



Metrics for News

The Uses and Effects of Analytics in Journalism

Kenza Lamot

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METRICS FOR NEWS

The Uses and Effects of Analytics in Journalism

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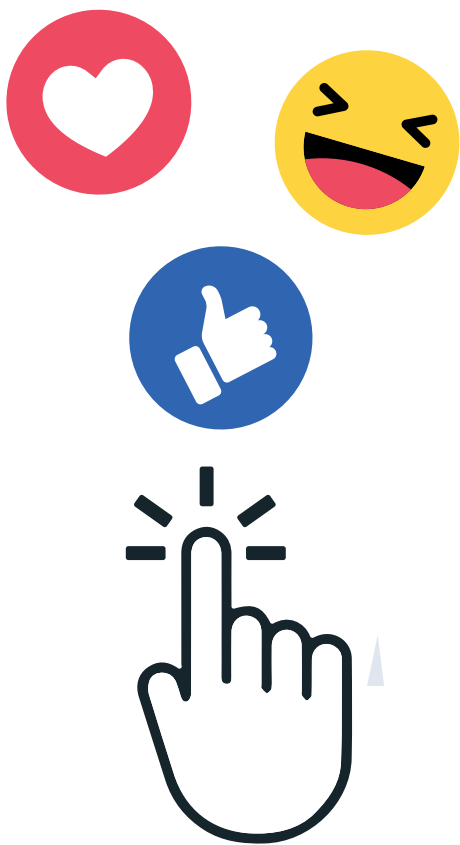
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CHAPTER 1

Introduction

In my master's year, which brings us back to 2017, I started working at the online newsroom of a Flemish broadsheet newspaper. As an intern, my task mainly involved browsing the internet and checking the wires for potentially interesting stories and subsequently, making content for the news outlet's website. One day, I wrote a tech story about how the police had been able to catch a pedophile through the use of video technology. When I handed in the piece to the sub-editor in charge that day, he complimented me saying: "Excellent piece. This was pretty technical and difficult stuff." A bit later in the same day, he got back to me and added: "It has even made our top five most-read pieces this day!" Judging from his sheer enthusiasm, this seemed an equally important achievement as the fact that the piece heralded great journalistic quality. It wasn't until later that year, when I started working the weekends as a sub-editor myself and was allowed access to the dashboard, that I, a novice in the profession, came to understand the almost incantatory power of *Chartbeat*.

Whenever I had assigned articles to the homepage, I found myself checking its dashboard continuously to see whether the numbers got up. I would end up feeling good about my work when the metrics seemed to "approve" what my editorial gut-feeling had priorly been telling me. Up to then, I always had this normative ideal vision of journalism as form of public service, like I had always learned in my journalism classes. Part of this service undergirds providing information that audiences need to know in order to act as responsible citizens in the political debate (Deuze, 2005, pp. 447-448). Yet, it is hard to fulfill this service function when news audiences apparently prefer "New baby orca born in SeaWorld" better than your in-depth Brexit analysis according to Chartbeat. As a young journalist you implicitly start to no longer trust yourself, and somehow you are encouraged by metrics to do "as they say". If I came to reason this commercially in the short period of time I had spent at the newsroom floor, what impact are analytics having on journalistic cultures in general? How are analytics seeping into news values and news selection decisions of professional journalists? And how do they ultimately change the news that we as citizens are consuming?

This short anecdote is illustrative for the balancing act that journalists have to perform between what audiences *need* to know and what they apparently *want* to know. Analytics and metrics that systematically track and analyze information about patterns of online user behavior have become ubiquitous in newsrooms, providing journalists with a wealth of information on the audience that they never had before (Lowrey & Woo, 2010; Petre, 2018; Vu, 2013). Through tools such as Chartbeat and Google Analytics, news professionals now know exactly and in real-time what users are clicking on and how much time they spent on an article. A growing body of scholarly work has investigated how user behavior distilled from these metrics impacts journalistic practices and routines, including news selection, presentation and distribution (Tandoc, 2019; Welbers, van Atteveldt, Kleinnijenhuis, Ruigrok, & Schaper, 2016). Journalists have assumed a close connection between these quantified preferences and audience interests. Since most-viewed lists of popular news items often tend to be oriented towards softer and entertaining content (Boczkowski & Mitchelstein, 2013; Tenenboim & Cohen, 2015), this has sparked debate among researchers and practitioners alike that giving in to audience preferences would coincide with giving up journalistic quality (Costera Meijer, 2020; Costera Meijer & Groot Kormelink, 2017). In an age where journalists are expected to do much more with less resources, it is believed that low-cost, low-need "information" will supplant the more expensive, time-consuming public affairs journalism that

may struggle to appeal to a broad, commercial audience (Tandoc & Thomas, 2015). However, the evidence for this concern is still inconclusive. More research is needed to shed light on this antithesis in the literature: Is quality journalism indeed irreconcilable with popularity? This dissertation provides an important opportunity to investigate the different ways in which analytics affect the processes of news selection and news distribution: Are they an outright curse or a blessing for journalism that struggles to make ends meet?

The dissertation at hand explores the emerging roles of audience analytics in the Belgian journalism case. However, we contend that Belgian newsrooms do not substantially differ from newsrooms operating in other countries or media systems. The Belgian journalism sector had to deal with similar structural developments in the digital media and information landscape and disruptive changes in the media economy. Furthermore, Belgian newsrooms have been appropriating analytics and metrics around the same period of time (the 2010s) and have been working with global third-party analytics companies such as Google (Analytics), Chartbeat and Facebook (CrowdTangle). These contextual and structural similarities thus amount to the generalization and elaboration of the findings of this dissertation to other newsrooms in western democracies. Therefore, a first objective was to investigate the organizational and individual uses of analytics in the daily newsroom operations. Whereas research into this area is well established, this dissertation makes an original contribution to their impact on news output. Moreover, I also wanted to examine the effects of these uses on journalistic perceptions and news selection and distribution decisions in the newsroom. These two overarching research aims informed all the different empirical chapters. The first two studies in the dissertation were designed to explore distinct uses, while the third and fourth study focused on the effects of audience analytics. I will first present a comprehensive literary overview that is necessary in order to understand and evaluate the role of audience analytics and metrics in news work. Then, the four empirical chapters will follow in which I seek to offer both methodological and theoretical contributions to contribute to the knowledge gaps in the literature. Finally, in the concluding chapter the insights obtained through these empirical chapters are situated and discussed in light of broader questions within the field.

Theoretical background

The theoretical framework is divided into three sections. Combined they serve as an introductory chapter for the four subsequent empirical chapters that feature full-length journal articles which were either submitted to or published in one of the established journals *Journalism Practice*, *Electronic News*, *Journalism Studies* and *Digital Journalism*.

The first section, entitled *The Audience Turn in Journalism*, looks more broadly at how audiences are currently being recognized as more active and individualized. The audience turn has significantly altered the relationship between journalists and their audiences. And it has marked a shift from a quality discourse, where audiences were largely neglected as it was assumed to lead to a loss of journalistic quality, to one that focuses on innovation where notions of “interactivity” and “audience empowerment” are at the center of attention (Costera Meijer, 2020). Although the innovation discourse is still present in literature on analytics in journalism, I will argue that the rise of analytics and metrics has also sparked renewed interest in the quality discourse.

Section two, *The Introduction of Audience Analytics and Metrics in Journalism*, discusses the emergence of audience analytics and metrics in contemporary digital newsrooms as a next step in this long-running process. It begins by exploring how the audience turn has laid the foundation for the audience as a quantifiable, rationalizable aggregate by offering a historic review on audience research and measurement. Then, it goes on to dissect the two key concepts “audience analytics” and “metrics” that are often used interchangeably within the academic literature. Next, it offers an exhaustive overview of the tools that are currently being used in Flemish newsrooms. Finally, it closes off with a state of the art of how audience analytics are used in contemporary news production. It hereby differentiates between (1) organizational (2) individual and (3) content-level effects. From this state of the art, the research questions are deduced that guided the empirical part of the dissertation.

Finally, the third section, the *Softening of News Content*, sheds further light on the implications of audience analytics for the journalistic products and the content produced in particular. It does this from the vantage point of two fiercely discussed theories in journalism research: “tabloidization” and “softening of news”. It argues how audience analytics and metrics play heavily into journalistic assessments of newsworthiness, allowing market logic to penetrate traditional news values. Lastly, it reflects more deeply on how social media such as Facebook could drive softening of the news supply.

The Audience Turn in Journalism

Costera Meijer’s (2020) formal essay “*Understanding the Audience Turn in Journalism*” serves as the theoretical point of departure for this dissertation. In the article, she identifies three tipping points in the Netherlands which roughly coincide with the Belgian case study as well and result in very distinct discourses that help understand how audiences are discussed by journalists: (1) quality discourse (2) marketing discourse and (3) innovation discourse. These different discourses in turn yield a powerful connection between varying perceptions of the audience as passive recipients, targets/consumers and creative audiences. As Nelson (2021) argues how changes in audience perceptions are usually followed by changes in audience pursuits, this dissertation delves deeper into how successive innovations, audience metrics being among the most recent, have enabled a more audience-oriented form of journalism.

Quality discourse

Journalists throughout the twentieth century had some clue of who their audience comprised as their marketing side routinely conducted audience research, but their editorial side has for a long time chosen to accidentally or willfully ignore it. Journalists were the sole “gatekeepers” deciding what is news and how to report it (Gans, 1979; Shoemaker & Vos, 2009; Shoemaker & Vos, 2008). Persisting in their efforts to disregard the audience, journalists were also dismissive of audience feedback, which they considered as diametrically opposed to their own journalistic norms (Atkin, Burgoon, & Burgoon, 1983; Beam, 1995; Schlesinger, 1978). Instead, journalists fell back on the input of colleagues and superiors as the most influential reference points when deciding what topics to report about under the delusion that what would appeal to them would interest the audience as well (Gans, 2004, p. 229). Audiences

thus tended to be “imagined” abstractions, largely constituted on the basis of their own social worlds, rather than an active presence in the newsroom (Beam, 1995; Gans, 1979; Heinonen, 2011; Nelson, 2021; Schlesinger, 1978). As Singer (2018) has argued, the traditional relationship between journalists and their audience is a unidirectional one, consisting mainly of “journalists producing and disseminating information in the public interest, a term defined broadly, often vaguely, and almost entirely by journalists themselves” (p. 14).

In particular, the framework of “quality journalism” has been mobilized as a strong and effective argument to keep the audience shielded from the journalistic news production process (Costera Meijer, 2020). In the *International Encyclopedia of Journalism Studies*, Meier (2019) has stated that quality foremost is a matter resting on the shoulders of journalists and newsrooms: “the value and quality of information stand and fall with the quality of the production process” (p. 5). Similarly, Gladney (1996) described quality criteria as “standards of journalistic excellence”. The primary reason for this was that journalists perceived their audiences as innately uninterested in public affairs news, which is exactly the sort of news that journalists consider as pivotal for a functioning democracy. This longstanding consensus among journalists derives from recurring observations that audiences consume more sports, celebrity and news about the weather than they do politics and public affairs (Boczkowski & Mitchelstein, 2013). As such, paying attention to these popular topics is expected to have a deteriorating effect on the selection and presentation of news content. When journalists think of their audience as inherently uninterested in civically relevant news, the decision of how much to engage with or listen to them becomes blurred by the conviction that it will inevitably have a “dumbing down” effect on the news output that is produced (Nelson, 2021). Honoring the standards of quality then almost by definition required to exclude audiences from the news production process (Costera Meijer, 2013), which Deuze (2003) referred to as a “we write you read dogma” (p.220). Yet, a radically new attitude towards audiences has emerged in the online era, alongside far-reaching commercialization of journalism and the rise of digital technologies (Picone, Courtois, & Paulussen, 2015).

Marketing discourse

The main reason why journalists did not bother about their audience was because commercialization had not yet penetrated that far. Hence, journalists could report on what they believed mattered most to their readers, while the sales department had to see how to sell and market those pieces. However, the international literature generally refers to the 1980s as the tipping point in the transformation to a global public sphere and the far-reaching commercialization of the news media (Van Leuven, 2013). In Flanders, the arrival of commercial competitor VTM in the late 1980s and subsequent audience loss that followed, forced the public service broadcaster VRT to introduce a commercial-competitive business logic, focusing on similar goals such as broadening audience reach (McNair, 1998; Webster, 2011). Furthermore, the many mergers between news organizations across the mid-nineties, in 2013 with the founding of Mediahuis and the latest synergy in 2019 between DPG Media and Mediahuis, have resulted in an extremely concentrated Flemish media market with three dominant players and an influx of commercial incentives in newsrooms (De Bens & Raeymaeckers, 2010; Hendrickx & Ranaivoson, 2019; Van Leuven, 2013). The pressure to

account for audience preferences has only increased ever since the end of the twentieth century with the introduction of new, digital technologies, which drove news organizations to expand their publishing activities across digital platforms. With the introduction of search engines and social media such as Google, Facebook and YouTube, Flemish news media also saw their advertising revenues plummeting due to the specific dynamics these platforms brought for online advertising (Flemish Media Regulator, 2020, p. 274). Furthermore, given that more and more people turn to the Internet for news, where it is to a great extent freely available, legacy media experienced a significant decline in readership and a resultant decline in newspaper circulation (Hendrickx, forthcoming). However, the substantial loss in print sales is only partly offset by rising digital reader subscriptions (Flemish Media Regulator, 2020, p. 272). As a result, journalists now not only have more opportunity to “listen” to the audience but keeping the reader at arm’s length has also become an economic necessity and a conscious choice for profit maximization.

All these different societal developments loom as a reason why news organizations have started to take an expansive approach to the audience in the hopes of reaching as large an audience as possible (Nelson, 2021). It has opened the door to what McManus (1994) calls market-driven journalism, a type of journalism where economic incentives drive news content. Numerous scholars have cautioned that the tendency to market-driven journalism has prompted news organizations to emphasize profit maximizations, cost-cutting measures and efficiency considerations (McManus, 2009; Philips & Witschge, 2012). Given that the profit motive is paramount to this one, the new discourse saw media outlets turn away from their original mission of quality in journalism. While news outlets had always worn their ignorance of the reader as a badge of honor, the marketing discourse highlighted the importance of producing content that reaches out to a mass audience; that is, content for *everyone* (Costera Meijer, 2020). The implication of treating the audience as such a homogeneous “mass”, has given rise to conceptualizations of the audience as mere recipients, commodities and products (Loosen & Schmidt, 2012; Webster & Phalen, 1994). For example Ang (1991) proposed the consumerist idea of an “audience-as-market”, where the audience is a product to be sold.

