Original Article

Journalism
2024, Vol. 0(0) 1–19

DOI: 10.1177/14648849241237647
journals.sagepub.com/home/jou
Sage

Digital reputation indicator: A webometric approach for a global ranking of digital media

Magdalena Trillo-Domínguez
University of Granada, Spain

Ramón Salaverría
University of Navarra, Spain

Lluís Codina
Pompeu Fabra University, Spain

Félix De Moya-Anegón
SCImago Research Group, Spain

Abstract

In this article we present the Digital Reputation Indicator (DRI), an innovative methodological tool that allows evaluating and comparing the reputation of digital news media on a global scale. In use since January 2023 by SCImago Media Rankings (scimagomedia.com), DRI is a composite assessment and measurement instrument that weighs web metrics originating from trusted, stable, and globally accessible sources. DRI provides a resource for the qualitative comparison of digital media according to a webometric model based on its level of citation by other websites (citationflow), the quality of the sites that link to the media (trustflow) and the level of authority scores associated with their domain (domain rating and authority score). This article explores the reliability of this webometric approach, which overcomes the limitations of the two media measurement paradigms used up to now: the most traditional, based on audience measurement, and the most recent, oriented towards popularity in social networks. In this article we present and test the consistency of the DRI as a resource for the building of a global ranking of digital media, an instrument that we consider to be of interest to both the academic and professional communities.

Corresponding author:
Magdalena Trillo-Domínguez, Información y Comunicación, Universidad de Granada, C/Cortijuela, 5 4-A, Granada 18008, Spain.
Email: mtrillo@ugr.es

Keywords
Audiences, digital news media, digital reputation, journalism, SCimago ranking, webometrics

Introduction

The media sector, which comprises both the press industry and the digital media and audiovisual ecosystem, is in the middle of a profound transformation as a result of the processes of digitalisation and globalisation of communications over the last few decades. Under the particular socioeconomic, technological and cultural contexts of each country, the media face a dilemma of challenges related to the redefinition of their role in democracy, competition with new actors in the media ecosystem, the threat of disinformation and the forced reinvention of business models, key to their survival.

In these times of change, a matter pending both for the academic world and the industry of journalism is having instruments to analyse the media ecosystem in an objective, solid way that is comparable on a global level. Such resources should permit the analysis of adaptation-evolution processes both in existing legacy media and for the new actors that have erupted onto the media stage, including the technology giants, the new audio-visual platforms and, in particular, native digital media.

With this aim, we present what we call the Digital Reputation Indicator (DRI). It is a combined evaluation and measuring instrument that weighs web metrics originating from globally reachable, stable and contrasted sources. These sources offer data on all types of content intensive domains (Pérez-Montoro and Codina 2017). In our case, we focus on the digital communications media and, more specifically, on the study of the affordances of their respective websites.

In this article we present and test the consistency of the DRI as a resource for building a global digital media ranking, available online since January 2023 in https://www.scimagomedia.com, a resource we consider to be of interest to both the academic and professional community. In fact, one of the great challenges faced by the media sector, with evident detriment to business, is the lack of a system for measuring and comparing digital media at a global level. Furthermore, the competition between companies specialising in media auditing, which fight for the business of controlling audiences in the digital ecosystem, hinders the development of universal analytical systems.

In the face of a lack of digital media measuring tools for undertaking homogenous comparisons at a global level, what has existed up to now is a combination of "fractured media metrics" (Graves et al., 2010: 6), which go from a diverse collection of resources for analysing digital audiences to periodical reports on trends and magnitudes in national and international media markets. Some of the most well-known reports are, for example, *State of the News Media*, carried out annually in the United States by the Pew Research Center between 2004 and 2018. Since 2019, their statistical data on north American media have been published in the form of factsheets with no established periodicity. Another multinational report of interest is *Media Landscapes* (medialandscapes.org), promoted by the European Journalism Centre. This project describes and quantifies the media

ecosystems of 54 countries, despite not permitting the comparison of media, and it was last updated in 2019. With more systematic periodicity, there are also well respected reports that compare digital news consumption tendencies in different countries on an annual basis. The most comprehensive example is *Digital News Report* (digitalnewsreport.org), coordinated since 2012 by the Reuters Institute for the Study of Journalism at Oxford University (Newman et al., 2023). One of the sections of this publication, created from a survey of over 92,000 internet users in 46 countries, analyses the consumption of a selection of digital media in each market. Although they offer information relevant to the media industry and academic community, none of these reports affords a systematic and global comparison of the reputation of digital media.

In an environment of digital hyper competition such as the present, and in a structure as complex as the media system, with the challenge of objective analysis at a global scale we set out above, our study and measuring proposal puts the spotlight on digital reputation and starts out from the premise that, for the positioning and visibility of a website to be recognisable and comparable, specialised metrics are required. We understand that website visibility indicators can aid in the analysis of media websites, connecting social reputation associated with the brand (the capacity of the media outlet to project itself as an influential actor in society, be a prescriber and conform public opinion) with attainable and measurable access indicators, which permit a global comparative analysis (benchmarking).

The central idea is to consider that the appropriate adaptation of digital media sites to the context of the internet should include their visibility; in other words, the probability of the content from a media being present in the results of searches on engines such as Google, in response to questions from citizens. We propose that the combination of indicators that express the positioning of a media platform be referred to as "digital reputation". In this way, we define digital reputation as the capacity, measured via quantitative indicators of digital content, for visibility on digital platforms and, specifically, on search engines such as Google.

At the same time, we feel it convenient to use specialised and multidimensional metrics, combining diverse indicators, which offer an integral approach and one that is as complete as possible to the relative position of the media and their level of commitment towards the digital realm. From this perspective, we propose a novel third way for evaluating digital media, which overcomes the limitations of the two paradigms used up to this point. The first paradigm is based on the measurement of audiences as a fundamental parameter and constitutes the hegemonic model in the media industry, both in this digital age and the period prior to the internet (Carlson, 2020). The second more recent paradigm is based on evaluating the impact of the media in accordance with their metrics and coverage on social networks (Peters et al., 2013). Both models have been questioned due to the ease at which they fall into bias (Olteanu et al., 2019) and tricks (Graves et al., 2010).

