Advertising Viewability in Online Branding Campaigns[1]

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1   Introduction

In the first half of 2016, digital advertising revenues in the U.S. totaled $32.7 billion, up 19% from the year-earlier period according to the latest Internet Advertising Revenue Report released by the US Interactive Advertising Bureau; Mobile for its part represented 47% of all digital ad spend in the first half of 2016. According to eMarketer's forecast, online ad spending in the US will surpass TV ad spending in 2017 for a total of about $77 billion.

This gradual transformation of the advertising industry where TV and print media are surpassed by their digital counterparts comes with a total reconfiguration of the advertising industry characterized by new players and intermediaries (demand and supply-side platforms, ad networks, trading desks, etc.), new marketing techniques (retargeting) and new ad technologies (programmatic, real-time bidding, etc.). The ability to collect data on consumers and ad impressions allows an effective personalized targeting of audiences. Advertisers are therefore supposed to be in a better position with respect to TV and print media to estimate how successful a particular ad is in driving a purchase decision or in raising brand awareness over time.

But recent developments with Facebook and Dentsu[5] as well as recent market studies cast some doubts about the promises of online advertising. Two examples can be given. First, several companies such as Google, comScore, Nielsen, etc., that daily analyze billions of impressions from campaigns over thousands of publishers show that between 40% and 50% of served

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[5] For example, Facebook admitted having overestimated by up to 80% the average time people spent watching video ads on its platform. See The Wall Street Journal, Sept. 23, 2016, "Doubts About Digital Ads Rise Over New Revelations."

impressions are actually never seen by Internet users, resulting in a significant waste of budgets for advertisers. More and more advertisers therefore demand to pay only for viewable impressions and not for served impressions. A new trading currency is therefore emerging: the viewable CPM (vCPM) that prices ads by the number of impressions that can be viewed by Internet users, instead of just being served.[6] Secondly, the rise of online fraudulent impressions, infringed content (stolen video programming, music, and other editorial content), and malvertising-related activities (malware) become a serious concern for advertisers. The World Federation of Advertisers [...] estimates that between 10 and 30% of online advertising slots are never seen by consumers because of fraud, and forecasts that marketers could lose as much as $50bn a year by 2025 unless they take radical action." (Financial Times, "Digital advertising: Brands versus bots", July 18, 2016).[7]

This article focuses on the issue of ad viewability for two reasons. Firstly, ad viewability is a central concern for all market players that led the Media Rating Council and the Internet Advertising Bureau in the US to provide guidance for the measurement of viewable impressions in desktop and mobile web environments. Secondly, to the best of our knowledge, there is no comprehensive economic study that analyzes how the adoption of ad viewability technologies could affect the economics on online advertising. Yet viewability is a crucial component of ad effectiveness as an ad that is not or partially seen does not have any chance to reach consumers.

The remainder of the paper is structured as follows. In Section 2, we first discuss the concept of ad viewability. In Section 3, we present some key findings. In Section 4 we review the academic literature. In Section 5 we present the general framework of the model. In Section 6, we present our conclusion.

2 Advertising viewability: definition and market insights

Online branding campaigns require the Internet to deliver marketing messages to consumers. Marketers use many types of ads (or creatives) in desktop (personal computer) and mobile environments. To measure how often impressions are delivered to Internet users, publishers, advertisers and ad servers use tags, a piece of HTML or JavaScript code placed on each creative

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[6] CPM stands for Cost-Per-Mille.

[7] A further concern often considered by advertisers is brand safety. The latter refers to techniques and strategies proposed by measurement vendors for example to ensure that an ad will not appear in a context that can damage the advertiser's brand.

to provide a complete view of campaign delivery. The tags are usually provided by a viewability vendor.