While market logic places the agency in the hands of the news users, this turn towards the audience is mostly regarded as a bad thing through the prism of commercialization. The public-as-consumer conception radically removes the journalists from the narrative, where their role is limited to serve the news consumer under the popular adage that “the market knows best” (McChesney, 2004; McManus, 2009). This is seen as dangerous territory, as the market cannot be trusted to provide what the audience needs, but nor can the audience be trusted to always know what it needs (Baker, 2002). Habermas (1991) argued that while citizens can reflect upon utterances and opinions, consumers on the other hand lack this critical mindset and are merely consuming content. Commercial journalism, in Habermas’ view, might thus have dire consequences for the public sphere and democracy. In particular, he is concerned with how the media would turn into arenas of entertainment and advertising, where entertainment, rather than dissemination of knowledge, is the main objective (Gripsrud, 2017, p. 23). Similarly, McChesney (1999, 2004) reported across several volumes, reported how the two main priorities of news organization - making profit and serving democracy - are incompatible. In effect, journalism’s orientation towards more profit-driven motives encourages uniformity; enticing

news organizations to play to the lowest common denominator of consumer preferences in order to maximize audience. So by having to appeal to as many people as possible rather than being concerned with the quality of journalism, journalists would end up giving audiences what they want rather than what they need (Winch, 1997, p. 2)

Attempts to maximize audiences for news may seem a direct subversion of quality discourse, however, the massive appeal it generates has led to suggestions that popular news is fostering a process of democratization (Harrington, 2008). This also accords with earlier observations of Costera Meijer (2001) about the popularization of journalism, in which she implied that *"in genuine democratic societies true quality coincides with public quality"* (p. 203). Journalism scholars have for a long time problematized the fraught dichotomy between "citizens" versus "consumers" and "quality" versus "popular journalism" (Costera Meijer, 2003; Deuze, 2005; Harrington, 2008). In her later work, Costera Meijer (2007) further develops this point by drawing the attention to the many paradoxes and inconsistencies that exist in news consumption. She argues that people continue to consume news that they do not regard as quality news but not for the sake of interest as such. As Thompson (2014) wrote: *"Ask audiences what they want, and they'll tell you vegetables. Watch them quietly, and they'll mostly eat candy."* Instead of seeing this as "bad behavior", Costera Meijer (2010, 2013) makes the case for taking the news user's perspective seriously in order to get a better understanding of what they consider to be valuable journalism.

Innovation discourse

The Internet and other technologies have empowered news users to express themselves (Jenkins, 2006). Given the fact that audiences can now enjoy a seemingly endless spectrum of media choice, journalists had to become more deliberate in their efforts to earn the audience's attention. Therefore, journalists have attempted to strengthen their connection with *"the people formerly known as the audience"* (Rosen, 2006) by capitalizing on the opportunities offered by interactive, digital media. In his book *We the media*, Gillmor (2004) suggests that digital technologies have increasingly blurred the boundaries between news producers and consumers, an idea which is also encapsulated in Bruns' (2008b) concept of *produser*. Websites, online forums, blogs and particularly social media have enabled other actors besides professional journalists to partake in the creation of content. On the other hand, the empowering potential of digital networked media have made news consumers also less reliant on the information that passes through the gates of mainstream news organizations, which they can easily bypass altogether while turning straight to these other information suppliers. Bruns (2008a) argued that journalism is becoming a matter of *gatematching*, where journalists observe and curate the stream of information that passes through the many gates rather than actively making selections.

As journalism exists for and by its audience, the risk of audiences moving away from traditional information providers towards channels outside the margins of the media sphere was regarded as problematic. News organizations thus hoped to find salvation by reconnecting with declining audiences through innovation (Paulussen, 2016). This shift to innovation discourse involved an audience turn in journalism (Costera Meijer, 2020), where news consumers are

increasingly being discussed as creative, active participants in the news-making process rather than passive, irrelevant news consumers that just attend to the information provided by professional journalists (Anderson, 2011). Traditional news organizations, and newspapers in particular, have since then been experimenting participatory forms of content production, which scholars have discussed under labels as ‘citizen journalism’ (Lewis, Kaufhold, & Lasorsa, 2010), ‘participatory journalism’ (Singer et al., 2011) and ‘participatory news’ (Deuze, Bruns, & Neuberger, 2007). These forms of journalism no longer triggered the same active resistance against audience responsiveness in the newsrooms as did previous disruptions.

However, the literature on participatory journalism may have been too optimistic about the power of technology and too naive about the benevolent user as citizen that in fact is much more passive and whose news consumption is full of paradoxes. Unlike the popular assertion in this strand of literature, there is an ambivalence to engage in journalism, with people rarely contributing in the production and dissemination of news (Costera Meijer & Groot Kormelink, 2014). Consequently, Carlson and Usher (2016) argued that audiences tend to be seen as “commercial targets” whose user experience should be improved rather than as potential and more equal partners in producing information. Echoing this point, Vos and Singer (2016) and Wagemans, Witschge, and Harbers (2019) illustrated that innovation discourse in journalism has increased the attention for audiences as targets, but not necessarily as more ‘creative’ audiences (Anderson, 2011; Costera Meijer, 2020).

The innovation discourse has mainly developed with the rise of multimedia and social media. These innovations would give the journalists the “tools” to get closer to the wishes and interests of the public. The large-scale implementation of audience analytics and metrics in the newsrooms is the latest innovation in a row that was thought to reduce the distance between journalist and audience. Audiences have since then become truly central in journalism discourse and news production practices (Tandoc, 2019). While a mere decade ago the relation between popularity and quality was deemed antagonistic (Harrington, 2008), the decision to select a news item for publication is now to a large extent steered by the assessment whether audiences will actually consume it (Costera Meijer, 2020). The rise of audience metrics discourse has reignited attention for quality discourse, precisely because it resonates with the much-loathed marketing discourse. Scholars have continued to raise concerns about a decline of news quality when news organizations grow overly responsive to metrics, although most of their criticism is aimed at an uncritical employment of metrics (Bélair-Gagnon, Zamith, & Holton, 2020; Zamith, 2018) rather than questioning the metrics themselves (Groot Kormelink & Costera Meijer, 2018, 2020). Following the position of Creech and Nadler (2018), this dissertation questions whether journalism would necessarily benefit from innovation since quantified metrics as an innovation as such, can be used for different purposes (see section 2). It acknowledges that those metrics also fit into a marketing discourse in which “consumer demand” is the determining factor and journalistic quality is subordinated to popularity. Therefore, it is important to examine how these tools are used and whether they improve or deteriorate journalism. At the same time, the dissertation reckons that it may not be very fruitful today to think of quality and popularity in terms of a contradiction, where “hard news” equals “quality” and “soft news” is equivalent to “popularity” (Costera Meijer, 2007). Rather, it moves away from this sometimes too simplistic binary discourse and

proposes the framework of a useful alternative to examine whether the selection of news and the nature of the news supply have changed under the influence of the metrics (see section 3).

The introduction of audience analytics and metrics in the newsroom

In this section, I will first give a brief overview of the history of quantitative audience research. Then I will look at how to define both audience analytics and metrics and list which tools are most commonly used nowadays, before moving towards the current debates and some normative assumptions that require more elaboration. Next, I will assess the development of the area of study by offering a systematic review of literature related to the topic of analytics and metrics. Following from this state of the art, I will introduce research aims that will form the backbone of this dissertation, which I will try to answer in the empirical chapters.

History of audience research

This perspective of an audience as “target” or “consumer” that I have discussed under the umbrella of marketing and innovation discourse can be seen as laying the foundations for a vision that is increasingly quantified and numerical. However, it is important to situate the increasing quantification of audiences within the broader historical context. Neither audience measurement nor the inclination towards audience feedback is a novel phenomenon, as media organizations have a fairly long tradition of doing audience research. For a long time, news workers depended on correspondence with the audience in the form of phone calls and letters to the editors that fueled their construction of the audience (Gans, 1979; Schlesinger, 1978). In his wide-ranging overview on audience evolution, Napoli (2011) documents how news organizations have gradually moved away from these qualitative forms of audience feedback towards quantitative measurement, a process which he labelled as the “*rationalization of audience understanding*”. This movement involved “*efforts to bring empirical rigor and (primarily) quantitative methods to the processes of understanding a range of audience behavior*”, under the presumption that quantitative assessment would yield better predictions and subsequent responses to those behaviors (p. 73).

News organizations have not only begun to focus on quantitative measurement because tools have become more rigorous, but also because they themselves had grown more desperate. Throughout the past decades, many news organizations have suffered significant economic losses due to competition pressures spurred by, amongst others, the Internet which left them in serious doubt that their gut instincts alone would lead them to larger audiences as a necessary precondition for survival (Kvalheim & Barland, 2019; Nelson, 2021). As a result, news organizations have become fixated on accumulating data on their reader- and viewership. It was during this time that news organizations started relying on readership surveys, circulation figures and rating systems or subscribed to polling companies who query a subset of the audience on their media habits and demographics (Beam, 1995; Schlesinger, 1978; Tandoc, 2019). These data were once the sole responsibility of the news organization’s marketing department, which had long been separated by a metaphorical wall from the newsroom staff (Gade, 2016). The purpose of such market research is mainly to boost sales

and inform potential advertisers which segments of society belong to the readership of that news outlet. This has largely made sense since news organizations typically operate in dual markets: they sell their content to an audience and they sell their audience to advertisers (Gade, 2009). Increasing commercialization of journalism has led to spillover effects from marketing tools and services to newsrooms.

In Flanders, the first steps towards the explicit use of marketing techniques at the Flemish public service broadcaster, were taken in the late 1980s by the then head of Radio Piet Van Roe. Steered by his notion of “His Majesty the Viewer”, the Flemish public service broadcaster regularly commissioned audience studies in cooperation with the market research agency *Censydiam* in an attempt to position itself in a competitive media landscape and to secure audience loyalty (Van den Bulck, 2008). During this period, we also see the development of a number of advancements in the systematic empirical assessment of audiences in terms of exposure. For newspapers in Belgium, the founding of The Center for Information on the Media in 1971, known as CIM in short, from the merger of the *DVEA* (the first body to authenticate the distribution of Belgian press titles) and the *BSRM* (the first Belgian institute to measure circulation figures) meant a more systematic account of exposure through the measurement of circulation rates, or the number of distributed copies of the newspaper. Broadcasters on the other hand used broadcasting ratings as benchmarks for exposure, respectively the percentage of the potential audience and the percentage of the audience watching TV or listening radio during a particular time slot. Viewing figures have been measured in Belgium since 1997 by the companies *GfK Audimetrie* and *MediaXim* on behalf of the Centre for Information on the Media.

However, in the contemporary media environment exposure has become increasingly difficult to measure due to two interrelated processes which Napoli (2011) describes as “audience fragmentation” and “audience autonomy”. Firstly, there has been a growth of digital platforms for news use, which has led to audiences being dispersed across many different news outlets. Whereas news users were once dependent on the morning newspaper or the evening news bulletin in order to be up to date with news of the day, today they have instant access to more news and a wealth of other information via search engines and social media. It is hence increasingly likely that people come across news unintentionally, feeding people’s perception that “news will find me” (Boczkowski, Mitchelstein, & Matassi, 2018; Gil de Zúñiga, Weeks, & Ardèvol-Abreu, 2017). Secondly, audiences now have considerably more power to compose their own news repertoires, giving them greater autonomy and more choices (Bruns, 2008). Whereas new users first largely followed the set production and distribution schedules of news media to consume news, they are now enabled by new communication devices, the internet and the fact that the news no longer comes in “bundle” to consume news at any place and at any time they want (Groot Kormelink, 2019). What follows is a media ecosystem in which news organizations are continuously on the lookout for audience attention, now a highly coveted and increasingly scarce good (Webster, 2014). Hence, the attention economy has made it more important for news media to gather more sophisticated, real-time knowledge about their audience.

In the past decade, audience analytics and metrics have marked a new phase in the rationalization of audience understanding, since they partially overcome the challenges that the Internet has brought for traditional audience measurement systems. Audience metrics are collected faster and in real-time, eliminating the lag time for audience measurement. Furthermore, unlike surveys or broadcasting rates, they do not call for complex sampling practices since they are collected automatically and without the audience being aware that they are being recorded (Mullarkey, 2004; Tandoc, 2019). The introduction of analytics has given rise to what Anderson (2011) coined a “growth in quantification” (p. 564) that is likely to promote the commercialization in journalism even further. In light of that observation, “measurable journalism” (Carlson, 2018) has not coincidentally become an important area of study within digital journalism studies.

Defining analytics and metrics

In journalism studies, many terms exist to refer to the measurement, collection and analysis of users’ behavior. Scholars have used “web analytics” (Tandoc, 2014), “newsroom analytics” (Petre, 2018), “audience analytics” (Zamith, 2018) interchangeably, yet these tools slightly differ in the range and scope of the data they collect. While web analytics refer to a specific type of audience measurement on websites, the other concepts refer to larger systems that complement the data that news organizations derive from web analytics with metrics from audiences outside web spaces (Tandoc, 2019). In this dissertation, we will mainly work with Zamith’s (2018) conceptualization of audience analytics that describes them as “*systems and software that enable the measurement, collection, analysis and reporting of digital data pertaining to how content is consumed and interacted with*” (p. 421). Audience analytics systems are driven by algorithms that log data requests and capture a variety of user behaviors, which they aggregate in order to identify larger trends in the data (“trending stories”) and are displayed in intuitive interfaces or dashboards (Zamith, 2019).