To overcome the limitations of systems based on the measurement of user numbers or popularity on social networks, we propose evaluating the media in accordance with metrics that reveal objective dimensions of reputation, focused on online quality and external recognition.

In particular, we establish the following research questions as a central point of the work: Research Question (RQ1). Is it possible to measure the digital reputation of the

media via webometric indicators relating to linking and visibility? RQ2. Does a correlation exist between the "digital reputation" of the media and their "social reputation"?

Literature review

The concept of digital reputation

Reputation is understood as "the public's opinion about the character or standing (such as honesty, capability, reliability) of an entity, which could be a person, an agent, a product or a service" (Wang and Vassileva, 2007: 3). It therefore involves a mixture of attributes that, combined with each other, characterise a subject, be it personal or institutional (Zinko et al., 2007). These attributes, with their different weighting, comprise "information used to make a value judgment about a person or a thing" (Farmer and Glass, 2010: 5). Whatever the subject of the reputation, this concept reflects, in short, a valuation on its quality, based on perceptions of its features and affordances.

The broadening of the concept of reputation to include organisations has given rise to a fertile discipline: Corporate Social Responsibility (CSR) (Lindgreen and Swaen, 2010), in which reputation plays a fundamental role (Fombrun and Shanley, 1990). Beyond worrying about the simple fulfilment of corporate objectives or financial profit, organisations are affording increasing importance to non-economic factors, differentiation in regards to competitors, employee well-being and, generally, to the creation of a positive image on the part of stakeholders.

If this is the social interpretation of reputation, in digital environments the meaning of this concept becomes even more specific. Digital reputation refers to web pages and sites with content that, thanks to the combination of certain features and affordances, has more possibilities of being accessed and seen by users. This greater probability is the result of a series of factors, such as for example attractiveness (Hartmann et al., 2007), credibility (Danielson, 2006) and accessibility (Thatcher et al., 2007), which together end up comprising a reputation, as used on the internet (Wang and Vassileva, 2007).

The concept of web or digital reputation is underlined in the first instance by Google via the group of factors denominated E-E-A-T (Google, 2022), which means that sites more deserving of trust are more visible on digital platforms, receive more links and higher traffic. The way in which we measure this, taking into consideration the variety of indicators managed, permits us to indicate that it is based on the best available public evidence.

From this point of view, it is essential to know exactly what an indicator measures. In this case, we cannot say that better digital reputation means better journalism. Or not necessarily. What we can say is that better digital reputation is journalism with greater online impact or journalism better adapted to the digital medium. Ideally, we can say that we need is good journalism with a good digital reputation. Let us consider that digital communications media show a high number of dimensions of analysis, precisely due to said digital profile, and one of these is their visibility in an ecosystem such as the internet, where online characteristics and the search and information consumption habits of users do not always correlate the best journalism to its best positioning and visibility.

The underlying idea is that quality journalism is a multifaceted and "integrative concept" that involves "diversity, topicality, relevance, credibility, independence, research, criticism, accessibility and other media-specific criteria" (Arnold, 2008: 504). All these characteristics result in the quality perceived by the public, which in the end builds the journalistic reputation in the long term. Our understanding of reputation is more specific, as it refers solely to the digital performance of the media, measured through web metrics.

We therefore understand that the development of a web reputation indicator with such characteristics may contribute to the creation of an attainable snapshot on its position and relevance that also sheds light on the worrying debate on the quality of journalism in the digital age, the disconnection of legacy media from the new generations and their loss of prominence as intermediaries in communication processes.

We are ultimately placed in a crucial debate on the sustainability of the media where there is a clash between an optimistic discourse on democratisation, diversity and widening of forms of citizen participation that the new communication environments should facilitate, and another more pessimistic (and realistic) discourse connected to the drifting of the concentration of economic and symbolic power that is occurring in the new media structure. Concern about disinformation (Salaverría et al., 2020), from traditional hoaxes to inappropriately named *fake news* that spread immediately and exponentially on social networks, without geographical boundaries and with great capacity of viral dissemination (see, e.g., Noain-Sánchez, 2021; Gutiérrez-Coba et al., 2020; López-Rico et al., 2020), has led precisely to the World Health Organization itself coining the term "infodemic" (WHO, 2020), warning that it is one of the greatest challenges faced by both journalism and traditional communications media (Pari Tito et al., 2022; Pérez-Escoda and Pedrero Esteban, 2021) and all of us as a society.

From the perspective of the concept, the idea of reputation we are working with corresponds to the acceptation of "relevance" systemised by Castells-Fos et al. (2022) in their analysis on media sustainability, to the extent that it is related to their degree of internet visibility and, in turn, connects with the connotation of reputation itself (Gundlanch and Hofmann, 2020). Notwithstanding this, we also consider that said web reputation also has a transverse effect on the second meaning indicated by researchers as regards relevance: the capacity of the media outlet to project itself as an influential actor in society, being a prescriber and shaper of public opinion (Vázquez-Herrero et al., 2022).

In the two cases, these ideas of reputation end up connecting with a notion closely linked to the media system and the journalism companies themselves: the brand. Moreover, they are starting from a situation of weakness in the digital realm due to the rise in new media companies and news content distributors that are competing and eroding the role of traditional large journalistic organisations (Picard, 2010).

Digital platforms and journalism

The intense relationship between digital platforms and journalism has a number of dimensions and, although constantly evolving, offers a clear model of necessity and even

mutual dependence on the part of both actors, although not always or not necessarily mutually beneficial (Nielsen and Ganter, 2022).