The mission of a viewability vendor is to measure the number of served and viewed impressions. The number of served impressions is just the number of tagged impressions. But all served impressions are not necessarily measured by vendors because of network failures and invalid (non-human) traffic issues.[8] For example, some ads can be tagged but not correctly delivered or fraudulently served to spiders and bots to manipulate legitimate ad serving. As a consequence, a second measure named the "number of measured impressions" is important to consider as it cleans up invalid traffic and non-served impressions. Finally, ads can be correctly served and measured but not seen by users for several reasons. For example, the ad can be served below the fold (i.e., outside the viewable browser space) far down at the bottom of a web page. Consequently, "a served ad impression can be classified as a viewable impression if the ad is contained in the viewable space of the browser window, on an in focus browser tab, based on pre-established criteria such as the percent of ad pixels within the viewable space and the length of time the ad is in the viewable space of the browser" (Media Rating Council (MRC), 2014). The rate of ad viewability is therefore the ratio of the number of viewable impressions over the number of measured impressions.

The pre-established criteria mentioned in the quotation above have been formally defined for different ad formats by the MRC in 2014 and 2016. A display ad is considered viewable when 50 per cent of an ad's pixels are in view on the screen (on an in-focus browser tab on the viewable space of the browser page) for a minimum of one continuous second. This standard is valid for most banners but has been extended for large ad size banners: a viewable impression may be counted if 30 per cent are in view for a minimum of one continuous second. Regarding videos, it is required that 50 per cent of an ad's pixels are in view on the screen and that two continuous seconds of the video is played. Finally, regarding mobile ads, the MRC has issued its first set of guidelines in last April 2016 and recommends treating smartphone and desktop ads the same way: 50 per cent of an ad's pixels are in view on the screen for a minimum of one continuous second.[9]

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[8] One of the largest studies on this topic was conducted and published in December 2014 by the Association of National Advertisers (ANA) and online fraud detection firm, White Ops. According to the numbers, 11% of display and 23% of video impressions were bot-driven. The Internet Advertising Bureau (IAB) estimates that nearly 36% of online traffic is fake.

[9] As indicated, the MRC standards value a one second impression the same as a five second impression. As a consequence, alternative trading currencies such as the 'Cost Per Hour' are being experimented by large publishers such as The Financial Times to value ad exposure time as a key dimension (Sanghvi, 2015).

3   What do we know about ad viewability?

Since 2012, numerous studies committed by viewability vendors have measured the viewability of publishers' ad inventories. Overall, viewability vendors agree on the relatively low levels of ad viewability. This finding is valid across countries even if there are some gaps. Beyond the Internet users' browsing behavior, the gaps in viewability between countries may be due to several reasons: the technologies used by viewability vendors, the publishers' strategies about the placement of ads within webpages and websites, the use of specific formats (static versus rich media), the predominance of programmatic advertising with respect to direct advertising, the penetration of some devices (mobile, tablet, etc.), and the distribution channel (programmatic versus publisher direct).

Ad viewability is relatively low

All studies conclude that a significant proportion of delivered ad impressions are never visible to the end user, resulting in fairly low viewability rates. comScore was the first viewability vendor to conduct such analysis over thousands of campaigns spanning a mix of global advertisers who ran their ads across a variety of publisher sites and ad networks from May 2012 through February 2013. The key finding was that 54 per cent of display ads do not have the opportunity to be seen by a consumer (see comScore, 2013).