Analytics companies began surfacing in mid-nineties and were originally intended for use by the business side of publication for the purposes of obtaining insights about customers and improving (website) performance (Bélair-Gagnon & Holton, 2018; Petre, 2018). In the first decade of the new millennium, they have also migrated into the newsroom. Web metrics are nowadays not only monitored by individual journalists but also presented on big screens in newsrooms and forwarded to staff by editors-in-chief. The companies listed below constitute the most common editorial and generic analytics tools that I have come across while researching analytics in Flanders, Belgium (see also Tandoc, 2019). They are sometimes complemented with homegrown, customized systems and dashboards developed by and for a specific news organization:

Google Analytics is a freemium web analytics service that is used to track and report on website traffic as a platform inside the Google Marketing Platform brand. It was first introduced by Google in 2005, shortly after it had acquired the web analytics company Urchin Software Corporation. As of 2019, Google Analytics is one of the most widely used digital analytics software on the web. It collects a large amount of data on website activity such as session duration, bounce rates, pageviews along with information on the source of traffic (where the visitors are coming from, such as search engines or social media).

Chartbeat is a technology company that provides data and analytics to global publishers. The company was launched in 2009 and has its headquarters in New York City. Chartbeat claims to be partnering with over 60,000 media brands across 60+ countries. It provides a lot of tools that give publishers real-time insights into a number of key metrics such as live visits, sources of traffic, social media metrics and offers in-depth headline testing.

Adobe Analytics was first introduced as Adobe Site Catalyst in 2009 after Adobe acquired the web analytics tool Omniture. Similar to Chartbeat, Adobe Analytics tracks real-time metrics such as unique visitors, pageviews and views per type of device among others. Besides analyzing existing data, it is also used to perform predictive analysis in order to proactively respond to the needs of the target group or to observe trends over longer periods of time.

smartocto. A relatively new player on the web analytics market is smartocto. In June 2020, Content Insights merged with the real-time analytics service SmartOcto and formed a new company under the name of smartocto. From their offices in The Netherlands and Serbia they currently service over 150 newsrooms around the world with real-time insights and historical reports of all their stories' performances. With metrics going beyond the standard pageviews and reach, they offer analytics on loyalty, engagement, impact and more, to connect the dots between online publishers and their audience.

Most of these tools are considered on-site web analytics that measure traffic to the specific websites they monitor, as opposed to social media analytics that capture a range of data on audience behaviors and patterns from social media sites and platforms in particular (Tandoc, 2019). Although most of the tools described above feature social media metrics on their dashboards, the tools below are almost exclusively built around these functionalities:

Ezyinsights is a Finnish company, which was established in 2011. EzyInsights is a newsgathering tool and a viral content discovery platform for publishers and journalists. It monitors social performance across all major social media platforms and allows news organizations to compare the engagement on the publisher's websites and their social media posts against their competitors. Furthermore, it gives journalists the possibility to see what news is emerging, when they should post a particular post or what their audience is consuming on different websites.

CrowdTangle. In 2016, Facebook announced it had purchased CrowdTangle, at that moment a 4-year-old tool which publishers used for its ability to show what social content overperformed on Facebook pages. It has ever since expanded to include other social platforms and became an important way for newsrooms and media organizations to monitor performance and identify emerging stories online. CrowdTangle is primarily used to identify viral stories, find larger trends to understand how public content spreads on social media and to benchmark and compare social performance of public accounts over time .

While *audience analytics* are the systems that capture a range of audience behaviors online, *audience metrics* are the quantified and aggregated measures that can be harvested from those systems (Zamith, 2018). Nguyen (2013) distinguishes between two types of metrics: internal and external ones. Internal metrics refer to data about particular user behaviors before, during and after their visit to the site in question, whereas external metrics comprise information about preferences and user behavior that take place on other platforms as well. Most news organizations today work with a broad range of both these metrics, including more rudimentary ones like pageviews and unique users and more editorial analytics such as time spent, attention time and conversion rates. Table 1 includes some of the most commonly tracked web metrics.

Table 1. A list of some of the most commonly tracked metrics

Metric	Definition
Pageviews	The number of times a page is viewed by the news reader by any method such as clicking on a link, typing in a URL or refreshing a page. Also referred to as 'clicks' or 'hits'.
Time spent	The amount of time (in minutes or seconds) that visitors have spent on a particular page.
Attention time	The total amount that users actively spend engaging with a page, defined by actions such as reading, scrolling and writing.
Unique users	The number of different people that have visited the website or app in a given period of time.
Conversion rate	The percentage of users that have undertaken a commercially interesting action (buy a subscription, sign up to a newsletter).
Bounce rate	The percentage of single-page sessions, the percentage of users landing on a page but immediately exiting the site thereafter.
Recirculation	Percentage of the audience that engages with more than one piece of content
Referred traffic	Traffic that comes from external sources such as search engines, social media or "dark social" (when analytics systems cannot determine the referrer).
Social shares	The number of times a piece of content has been shared on social media sites such as Twitter, Facebook and Instagram.

Note. see Cherubini and Nielsen (2016) and Tandoc (2019)

The *State of Technology in Global Newsrooms* survey fielded in 2017 by the International Center of Journalists (ICJF) among 2,700 journalists and newsroom managers showed that newsrooms primarily use analytics data to drive traffic to their websites. Pageviews were the metric that got the most attention from the newsrooms in the sample (ICJF, 2018). However, pageviews are currently falling more and more out of favor, with publishers actively pursuing *engagement*. Nelson (2019) defines *audience engagement* as the captivation of how people devote attention to and interact with news. He distinguishes between production- and reception-oriented engagement. Whereas production-oriented audience engagement focuses on how journalists attend to their audiences (*Did the audience have a chance to partake in the production of the story? How diverse are the sources displayed in the article?*), reception-oriented definitions of engagement refer to how news audiences attend to news (*How much time did users spend on a story? How much was a story retweeted or commented upon?*) (p.7-8). The latter approach seems a natural fit for this dissertation, as it can easily be translated in quantifiable measures. Specific applications of the approach are news organization's use of the measures "time spent" and social shares. Time spent has become a key performance

indicator in Belgian newsrooms (Hendrickx, Montero, Ranaivoson, & Ballon, 2021), as it is generally considered to be a more valid measure of whether the audience perceives something as meaningful than pageviews, and therefore, is more closely aligned with journalistic values (O'Donovan, 2014). In the context of social media, three overarching types of interactions – likes/favorites, shares/retweets and comments – have enabled social media users to engage with a given post on the platform. *Liking* is one of the seven components of the Facebook Reactions functionality, besides other more emotional responses (*Love, Haha, Wow, Sad, Angry* and *Thankful*) through which users can express their investment with news content (Larsson, 2018a). As it merely requires a touch of the button, liking is labeled as a “light version of participation” (Hille & Bakker, 2013, p. 666). The practice of sharing on the other hand permits users to redistribute news content originally posted by the news outlet itself. Hence, it has become a crucial functionality to boost the visibility of content on the social media platform (Kalsnes & Larsson, 2018; Larsson, 2016). Finally, comments offer news users the opportunity to “express their opinions” in response to articles (Chung, 2008). Particularly on Facebook, these possibilities for engagement are seen as useful to generate traffic to the news organization’s website (Hille & Bakker, 2014).

The fallacy surrounding audience data as being “neutral” and “objective” has contributed to the replacement of the “imagined audience” by “a quantified audience” (Bunce, 2015; Tandoc & Thomas, 2015). However, while news organizations may employ systems that consist of the same metrics, the algorithms behind those systems might diverge in the ways they collect, synthesize and present that information (Zamith, 2019). Journalists may thus see different information when looking at supposedly similar audience metrics, which in turns yields incompatible abstractions of the audience (Bélair-Gagnon & Holton, 2018). The opaque nature of algorithms – that is one cannot directly detect how they operate – has given them the status of “boxes of Pandora”. The configuration of algorithms is largely driven by commercial concerns and competitive dynamics with the ulterior goal that users remain and engage on the platform (Diakopoulos, 2015; Latzer, Hollnbuchner, Just, & Saurwein, 2016). As a consequence, when this is the primary goal in lieu of informing the audience, news production distribution is likely to become subject to the ‘algorithmic logic’ of these metrics rather than to the ‘editorial logic’ of professional news media (Gillespie, 2014). In an algorithmic logic, instead of being creative and empowered, audiences are much rather “the products of algorithmic steering, pushed towards particular content and sold to advertisers” (Poell & van Dijck, 2014, p. 196). Algorithms and metrics enable journalists to see what kind of content ‘works best’ on their websites or social media and automatically preselect and assign relevance to posts while downgrading others (Blanchett Neheli, 2018). These data mislead journalists by creating a kind of self-fulfilling prophecy: as algorithms favor the content that they believe to be of commercial value, simultaneously, they are making unpopular and almost invisible content disappear even further from view (Bucher, 2012). Hence algorithms may contribute to a narrower news diet by making personal recommendations based on previous clicks, likes and shares hereby shunning people from information that contrasts with their own predispositions. Consequently, news consumers might be in peril of being exposed to a less qualitative, biased body of information that makes them incapable of making well-informed decisions to engage in public and political life. According to Nechushtai and Lewis (2019), scholars and practitioners alike have to engage more with the question “What kind of news gatekeepers do we want machines to be?”.

Furthermore, as R. Williams (1958) wrote “there are in fact no masses; there only ways of seeing people as masses” (p. 300). Metrics are nothing more than merely proxies from which journalists attempt to infer people’s behavior, attitudes and experiences (Cherubini & Nielsen, 2016). While audience analytics mostly offer data on what people do with digital news content, they may offer much less information on *why* or *what* that behavior means (Nelson, 2021). The quantified audience will therefore always be a reduction of a more complex reality, as actual perceptions of the audience remain only knowable in narrow, controlled ways (Coddington, 2018; Zamith, 2018). Since audiences can only be reactive to the choices offered to them by the journalist, journalists will always be confronted with a tinge of uncertainty when it comes to interpreting audience behavior. Groot Kormelink and Costera Meijer have problematized the relationship between metrics such as clicks and time spent and audience interest in two important studies. A first one suggests that while clicks do indicate some kind of interest, preference or engagement towards news, they remain a particularly flawed instrument that does not account for the wide variety of people’s considerations for (not) clicking (Costera Meijer & Groot Kormelink, 2017; Groot Kormelink & Costera Meijer, 2018). The tendency of respondents to (not) click was subject to cognitive, affective and pragmatic considerations, indicating a more complex account of people’s digital news use. Secondly, they arrive to a similar conclusion regarding the metric time spent. Time spent does not necessarily reflect the quality of attention paid to particular types of content (Groot Kormelink & Costera Meijer, 2020). They argue that more time spent on news use can be the result of little interest or engagement, and less time spent can be an indicator of more interest or engagement. As a result, they advocate for a more qualitative user-centered approach that would facilitate the examination of “what metrics do and do *not* measure” (Groot Kormelink & Costera Meijer, 2018, p. 681).

Nevertheless, journalists keep relying on audience analytics and metrics, which they believe reflect how people behave, to make educated guesses about what the audience wants (Nelson, 2021). As research to date has tended to focus on the ambivalence of page views, this heightens the need to call other metric information into question as well. This dissertation aims to unravel some of the complexities surrounding page views, time spent and social media engagement (likes/favorites, shares/retweets, comments). Since all of these metrics do at least *convey* some sort of understanding of the audience, it would be worth exploring what impact they actually have on journalistic perceptions, choices and routines.

State-of-the art and research questions

Research into how news organizations approached metrics has only begun to emerge in the early 2010s. Pioneering research into this area aims mainly investigated the developments in US newsrooms (Anderson, 2011; A. M. Lee, Lewis, & Powers, 2012; MacGregor, 2007; Tandoc, 2014; Usher, 2013), with some early adopters in Sweden as well (Karlsson & Clerwall, 2013). These first studies indicated that these early analytics data were accessed not yet in real-time and were generally ignored by journalists while making decisions (MacGregor, 2007; Singer, 2011). However, there have been a number of (mainly qualitative) studies that since then have reported how analytics and metrics influence editorial judgment. An in-depth ethnography of a local US newsroom conducted by Anderson (2011) showed that journalists were increasingly becoming aware of audience data and often used this as a key determinant in their news

judgment. Other studies such as those of Tandoc (2014) and Vu (2013) have supported this view, identifying a growth in analytics use and changes to established gatekeeping practices. At the organizational level, market-orientated organizations and organizations that perceive greater competition are more likely to make greater use of audience analytics (Ferrucci & Tandoc, 2015; Lowrey & Woo, 2010; Tandoc, 2015). The economic structure of a news organization and journalists' market orientation can have an effect on the adoption and use of audience analytics (Ferrucci, 2020; Hanusch & Tandoc, 2017). Ferrucci and Tandoc (2015) and Usher (2013) showed that profit-oriented newsrooms utilized audience analytics more often in their editorial decision-making compared to newsrooms that are more shielded from economic pressures. While commercial media are more market-oriented and might need to attend more to audience metrics to bring in advertising revenues, public service media have other sources of income. Karlsson and Clerwall (2013), for instance, found that journalists working for commercial media companies monitored web traffic to news stories more closely than their colleagues working at public service media. In their sample, public service journalists monitored clicks to evaluate whether a news item was relevant to their users, while commercial journalists referred to both relevance and commercial factors as reasons for monitoring audience metrics. Finally, the primary media vehicle may also have an impact on the use of analytics across organizations, with particularly digitally oriented outlets using them more extensively (Hanusch, 2017; Whipple & Shermak, 2018; Zamith, Bélair-Gagnon, & Lewis, 2020). While these strands of literature illustrate that the majority of newsrooms today employ audience analytics and regularly monitor them at some level, what explains the differences in the use of analytics and metrics across types of organizations and towards particular practices has not systematically been investigated. Concretely, a *first research aim* of this doctorate is to assess the extent to which Flemish newsrooms adopted audience analytics and metrics. I have explored this aim in Chapter 2 where I looked at the organizational uses analytics in Flemish newsrooms. This study therefore fits within what can be called the first wave of studies which investigated how newsrooms approach audience analytics.