One of the evident points is they offer new forms of accessing and sharing information, at the same time of presenting challenges for news enterprises, as very specifically pointed out by the contributions from the aforementioned report by Nielsen & Ganter.

Media companies need to reinforce their online visibility as part of their sustainability strategies, which is why we afford such importance in our work to the concept of web reputation, as it is both the main result and cause of such visibility.

There are prior investigations that consider diverse forms of relationships between platforms and communications media, but there are few studies and no development of the concept of web reputation. Despite this, attention may be drawn to a number of different related works.

Specifically, recent investigations analyse the relationships of power with the platforms in the production and distribution of news (Poell et al., 2022; Simon, 2022; Zhang and Pérez Tornero, 2022). The work of Simon (2022) in particular addresses questions of control, dependency and autonomy of the media in relation to the platforms and concludes that, as the technology increasingly impregnates all news creation processes, their dependency on the platforms can increase.

In their work, Lewis and Westlund (2015) established the opportunity of conceptualising interactions of what they refer to as "the Four As", namely, actors, actants, audiences, and activities, in order to overcome deficiencies in the analysis of current journalist production. Shortly following this, a work by Hermida (2020) revised this proposal through the concepts renamed as public, platforms, paraphernalia and practices, thus helping to define areas of study and their interrelations.

For their part, Poell et al. (2022) propose an analytical framework for examining the relationships of power between news companies and platforms. These authors theorise this type of power as relational with important variations in the degree of dependence on the platform of news organisations and observe that spaces of negotiation are produced, concluding with a less deterministic view of the role of platforms.

Zhang and Pérez-Tornero (2022) analyse the use of platforms on the part of digital media as a resource for both the production and distribution of news. Furthermore, they point out a certain interrelationship of media and platforms in terms of political participation.

Martin (2021) for her part considers that the aspect of news visibility on social media platforms is now measured as much by algorithmic power, which is to a large extent opaque, as it is by the quantifiable exchange of social news. She considers that various channels exist for journalism to reconfigure its relationship with the power of the platform in an age of the exchange of social news.

The participation of citizens in the process of redistribution and coproduction of news is the object of other studies on digital journalism, as the already mentioned work of Lewis and Westlund **(2015)** and, more recently, that of Panagiotidis et al. (2020). The latter work points out that news companies include tools and applications on their websites that enable users to, in some way, be co-producers of journalistic content through voting,

sharing, commenting and even the sending of material, thus affording to the site of each medium the characteristics inherent to a digital platform of participative journalism.

SEO has been studied (relatively) little despite its deep implications in regards to visibility and therefore interaction of news with users. The work of Schultheiß and Lewandowski (2021), as well as carrying out a review of these studies and highlighting that search engine optimisation (SEO) is a multimillion dollar industry, interview a group of experts and conclude, amongst other aspects, that SEO is considered necessary for content suppliers to guarantee visibility as well as calling for further works that help to draw attention to the task of SEO in the visibility of news to the extent that the public are also aware of it. Along a similar line, Giomelakis et al. (2019) not long before initiated studies on the result of applying SEO techniques to the optimisation of news in Greek media, whereas Lopezosa et al. (2019) compared SEO performance in digital media in Spain.

Other studies related to SEO and platforms draw attention to the fact that journalists and media professionals should be aware of and possess a new set of skills related to web technologies, as undertaken in the works of Giomelakis et al. (2019) and Lewandowski and Schultheiß (2022), in a similar vein to the abovementioned authors, but in the first case putting the emphasis on the culture of editorial departments as regards SEO and in the second case, what the German public (users) know about search engine optimisation. This particular work (Lewandowski and Schultheiß, 2022), demonstrates that the German public has a fragmentary knowledge on the impact of SEO, being unaware of essential aspects such as the difference between organic and paywall results.

There is also a growing body of literature on the influence that audience metrics have in newsrooms across the world, such as the works of Fürst (2020) and Kristensen (2021). As the work of Fürst (2020) points out, academics assume that this could affect news quality. The study by Fürst reveals that the use that journalists make of audience metrics may, effectively, have a negative impact on news quality, as an effect both of the growing economic pressures on newsrooms and a certain dominant rhetoric at the moment of her study that compared measurements of audience size with audience interests and good journalism.

These tendencies, however, appear to have diminished in the face of the need to create communities in those media that have over the last 2 years opted towards forms of membership, although studies are needed to support this alleged new trend. In this regard, Kristensen (2021) adopts a pragmatic approach in her study on how the editorial departments of a Danish media platform integrate the analyses of audiences in their work as a form of negotiation between editorial and commercial objectives.

The different studies outlined above show us the extent of interests and approaches when it comes to considering the relationships between communications media and digital platforms. From the perspective of our study they are a way of underlying the need for and usefulness of an enormous quantity of approaches and investigations to dispose of metrics such as that which we aim to present in our work under the concept of web reputation.

Materials and methods

The sources of indicators selected in this project, in response to the general objective put forward of developing a third channel of analysis that makes a leap from the focus put on volume to quality are Semrush, Ahrefs and Majestic. These sources are generalist and sufficiently accredited in the SEO product market in the sphere of website monitoring throughout the world (Abbamonte, 2023; Sinkus Studio, 2023; Stratits Research, 2023; Technavio, 2023: S). From the wide group of metrics offered by these sources, we have selected these three due to their holistic aspirations as regards the visibility of different domains and because the fact they operate at equal scales facilitates weighting and comparability between them.

The combination of sources and indicators is an attempt at minimising possible biases, basing ourselves on the complementarity of representations. In contrast to the frequent use of unique indicators that offer extremely partial and on occasions self-interested visions of the reality of domains subject to analysis, our methodology, through the combination of three different data sources and four indicators related to access and linking, intends to avoid biases due to partiality that are very common in one-dimensional overviews.

