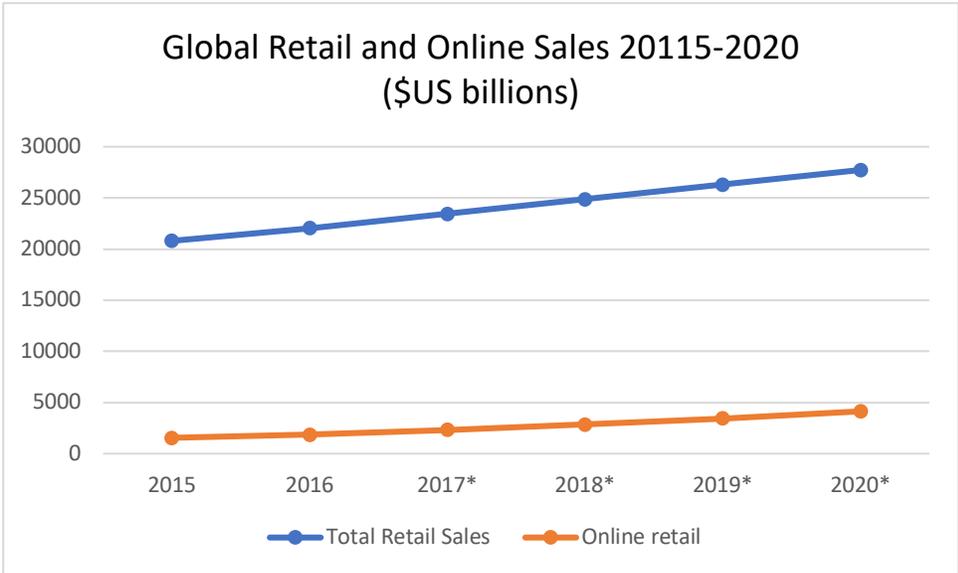


Figure 13a: Global retail and e-commerce sales⁷¹

	Global Retail Sales (US billions)	Global Online retail sales (US billions)
2016	\$22,050	\$1,845
2017	\$23,450	\$2,304
2018*	\$24,860	\$2,842
2019*	\$26,290	\$3,453
2020*	\$27,730	\$4,135