Since this first and well commented statistic, other studies have confirmed this finding. Quantcast for example finds that "there is a very limited supply of very high viewability inventory, with viewability above 80% constitutes just two to three percent of all RTB inventory in Europe." This is illustrated in Fig. 1.
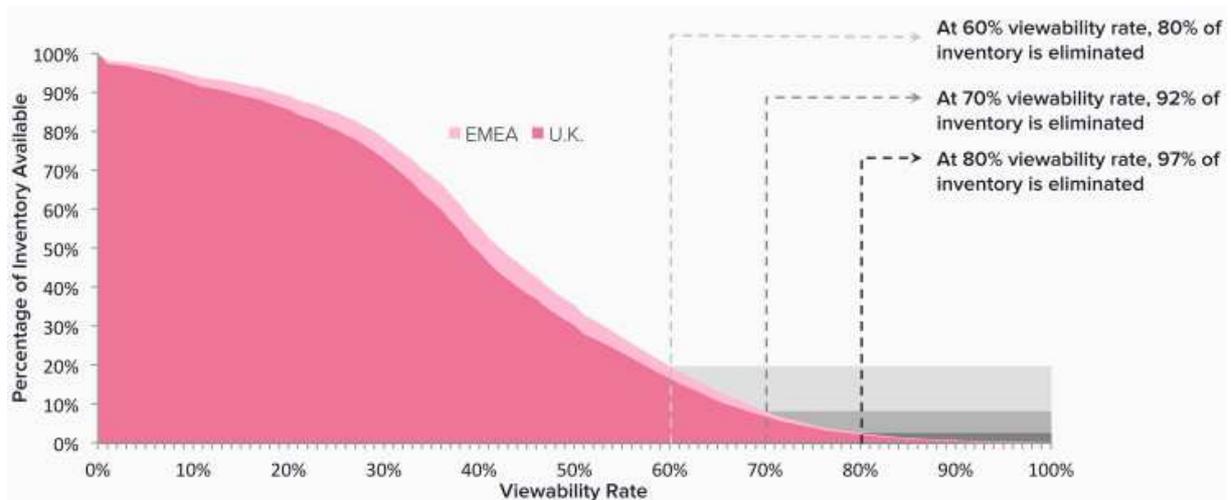
Fig. 1 : Viewability rate by percentage of Inventory available (Quantcast, 2016)

In the specific case of videos, Google conducted in 2015 a study of the video advertising platforms, including Google, DoubleClick, and YouTube (see Google, 2015). Using Google's Active View measurement technology and analyzing video viewability across the web (desktop, mobile, and tablet), not including YouTube and mobile video app data, they find that the average viewability of video ads across the web is about 54%

Ad viewability varies across countries

Ad viewability also varies significantly across countries. According to Meetrics, another viewability vendor, the viewability rate for digital display ads in France stood at 65 per cent in Q4 2015, compared with 50 per cent in the UK, the lowest viewability rate than for any other country in Europe tracked by the firm (see Meetrics, 2016). In the case of videos, Google (2015) also reports that viewability drastically varies between countries from 86 per cent for Russia for example to 54 per cent for the United States. These findings are also corroborated by the media quality reports provided by Integral Ad Science (2016). In his last report dated Q1 2016, Integral Ad Science outlines that 60.9% of impressions are viewable in France, which is +7.4 points compared to Q4 2015 and + 13.1 points in one year. This increase is particularly driven by programmatic.

Ad viewability varies between publishers' websites

Viewability is partly under the control of publishers as they have the potential to render ads more or less viewable for Internet users. This is one the first conclusions drawn by comScore early in 2013. Regardless of the publisher type, the reports emphasized that it is important "to

evaluate the individual publisher or network on its own merits. The wide viewability range suggests that regardless of the publisher type, there are some members of the sell-side of the market who are delivering very strong in-view rates and others who are falling short on their intention to deliver valuable ad inventory to advertisers." For example, for premium websites having an average CPM above USD 5.00$ and 100,000 in monthly ad revenue, the viewability ranged between 10 and 80 per cent (see comScore, 2013).

Ads placed at different page depths are therefore central for viewability as ads have different likelihood of being viewed by users. Traditionally, above the fold (ATF) has been considered as the top location by advertisers because the ad is supposed to be directly viewable in a browser window when the page first loads. But recent studies tend to refute this common belief. Quantcast (2015) shows for example that "ATF is a poor proxy for viewability, with one exchange at only 44% viewability rate on ATF inventory". Several reasons may explain this result: first, users quickly scroll down to reach their desired destination, and second hyperlinks do not always link to the top of a page. In this respect, the format of the ad may help publishers and advertisers to attract consumers.