Each of the indicators, defined below, have been weighed in equal measure to calculate the overall indicator that determines the position of each domain in the ranking:

- Authority Score (SEMRUSH https://www.semrush.com): measures the general quality of a website and influence on SEO. Ranking is based on the quantity of backlinks, reference domains, organic search traffic and other data.
- Domain Rating (AHREFS https://www.ahrefs.com): measures the strength and authority of a website. It is calculated by evaluating the backlinks of a website, social network posts and other relevant data.
- Citation Flow (MAJESTIC https://www.majestic.com): reflects the quantity of links that point to a specific website without taking into account whether the quality of the links is good or bad.
- Trust Flow (MAJESTIC https://www.majestic.com): measures the quality of links that point to a website. A website with better Trust Flow than Citation Flow will normally have good quality links.

With the objective of testing the proposed methodology, using a sample of over 4000 media domains throughout the world (https://www.scimagomedia.com/rankings.php), we have calculated the four indicators based on three sources, and subsequently derived the overall indicator for each media platform.

With regard to the materials used to test our indicator, and in the absence of a global list of open-access media, we decided to build our own sample, compiling the information available in relevant digital media directories and databases. These sources included global directories of print newspapers such as the Worldwide List of Online Newspapers (https://www.newspaperindex.com), the Worldwide Directory of Online Newspapers (onlinenewspapers.com), W3 Newspapers catalog (https://www.w3newspapers.com), the

ComScore List (comscore.com), as well as other sources such as Kiosko.net (en.kiosko.net), PrensaEscrita.com (https://www.prensaescrita.com), and the Iberian digital media database developed by the IBERIFIER hub (map.iberifier.eu).

From these directories and databases, we built an initial sample for this research in which we selected general news media with an online presence. This selection encompassed both legacy online media and digital native publications, with an international, national and regional reach.

The objective of the test is twofold: analyse the correlation coefficients between the four indicators to determine the degree of complementarity of the metrics and analyse the degree of normality of the distribution of the overall indicator (see Figure 1). Both analyses permitted us to conclude that the indicators created similar representations of the combination of the domains in the sample, but would allow differences to be appreciated in comparative terms that were included in the overall indicator.

The histogram graph illustrates a distribution closely resembling the Gaussian bell curve, serving as a graphical representation of the normal distribution of a dataset. Categorized and bell-shaped, we observe a small set of media with a very high overall digital reputation, a bulk of average values, and another set with very low values. In this initial sample, we note that the mean and median do not coincide at the center but are shifted to the right (there is a greater distance from media with higher digital reputation

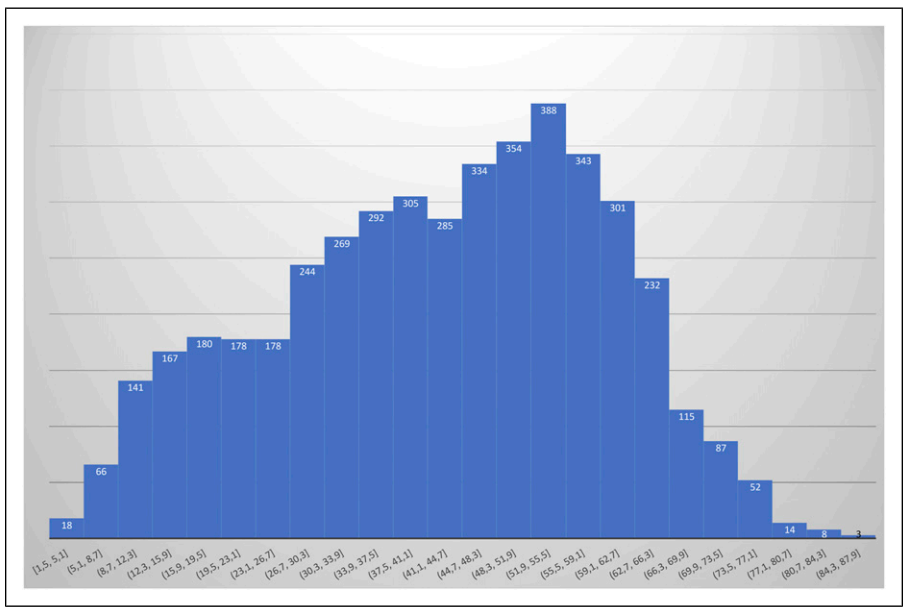

Figure 1. Histogram of the distribution of values from the overall indicator for the sample of selected domains by rangs. We can observe a statistical distribution of the overall digital reputation of the media sample. This distribution can be considered as 'normal' for such sociological phenomena, excluding any unusual or aberrant value.

than from those positioned lower). Conducting the same analysis with samples from future editions will allow us to observe whether there is an improvement or deterioration in the overall indicator as a reflection of media digital reputation.

Furthermore, we have analysed the correlation between the four indicators used for the construction of the DRI In order to verify their consistency. As reflected in the table (see Table 1), we are positioned in r-squared correlation values between 0.5 and 0.9.awa.

Although we could consider that such a correlation level may diminish the validity of some of the indicators (due to redundancy), our reflection is orientated precisely in the opposite sense: we are talking about consolidated, internationally recognised companies that, from different paths and approaches, come to expose a reality very closely related to the media on the digital stage. We see the same situation from diverse positions, based on indicators that measure complementary dimensions. While the sample of analyzed domains remains the same across the three sources, the set of reference domains differs for each case. In this way, we believe them to be an additional validation of the metrics to the extent they reinforce and increase the consistency of the results.

While dependence on metrics from private entities specialized in SEO solutions may raise concerns about objectivity and qualitative analysis, in our case, two key points need to be emphasized. Firstly, this situation is not fundamentally different from the dependence inherent in traditional audience-based metrics that have been used until now (thus, we face an unresolved weakness within the sector itself). Secondly, in our approach, we not only rely on robust and internationally accredited sources but also propose a triangulation method, enhancing the strength and neutrality of the indices.