Figure 13b: Global retail and e-commerce sales

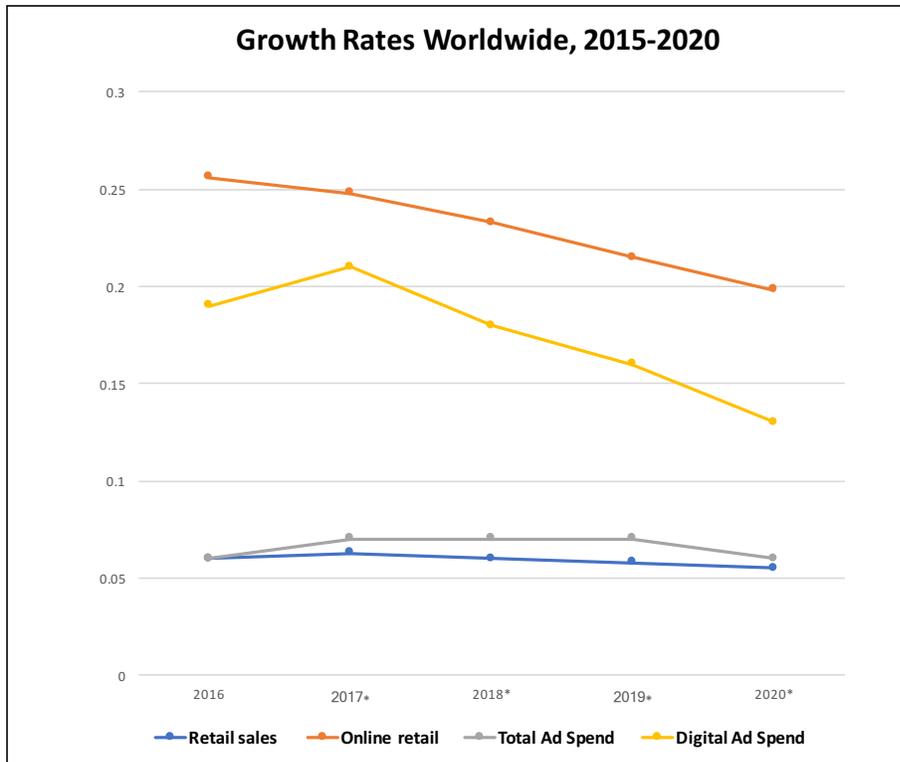


Figure 14a: Growth rates for digital ad spend, total ad spend, total retail and online retail, 2016-2020⁷²

Year	Digital Ad Spend (US billions)	% change	Total Ad Spend (US billions)	% change	Retail Sales (US billions)	% change	Online retail (US billions)	% change
2016	\$192	19%	\$545	6%	\$22,050	6.0%	\$1,845	26%
2017	\$232	21%	\$585	7%	\$23,450	6.3%	\$2,304	25%
2018*	\$273	18%	\$628	7%	\$24,860	6.0%	\$2,842	23%
2019*	\$316	16%	\$673	7%	\$26,290	5.8%	\$3,453	22%
2020*	\$357	13%	\$716	6%	\$27,730	5.5%	\$4,135	20%

Figure 14b: Growth rates for digital ad spend, total ad spend, total retail and online retail, 2016-2020

We briefly note here that, in addition to a rise in the number of SME's entering the B2C ad market, there has also been a rise in both B2B and political advertising online, particularly in the US. Following the 2016 US election campaign, political advertising grew from \$22 million in 2008 to \$1.415 billion.⁷³ Not surprisingly, most of it went to Facebook and Google.⁷⁴ And according to eMarketer, the B2B digital ad market will grow to \$4.6 billion in 2018 from about half that amount (\$2.18 billion) in 2013⁷⁵ as previously diverse marketing techniques start to converge.

4. Threats to the system

In our Introduction, we listed several factors that have a negative impact on the digital ad market, either by potentially reducing the efficacy, and thus economic value of ad inventory, or creating a hostile or risky environment for advertisers. Each of these factors is a topic in itself; for the purposes of this paper, we briefly review these considerations and present estimations of their economic impact.

4.1. Ad blockers

Ad blocker usage varies around the globe. According to PageFair (an anti-ad blocking service), on average, 11% of Internet users used ad blockers in 2016.⁷⁶ PageFair's study shows that, in total, mobile ad blockers have overtaken their desktop counterparts, but mobile usage is heavily concentrated in Asia, where 94% of mobile ad blocking occurs.⁷⁷ (In the US, about 30% of Internet users will use ad blockers by end of 2018.⁷⁸

The loss of revenue from ad blockers is estimated to be in the tens of billions of dollars worldwide. Predictions vary wildly. In terms of the U.S. alone, BI Intelligence estimates losses of \$9.7 billion in 2018⁷⁹ while OnAudience cited \$11 billion lost in 2016 and \$15.8 billion in 2017.⁸⁰ Global losses amounted to \$22 billion in 2015 (about 14% of total ad revenue) according to PageFair,⁸¹ and \$42 billion in 2016 (about 21%) according to a study conducted by OnAudience in 2017.⁸² Ovum predicted that that Web publishers would lose \$78 billion by 2020 (about 21% of ad revenue) if they did nothing to address the problem; at best, they could work to bring the cost down to \$16 billion.⁸³ A far more conservative estimate came from Juniper Research in 2016, claiming losses would be \$27 billion by 2020 (or about 7%).⁸⁴

Not all types of advertising are affected by ad blockers. Generally speaking, display ads are affected, while search and native ads in social media are not typically blocked,⁸⁵ giving further advantage to search engines like Google and Facebook.