While this first wave of studies mainly investigated how newsrooms approached analytics and metrics on an organizational level, an emerging body of literature also calls attention to how individual journalists are adapting their daily work routines and roles to the affordances of analytics. According to Zamith et al. (2020) superiors play a crucial role in the socialization and institutionalization process. They argue that superiors are most influential referents when conveying newsrooms norms concerning the use of metrics. Similarly, ethnographic work by Bunce (2017) and Christin (2020) showed that editors attempted to discipline their journalists by issuing directives and praise based on the metrics. Ferrer-Conill (2017) observed that metrics at the sports news website Bleacher report are used as a main component to evaluate journalistic performance. The flipside of the coin however, as Petre (2015) warns, could be that metrics and data are simultaneously becoming a source of stress besides reassurance. In one sense, it is logical that these newsroom roles seem to have embraced analytics, since they are primarily acting as an intermediary between audience data and the newsroom (Ferrer-Conill & Tandoc, 2018). It is important to bear in mind that such findings may be guided by normativity and role perceptions. News workers with managerial responsibilities perceive consumer orientation to be more important than those without such responsibilities, leading to higher perceptions of the effectiveness of audience metrics, and thus, more favorable

attitudes (Bélair-Gagnon et al., 2020; Hanusch, 2017; Hanusch & Tandoc, 2017). In contrast, regular reporters may diverge substantially in how they appropriate and use these analytics and metrics. Journalists are traditionally rather reluctant to let novel forms of technology determine the news production process (Lasorsa, Lewis, & Holton, 2011; Singer, 2005). Although scholars keep finding traces of resistance to metrics (Bunce, 2017), the literature appears to indicate a paradigm shift from resistance to curiosity and interest among individual journalists (Cherubini & Nielsen, 2016). Hanusch (2017) found that journalists across editorial hierarchies are actually quite enthusiastic about the ability to see what their audiences want. News workers may thus be in the process of normalizing technology (Nelson & Tandoc, 2018). Besides managerial capacity, other individual-level influences have been found to have an impact on the uses and perceptions of audience analytics. For instance, Tandoc and Ferrucci (2017) argue that next to journalists' personal attitudes towards audience feedback and their perceived level of skill to use analytics effectively, also the organizational policy predicts journalists' intended and actual use of audience metrics in their news work. Giomelakis, Sidiropoulos, Gilou, and Veglis (2018) observed that news workers who have the tools and analytical capability to engage with audience data are also more likely to feature them into their editorial decision-making, whereas news workers who are skeptical of such tools are less likely to adopt them (Welbers et al., 2016). Additionally, the higher the amount of journalism training, the lesser journalists will have the tendency to use audience metrics in their news work (Vu, 2013). All of these studies indicate that news workers hold mixed perceptions of audience metrics and use them in different ways. A *second research aim* of this dissertation is therefore to model individual uses of audience analytics tools. This particular research aim drove the investigation in Chapter 3. Although this may sound obvious and intuitive, it would allow us to obtain a more critical understanding of the role of technological socialization in shaping journalists' attitudes towards web analytics and metrics. Furthermore, a *third research aim* is helping to clarify how individual differences in journalists' perceptions of newsworthiness are influenced by the usage of these tools. In Chapter 4, we will further shed light on this specific aim.

Many newsrooms these days engage in what some authors call analytics-driven journalism (Moyo, Mare, & Matsilele, 2019) or metrics-driven journalism (Loosen, 2018). Analytics or metrics-driven journalism refers to how analytics and metrics have increasingly started to shape news production, news routines and news content. The metrics-driven practices identified here have led to a widespread concern among scholars and practitioners alike about potential trivialization of journalism and even the functioning of democratic societies (Costera Meijer, 2020). They assume that a stronger orientation and reliance on audience metrics would eventually translate in a rise of tabloidization and softer news content that might contribute to a "dumbing-down of news" (Fürst, 2020; Hanusch, 2017; Nguyen, 2013). In fact, a number of studies has documented how journalists used web analytics in the very last stages of gatekeeping, using audience metrics for decisions after news articles have already been gathered, written, edited, and decided upon for publication (Tandoc & Jenner, 2016). A considerable amount of literature has been published on the short-term impact of analytics on the placement of story elements in the website. A. M. Lee et al. (2012) found that a story's popularity affected subsequent story placement on the homepage of a news organization and that the effect of popularity on story placement was stronger than the other way around.

Bright and Nicholls (2014) showed that most-read articles were less often removed from the homepage and that this effect was broadly similar for both soft and hard news and surprisingly greater for “quality” publications than for their “popular” counterparts. Zamith (2016) identified similar effects for story placement and de-selection. Since the magnitude of this effect was rather small, the evidence for the relationship between metrics and editorial was deemed inconclusive. Aside from affecting story placement decisions, analytics also exert an influence on how newsrooms “package” stories are under the influence of audience metrics. While studies such as the one from MacGregor (2007) concluded that audience metrics are rarely used to modify articles in the immediate aftermath of publication, more recent evidence suggests that news reports are tweaked by changing the headlines and exchanging pictures or videos when they do not generate the expected traffic (Karlsson & Clerwall, 2013; Moyo et al., 2019). Moreover, many newsrooms use real-time A/B split testing, software that will expose half of the readers randomly to the A-headline, while the other half is shown the B-headline in order to estimate which headline generates the most traffic (Bélair-Gagnon, 2019; Hagar & Diakopoulos, 2019).

More recently, studies have also focused on how analytics are used to determine which topics to pursue and the deployment of resources, decisions that are ought to be made at the earliest stages of gatekeeping (Tandoc & Jenner, 2016). In their analysis of Dutch newspapers, Welbers et al. (2016) discovered that stories covered in the most-viewed lists were more likely to receive attention in subsequent reporting, both in the print edition and on the website. Furthermore, Arenberg and Lowrey (2019) found that articles that are able to generate large numbers of traffic are more likely to receive follow-up reports, while those displaying lower number are less likely to receive further coverage, despite quality or relevance. In the long run, audience analytics point out which topics generally attract a lot of traffic, lowering the threshold to plan more coverage on them in the future (Arenberg & Lowrey, 2019; Tandoc, 2019).

Although the overview makes it clear that audience metrics are now features of many newsrooms where they have an impact on editorial practices, much remains still unknown about the impact that audience metrics are actually having on the news products themselves. In particular, more attention needs to be paid to how audience analytics and metrics are transforming news content, rather than merely presuming such impact from observations or self-reported information gleaned from survey and interview data. This is a significant lacuna in research because self-reports only represent the extent to which news workers believe they are using audience analytics, which in turn might lead to misperceptions about how their behaviors end up affecting the news they produce. While the hardship of content-analytic work that does exist has offered a useful foundation to build upon (Bright & Nicholls, 2014; A. M. Lee et al., 2012; Welbers et al., 2016; Zamith, 2016), additional work is sorely needed. Most of this research departs from most-viewed lists, which suffer from many limitations with regards to comparability. Rather than taking these lists as a proxy for popularity, it could be useful to acquire different measures of appeal (page views, time spent, social shares). We succeeded in gaining this access by working in cooperation with the three media groups DPG Media, Mediahuis and VRT. This has enabled me to create a unique dataset to study the interplay between news supply and demand.

The Softening of News Content

To improve our understanding of the effects of metrics-driven uses on the news output, this section of the dissertation will dig deeper into the literature on tabloidization and news softening in order to address the question whether analytics have triggered news softening or a kind of “tabloidization 2.0”. Audience engagement figures are nowadays at the core of newspapers digital business models, with metrics and clicks becoming increasingly important as a currency for news organizations advertising revenues (Nelson, 2018b, 2019). Therefore, the impetus to “cater” to what these audience metrics say and adapt the news to audience taste and consumption behavior may be considerable for the survival and legitimacy of news organizations (Bright & Nicholls, 2014; Costera Meijer, 2020). Tandoc and Vos (2016) speak of “marketing the news” as journalists now seem to produce news aimed at the widest possible audience in the most efficient way, allowing audience analytics, and thus market logic, to influence news production rather than their journalistic judgment. Much earlier scholarly work has already shown how market logic constitutes a decisive factor in the news selection process of journalists (McManus, 1994; McQuail, 1998). Allern (2002) criticized how contemporary news values are increasingly geared towards commercial considerations, arguing that they merely reflect consumer preferences rather than journalistic norms (see also Strömbäck, Karlsson, & Hopmann, 2012). There is a longstanding belief that a stronger focus on economic gains will lead to serious journalism being pushed away to the benefit of entertainment (Kvalheim & Barland, 2019). Franklin (1997, p. 5), for example, has lamented that *“the task of journalism has become merely to deliver and serve up what the customer wants; rather like a deep-pan pizza”*.

For all these changes, scholars have coined a very distinct term, namely the “tabloidization” of news content. The concept is used today in both newspapers and television but owes its origins from the phenomenon of tabloids in the newspaper world, where it was then associated both with a small newspaper format and a particular news style. Concerns about the tabloids probably have been around since their inception, but the debate over “tabloidization” in particular can be largely traced back to the advent of commercial and online media in the late eighties. It is about a process that is supposedly underway at all types of news media that directly results from competition pressures on the media market, referring to substantive transformations in the form of presentation and the content of news coverage (Esser, 1999; Hauttekeete, 2004; Sparks, 2000; Turner, 1999). First, research describes how tabloid characteristics have spilled over to quality publications such as the use of larger photographs, more color, less text, etc. Second and perhaps more substantially, many authors see a shift in news values as another central feature of tabloidization (Djupsund & Carlson, 1998; Franklin, 1997). This manifests itself both in news selection and in the way the news is treated. According to Esser (1999), tabloidization is *“an overall decrease in journalistic standards; a decrease in hard news such as politics and economics and an increase in soft news such as sleaze, scandal, sensation and entertainment; a general change (or broadening) of the media’s definition of what they think the voters need to know to evaluate a person’s fitness for public office”* (p. 293).

Empirical research on tabloidization predominantly focuses on the British press. Golding and McLachlan (2000) observed a decrease in the number of international messages per page and an increase in the number of photographs per page at some British newspapers. According to their research the tabloids featured more entertainment, while quality newspapers

contained both more human interest and entertainment. Franklin (1997) stressed a decline in international and parliamentary news, as well as an increase in the proportion of editorials. Connell (1998), however, refutes both these authors' contention that quality newspapers report little about international events, nor does he note an excessive number of illustrations. Nonetheless, the "hard" news in quality newspapers did appear to be somewhat more "softened". Similarly, Uribe and Gunter (2004) took a closer look at the tabloids and found a tendency towards tabloidization in form and style, but remarked no significant shifts in terms of content. On European mainland, Esser (1999) also could not find the trends Franklin reported about. Although he identified a rise in scandal stories, political reporting in the German press did not appear to be as tabloidized as in Great Britain. Hoffmann (2000) analysis of a regional German newspaper on the contrary, indicated an evolution towards less "hard" news and increasing emotionalization, individualization and visualization. Similarly, Djupsund and Carlson (1998) concluded that Swedish and Finnish newspapers now contain more "trivialization" (more "soft" news and news about crime and accidents) and visualization on their front pages. In his large-scale front-page research among Flemish newspapers, De Swert (2002) noticed that there was generally no tabloidization at the quality newspapers *De Standaard* and *De Morgen*, but tabloidization occurred at the popular newspaper *Het Laatste Nieuws*, albeit not very strong.

The focus on soft news and a concomitant neglect of hard news seem to be pivotal pillars in most empirical work of tabloidization. However, the regularly replicated binary that "hard" and "soft" news equals "quality" and "popular" is overly simplistic (Costera Meijer, 2001, 2003; Deuze, 2005; Harrington, 2008). Soft news also deal with issues of political and societal importance regularly, whereas journalists increasingly soften their hard news to keep audiences interested (Graber, 1994). By focusing only on this dichotomy, scholars have created an artificial hierarchy (Boukes & Boomgaarden, 2015), whereas Baum (2003) describes the difference is more "of a degree rather than kind" (p. 6). Therefore, scholars have come up with a more nuanced type of measurement, being the "softening of news" (Otto, Glogger, & Boukes, 2017; Reinemann, Stanyer, Scherr, & Legnante, 2011). According to Otto et al. (2017), the softening of news can be scrutinized on different levels, including media ('tabloidization'), genre ('infotainment') and content (between and within articles). Reinemann et al. (2011) suggest conceptualizing softening as some sort of a continuum. Their model involves three dimensions of that can account softening of news on the content level: (1) a *topic dimension* with politically relevant issues at the beginning and irrelevant issues at the end of the pole, (2) a *focus dimension* indicating (a) social or individual relevance and (b) episodic and thematic framing and (3) a *style dimension* ranging from (a) unemotional to emotional and (b) impersonal to personal reporting. As the dissertation wants to investigate whether audience metrics enhance news softening, it must take these dimensions into account if it wants to avoid classifying news into on genre or the other.

This PhD thesis contends that the development of audience metrics has reinvigorated a second wave of research on the softening of news. Audience analytics can be seen as just another step in a process that has been ongoing since the eighties. Just because softening of news is such a longstanding concern, there seems to be less resistance to analytics and innovation discourse, making it a self-evident fact that "news is a product to be sold". While

early incursions into tabloidization had argued that mostly soft news stories appealed to audience taste, audience metrics allow to measure this irrefutably. It is insidious that research has affirmed journalists' historically low estimations of the audience: most-viewed lists tend to be dominated by entertainment, crime and sports news, providing evidence for the apparent preference of users of "junk" over public affairs news (Tenenboim & Cohen, 2015; Tewksbury, 2003). In a series of research articles, Boczkowski and colleagues looked into the interaction between journalists and online audiences regarding the selection of news. They speak of "a news gap" between the harder news choices of journalists and the softer ones of news consumers (Boczkowski & Mitchelstein, 2013; Boczkowski, Mitchelstein, & Walter, 2011; Boczkowski & Peer, 2011), with news users having a lower propensity to click on or e-mail about public affairs stories (Boczkowski & Mitchelstein, 2012). However, the potential problems of metrics to gauge news interest are clearly laid out by a Swedish study that analyzed online news consumption by comparing between the metrics pageviews and time spent. Whereas news related to the public sphere made up only a small percentage of pageviews, it accounted for a much larger share if the metric considered was time spent (von Krogh & Andersson, 2015).

As all this research seems to echo journalists' assumptions about the narrow scope and interests of the audience, it is easy to imagine how responsiveness to audience metrics would fit into pessimistic views about the consequences for journalistic content (Costera Meijer & Groot Kormelink, 2017). Scholars were quick to voice concerns about a "culture of the click" (Anderson, 2011, p. 555) that might fuel "a new race to the bottom" by catering to the popular appeal and thereby neglecting "hard" news (Nguyen, 2013, p. 152). Tandoc and Thomas (2015) contend that the use of metrics "has the potential to lock journalism into a race towards the lowest common denominator, ghettoizing citizens into bundles based on narrow preferences and predilections rather than drawing them into a community" (p. 247).