Methodologically speaking, on the path of exploration towards constructing the third way and as we have already put forward in the introductory section, we take similar studies as a reference that are approached from the sphere of scientific publications in the sense that they suppose a qualitative leap from the one-dimensional measurement of

Table 1. R squared correlations between the different indicators. The fact that all values fall between 0.6 and 0.9 highlights the high consistency of the overall indicator. Utilizing diverse sources and different information, no contradictions are observe.

	citationflow	trustflow	domain_rating	ascore	overall
citationflow		0.6	0.6	0.7	0.8
trustflow			0.6	0.6	0.8
domain_rating				0.8	0.9
ascore					0.9
overall					

citations to the incorporation of new measurements of impact on the basis of the analysis of social networks and usage registration data.

Bollen et al. (2006) investigate how these new measurements are related and with what precision they express scientific impact. The authors carry out an analysis of the main components of the classifications produced by 39 existing measurements and proposals of an academic impact that were calculated from the database of citation and usage registration. The results showed that the notion of scientific impact is a multidimensional construction that it is not possible to adequately measure with a single indicator.

This same idea on bias and usage limitation of a single indicator is that found on the basis of the DRI we develop in this work for application in the sphere of the communications media.

In practice, the purpose of the DRI is to extrapolate the debate on "prestige" and "popularity" marked by the evolution in the measurement and usage of metrics in scientific journals towards journalistic publications. As recalled by Bollen, the status of an actor in a social context is commonly defined in terms of two factors: the total number of endorsements it receives from other actors and the prestige of the actors that endorse it. These two factors indicate the distinction between popularity and expert appreciation of the actor (prestige), respectively.

These notions of popularity and prestige are those that have ended up being applied to the domain of academic evaluation and that we propose now to bring to the sphere of the media. We concur with Bolen that a weighted version of the popular PageRank algorithm can be used to obtain a metric that reflects prestige and build upon the work of other authors that have made proposals of indicators based on Google PageRank (González-Pereira et al., 2010; Guerrero-Bote and Moya-Anegón, 2012).

Starting out from the prior verifications that have marked the passing of an initial generation of indicators in the sphere of scientific journals to a second multidimensional generation focused on quality, the Digital Reputation Indicator (DRI) we present in this work, and whose construction we develop in the following section, is an attempt at showing the usefulness of applying the concepts of popularity and prestige to the media sphere with the final objective of navigating via the aforementioned third way in the analysis of journalistic publications.

We define the Digital Reputation Indicator (DRI) as a novel instrument for the assessment and measurement of digital audiences. It relies on a combination of globally recognised, stable and validated sources, allowing for an estimation of the prestige and popularity of digital media through linkability and accessibility indicators.

For the purposes of our research, we advocate for the indicator as the outcome of an index composed of visibility and access measures, enabling us to gauge the likelihood that a news article published by a media outlet gains visibility on digital platforms. Consequently, a higher DRI indicates media outlets with greater probabilities of their news articles ranking high in search results.

As an example of our proposal, we could think about the cases of *The Da Vinci Code* by Dan Brown and *Ulysses* by James Joyce. Who decides on prestige? With what profile and based on which criteria? If we consider ourselves to be in a democratic approach, where everyone has a vote, we would be speaking about popularity in the literary case, the

number of citations in the case of scientific publications and audiences or volume in the case of the media. Nevertheless, if we make the leap and heed the criteria of experts (critics), we weigh scientific citations (discriminating between the value of being cited by *Nature* or a third rate journal) or we take into account the profile and value of who links to you in the case of the media, then we would be moving from popularity to prestige.

And it is precisely here where our proposal is situated: our DRI does not ignore popularity (access and audiences), but combines it evaluating and weighing links. Thus, from the combination of these concepts of access and linking, from the objective indicators of web positioning, we understand the concept of "web reputation".

Results and discussion: Reach of digital reputation indicator

In the perfect storm of crises and challenges in which the media industry currently finds itself, we consider that the Digital Reputation Indicator (DRI) we present in this work may bring with it a double potentiality, firstly from the rigour, objectivity and precision the webometrics offers us, along with the indicator of media brand value and, secondly, as a factor of quality in competition for audiences. Specifically, what the digital reputation indicator contributes is the result of audience interactions based on a broad series of consolidated analyses, as we show above. In short, it is impossible to achieve positions of note in this digital reputation metric without an expansive and continuous interaction with an audience that is paying attention to a particular media outlet in each case.

In the short but intense history of online media (Salaverría, 2019), the first stage of adaptation to the digital realm has been timid, erratic and with a primarily quantitative approach: it was necessary to tell the story on the internet, to make oneself visible in the ocean of binary communication, as a starting point to be able to compete. To survive. The dynamics of information retrieval imposed by the large search engines, especially by Google with its continued changes of algorithm, have determined one of the main conversion strategies of the media to the digital environment, affecting forms of content distribution and even agenda setting itself (Trillo-Domínguez, 2021).

From the point of view of media sustainability, and to what point difficult to measure factors such as relevance and prestige enter into play, we believe that the Digital Reputation Indicator could act as an approach of brand reinforcement in terms not just of audiences, to which it is increasingly difficult to guarantee the quality of their information diet, but also at a commercial level, completing current measuring systems.

SCImago Media Rankings (scimagomedia.com) and their DRI open a third way that is added to the metrics models of digital media, based on audience measurement or popularity on social networks. It is not the aim of the DRI to quantify the number of users that visit a media outlet or the volume of pages they view. Nor does it attempt to evaluate the number of times content is shared on social networks or the interactions that this can generate. SCImago Media Rankings contributes a resource for qualitative comparison of digital media classifying them in accordance with a combined webometric model based on their level of citation on the part of other websites (citationflow), the quality of the sites that link to the media (trustflow) and the level of authority associated with their domain (domain rating and ascore). These factors enable a uniform comparison for digital media

in any location in the world, at the same time as admitting analyses segmented geographically and by language. The resultant ranking offers an indicator of the reputation of a digital media platform compared to that of its competitors in a determined market, while at the same time permitting the generation of a global ranking.