4.2. Privacy policies

One of the most cited works on the impact of privacy policies on ad revenue is Goldfarb & Tucker's 2010 research paper, "Privacy Regulation and Online Advertising," which demonstrated that, on average, display advertising was significantly less effective after privacy laws that prevented advertisers' ability to collect user data were enacted. More specifically, in their evaluation of the 2002 EU "Privacy and Electronic Communications Directive," the authors found that purchasing intent declined by 65% on average compared to countries outside the

EU.⁸⁶ A similar study from 2013 by Garrett Johnson found that in the U.S., “online publisher revenues drop by 3.9% under an opt-out policy, 34.6% under an opt-in policy, and 38.5% under a tracking ban. Total advertiser surplus drops by 4.6%, 40.9%, and 45.5% respectively.”⁸⁷

The more recent events of spring 2018 concerning Facebook and Cambridge Analytica’s data privacy scandal as well as the EU’s General Data Protection Regulation (GDPR) have spawned many back-of-the-envelope calculations regarding their impact on the economic value of the digital ad market. One analyst claims the GDPR, which went into effect May 25, 2018 could wipe out 2% of Google’s revenues as a result of a 20% reduction in the efficacy of its advertising.⁸⁸ In the case of Facebook, analysts estimate that the “delete Facebook” campaign combined with potential regulation “beyond the EU’s GDPR” has put \$4-5 billion of annual advertising revenue at risk, or about 9% of the company’s ad revenues.⁸⁹ It is too soon to tell, and most of these numbers are speculative. eMarketer reported that a study by marketing intelligence group, Ezoic, found that one month into the GDPR, ad prices dropped in the EU and actually rose in the U.S.⁹⁰

Over and above the devaluation of the market, there are costs associated with regulations, including the compliance and penalties, which are easier for the giants to absorb.

4.3. Ad fraud

The World Federation of Advertisers (WFA) defines as fraud as any activity “where impressions, clicks, actions or data events are falsely reported to criminally earn revenue, or for other purposes of deception or malice.”⁹¹ In their 2016 report, they note the difficulty in assessing the extent of ad fraud exposure rates, with reported results ranging from 2% to 90%.

In terms of losses—money diverted from online publishers to fraudsters—the Association of National Advertisers (ANA) reported \$7.2 billion lost in 2016 and \$6.5 billion in 2017 in their annual Bot Baseline Report.⁹² The WFA believes these numbers are too conservative, citing losses of \$20 billion in 2015, and predicting \$50 billion in losses by 2025.⁹³ According to Juniper research, ad fraud will amount to \$19 billion in 2018, with losses reaching \$44 billion by 2022.⁹⁴

4.4. Brand risk

Marketers have always been wary of associating their brands with “unsavory” content. The ability to control offensive content has greatly decreased in the digital world given open platforms like YouTube. At the same time, the ability to control ad placement has also decreased with the rise of programmatic advertising—the automated buying and

selling of ad inventory. Programmatic accounted for 39% of total ad spend in the US as of 2017.⁹⁵

Brands experience losses when consumers boycott their products, and in turn boycott Web publishers' sites. For example, throughout 2017, major brands including P&G, Verizon, and Johnson & Johnson, temporarily withdrew advertising from YouTube when they learned their ads were appearing alongside offensive content. While these actions did little to hurt Google's bottom line, they did result in efforts to remove the offensive content.

4.5. Intermediaries

The advertising value chain is complex and mysterious; in addition to traditional agencies, myriad intermediaries reduce the amount of ad spend that goes to publishers' web sites. A recent study in the US by a media investment management group (GroupM) claimed that ad tech vendors in particular receive about 20% of the overall ad spend advertisers send to publishers.⁹⁶ Another study by several ad industry groups calculated that publishers in the US received about 60 cents for every dollar spent on programmatic advertising,⁹⁷ where programmatic advertising represents about 80% of digital display ad spend.⁹⁸ As advertisers become increasingly frustrated with intermediaries there is some indication that the larger advertisers are starting to go back to relying on direct relationships with publishers.⁹⁹

It's not clear what the actual impact of the above threats will be and to what extent they are inspiring advertisers and ad-supported services to redesign the advertising value chain and the ad experience. The more important point of this paper, however, is that the negative impacts of these threats will in many cases be unevenly distributed as will the ability to absorb the costs and losses associated with them.