Ad viewability varies between ad formats

Viewability varies also between static banner ads and dynamic rich media. Sizmek Research (2016) analyzed viewable data from more than 240 billion measured impressions from more than 840,000 ads and 120,000 campaigns served in 74 countries and six continents to more than 22,000 publishers and 43 programmatic partners from January 1 to December 31, 2014 (see Sizmek, 2016). Sizmek notes that "flash rich media ads were 18% more likely to be seen than standard banners. This was most pronounced in North America, where rich media was 29% more likely to be seen than standard banners." This finding is also confirmed by an Adform study in 2015 that found that "rich media display ads performed especially well in the UK, with such ads on its platform seeing a 71.2 per cent viewability rate. In particular, those ads saw some of the best engagement rates and times compared with other countries covered in the study." Moat analytics finally also confirms that bigger ads are more likely to be seen than smaller ones.

Ad viewability varies between devices

Ad viewability also varies by device. For example, the report committed by Sizmek Research (2016) shows that mobile is generally more viewable than desktop sizes to the exception of

Flash rich media. The gaps are substantial as indicated in Fig. 2 where we observe up to 31 points of percentage for HTML5 standards banners in desktop and mobile environments.
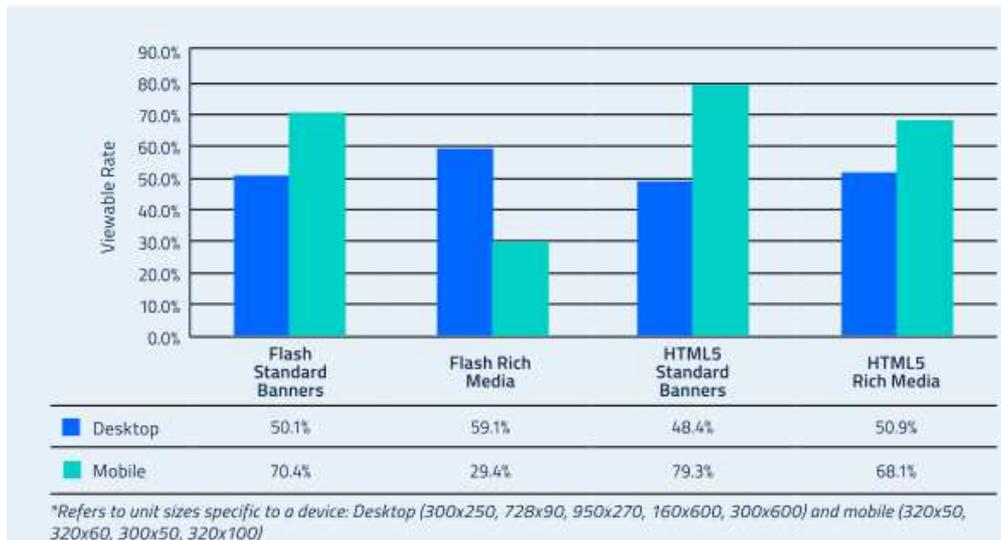

Fig. 2 : Worldwide viewable rates by device[*] and format (Jan-Dec 2014) (Sizmek, 2015)

This finding is also corroborated by Google about video ads. The study reports that video ads are significantly more viewable on mobile (83 per cent) and tablet (81 per cent) than on desktop (53 per cent) (see Google, 2015).