The tool is useful not just for the media industry, but also for the academic community. In terms of its professional usefulness, it offers a resource available to both leading media outlets and the smallest platforms, given that they are all measured in a common ranking, something that is infrequent in classic audience measurement systems, where it is common for only a small media elite to be analysed. In regards to academic usefulness, the ranking offers a global directory of thousands of digital media, from which it is simple to select samples for study in accordance with different criteria such as type of digital media, geographical reach and language of publication.

We therefore consider that both the DRI and the development of the project via SCImago Media Rankings come to validate the central research question of the investigation (RQ1) into the possibility of measuring the digital reputation of the media using webometric indicators of linking and visibility.

In relation to the second research question (RQ2) regarding whether it exists a correlation between the "digital reputation" of media outlets and their "social reputation", we believe that our research does not provide sufficient evidence to affirmatively answer this question. In our opinion, it would require further discussion, additional complementary indicators, and comparative studies to enable us to progress with stronger evidence.

In this sense, we believe that the SMR holds social significance as it weighs objective indicators of linkability and accessibility. Different sources generated by very different mechanisms with distinct algorithms yield consistent results in terms of benchmark. Therefore, there is coherence in various measurements, and by employing the same mechanism traditionally used for traditional audiences, we conclude that it is plausible to relate the digital reputation to the social reputation of media outlets.

At the same time, it is our opinion that all of this involves an approach directly connected to the underlying idea surrounding reputation. We thus understand that the traditional audience measurement systems themselves already have the implicit idea of social reputation and, in the case of digital reputation, we consider it to be an approximation, an expression of said concept. In other words, they would not be comparable terms but we can say that digital reputation is part of the social reputation of the media platform in a more specific and more pertinent way, on the digital stage.

Conclusions

Aware that there are no magic recipes, or exclusive paths, the Digital Reputation Indicator (DRI) starts out from an interdisciplinary and transverse work effort with the aspiration of being able to contribute, from a third way that is complementary to the study of audiences and the impact of the media on social networks, to evaluating the state of the media in the fluid ecosystem of digital communication in which we find ourselves. It is important to take into account media companies but, above all, in their obligatory mission to reconnect with the public.

Measurements based on parameters of access and linkage cover a wide spectrum of visibility of internet domains and, to the extent that both parameters are representative of interest on the part of audiences, we can consider them as a reference of the digital reputation of the media. The conditions, therefore, for sharing digital media domains are, on the one hand, the use of a sample based on mediums with predominantly digital audiences and, on the other hand, the use of sources of verified indicators due to the broadness of their processes of gathering information on the internet.

In all likelihood, one of the greatest virtues of this indicator is the fact it is based on an intense data collection process that literally starts from the big data that provides the measurements on which it is based. Another virtue is its triangulation, thanks to the crossing of four indicators of great potential, being based as we say on big data.

To conclude, we understand that the instrument it is possible to develop from the aforementioned selected sources and indicators shall permit a global view of the digitalisation processes of the media and their evolution to the extent that successive editions of the tool afford us diachronic perspectives of different grouping levels. Lastly, the georeferenced analysis of the media shall also represent a novel and significant contribution insofar as our selected sample is sufficiently represented at a global scale.

Finally, connecting with the ongoing discussion regarding our methodology and the usage evidence, we believe we demonstrate through the SMR project (where five waves with a full year of analysis are already available in January 2024), we can establish several future lines of work as crucial steps to mitigate the detected weaknesses and make progress in such a complex topic as media reputation and quality.

An intriguing line of work delves into one of the major discussions in the media sector, the reliability of measurement sources. We believe our research opens a new analytical approach with significant exploration potential. Regarding concerns about dependence on private entities, we acknowledge that we are confronting a societal issue beyond the scope of these researchers, particularly in reference to the potential future existence (or absence) of analysis systems independent of private sector initiatives.

As the main challenge in our research line, we believe that the logical progression in the pursuit of social reputation based on metrics is to take a new step towards moving away from a methodology that measures popularity (traditional audience metrics) and transition towards a methodology that weights (assigns different values to) based on the type of audience. In other words, being capable of discriminating and weighting links and accesses in a differentiated manner: not all links and accesses should have the same value (an internal link from a site within your own group is not the same as an external one; being linked by a small local media is not the same as being linked by *The New York Times*…). This is precisely the challenge we are currently addressing and are confident in our ability to tackle with the assistance of generative AI.

Regarding the overall SMR project, we are already working on enhancing the sample used as a laboratory to test the validity of the DRI. This involves expanding the selection of media to include a greater presence of digital outlets and improving global representativity. In the medium term, we also aim to explore a broader typology of media, incorporating sports, economic, and specialized outlets, as well as audiovisual media.

Acknowledgements

This work forms part of the new line of investigation driven by the SCImago Research Group for the study and evaluation of digital media at a global scale, and by the CUVICOM project (Parameters and strategies to increase the relevance of media and digital communication in society: curation, visualisation and visibility PID2021-123579OB-I00 (MICINN). Spanish Ministry of Science and Innovation).

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Spanish Ministry of Science and Innovation (PID2021-123579OB-I00).

ORCID iDs

Magdalena Trillo-Domínguez https://orcid.org/0000-0003-0647-2781
Ramón Salaverría https://orcid.org/0000-0002-4188-7811

References

Abbamonte K (2023) The Best SEO tools to win organic traffic in 2023. *Shorthand* https://shorthand.com/the-craft/best-seo-tools/index.html

Arnold K (2008) Quality in journalism–an integrative concept. *Publizistik* 53: 488–508. DOI: 10.1007/PL00022233

Bollen J, Rodriguez MA and Van de Sompel H (2006) Journal status. *Scientometrics* 69: 669–687. DOI: 10.1007/s11192-006-0176-z

Carlson M (2020) *Measurable Journalism. Digital Platforms, News Metrics and the Quantified Audience*. Oxfordshire, UK: Routledge. DOI: 10.4324/9780429347108

Castells-Fos L, Pont-Sorribes CY and Codina L (2022) La sostenibilidad de los medios a través de los conceptos de engagement y relevancia: scoping review. *Doxa Comunicación* 35: 19–38. DOI: 10.31921/doxacom.n35a1627

Danielson DR (2006) Web credibility. In: Ghaoui C (ed) *Encyclopedia of Human Computer Interaction*. Hershey, PA: IGI Global, 713–721.