5. Alternatives and complements to advertising revenues

Several non-advertising sources of revenue can be considered, not all of which are significant at this time. For example, Twitter licenses public data to marketers and developers.¹⁰⁰ Data licensing comprises about 15% of total revenue in 2017 (up from 11.5% in 2016). It continues to grow while ad revenue is decreasing.¹⁰¹ Snap sells hardware, i.e., glasses (Spectacles), which comprise part of Snap's "other" revenue category, representing less than 5% of Snap's total revenues. Facebook makes money from hardware sales as well (Oculus) and digital games. These are just a few examples. Amazon Prime video service is an exception in that its "free" online video service is part of a larger suite of services that users get with Amazon's "Prime" free shipping service, i.e., it is cross-subsidized.

The more commonly discussed alternative or complement to advertising concerns users paying for the full service or for access to a higher tier. In the wake of the privacy controversies that erupted in spring 2018, the likes of Facebook debated subscription models with prices based roughly on ARPU.¹⁰² Such models are complicated. For example, while Facebook subsidizes its less profitable users in developing countries, it's not clear users would be willing to do the same. As noted above, Facebook's ARPU is currently over \$100/year in the US while the global average is about \$25 per user. Based on these numbers, one analyst calculated that Facebook would need \$7 per month from all North America users to maintain its current revenue from targeted advertising.¹⁰³

As another example, an FTC study from 2016 included calculations for the monthly subscription fee for online content services using data from a 2010 study sponsored by the Network Advertising Initiative.¹⁰⁴ The calculations assumed the most loyal customers would cover the costs. It was determined that among the top 10,000 sites that showed display advertising, 15% of users were regular visitors. It would require 25% of those loyal users to pay \$2 per month to replace ad revenues, based on ad rates at the time.¹⁰⁵

On other hand, many users believe *they* should be paid—as data laborers.¹⁰⁶ Consider that in the original ad-supported model, consumers of content—whether TV watchers or magazine and newspaper readers or radio listeners—gave their momentary attention to ads in exchange for the content they were watching, reading, or listening to free of other (monetary) charges. Today, however, especially in the case of digital services, users are giving far more than their attention. Scholars have referred to the exploitation of “digital audience labor,” i.e., the extraction of value from audience activities, which expands with every new interactive feature.¹⁰⁷ That includes providing data but also sharing (re-distributing) content, and word-of-mouth marketing on social media. One could counter argue that users are likewise getting a lot more in return. For example, Facebook users have access to a rich communications infrastructure that enables many functions and services including those related to running a business and generating revenue—services that would otherwise be prohibitively expensive. Nonetheless, it is the increasingly intimate and all-pervasive (inescapable) nature of users' contributions that is driving this movement; a lack of control in the terms of agreement. Performance artist Jennifer Lyn Morone has illustrated the concept by turning herself into a registered company and selling her identity—all the personal information she generates by “simply being alive.”¹⁰⁸

When discussing user-pay models, it's important to recognize that some users are rejecting the ad-based model not just because ads are disruptive or that tracking is an invasion of privacy. Rather, it's because advertising influences the nature of the online experience in more insidious ways, particularly in the case of social media. As both content distribution and interpersonal communication shifts to social media platforms, the race to provide higher levels of engagement and better targeting (and thus higher ad revenues) has created incentives to promote (or at least not deter) fake news and sensationalized or provocative content that lends itself to obsessive sharing and commenting. In short, the quality of content and the experience surrounding the content,

and thus both culture and social discourse more fundamentally, changes when harvesting attention and data are the goal.

Overall, in the same way that ad-supported broadcast television—which created incentives for lowest-common denominator programming—suffered a backlash in the 1960s for being “a vast wasteland,”¹⁰⁹ we are seeing a growing discontent with our free online services (and digital culture more broadly) in public discussions. And in the same way that users have opted for ad-free pay TV services (premium cable and now Netflix and other SVOD services) they may be willing to pay for other services as well—no matter how relevant or unobtrusive the ads.