More recently, social media platforms such as Facebook, Twitter and Instagram have intensified the debate. These new media have confronted news organizations with new challenges. As a significant share of Belgian news consumers are using social media as a source for news (41%) (Newman, Fletcher, Schulz, Andi, & Nielsen, 2020), homepages are starting to lose their relevance for news consumption. This problem is aggravated by fact that algorithms structure social media feeds, that make it extremely difficult for news organizations to reach an audience and achieve visibility for their news content (Bucher, 2012; DeVito, 2017). In essence, social media platforms prefer content that is already popular and will direct even more attention of users to it. This is one reason why social media editors tend to promote content that is already attracting lots of traffic, hoping to lure more readers to the news sites that way (Tandoc, 2014, 2017; Welbers & Opgenhaffen, 2018b). Since the selection logic of social media is biased towards the popular (Poell & van Dijck, 2014), it is assumed that news media will be encouraged to select the content that is likely to evoke attention, making social media content particularly more tabloidized in comparison with news organization's other platforms (Bastos, 2017; Magin, Steiner, Häuptli, Stark, & Udriș, 2021). Although the issue of tabloidization has received considerable attention in the literature, only a few studies have shed light on how this may relate to social media logic. Content analyses by Lischka and Werning (2017) and Steiner (2016) showed that social media algorithms and user engagement

affected the selection of topics, leading to an increase in soft news on the Facebook pages of German news outlets. Additionally, studies by Lischka (2018), Welbers and Opgenhaffen (2018a) and Hågvær (2019) focused on soft news presentation strategies on news outlets Facebook pages using both qualitative and quantitative methods. They all signal how the use of emotions and subjective language plays a significant role in Facebook news posts. Another study by Steiner (2020) has found that the overall level of news softening is fairly low across outlets, with news softening being somewhat more pronounced on Facebook. Magin et al. (2021) supported these findings, indicating that news softening has increased online and on Facebook over the course of time in comparison with offline news, albeit not for all media outlets in the sample. However, the few studies that exist hereon have not adequately addressed the connection with actual audience data and only hint at the fact that they drive selection on social media. The dissertation at hand adds to the growing body of work by studying news output on Facebook and the news website in conjunction with audience engagement data. *The fourth research aim* was then to investigate how audience analytics impact the promotion of content by news organizations on social media and assess the premise that they particularly enhance the softening of news on Facebook.

Methodological scope and outline of the dissertation

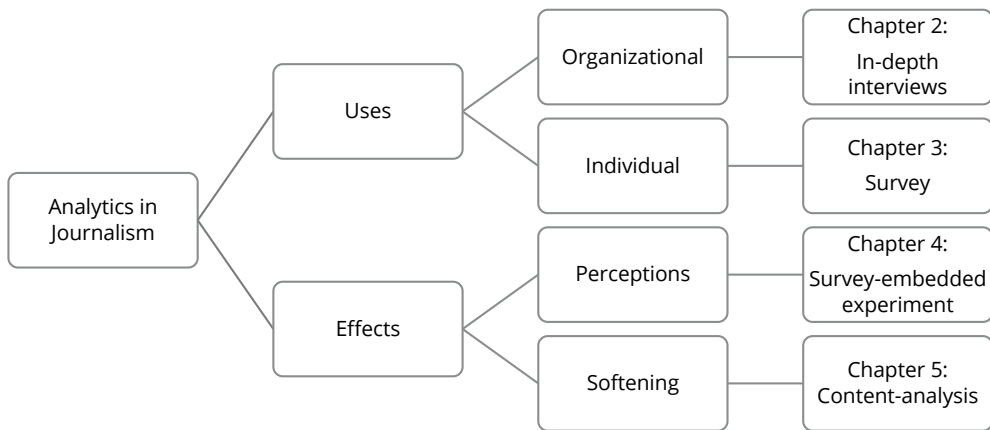
In the figure below, an overview is given of the different methodological aspects of the four studies included in this dissertation. As can be seen, the dissertation combines four different methodological elements that each had their value to investigate the specific research aims. Taken together, this methodological scope forms a good base to study the uses and effects of audience analytics in journalism.

First, I have conducted in-depth interviews with editors to advance and synthesize the general ideas in the literature concerning the different uses of audience analytics. Interviews offered an effective way to obtain further in-depth, rounded information on how analytics inform editorial practices. In the second study presented in this dissertation, I investigated both news organizations and individual journalists and, by doing so, was able to contribute to the knowledge of how journalists use or are exposed to analytics and whether that has an impact on their perceptions about the usefulness of analytics. A survey is one of the more practical ways of gathering more representative data on their perceptions about the usefulness of analytics. The sample partially involved a pragmatic choice for political journalists because I was given access to the population as part of a larger project. However, the political journalists sample had a number of attractive features. One advantage is that it is a largely homogeneous population consisting of a good mix of editors and reporters covering the same news beat, which allows to reduce variance between journalists. The broad operationalization of political journalists offered another advantage for the generalizability of our findings as they make up for approximately 22% of Belgian journalists (Van Leuven et al., 2019).

In addition to studying the uses of analytics by news organizations and individual journalists, this project focused on the effects that analytics may have on journalistic perceptions and news output. To investigate this, I chose a primarily quantitative approach that was largely lacking in the literature. The first wave of studies on analytics and metrics relied almost

exclusively on ethnographic research and in-depth interviews. While this type of research was useful, also for us, to shine a first light on the adoption of analytics in Flemish newsrooms in study 1, another analytical approach was needed to actually understand the effect on news and journalistic perceptions. Therefore, study 3 uses experimental research to investigate the impact of audience metrics on journalistic perceptions of newsworthiness. Study 4 is based on content analytical research to examine to what extent the news output on Facebook is adjusted to audience metrics. Both methods have allowed us to go beyond the level of mere self-reporting and expose discrepancies between perceptions and actual behavior. However, the drawback is that the methods used do not allow me to put the finger precisely on why such choices are made or what editorial strategies lie behind them.

Figure 1. Overview of the dissertation



Hence the overall structure takes the form of six chapters including this introductory Chapter 1. With this introductory chapter, we laid out foundations for the audience turn in journalism and marked (or: highlighted) the shift from a quality to an innovation discourse.

It moves on to reflect on how the rise of metrics-driven journalism has led to the re-emergence of the quality discourse in journalism. The chapter concludes with a review on tabloidization and news softening to shed further light on this discussion.

Chapter 2 offers the results of qualitative in-depth interviews that are explorative in nature. It deals with finding out how audience analytics and metrics inform and shape the daily work practices and organizational strategies of digital editors in contemporary digital newsrooms. The study distinguishes six uses of analytics: (1) story placement, (2) story packaging, (3) story planning and (4) story imitation, but they can also serve as instruments for (5) performance evaluation and (6) audience conception.

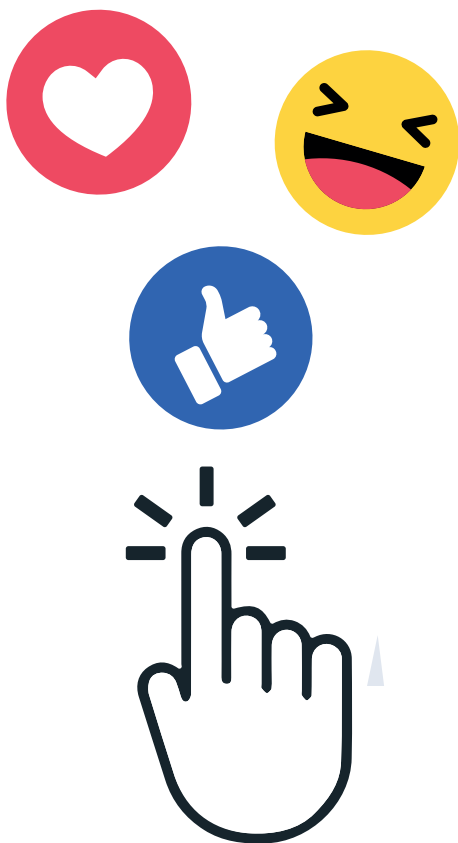
Chapter 3 comprises the results of a survey that was fielded among 231 Belgian political journalists. The survey covered how regular journalists perceived audience analytics, in conjunction with usage and exposure patterns. While Chapter 2 mostly looked at the adoption of audience analytics and metrics from an organizational perspective, this chapter sought

to identify factors at the individual level that might explain how and how much audience analytics and metrics are being used. This study therefore calls attention to the tensions that exist between managerial priorities (see chapter 2) and the attitudes that regular news reporters have towards news work.

Chapter 4 delves deeper into one of the practices distinguished in Chapter 2, namely story placement. Moreover, it examined how journalists' news judgment is affected by audience analytics and metrics. We conducted a survey-embedded experiment in which political journalists were asked to rank a set of five news story headlines from most to least prominent on a fictional homepage of a news outlet, whereby each headline was accompanied by analytical data indicating the story's real-time popularity (increasing, decreasing, or stable). The results of the experiment showed that stories with positive analytics were genuinely ranked higher compared with stories in the control condition, whereas stories with negative analytics were ranked lower. However, this effect was only significant for the soft news stories, as the audience analytics did not seem to influence the ranking position of hard and negatively framed stories.

Chapter 5 critically assesses the implications of metrics-driven decision-making for news content, employing a partially computational content analysis of all news items published by five market-leading Belgian media outlets (N=10,579). It departs from the premise that there is a close connection between user engagement and news softening, by looking at actual engagement metrics derived from news organizations. In particular, the study wonders whether news softening is to a greater degree present on Facebook as to comply with the logic of the Facebook algorithm that favors user engagement.

The final chapter, **Chapter 6**, draws upon the entire thesis, tying up the various theoretical and empirical strands in order to come to a normative answer whether audience analytics have the potential to restore the journalist-audience relationship. It starts with a discussion of the key findings. Then, the dissertation goes on to acknowledge the limitations and provides suggestions for future research into this area. Furthermore, it concludes with social implications and recommendations to journalism practice.





CHAPTER 2

Six Uses of Analytics

Digital editor's perceptions of audience analytics in the newsroom

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Abstract

This article investigates how digital news editors perceive the uses and implications of audience analytics in contemporary digital newsrooms. Based on 21 interviews with digital news editors at 11 Belgian news organizations, including 7 national newspapers, one news magazine, one public and one commercial broadcaster, and one digital-born news medium, the study shows how audience analytics have become normalized in these digital newsrooms and how, in the perception of those who use them, tools for capturing audience behavior data inform and shape their daily work practices and organizational strategies. Combining insights from literature with empirical findings, the study distinguishes six uses of audience analytics: Not only do analytics inform editorial decisions on (1) story placement, (2) story packaging, (3) story planning and (4) story imitation, but they can also serve as instruments for (5) performance evaluation and (6) audience conception. Overall, the digital news editors are convinced that audience analytics support rather than harm their journalism.

Keywords: *audience analytics tools, digital media, web metrics, social media, computational journalism, newsroom management, innovations*

Introduction

Journalists' understanding of the audience has become increasingly more refined and data-driven throughout the twentieth and twenty-first centuries. In today's digital news environment, media organizations can now constantly monitor news users' behavior on their websites and social media platforms (Hanusch, 2017; Napoli, 2011). Newsrooms worldwide have been implementing audience analytics, tools that provide their journalists with real-time metrics and quantified knowledge about the online behaviors and preferences of their website's visitors, based on observational data about how users land on their pages, how much time they spend reading articles, which headlines they click on, which topics they are interested in, and so on (E.-J. Lee & Tandoc, 2017).

While the increased use of audience analytics in journalism has been mapped in several studies across different countries (Bright & Nicholls, 2014; Cherubini & Nielsen, 2016), research on how these tools affect the daily work organization and strategies inside the newsroom is still rather limited. First studies in this area have mainly focused on how audience analytics influence the provision and positioning of news stories on media websites (A. M. Lee et al., 2012; Tandoc, 2014; Vu, 2013) and how the quantification of news user behavior impacts on journalists' relationship with and perceptions about their public (Anderson, 2011). Later studies also focused on the practical, organizational and ethical implications of audience analytics for news work (Hanusch, 2017; Tandoc & Jenner, 2013, 2016; Tandoc & Thomas, 2015) and on the impact of analytics on journalists' professional role perceptions (Ferrer-Conill & Tandoc, 2018). Most of these studies contain a warning for potential 'dumbing down' effects of audience analytics. There is indeed the risk of a shift from an editorial to an algorithmic logic in the news-making process, which may intensify tendencies towards news commodification and the 'marketization' of journalism (Tandoc & Thomas, 2015; Tandoc & Vos, 2016). However, as Zamith (2018) concludes from his literature review, both scholars and practitioners seem to replace, or complement, their initial scepticism with a more pragmatic view that also recognizes "more nuanced effects and prosocial possibilities". Yet, Zamith also notes that several questions are still unresolved, such as the question of how audience analytics are modifying journalists' professional routines and norms or how the 'quantitative turn' in journalism is affecting the "allocation of capital within newsrooms" (2018, 430; see also Bunce, 2017).

The interview study at hand deals with these latter questions. Whereas most research has focused on the impact of audience metrics on journalists' news selection practices, we also look at how analytics, as they are becoming part of the newsroom infrastructure, inform the broader editorial and strategic decision-making processes inside the newsroom. We want to investigate to what extent and how analytics have been integrated within the organizational and professional context of newsrooms in Belgium, and how this has led to new or altered work practices and processes both at the daily and more strategic level. The study relies on interviews with digital news editors, which means that the results reflect the uses and effects of analytics in news work as perceived by the practitioners themselves. Below, we first discuss the theoretical background of our study before specifying the research questions and presenting our empirical study.

Literature review

Newsroom innovation

As with all innovations in the newsroom, the adoption of audience analytics is both shaping and being shaped by the organizational context in which they are implemented. Literature on newsroom innovation shows that technology adoption is a process that is socially negotiated through the practices and strategies of both newsroom managers and staff. The integration of technology in the organizational context of the newsroom depends on many factors, such as the level of newsroom leadership over the availability and allocation of human and financial resources, or journalists' professional attitudes towards both the innovation and their audience (Boczkowski, 2004; Paulussen, 2016). Hence, to understand the adoption of audience analytics in contemporary newsrooms, it is relevant to take into account the organizational and professional factors that enable and constrain the integration of these tools in the daily news work practices.