Farmer R and Glass B (2010) *Building Web Reputation Systems*. Sebastopol, CA: O'Reilly Media, Inc.

Fombrun C and Shanley M (1990) What's in a name? Reputation building and corporate strategy. *Academy of Management Journal* 3: 233–258. DOI: 10.2307/256324

Fürst S (2020) In the service of good journalism and audience interests? How audience metrics affect news quality. *Media and Communication* 8(3): 270–280. DOI: 10.17645/mac.v8i3.3228

Giomelakis D, Karypidou C and Veglis A (2019) SEO inside newsrooms: reports from the field. *Future Internet* 11(12): 261. DOI: 10.3390/fi11120261

González-Pereira B, Guerrero-Bote VP and Moya-Anegón F (2010) A new approach to the metric of journals scientific prestige: the SJR indicator. *Journal of Informetrics* 4(3): 379–391. DOI: 10.1016/j.joi.2010.03.002

Google (2022) General Guidelines. https://static.googleusercontent.com/media/guidelines.raterhub.com/en//searchqualityevaluatorguidelines.pdf

Graves L, Kelly J and Gluck M (2010) *Confusion Online: Faulty Metrics and the Future of Digital Journalism*. New York, NY: Tow Center for Digital Journalism, Columbia University. https://towcenter.columbia.edu/news/faulty-metrics-and-future-digital-journalism

Guerrero-Bote VP and Moya-Anegón F (2012) A further step forward in measuring journals' scientific prestige: the SJR2 indicator. *Journal of Informetrics* 6(4): 674–688. DOI: 10.1016/j.joi.2012.07.001

Gundlanch H and Hofmann U (2020) Information search, behavioral economics, and relevance decisions in the online media industry: how strongly do the algorithms of intermediaries influence the relevance evaluation of information? *Journal of Media Business Studies* 18(3): 179–198. DOI: 10.1080/16522354.2020.1854602

Gutiérrez-Coba LM, Coba-Gutiérrez P and Gómez-Díaz JA (2020) Fake news about Covid-19: a comparative analysis of six iberoamerican countries. *Revista Latina de Comunicación Social* 78: 237–264. DOI: 10.4185/RLCS-2020-1476

Hartmann J, Sutcliffe A and De Angeli A (2007) Investigating attractiveness in web user interfaces. In: Proceedings of the SIGCHI conference on human factors in computing systems, San Jose, California, USA, 28 April –3 May 2007, 387–396.

Hermida A (2020) Post-publication gatekeeping: the interplay of publics, platforms, paraphernalia, and practices in the circulation of news. *Journalism & Mass Communication Quarterly* 97(2): 469–491. DOI: 10.1177/1077699020911882

Kristensen LM (2021) Audience Metrics: Operationalizing News Value for the Digital Newsroom. *Journalism Practice* 17(5): 991–1008. doi: 10.1080/17512786.2021.1954058

Lewandowski D and Schultheiß S (2022) *Public Awareness and Attitudes towards Search Engine Optimization*. Philadelphia, PA: Behaviour & Information Technology. DOI: 10.1080/0144929X.2022.2056507

Lewis SC and Westlund O (2015) Actors, actants, audiences, and activities in cross-media news work. *Digital Journalism* 3(1): 19–37. DOI: 10.1080/21670811.2014.927986

Lindgreen A and Swaen V (2010) Corporate social responsibility. *International Journal of Management Reviews* 12(1): 1–7. DOI: 10.1111/j.1468-2370.2009.00277.x

López-Rico CM, González-Esteban JL and Hernández-Martínez A (2020) Information consumption in social networks during the Covid-19's crisis in Spain. *Revista de Comunicación y Salud* 10: 461–481. DOI: 10.35669/rcys.2020.10(2).461-481

Lopezosa C, Codina L and Pérez-Montoro M (2019) SEO and digital news media: visibility of cultural information in Spain's leading newspapers. *Tripod* 44: 41–61.

Martin FR (2021) Visibility, connectivity, agency: journalism's prospects in an age of automated social news sharing. *Digital Journalism* 9(8): 1190–1198. DOI: 10.1080/21670811.2021.1977670

Newman N, Fletcher R, Robertson CT, et al. (2023) *Digital News Report 2023*. Oxforf, UK: Reuters Institute for the Study of Journalism. https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2023

Nielsen RK and Ganter SA (2022) *The Power of Platforms*. Oxforf, UK: Oxford University Press.

Noain-Sánchez A (2021) Disinformation and Covid-19: quantitative analysis through the hoaxes debunked in Latin America and Spain. *Estudios sobre el Mensaje Periodístico* 27(3): 879–892. DOI: 10.5209/ESMP.72874

Olteanu A, Castillo C, Diaz F, et al. (2019) Social data: biases, methodological pitfalls, and ethical boundaries. *Frontiers in Big Data* 2(13): 1–33. DOI: 10.3389/fdata.2019.00013

Panagiotidis K, Tsipas N, Saridou T, et al. (2020) A participatory journalism management platform: design, implementation and evaluation. *Social Sciences* 9(2): 21. DOI: 10.3390/socsci9020021

Pari Tito F, García-Peñalvo F and Pérez Postigo G (2022) Bibliometric analysis of media disinformation and fake news in social networks. *Revista Universidad y Sociedad* 14: 37–45. Available at: https://rus.ucf.edu.cu/index.php/rus/article/view/2755

Pérez-Escoda A and Pedrero Esteban L (2021) Challenges for journalism facing social networks, fake news and the distrust of z generation. *Revista Latina de Comunicación Social* 79: 67–85. DOI: 10.4185/RLCS-2021-1519

Pérez-Montoro M and Codina L (2017) *Navigation Design and SEO for Content Intensive Websites: A Guide for an Efficient Digital Communication*. Amsterdam, the Netherlands: Chandos Publishing-Elsevier. ISBN 978 0 081006764.