The emergence of convenient, flexible, and affordable payment options including micropayments, donations, etc., will only facilitate this trend. One of the more radical models proposed is MIT professor Ethan Zuckerman’s taxpayer-supported version of social media. Zuckerman argues that the advertising-based logic driving ad-supported platforms like Facebook has resulted in echo chambers and a predominance of baby pictures whereas a public social media platform would lead to a diverse and global view of the world. Despite his idealized view of a publicly supported social network, he points out that while such a vision is possible in Europe, it is “unrealistic in the U.S. because of differences in public media culture.”¹¹⁰ Another collective or distributed payment model includes a version of the music industry’s performance rights’ collection model applied to the Internet experience, as speculated by Clark and Valentin in the original study.

Regardless of payment methods, it remains to be seen how much of the Internet experience users will end up paying for and what this will mean for Internet businesses in terms of revenue. By comparison, one of the television industry’s greatest fears is that a significant portion of ad revenue will be lost as viewers willfully migrate to ad-free services like Netflix. It’s been estimated that Netflix alone has taken between \$3 and \$6 billion worth of TV ad time off the table, or 4-8% of the value of TV advertising in the US, depending on the extent to which Netflix replaces rather than complements traditional television.¹¹¹

6. Summary and conclusions

Digital ad spend is growing worldwide. At just over \$200 billion dollars, it has surpassed TV ad spend as of 2017, and represents about 40% of total ad spend. While the US currently leads in market share, it lags in terms of percentage of total ad spend, and per Internet user spend. Most of the growth in the coming years will be in the Asia Pacific market, but while it will rank high in percentage of total ad spend, per Internet user spend is extremely low due to high population levels. Mobile advertising is driving the bulk of digital advertising growth in all markets.

The market is highly concentrated with Google and Facebook together capturing close to 50%. While social media shows high growth rates, giant retail aggregators are the

most immediate source of competition to the Google Facebook duopoly. Alibaba already dominates the digital market in China while Amazon has started moving up in the ranks in the US as of 2017.

Several threats stand to diminish the revenues derived from advertising but it's not clear what the actual impact will be or to what extent ad-supported businesses and advertisers will respond to address problems like disruptive ads, privacy breaches and offensive content, etc. In any case, smaller businesses will be most affected, giving further advantage to Google, Facebook, and Amazon.

The more immediate problem faced by most ad-supported Internet businesses therefore is market structure; more specifically, the flow of ad dollars to Google and Facebook, and increasingly, retail giants like Amazon and Alibaba.

We thus end this paper with a brief discussion that redirects the focus from *how much* ad money there will be in the future, to *what* types of economic activity those advertising dollars support. Assuming that advertising changes the nature of the experience of the product/service, this is an important question since every aspect of our lives has now become subject to the logic of advertising.

6.1. Wither the content industry?

Given the evolving market structure, we observe that the composition of the digital ad-supported economy differs significantly from the traditional ad-supported industry in that the latter has comprised primarily content or media industries (i.e., mostly TV but including radio, magazines and newspapers) whereas digital advertising funds a different set of services, some entirely new and many of which are not content industries, at least not in the traditional sense. Let's explore this in more detail, with a focus on the US.

As shown in Figure 16, in the non-digital domain, almost three-quarters (73%) of ad spend went to content (media) industries, including TV, radio, magazines and newspapers, in 2010. Of this 73%, 38% went to TV. Newspapers got 15% while radio and magazines got about 10% each. The rest went to outdoor ads and directories (9.8%) while digital advertising comprised 17.1%. In 2017, traditional (non-digital) media spend decreased to 57%, outdoor ads and directories to 6.0%, while digital advertising rose to 37%.¹¹² And by 2020, traditional media spend is expected to decrease to 50%, and outdoor ads and directories to 5.0%. Digital advertising will rise to almost 50%.¹¹³