While audience analytics are a recent technological innovation, it is important not to overstress their novelty and disregard the historical antecedents (Mitchelstein & Boczkowski, 2009). Although web analytics seem to have quickly become 'normalized' as a tool to monitor and incorporate audience feedback, media organizations have a fairly long tradition in audience measuring (Anderson 2011; Napoli 2011). For decades, newspapers have been gaining audience feedback from letters-to-the-editor or phone calls from readers and later on from readership surveys or circulation figures, while broadcast media carefully monitor their audience ratings. The emergence of web analytics can thus be regarded as a next phase in a longer evolution from rather intuitive imaginations of the audience to increased quantitative measurements of audience behaviors (Carlson, 2018; Zamith, 2018). In this sense, the implementation of web and social media analytics may be considered by professionals as a rather 'natural' technological extension of tools and practices that have already been in place for a longer time. In other words, we can expect that the embedding of web and social media analytics in the newsroom has been, and still is, met with little resistance since the new tools fit well into the existing routines, norms and work processes.

At the same time, it is relevant to note that newsroom managers also tend to use new technologies as a means to push new strategies through in the organization. E.-J. Lee and Tandoc (2017) point out, for instance, that newsroom managers use audience metrics to evaluate their employees and move them in a favored direction. Bunce (2017) shows how audience analytics fit within a broader arsenal of techniques used by newsroom managers "to more efficiently monitor and discipline their journalists" and "to try to change the reporting priorities of their journalists". Thus, audience analytics are not only used in newsrooms to monitor users' engagement with online news stories, but they can also serve as tools for managers to reduce journalists' resistance towards certain content strategies. By using audience metrics for performance evaluation, managers can use these tools to discipline their team in accordance with the efficiency and profit motives of the news organization.

Measurable journalism

Bélair-Gagnon and Holton (2018) draw attention on the fact that the integration of audience analytics in newsrooms does not just depend on internal dynamics but is also influenced by external pressures from web analytics companies. Having little experience in journalism, these companies introduce and promote profit-making orientations in the newsroom that challenge and influence the professional values and norms of news production. Authors have been discussing the commodification of news and commercial pressures on journalism for several decades (McChesney, 2004; McManus, 1994), but more recently, scholars have expressed concerns about how audience analytics and metrics may further accelerate and normalize these commercial orientations to the news, in which the public-oriented editorial logic of journalism is being subdued by the profit-oriented quantified and algorithmic logic of technology and media companies (Poell & van Dijck, 2014; Vu, 2013). The quantification of audience behavior does indeed influence editorial decisions on the placement of news stories on the website, leading to what Tandoc (2014) sees as a process of selection and 'de-selection'. According to Tandoc and Jenner (2016), web metrics are not only increasingly used to determine the placement and packaging of news stories on the website, but also to inform editorial decisions on the planning of future coverage on certain topics or stories. The latter is confirmed by the study by Welbers et al. (2016) who found that audience clicks on newspaper websites affect the news selection choices for the print edition.

Furthermore, audience metrics may also lead journalists to mimic other media and copy stories that do well on other platforms for publication on their own channels. As theorized by Boczkowski (2010), the intensification of monitoring practices in news work, combined with journalists' inclination to imitate their competitors, may ultimately lead to increased news homogenization. Instead of using the knowledge gained from the constant monitoring of content and audience behavior to differentiate themselves from their competitors, journalists tend to imitate each other by selecting the same popular stories (Boczkowski & de Santos, 2007). Hence, audience analytics may also lead to more story imitation.

Despite concerns about the potential dumbing-down effects of audience analytics on news selection, web analytics also create new opportunities for journalism. Both scholars and practitioners are increasingly aware that audience analytics might help journalists to restore their relationship with their audience (Zamith 2018). According to Hanusch (2017), knowledge gained from analytics allows journalists to improve the multi-channel distribution of news. He found that editors are generally positive about the ways in which analytics provide newsrooms with detailed real-time metrics that allow them to develop new practices of "day-and platform-parting", in which they can "target specific audiences depending on the time of day they access news or the type of platform they use" (Hanusch 2017, 1583). Practitioners believe that such data-informed practices may narrow the 'news gap' (Boczkowski & Mitchelstein, 2013), i.e. the divergence between what journalists consider newsworthy and what the audience deems noteworthy (see also A. M. Lee & Chyi, 2013). In order to better align their news supply to user demands, news organizations need to improve their knowledge about their users' behavior and audience engagement, and, in combination with new content and distribution strategies, analytics might offer one way to achieve this goal.

Nevertheless, an international study by Cherubini and Nielsen (2016) suggests that news organizations still have a lot to learn about audience engagement. The report shows that web analytics are primarily used for short-term optimization of the websites, such as the placement and packaging of stories on the homepage or the planning of follow-up stories for the online or print edition. Cherubini and Nielsen (2016) found less examples in which web analytics are used to lay the foundations for longer term editorial and organizational priorities like developing loyal and engaged audiences or more effective journalism. As said above, the underlying optimistic belief is that audience analytics might help newsrooms to improve their knowledge about audience engagement and public opinion formation. Ferrer-Conill and Tandoc (2018) found that this belief is already present among online journalists, who are increasingly taking up audience-oriented roles as they are encouraged by their superiors and peers to take into account audience metrics in their editorial decisions. This leads them to develop new practices in which quantitative and qualitative assessments of audience trends inform editorial decisions “on how to better match journalistic content to what the audience wants and expects” (Ferrer-Conill and Tandoc 2018, 449). Put differently, online journalists’ knowledge and estimations of what the audience wants, expects and needs, seem to be increasingly based on their interpretations (and misinterpretations) of audience metrics. Further research is needed on the accuracy of such quantified measurements of audience engagement and public interest. Yet, it can also be assumed that the knowledge gained from audience analytics may have an influence on how journalists imagine or conceive their audience, leading them to replace the ‘imagined audience’ by a ‘quantified audience’ (Bunce, 2015; Tandoc & Thomas, 2015).

In sum, as noted by Carlson (2018, 413), current literature on ‘measurable journalism’ sketches two possible scenarios: The first scenario emphasizes how analytics “elevate economic imperatives above all else by enabling minute tinkering aimed at extracting larger audience numbers”. In the other scenario, analytics are seen as an instrument for journalists to augment their judgments, improve their selection choices and multi-channel distribution strategies, and build better connections with their audience. Both scenarios are not mutually exclusive, though. Rather do they highlight the tensions that exist and have always existed between commercial and journalistic – and between quantified and creative – audience orientations in the newsroom (Anderson, 2011; Nelson & Tandoc, 2018). Therefore, instead of choosing sides, this study aims to investigate how digital news editors try to navigate and regulate these tensions when using audience analytics in the newsroom.

By combining insights from literature on newsroom innovation on the one hand and recent studies on measurable journalism on the other hand, we want to investigate the adoption and uses of audience analytics and their perceived effects on the daily and strategic operations and decision-making inside the newsroom. The literature on newsroom innovation reminds us that new tools are rarely used to their fullest potential but shaped and confined by the social context of the newsroom. In other words, we assume that analytics do not generate any direct or linear editorial effects since their implementation in the newsroom is, like any other innovation, moderated by the routines, norms and attitudes of those who use them (Boczkowski 2004). To better understand how analytics blend and collide with current practices and norms, it is useful to look at the perceptions of the practitioners on the adoption

of and resistance to analytics in the newsroom. Having delineated different practices in our synthesis of the literature on measurable journalism, the study further attempts to map and unravel the purposes for which analytics are being used in newsrooms and digital news editors' assessment of these uses. Hence, this study proposes two research questions:

RQ1: *What are the professional and organizational factors that influence the adoption and acceptance of audience analytics within the newsroom?*

RQ2: *How do digital news editors assess the different purposes for which audience analytics are used in the newsroom?*

Method

On an empirical, descriptive level, this study is the first to map the adoption of audience analytics in Belgian newsrooms. More fundamentally, however, the study tries to make a contribution to current journalism scholarship by examining digital news editors' perceptions and evaluations of the uses and effects of audience analytics within the newsroom. Considering that the use of analytics is not only affecting, but also affected by the people who use them, we opted for semi-structured, in-depth interviews with digital news editors. Interviews enable to get a nuanced insight and understanding of the negotiation process that guides the ways in which analytics become centralized and normalized in daily news work. We conducted in-depth interviews with digital news editors. Aiming for diversity as well as comparability in our sample, we interviewed editors of the 11 most-read online news outlets in Flanders, the Dutch-speaking part of Belgium. The ranking was based on website traffic statistics of the Centre for Information on Media (CIM.be), consulted in January 2018. The list included the websites of seven national newspapers, one news magazine, one public and one commercial broadcaster, and one digital-born news medium. With the exception of the latter stand-alone medium, which occupied position 11 in the ranking, and the public broadcaster's website, all outlets belong to one of the three largest and financially stable media groups in Flanders (Mediaaan-De Persgroep Publishing, Mediahuis and Roularta). However, despite the financial stability of the groups to which they belong, digital news media in Flanders, like in the rest of world, are under high commercial pressure due to the competition from platform companies, declining advertising revenues, and the moderate success of paywalls (Evens & Van Damme, 2016). The online news outlets of the three legacy media groups have a freemium business model, while the content of the digital-born medium and the public broadcaster's website is free of charge.

We interviewed the chief online editor of each news outlet. For 10 organizations, we additionally interviewed one more person who held what Ferrer-Conill and Tandoc (2018) call an "audience-oriented position", such as "head of audience engagement", "social media manager", "digital manager", "chief social strategy" or "traffic specialist". These rather new newsroom positions are explicitly tasked to make sense of audience metrics. Since our interviewees worked primarily for online news outlets and since the use of web analytics is mainly associated with the news organization's website, the interviews mainly dealt with web analytics and online news decisions, but we also addressed the use of social media and the influence of analytics on news selection choices in the print or television outlet.

The 21 interviews were conducted between February and March 2018, using a semi-structured, theory-guided topic list with a fixed set of questions we asked to each editor. Journalists were first asked to describe their professional background and how a regular workday looks like for them in order to contextualise their subsequent answers. To what extent are they involved in editorial decision-making? How often do they attend editorial meetings? During this first introductory part of the interview, we particularly paid attention to hierarchies and job profiles in the newsroom to get a better understanding of how the current routines and organizational structures shape the adoption of analytics (RQ1). Next, they were asked to reflect on their prevailing uses of audience metrics and to assess the positive and negative ways in which metrics inform and affect news work (RQ2). We used a semi-structured topic list to ensure that we asked each interviewee about the use of analytics for the different purposes described in previous literature: story placement, story packaging and headline testing, story planning, and performance assessment (both at the story level and for job evaluation). The interviewees were asked to describe and evaluate whether and how they used analytics for these purposes. In addition, we asked follow-up questions about other relevant uses of audience analytics. Again, we showed particular interest in the editors' perceptions and assessments of these different uses and effects of analytics. The interviews took place face-to-face, except for one interview that was conducted by telephone. The interviewees were guaranteed anonymity, considering the culturally charged nature of audience analytics and the need for our participants to take an overt stance. All interviews were digitally recorded, which added up to 806 minutes of recording time in total, with an average length of 38 minutes per interview.

We used the qualitative data analysis software package NVivo 11 to transcribe all interviews verbatim and to process our data. Finally, all transcripts were subjected to thematic analysis, in which we searched for recurring themes within the data, using both codes that were set *a priori* to look for particular aspects as well as new codes that emerged from the data.

Findings

This section is organized around our two main research questions. For the first research question, we focus on the organizational and professional factors that either foster or restrict the adoption and acceptance of audience analytics as tools for journalism. The second research question requires us to zoom in on the editors' perceptions and assessments of the purposes for which audience analytics can be used.

The adoption of analytics in the newsroom

Each of the 11 newsrooms in our study uses analytical tools to monitor their audience. Chartbeat and Google Analytics are the most popular ones, with Google Analytics being used in every newsroom and with two newsrooms that do not use Chartbeat. One of these two newsrooms developed a customized version of Chartbeat, while the other newsroom preferred a less expensive tool. To gather information from Facebook, Twitter and the comment pages on their own website, Belgian digital news editors referred to Crowdtangle,

Ezy Insights and Facebook Insights as the most used tools. However, some interviewees said they individually used a wider array of web and social media analytical tools such as Adobe Analytics, SmartOcto, IO, Spike, Hootsuite, CX Social and Echobox. All interviewees, and especially those who hold audience-oriented newsroom positions, were familiar with most of these tools, so we can safely say that audience analytics have become part of the digital toolbox of online news editors in Belgian newsrooms.

This is of course already reflected in the fact that all newsrooms have one or more staffers with an audience-oriented role. According to the interviewees, most of these “social media editors” or “engagement managers” were hired in the previous one or two years. In the larger media companies, in-house analytics expert teams – or “traffic teams” as they were called – have been established to monitor the success of content and audience behavior on and across the different media channels and platforms. The digital news editors said they closely worked together with the “traffic team”. To further develop their data management skills and keep up with the rapid pace of change, interviewees also said they participated in internal and external training sessions. Some of them also organized in-house workshops to share their knowledge with their colleagues.

In line with literature on newsroom innovation, our interviews suggest that organizational structures are sometimes viewed as an obstacle to the optimal use of new technologies. Some of our interviewees argued that physical and departmental boundaries within their newsrooms are not beneficial for the creation of a “culture of data”. The traffic team is physically separated from the newsroom, which makes it difficult for them to gain a foothold in the newsroom. One of our interviewees, who served as a bridge between the traffic team and the newsroom stated that they were *“quite jealous of our colleagues at NRC [Dutch newspaper owned by the same media company] where the traffic team works inside the newsroom.”* The interviewee added that, as they had to work physically separated from the editorial department, *“it is harder for us to follow the newsroom dynamics, so we can only make general recommendations.”* However, in most newsrooms, online news chiefs and social media editors have a seat at the “central news desk”, together with the other superiors of the news organization. One chief editor said: *I am sitting at a central desk. All superiors sit there together and our social media manager sits there too. Actually, we are all involved in the negotiations and decision-making in the newsroom.”* This close cooperation enables the transfer of a great deal of know-how on data between the different outlets through informal contacts. One social media manager described how his recommendations have increasingly been taken on-board over the past few years: *“I always work in consultation with the homepage editors, but they have now such confidence in me that I often do not have to justify my decisions anymore.”*

Further, the interviewees tended to agree that a “data culture” could only arise if the newsroom managers would be more transparent about the use of data and if data were made accessible to individual journalists and editors, and not only to the traffic team and the editor-in-chief (see also Cherubini & Nielsen, 2016). In eight newsrooms, real-time metrics are continuously visible on large TV screens, not only to inform all journalists about which stories are doing well, but also to stimulate the acceptance and normalization of analytics among the newsroom staff. In addition, the interviewees said they often provided journalists with extra

information and context for them to be able to make the most out of these analytical tools. In most newsrooms, daily or weekly audience metrics reports are sent around through e-mail. An editor explained: *“One of our editors makes a top 5 of the best performing articles on the site and Facebook each day, in comparison with the global traffic and the monthly average.”* In two newsrooms, these e-mails were sent to the entire staff. In most newsrooms, however, the reports are only circulated among the online team and the editorial board or communicated to individual journalists that worked on the article. Some interviewees said that editorial meetings tend to start with a discussion of yesterday’s traffic figures.