Peters K, Chen Y, Kaplan AM, et al. (2013) Social media metrics—a framework and guidelines for managing social media. *Journal of Interactive Marketing* 27(4): 281–298. DOI: 10.1016/j.intmar.2013.09.007

Picard RG (2010) *Value Creation and the Future of News Organizations: Why and How Journalism Must Change to Remain Relevant in the Twenty-First Century*. Portugal: Media XXI. ISBN 978 9898143273.

Poell T, Nieborg DB and Duffy BE (2022) Spaces of negotiation: analyzing platform power in the news industry. *Digital Journalism* 11(8): 1391–1409. doi: 10.1080/21670811.2022.2103011

Salaverría R (2019) Digital journalism: 25 years of research. Review article. *El Profesional de la Información* 28(1): e280101. DOI: 10.3145/epi.2019.ene.01

Salaverría R, Buslón N, López-Pan F, et al. (2020) Disinformation in times of pandemic: typology of hoaxes on Covid-19. *El Profesional de la Información* 29(3): 1–15. DOI: 10.3145/epi.2020.may.15

Schultheiß S and Lewandowski D (2021) Outside the industry, nobody knows what we do" SEO as seen by search engine optimizers and content providers. *Journal of Documentation* 77(2): 542–557. DOI: 10.1108/JD-07-2020-0127

Simon FM (2022) Uneasy bedfellows: AI in the news, platform companies and the issue of journalistic autonomy, *Digital Journalism* 10(10): 1832–1854. DOI: 10.1080/21670811.2022.2063150

Stratist Research (2023) SEO software market. https://straitsresearch.com/report/global-seo-software-market

Sinkus Studio (2023) Best SEO tools & resources. https://sinkusstudio.com/best-seo-tools-resources/

Technavio (2023) SEO software market by type and geography - forecast and analysis 2022-2026. https://www.technavio.com/report/seo-software-market-industry-analysis

Thatcher J, Burks MR, Heilmann C, et al. (2007) *Web Accessibility: Web Standards and Regulatory Compliance*. New York, NY: Apress.

Trillo-Domínguez M (2021) The digital realm blurs the lines between journalistic and corporate communication: the rubik's cube as a metaphor for new global strategies. In: Olvera MD (ed) *Innovative Perspectives on Corporate Communication in the Global World*. Hershey, PA: IGI Global, 78–96. DOI: 10.4018/978-1-7998-6799-9.ch005

Vázquez-Herrero J, Negreira-Rey MC, Silva-Rodríguez A, et al. (2022) The news media through the lens of the Spanish audience: a matter of trust. *Estudios sobre el Mensaje Periodístico* 28(2): 447–459. DOI: 10.5209/esmp.77807

Wang Y and Vassileva J (2007) A review on trust and reputation for web service selection. In: 27th international conference on distributed computing systems workshops, Toronto, Canada, 22–29 June 2007, Vol. 07, 25. ICDCSW. DOI: 10.1109/ICDCSW.2007.16

WHO (2020) *Managing the COVID-19 Infodemic: Promoting Healthy Behaviours and Mitigating the Harm from Misinformation and Disinformation*. Geneva, Switzerland: World Health Organization. https://www.who.int/news/item/23-09-2020-managing-the-covid-19-infodemic-promoting-healthy-behaviours-and-mitigating-the-harm-from-misinformation-and-disinformation

Zhang W and Pérez Tornero JM (2022) Theorizing platformization from the perspective of the connection between mobile journalism and political participation. *Communications Society* 35(3): 173–190.

Zinko R, Ferris GR, Blass FR, et al. (2007) Toward a theory of reputation in organizations. In: Martocchio JJ (ed) *Research in Personnel and Human Resources Management*. Greenwich CT: JAI Press.

Author biographies

Magdalena Trillo Domínguez (Córdoba, 1975): Journalist, PhD in Communication from the University of Granada (Spain), Master in Cultural Management and specialist in Digital Journalism. She has more than twenty years of active journalism in different media and a decade as a university professor. Director of the newspaper 'Granada Hoy' (2008-2021), she currently combines teaching with the Digital Transformation project in Grupo Joly. She is a Meridiana Equality Award winner and collaborates as an analyst in national media such as TVE.

Ramón Salaverría Aliaga (Burgos, 1970) is a prominent Spanish communication scholar and professor, specializing in digital journalism and media innovation. He has authored numerous publications in the field and is recognized for his contributions to digital media research. Currently, he leads the Iberifier project, an observatory of digital media in Spain and Portugal, supported by the European Commission and affiliated with the European Digital Media Observatory.

Lluis Codina is a respected academic and researcher in the field of information science. His work primarily focuses on digital libraries, information retrieval, and web usability. Codina is known for his expertise in these areas and has published extensively in international journals. He is a co-founder and member of the editorial team of the academic journal Hipertext.net. Lluís Codina is a professor and researcher at the Universitat Pompeu Fabra in Barcelona.

Félix de Moya Anegón is a renowned scholar known for his expertise in bibliometrics and information science. He has conducted extensive research in the quantitative analysis of scientific publications, contributing significantly to the understanding of scholarly communication. De Moya Anegón's work is widely cited in academic circles. He is the principal researcher and founder of the SCImago Research Group, which carries out ambitious R&D projects such as "Atlas de la Ciencia," "Scimago Journal & Country Rank-SJR," and "Scimago Institutions Rankings".