Ad viewability varies between ad serving channels (programmatic and direct)

Sizmek Research (2016) found that serving ads direct to publishers increased average viewable rates worldwide with respect to ads served with programmatic (see Fig. 3). This result is most pronounced in North America, "where serving Flash rich media direct to publishers resulted in a 22-point jump in viewable rates, while HTML5 rich media jumped 15 percentage points."
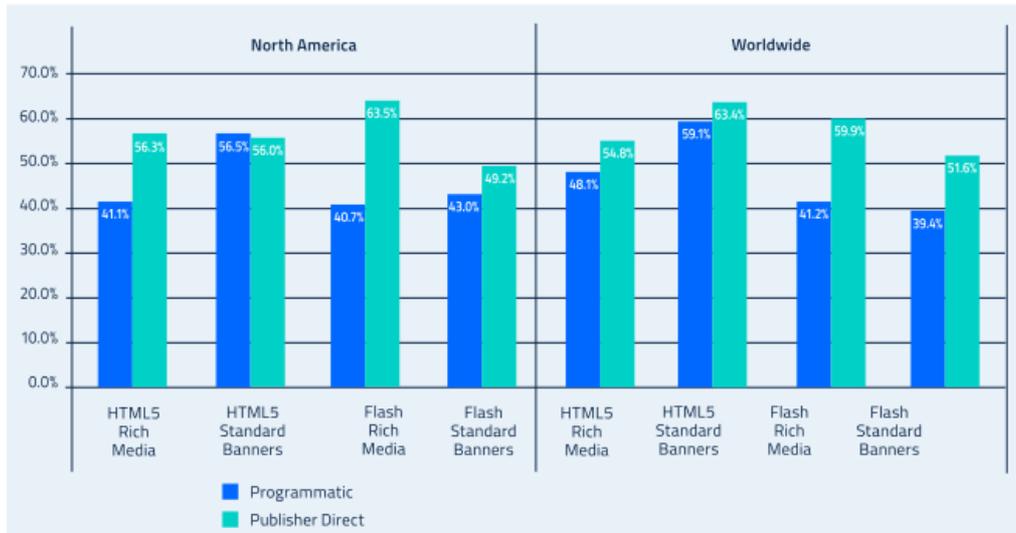
Fig. 3 : Viewability rates by region, channel and format (Jan-Dec 2014) (Sizmek, 2015)

4 How the adoption of an ad viewability measurement technology can affect the economics of online advertising?

For most of advertisers and publishers, ad viewability is a top priority. However, surprisingly, very few academic papers have been devoted to the issue of ad viewability. To the best of our knowledge, two papers only have been published in computer science, one in advertising research, and finally one in management and economics. We review hereafter the papers.

A brief survey of the academic literature

The objective of the two papers in computer science is to better understand and improve ad viewability. For example, Wang et al. (2015) propose a model supposed to better predict the viewability of any given scroll depth for a user-page pair compared with other systems. In particular, they identify two features such as user geo-location and device type that have significant impact on the maximum scroll depth. Zhang et al. (2015) investigate what percentage of viewable pixels and length of exposure time may encourage user's ad recall. They find that 75% of the ad pixels being shown at least two seconds in the active page insure the ad to be seen by users.

Regarding research in advertising, Flosi et al. (2013) use a 2-million-person panel and census server data (cookie data) provided by comScore in 2013 to understand the extent to which ads are delivered to the right target audience. Several empirical generalizations are proposed from the study findings about cookie-related issues, viewability, geo-targeting, and non-human traffic (fraud). For the authors, viewability is a critical component of campaign validation.

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Several findings are commented. Firstly, the authors find that "on average, 30 percent to 37 percent of all served advertising impressions in the United States, Europe, and Canada were never actually viewable by the end user." Secondly, viewability rates significantly vary across sites and campaigns and, finally, the prices of ads is not correlated to viewability rates.

The aforementioned studies do not analyze how the adoption of ad viewability could affect the economics of online advertising. This is done by Bounie et al. (2016) in a very recent contribution where the authors show that ad viewability affects the way publishers price ads, which in turn affects their profits, the demand of advertisers, and user experience. We briefly review hereafter the main results of this paper.