The social media and engagement editors we interviewed, said that they monitored audience metrics regularly, if not *“constantly”* or *“maniacally”*. However, a lack of time kept them from studying the analytics in a more in-depth manner. The workload and continuous deadline of the online newsroom do not always allow them to do much beyond their daily tasks, as a site manager recognized: *“I simply don’t have the time to follow these things to the letter.”* Other interviewees argued that more knowledge can be gained from analytics, but this requires more resources. One interviewee said that his newsroom was now unable to systematically use Chartbeat’s headline-testing feature because of a lack of time and resources. Another interviewee said they only appoint a journalist to be responsible for the social media channels when nobody has taken a leave of absence or has fallen ill.

When asked editors how they perceived the attitudes of journalists towards the use of web analytics inside the newsroom, interviewees agreed that there is a degree of healthy scepticism among journalists, but in general, resistance towards audience analytics is perceived to be rather low. Interviewees indicated that most journalists are curious and interested in audience data, although some noticed a difference between the print and online journalists. The latter seem to be more eager to learn and see how their own articles are performing online. One interviewee asserted that *“some journalists even think that they are not doing a good job when their articles no longer appear in the top 10 for a few days.”* However, interviewees were also aware that an ever-more competitive battle for attention could lead reporters to focus on tangential stories that get a lot of hits. Audience analytics do foster internal competition. For example, a chief editor explained how he had to redirect incentives because journalists became reluctant to publish their stories behind the paywall as such stories never appear in the most-viewed list. Another digital news manager put it as follows:

“Journalists know that numbers depend on how an article is played out on the website’s homepage or on social media. Some of them would therefore go and lobby the online team to highlight their own articles. So it creates a hunger for visibility, public and success. ... To a certain degree we also want that, ... but we try to avoid evaluating our journalists only on that basis. You need to do it in moderation.”

The uses of audience analytics

For our second research question, we are interested in the purposes for which analytics are utilised and how analytics have an influence on the work practices and organizational strategies that determine the news decision-making process. Based on the literature, we

distinguished different uses of audience analytics in the newsroom: audience analytics inform decisions about placement (Lee et al. 2012), story packaging, story planning, and performance evaluation (Tandoc and Jenner 2016; Tandoc and Lee 2017). Further, we discussed with interviewees to what extent audience analytics result in “story imitation” (selecting stories that do well on other websites or platforms; cf. Boczkowski 2010) and “audience conception” (the construction of the “imagined audience” on the basis of metrics, cf. Coddington 2018). Below, we discuss how editors perceive the possibilities and limitations of audience analytics for each of these six functions.

Story placement. Whereas Google Analytics is used for more general evaluations and comparisons on a longer-term basis (e.g. one week or month), Chartbeat is primarily used for real-time observational data about their readers and the intra-day management of their homepages. Web analytics inform editorial decisions on the placement of stories on the website (Lee et al. 2012). Since the website’s homepage can only feature a limited number of stories, editors need to determine which stories to prioritize. Interviewees considered it obvious to “take a look at Chartbeat figures” when taking these editorial decisions. One editor stated that it was just a matter of good practice: “if you have a dozen articles, it makes sense to give the most-read article a better position than those that are not read at all.” Another editor nuanced that “it is not that we only look at Chartbeat, but if we see that an article does not give any return, it will not harm if we put it on a lower position.” Interviewees stressed that Chartbeat’s recommendations are always balanced with editorial judgements about a story’s newsworthiness. They all firmly disagreed with the idea that audience metrics would skew these judgements. One editor gave the example of Brexit coverage, which hardly, if ever, succeeds in arousing great audience engagement, but as it is deemed an important and relevant topic, they keep featuring these articles on top of the page. There was a general consensus among interviewees that, as one of them put it, “you must of course respect journalistic values, so we will never put the important pieces at the bottom of our site just because they are not sexy enough to click on.” That said, the interviewees also stressed the importance of a well thought-out “homepage composition”, and Chartbeat figures help them to create what some called a “good news mix”.

Story packaging. A second way in which audience analytics are used for, is story packaging. Tandoc and Jenner (2016, 431) define story packaging as all adaptations journalists make to an article after it has already been mostly constructed. This includes decisions about the presentation of stories or their promotion on social media platforms. With the exception of the public service broadcaster, all media organizations systematically use the A/B-headline testing services of Chartbeat or similar tools like Google Optimize or Echobox. With headline testing, the web editor writes an A-headline and a B-headline, and the software will expose half of the readers randomly to the A-headline, while the other half is shown the B-headline to estimate which headline generates the most clicks. One editor said that “in nine out of ten cases, we will pick the one with the highest rating. Unless we think it is formulated too bluntly or too ‘clickbaity’.” When discussing ‘clickbait’ more in-depth, all editors seemed rather vexed. They argued that a journalist can make an article more accessible for the public by writing an attractive or teasing headline, but they would never consider that as “clickbait”, a term they associate with misleading and deceitful headlines that do not match the story’s content. For

the interviewees, the demarcation line between clickbait and engaging headlines was very clear and evident. Confronted with the question of whether his readers would agree with him, one interviewee explained that *"if we write a headline that is not consistent with the content of the article, we know our readers won't click next time. It would be stupid to fool our readers."* Other interviewees made the analogy with newspaper headlines, arguing that it is a general rule in journalism that *"an article with a bad headline will not be read"*.

Story planning. Previous research suggests that audience analytics are also used by editors to make decisions on which stories or topics to report about in the near future. For instance, if analytics show that a certain story is doing well, editors may plan follow-up stories or they may decide to assign additional coverage for the next day's print edition (Tandoc and Jenner 2016, 431-432). The digital news editors in our study confirmed that audience metrics are taken into account for story planning. One editor gave an example of how audience metrics had even led them to hire specialist reporters for the science news beat because the scientific news stories performed surprisingly well on the website: *"If a science editor wants to write a new piece nowadays, I will tell him: 'don't hold back, write a lot about it!'"* Another interviewee said that his newsroom secured more time and resources for "regional judiciary", because it often appeared in the top five topics in Google Analytics: *"Whilst our court reporters could previously write 10 line stories, we are now letting them write 30 to 40 lines."* Editors thus admitted that they felt encouraged to invest more in certain topics that generate a lot of audience feedback. Sometimes audience metrics correct their "gut feeling", as one interviewee explained:

"I never would have guessed it, but everything we publish on royalty scores incredibly well. We happen to have a journalist who is specialised in royalty, but in the past, she was never allowed to focus only on that subject. Now, she has her own royalty news blog on Sunday."

In line with the study by Hanusch (2017), the interviews also indicate that story planning takes place throughout the news day and across different platforms. In other words, web analytics do not only influence editors' decisions about the online news, but they also inform the decision-making process about the print edition and other channels of the media organization. One editor working for a broadcaster said that also their TV news editor sometimes looks at the web metrics to decide on the composition of the news broadcast: *"Recently, something he had planned to be the third item became the opening piece of the broadcast, because he saw how much attention it gained online."* Another editor gave an example of a small topic that exploded on Facebook in the course of the day, which urged him to assign a print reporter to the story. Interviewees said that these practices of multi-channel story planning become more and more commonplace in the newsroom.

Story imitation. As mentioned above, larger media organizations work with "traffic teams" that monitor stories and audience engagement in different outlets on different platforms. Half of the newsrooms in our study used social media analytics tools such as Crowdtangle and Ezy Insights to monitor the engagement and scope of their own articles on social media as well as those of their nearest competitors. If a certain story is performing well on a competitor's website, editors may be likely to pick them up for publication on their own media channels. This leads to story imitation and content homogenization, but most of our interviewees did

not consider it as a problem. Again, this routine was rather seen as a matter of good practice, as one interviewed stated: *"If we suddenly see that an article is performing particularly well on the website of [name of competitor], we will obviously pick it up, and vice versa."*

While interviewees recognized the commercial logic behind such selection practices, most of them were not concerned about potential dumbing-down effects. Instead, they were strongly convinced that when analytics are used wisely as a *"tool"* or *"compass"*, and *"complementary"* to journalistic gut feeling, they could help to do better and more useful journalism. As one editor put it:

"Most media organizations are commercial enterprises, so in a way it is logical that we use these tools. Nevertheless, you always need to preserve your journalistic values and ethics. Otherwise you are not practicing journalism anymore, but plain commerce."

Performance evaluation. In line with Lee and Tandoc (2017) and Bunce (2017), our interviews indicate that audience analytics are also used, to some degree, as tools to evaluate and discipline employees. In Belgian newsrooms, journalists regularly receive feedback based on web metrics. Besides individual feedback on particular stories, reports are also circulated to highlight 'good practices' of the kind of stories and topics that performed well. A chief editor explained that they *"do not intend to organize a competition, but we want to create some kind of awareness among journalists, like, you know, 'these tools really tell you something'."* Further, web analytics also help to socialise journalists into the *"digital-first"* culture that newsrooms try to foster. Interviewees acknowledged that especially among print journalists, web analytics are still met with a great deal of distrust or indifference, a finding in line with a recent study by Nelson and Tandoc (2018). However, most interviewees argued that this scepticism was rather due to a lack of knowledge about how these tools can be employed in favour of creating more engaging journalism. To increase knowledge and openness about metrics among their employees, one interviewee said that *"at my previous job, we had a 'Chartbeat trophy' – I'm not sure it still exists. Every time one of the newspaper journalists published an online article that went through the roof, I would hand him or her the trophy."*

While journalists are thus actively encouraged to learn from metrics, none of the newsrooms used audience analytics to systematically measure their employees' job performance. Only at the digital-born medium, an interviewee told us that analytics are also monitored and compared on an individual level. She stated that for job evaluations, they *"take two things into consideration: how many articles someone has produced and how many views he has. If there is someone who keeps dangling at the bottom month after month, we will indeed draw some conclusions from that."*

Audience conception. Finally, the interviews show that audience analytics have an influence on journalists' perceptions of what their public thinks. Their "imagined audience" becomes increasingly constructed on the basis of metrics. In general, web analytics seem to be regarded by our interviewees as valid measures of the audience's interests, sentiments and opinions. None of them questioned the algorithms on which these metrics are based. Instead, they argued that metrics helped them gain a clearer picture of their users on the basis of accurate, objective information. An often-heard argument is that, as one interviewee put it:

"Back in the days, we had to sail blind. We made a newspaper by the seat of our pants, just assuming it would all be read. But now we sometimes have to admit: 'Sorry guys, it's not working'. I'm glad that we know our readers better now."

Digital news editors also said they felt more confident about the topics that their readers are interested in or concerned about. As such, audience metrics also serve as an indication of the interests and opinions among their readership. One of the interviewees stated that Google Analytics gives him a more reliable reflection of the audience's interests and opinions than social media, since the first actually tracks audience behavior and engagement, while the latter mainly comprise self-expressed opinions of only a minority of people who want to speak out publicly.

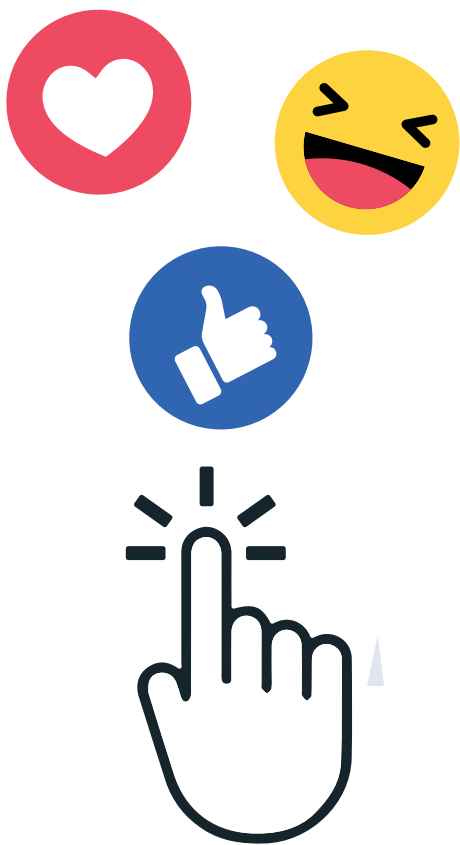
Yet, there is a general consensus that progress still has to be made in the ways they interpret metrics as measures of public interest and opinion. Some interviewees believed they were moving in the right direction as their attention was shifting away from the mere clicks and page views to more advanced measures such as attention time, level of content recirculation and user loyalty. Moreover, they stated that web and social media analytics always need to be combined with conventional forms of audience research and matched to the editorial norms, values and judgements. That way, audience analytics can become further integrated and normalized within the work practices inside the newsroom, or as one editor concluded: *"The media have always used audience measurements; web analytics do exactly the same thing, just more elaborated."*

Conclusion

The goal of this study was twofold. Firstly, we wanted to know to what extent Belgian digital newsrooms have integrated audience analytics into their daily operations. In line with international research, we can conclude that a large degree of normalization has been realized with regard to the adoption of these new tools for audience measurement. All newsrooms in our study have invested in hiring new job profiles like "social media managers" or "engagement editors" to systematically monitor and make sense of traffic and audience behavior data on the range of platforms that media organizations use for news distribution. Further, they all make efforts to facilitate the exchange of the knowledge of analytics among their journalists, both in the print and online teams, in order to build a "culture of data" (Cherubini and Nielsen 2016, 14), wherein every journalist is open to act on the insights gained from analytics. The interviews show that audience analytics are gradually becoming integrated and routinized within the daily work practices and organizational strategies of today's newsrooms. Editors consider it logical and obvious to use analytics as yardstick for making editorial decisions.