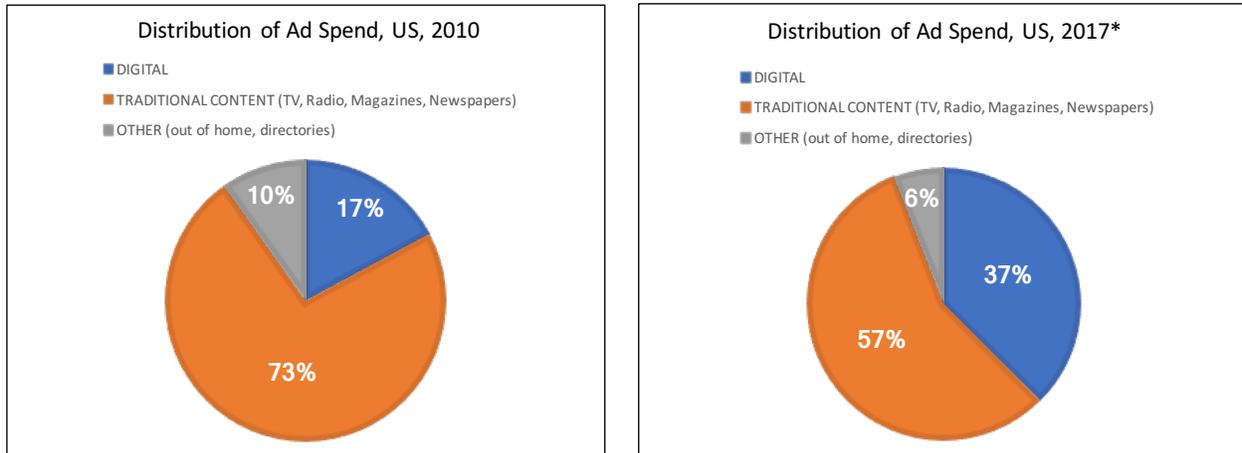


Figure 16: Distribution of Ad Spend in the US, 2010 & 2017¹⁴

Digital advertising is counted as a category unto itself, but even when broken down, most reports present the digital ad market using categories that don't easily map on to traditional ad market categories, i.e., apples to apples. (This lack of parity between traditional and digital categories of economic activity is a more general condition of the Internet economy.) The nature of the ad-supported economy in the digital world in terms of its composition (i.e., what kind of economic activity is supported) is less clear and difficult to compare with the non-digital world.

Based on the market structure described in Figure 9 above, even if we assume for the sake of argument that all of the "other" category comprises traditional content, and count half of Facebook's content as traditional content distribution (the rest being personal or user-generated content) that means only about 15% of the ad-supported digital economy comprises what we have traditionally considered content or media, compared to 57% in the non-digital economy.

This may change as television moves online, with OTT video and connected TV services expected to experience high ad spend growth rates in the next five years.¹⁵ As ISPs vertically integrate with large TV programming networks while buying ad tech firms,¹⁶ we expect the latter to attract more digital dollars given their access to user data.

Generally speaking, new classes of what Tim Wu calls "attention merchants" have emerged over the last few decades; beyond content or media to include any business that has a user base whose attention can be "harvested" and sold to advertisers—what we have traditionally thought of as a captive audience. Wu introduces his book with what still appears at this juncture an extreme scenario describing the introduction of advertising into parts of the US K-12 school system: ads plastered across lockers and hallways, logos on report cards, and TV-style commercials playing in between school announcements that are increasingly "broadcast" over video screens strategically located throughout the building. As Wu notes, "There was a time when, whether by convention or technological limitation, many parts of life—home, school, and social

interaction among them—were sanctuaries, sheltered from advertising and commerce. Over the last century, however, we have come to accept a very different way of being, whereby nearly every bit of our lives is commercially exploited to the extent it can be.”¹¹⁷ This is true of both the physical world and the digital realm, where the user experience is, by default, media. Just about any consumer-facing online service—where someone is staring at a screen—is thus potentially an attention merchant. And as noted above, interactivity turns audiences into data laborers. Overall, the boundaries of historically ad-free domains are becoming increasingly porous while entirely new classes of businesses are emerging that are ad-based to one degree or another. In short, traditional content distribution, or media, is no longer the only or even the best game in town.

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