An economic analysis of ad viewability

Bounie et al. (2016) construct a model that involves three types of agents: Internet users, advertisers/media agencies and publishers. Publishers manage their website (or platform) to attract Internet users on one side and advertisers on the other side. This is therefore a classical two-sided market in which three groups of agents interact through a platform.[10]

To maximize their profits, publishers choose the price of ads and their level of viewability. In a sense, publishers can determine the level of ad viewability on their website as reported in Section 2 of this paper. Advertisers for their part derive benefits by displaying ads on publishers' websites. Advertisers are concerned about paying for ads that are seen by users and not just only served, as non-viewable ads do not raise brand awareness. The profit function of an advertiser displaying an ad on the publisher website increases with the traffic of Internet users and the viewability of ads, and decreases with the price of ads. Finally, Internet users choose to visit a publisher website. The utility of Internet users, i.e. user experience, increases with the quality of the editorial content, but decreases with the number of viewable impressions, and the nuisance cost of ads.[11] Likewise, the utility also decreases when a user visits a publisher that differs from his preferred content.

The authors analyze two situations. In the first situation, advertisers do not have a technology to measure the viewability of ads on the publisher website. They just anticipate (estimate) a global level of ad viewability. In the second situation, advertisers have a technology to precisely measure ad viewability. They can therefore compare the impact of the adoption of a technology

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[10] Publishers are supposed to be only financed by advertising and not by subscription.
[11] The ad nuisance cost is the same for all Internet users and strictly positive, meaning that Internet users perceive a higher number of viewable impressions on a page as a nuisance.

to measure ad viewability on the demands and profits of Internet users, publishers and advertisers. They compare the two situations - with or without the adoption of an ad viewability technology - in two different markets. First, they assume there is only one publisher in a monopoly position. Second, they envisage a competition between publishers to attract Internet users and advertisers.[12]

Prices, ad viewability levels and profits

In the monopoly case, Bounie et al. (2016) show that *when publishers and advertisers have no technology to measure the level of ad viewability*, the publisher sets the level of ad viewability to its minimum for two reasons. Firstly, a low level of ad viewability preserves user experience. Secondly, advertisers purchase impressions based on their anticipated level of ad viewability and not on the actual level of ad viewability (that they do not know). This mechanism is central: when advertisers anticipate a high level of ad viewability, they are keen to pay a higher price of ads, which increases publisher profits. However, as the actual level of ad viewability is low, the return on investments is also low. Consequently, the higher the difference between the actual and estimated levels of ad viewability, the higher the advertisers' losses and publisher profits. The result of the competition between publishers is very similar to the monopoly case. Under the assumption that the quality of the editorial content is equivalent between publishers, publishers have no incentive to raise the level of ad viewability as it does not increase profits and repels Internet users from visiting their websites.

These results completely change *when advertisers can determine the actual level of ad viewability* as publishers cannot exploit anymore this information asymmetry. The only way to increase the publishers' profits is to raise the level of ad viewability (to charge higher prices). The authors show however that Internet users are not always ready to accept a higher nuisance cost of ads. In the monopoly case, they will do it only if the quality of the editorial content is good enough. In the competition case, when the cost of visiting a publisher *i* is low, i.e. when Internet users have the possibility of switching easily between publishers, publisher *i* has no incentive to set a high level of ad viewability in order not to discourage Internet users from visiting his website. By contrast, when Internet users cannot easily visit the competitive publisher *j*, i.e. when Internet users are captive or do not find a close substitute to the publisher website *i*, publisher *i* can increase the level of ad viewability. In conclusion, in the presence of

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[12] They develop a model of "competitive bottlenecks" inspired from Armstrong (2006), where Internet users choose to join a single platform (single-home) and advertisers wish to join all platforms (multi-home).

a technology to determine the actual level of ad viewability, publishers can raise the level of ad viewability to charge a higher price to advertisers while keeping Internet users captive.

Does the introduction of ad viewability technology is beneficial for the society, i.e. for publishers, advertisers and Internet users?

Bounie et al. (2016) compute the social welfare, i.e. the sum of the industry profits and the surplus of Internet users, when publishers and advertisers have adopted a technology to measure ad viewability. When the publisher is in monopoly, the introduction of ad viewability increases the social welfare only in the combined presence of low advertising nuisance and high quality of content. This is due to the fact that a low advertising nuisance provides a higher user experience, high enough to generate substantial traffic on the publisher's website. In this case, a good quality of content generates more traffic and a higher willingness to pay for an impression.

The authors find a similar situation when publishers are in competition. The social welfare is higher with the introduction of an ad viewability technology only if both advertising nuisance and competition intensity are low. As previously, a low advertising nuisance allows for high Internet users' surplus and industry profits. However, low competition intensity has mixed effects on the social welfare: it increases publisher profits and decreases the surplus of Internet users. In the end, the authors find that a low competition intensity combined with a low advertising nuisance drives the industry profits to be higher than the loss of Internet users.

5   Conclusive discussion: what are the barriers to vCPM adoption for branding campaigns?

In all markets around the world, a significant proportion of impressions bought by advertisers do not meet the IAB and MRC criteria for viewability definition. This represents a lot of money for advertisers and their agencies, but also for publishers given non viewable impressions are a source of negotiations and makegoods with agencies. Adopting viewability (vCPM) as a trading currency for branding campaigns seems a no-brainer from an advertiser point of view who only wants to pay for viewable impressions. It would also benefit publishers as shown in this paper. So what are the barriers to vCPM adoption for branding campaigns?

From our point of view, they can be summarized into three key categories: operational difficulties, discrepancies and scarcity of high-viewability inventory.

In 2016, the syndicate of internet sales (SRI) as well as the association of media agencies (UDECAM) in France commissioned the CESP to review and compare eight different viewability measurement solutions, namely Adloox, Adledge, comScore, Integral Ad Science, Meetrics, MOAT, and two tools natively implemented in platforms (AppNexus and Google). The feedback CESP received showed that many difficulties stemmed from the tag implementation: lack of guidelines, cumbersome process, lack of automation, etc.[13]

The observed discrepancies between vendors' solutions to measure viewability of digital advertising are another key issue.[14] Different vendors provide different levels of viewability of the same advertising campaigns, which is a problem for a KPI that should be a common and shared currency on the market. As shown in CESP review, there are several reasons to the existence of these discrepancies. First of all the lack of common language around the metrics does not help the dialogue between the parties involved. More importantly, the way invalid traffic, particularly sophisticated IVT, is more or less filtered impacts the number of measured impressions and, as a consequence, the viewability rate (viewable impressions/measured impressions). The different approaches to measuring some specific formats and the restricted access to the measurement of platforms' inventories add to the challenge of providing similar results across solutions. Finally the limited volume of high viewability inventory is also a reality which does not facilitate the adoption of vCPM.

However, despite all these challenges more and more advertisers request for their investments to be based on viewability for branding campaigns. We see three main drivers to an increased adoption of such practices. On the publisher side, the efforts made by Ad Ops teams to increase viewability of ad placements increase the volume available and reassure advertisers and their agencies on their quality. The Guardian initiative is a good example of such a virtuous circle. On the vendor side, the convergence towards fewer solutions or towards solutions providing closer viewability rates for a given campaign should also encourage the adoption of this KPI. In the US, the implementation of the MRC guidelines on discrepancies has helped to reduce the gaps between the results provided by different solutions. Finally, from a total market point of view, the initiative launched by SRI and UDECAM towards the certification of publishers' websites in France, is certainly very promising to increase the trust in inventory quality.

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[13] CESP made several recommendations to overcome these practical obstacles, which can be found on the association website.
[14] Based on tests comparing four major viewability vendors about ads placed above the fold (i.e. the upper half of the front page of a webpage) on well-known websites, CESP has reported discrepancies about the average rate of viewability between the four actors up to 36 percentage points.

6 References

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