Secondly, we focused on the daily operational and strategic uses of analytics in the newsroom. Based on previous research, we distinguished six purposes for which digital news editors turn to audience analytics: story placement, story packaging, story planning, story imitation, performance evaluation, and audience conception. Our interviews show that Belgian digital news editors use analytics for each of these six purposes, although the findings are nuanced. Interviewees stressed that metrics are taken into consideration in deciding where to place or how to package a story on the website, but these algorithmic recommendations are always balanced against their own editorial judgments. They strongly rejected the idea that analytics would lead them to produce more clickbait or to favour the popular over the relevant news stories. With regard to story planning and story imitation, editors also seemed to suggest that analytics do not change the ways in which newsrooms have been working for decades, in the sense that editorial decision-making processes have always been informed by what competitors are doing and by what has already proven to appeal to the audience's attention. A newer practice is that audience analytics also allow newsroom managers to evaluate employees' job performance on the basis of how much attention and engagement they generate with their stories, but, with the exception of the digital-born news medium, the interviews suggest that analytics are not used for performance evaluation on an individual level. However, on a more aggregate level, daily or weekly web metrics reports and soft rewards for well-performing staffers allow newsroom managers to discipline and socialize their journalists within a more data-driven newsroom culture. Finally, our interviews suggest that web analytics also serve as a proxy or indication of public opinion. Digital news editors feel that the use of analytics has improved their knowledge about how to connect with the audience's interests and concerns.

In conclusion, we can say that there is a general consensus among digital news editors that analytics support rather than harm their journalism. While scholars have expressed their concern about potential misuses or dumbing-down effects of analytics, the journalists in our study tend to minimize these risks, suggesting that newsrooms have always been expected to find a balance between their medium's commercial and editorial interests. However, the finding that editors are mostly positive about the uses of analytics in the newsroom does not mean that they are right. Interviews reflect the editors' perceptions, but do not allow us to say anything about the effects of analytics on the type of news stories that are published and highlighted in the media outlets, which is the focus of many concerns about the datafication of journalism. Further research should look into how current editorial and strategic uses of analytics in news work affect journalists' selection and storytelling practices. More specifically, we believe that content analyses and experiments can help researchers to better understand the short- and longer-term effects of the six uses of analytics on the news output.





CHAPTER 3

Do metrics drive news decisions?

Political news journalists' exposure and attitudes towards web analytics

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Abstract

As newsrooms are increasingly using web analytics to monitor news behavior, journalism is likely to become increasingly 'metrics-driven'. Research suggests that analytics are commonly used by web editors to decide on the distribution and promotion of news stories, but how does this affect the news practices of journalists? To what extent are audience metrics taken into account by individual journalists and reporters who work in a specific news beat? This paper explores this question through a survey of political journalists in Belgium. The study examines the level of access that political news journalists have to audience metrics, and to what extent their level of exposure to and use of metrics affects their attitudes towards analytics in news work. Results show that while three quarters of the political news journalists are nowadays exposed to audience metrics on a regular basis, more than half of them report to never make direct use of web metrics in their daily work. Younger journalists are more likely to be exposed and to use web metrics than their senior colleagues, but journalists working for commercial media do not use metrics more intensely than journalists from public service media. Journalists who actively use metrics themselves tend to hold more positive attitudes towards web metrics, whereas the passive exposure to metrics seems to make journalists more skeptical or negative about them.

Keywords: web analytics; political journalists; audience metrics; survey

Introduction

Audience analytics have become ubiquitous in today's media environment (Tandoc, 2019; Zamith, 2018). These tools have made it possible to monitor, measure and analyze user behavior through quantifiable metrics like the number of pageviews, amount of viewing time or degree of engagement (likes, shares, comments) (Napoli, 2011; Vu, 2013). Several studies have already uncovered how that analytical information shapes editorial and strategic decision-making processes inside the newsroom. Digital news editors now use them to varying degrees to gain insight about consumption patterns of their news users which subsequently informs editorial decisions on the placement, packaging and planning of future coverage on certain topics or stories (Tandoc, 2019; Lamot & Paulussen, 2020). Throughout the 2010s, there have been multiple qualitative and ethnographic studies raising questions about the impact of analytics and metrics on editorial judgment (Petre, 2018; Tandoc, 2014; Usher, 2013).

While this first wave of studies mainly investigated how newsrooms approached analytics and metrics on an organizational level (Anderson, 2011; Lamot & Paulussen, 2020; Tandoc, 2014; Usher, 2013), an emerging body of literature also calls attention to how individual journalists are adapting their daily work routines and roles to the affordances of analytics (Bélair-Gagnon et al., 2020; Tandoc & Ferrucci, 2017; Vu, 2013; Zamith et al., 2020). These studies suggest that individual levels of access and information can shape the perceptions that individual journalists have about audience analytics and metrics. This article takes a closer look at how individual differences in journalists' attitudes towards analytics are influenced by the level of exposure and use of these tools. More specifically, based on a survey of 231 political journalists in Belgium, our study empirically explores to what extent regular political journalists and beat reporters are exposed to metrics in their daily work, and whether their familiarity with metrics affects their attitudes and perceptions towards these tools. The findings invite us to reflect on the role of technological socialization in shaping journalists' attitudes towards web analytics and metrics. Before presenting our survey results, we summarize the current state of the literature that served as background for this study.

Theoretical framework

Data and algorithms are omnipresent in contemporary journalism, yet our understanding of their impact on journalism practice is still limited. In an attempt to unravel the debate on data and journalism, Loosen (2018) distinguishes four forms of datafied or computational journalism. Aside from *data journalism*, where large sets of data and statistical analyses are used for investigative news reporting, Loosen differentiates *algorithmed journalism* to refer to the influence algorithms have in the distribution and targeting of journalistic content, and *automated journalism*, referring to robot journalism or the automated production and processing of content by computational means. A fourth and final form of datafied journalism is what Loosen (2018) calls *metrics-driven journalism*, which highlights the particular importance that audience metrics have in monitoring user behavior and how this consequently influences news production. Metrics and analytics, originally designed for marketing purposes, are increasingly being used in a journalistic context, allowing journalists to monitor user behavior in real-time and greater detail. Through audience metrics, journalists can now assess how

many times a page has been visited, how much time readers spend on a story, how far they scroll down on a particular page or how they came across the story in the first place.

A large body of research shows that contemporary newsrooms all over the world have embraced audience metrics and analytics, influencing the work practices and organizational strategies that determine the news decision-making process (Blanchett Neheli, 2018; Bunce, 2017; Giomelakis et al., 2018; Hanusch, 2017; Karlsson & Clerwall, 2013; Welbers et al., 2016). In 2014, Tandoc (2014) already noted that editors in the US were using metrics to decide on which stories to select for which spot on the homepage, while at the same time ‘deselecting’ articles that generated less web traffic. News stories that are likely to generate audience engagement would thus be featured more prominently. Studies confirm that articles in the most-read list are less often removed from the homepage (Bright & Nicholls, 2014; A. M. Lee et al., 2012) and more likely to receive follow-up reporting both on the website and in the print edition (Welbers et al., 2016), even though a study by Zamith (2016) suggests that the effect of an item’s popularity on its subsequent prominence is rather small. Other studies found that web analytics do not only affect the prominence of news stories on websites, but they are also increasingly used by digital news editors for other purposes, such as the planning of news production (Vu, 2013) or the packaging of news stories so as to increase their likelihood to be clicked on (Tandoc & Jenner, 2016). Lamot and Paulussen (2020) distinguish six purposes for which digital news editors turn to web analytics: not only do audience metrics inform editorial decisions on the placement, packaging, planning and even imitation of news stories, they also serve as a tool to evaluate a journalist’s performance and as a proxy for public opinion. It is clear that, on the organizational level of the newsroom, web analytics have become important tools for digital news editors who can now rely on real-time metrics to inform and support their decision-making and content strategies. Social media editors have become the “new gatekeepers” to decide which messages are “shareable” enough to pass through their channels (Welbers & Opgenhaffen, 2018b).

Yet, not all news organizations are embracing web analytics to the same degree. At the organizational level, the economic structure of a news organization and journalists’ market orientation can have an effect on the adoption and use of audience analytics (Ferrucci, 2020; Hanusch & Tandoc, 2017). Ferrucci and Tandoc (2015) and Usher (2013) showed that profit-oriented newsrooms utilized audience analytics more often in their editorial decision-making compared to newsrooms that are more shielded from economic pressures. While commercial media are more market-oriented and might need to attend more to audience metrics to bring in advertising revenues, public service media have other sources of income. Karlsson and Clerwall (2013), for instance, found that journalists working for commercial media companies monitored web traffic to news stories more closely than their colleagues working at public service media. In their sample, public service journalists monitored clicks to evaluate whether a news item was relevant to their users, while commercial journalists referred to both relevance and commercial factors as reasons for monitoring audience metrics.

While first studies on the integration of web analytics in journalism were based on interviews with newsroom managers and digital news editors, more recent studies shifted their focus from the organizational to the individual level in order to examine how audience metrics may

influence the practices and perceptions of individual journalists. As journalists are nowadays expected to produce stories for the different platforms of the news outlet, they are increasingly exposed to web traffic and click statistics, but does this changing work environment also have an effect on their daily news practices and professional role perceptions? Despite the fact that audience metrics are available to almost everyone in the newsroom, there still seem to be varying levels of access and exposure to audience metrics among regular journalists (Bunce, 2015; Hanusch, 2017; Usher, 2013). Hanusch (2017), for example, found that some reporters ignored metrics completely, while other checked how well their stories did online, even outside working hours. Tandoc and Ferrucci (2017) found that next to journalists' personal attitudes towards audience feedback and their perceived level of skill to use analytics effectively, also the organizational policy predicts journalists' intended and actual use of audience metrics in their news work. The role of organizational policy has also been emphasized in other studies, showing that journalists are mostly socialized into using audience analytics by their editors (Moyo et al., 2019). Zamith et al. (2020) highlight the role of superiors in conveying the norms around the use of audience analytics and metrics within the newsroom. Moreover, senior managers and positions further up the editorial hierarchy tend to be more heavy users of audience metrics and more positive towards them than individual non-management staff (Bélair-Gagnon et al., 2020; Bunce, 2017; Hanusch, 2017). In sum, organizational policy and perceived newsroom norms lead individual journalists to conform to using audience metrics as well (Tandoc & Ferrucci, 2017; Usher, 2013).

While differences in journalists' attitudes towards analytics can to a large extent be explained by organizational contextual factors, some studies also draw attention to the role of individual-level characteristics of newswriters. For instance, Welbers et al. (2016) found that journalists who are skeptical about analytics are much less likely to adopt them. Likewise, in a study of foreign correspondents, Bunce (2015) suggests that journalists could either be typified as *data-driven*, being aware of audience data and making decisions accordingly; *data-informed*, having little knowledge of audience data but being incentivized by editors who do; or *data-denialists*, having no knowledge of audience data and experiencing little pressure from their editors to act accordingly. Bélair-Gagnon et al. (2020) argue that, besides organizational pressures and social influences within the newsroom, individual characteristics, such as one's experience in journalism or one's position in an editorial hierarchy, also explain these different attitudes. Through their survey with US news workers, they show that experience in journalism negatively correlates with the perceived usefulness of audience metrics for enacting consumer-oriented objectives. This finding is in line with Vu (2013), who showed that the higher the amount of journalism training, the lesser journalists will be inclined to use audience metrics in their news work. Also, a news-worker's position within an editorial hierarchy seems to be an important individual-level factor in shaping one's role orientations and attitudes towards audience metrics. Journalists in a supervisory or managerial position tend to be more positive about the perceived utility of audience metrics than non-managers (Bélair-Gagnon et al., 2020), which may be due to the fact that news managers are more likely to have received training from web analytics companies (Zamith et al., 2020). This suggests that news-workers' attitudes towards audience analytics and metrics depend on their level of familiarity and experience with these tools. Journalists who have access to audience metrics and the knowledge to engage with them may indeed be more likely to incorporate them into their decision-making (Giomelakis et al., 2018).

To further examine to what extent journalists' attitudes towards analytics are shaped by their familiarity with these tools, the study at hand focuses on exposure and active use as predictors of journalists' attitudes towards audience analytics and metrics. The study is confined to journalists working in the hard newsbeat of political news coverage. We expect a wide variation: some of these reporters will work primarily as political reporters outside the newsroom, while others will work more frequently inside the newsroom. This has implications for the degree of exposure and use, which allows us to zoom in further on the correlation between exposure/use and attitude. Two research questions guided this study:

RQ1: *To what extent are individual political journalists and reporters exposed to or using audience metrics in their daily work?*

RQ2: *How does the level of exposure to and use of audience metrics correlate with their attitudes towards web analytics?*

Method

Sample

To answer these questions, we conducted an online survey among Belgian professional political journalists. Because Belgium is a multilingual country and we wanted to include all Belgian political news journalists, the survey was fielded in both French and Dutch, between June and October 2018. For both French speaking and Dutch speaking journalists, we made use of an existing list of professional journalists working as a reporter or editor on national politics or domestic affairs for one or more media outlets across print, broadcast and online platforms. The contact list has been used for previous research projects with political journalists and has been updated during each survey round. For the update we used the database of the Belgian journalist unions VVJ and AJP in combination with names and contact details found on the websites of Flemish and Walloon news outlets. All journalists on the list received an email in June 2018 requesting them to complete the questionnaire online and the survey eventually ran until October 2018. In total, 231 of the 481 invited political journalists participated in the survey, accounting for a response rate of 48%. The response rate was higher among Dutch speaking (57%) than French speaking journalists (34%), which might be due to the fact that the second reminder in Flanders was a phone call, whereas the Francophone research team sent out a second reminder e-mail. It is difficult to estimate conclusively whether our survey of 231 political journalists is representative of all Belgian political journalists since a good baseline measure of the population does not exist. Yet, circumstantial evidence from a large, authoritative survey of Belgian journalists (all journalists, not only political journalists) from 2018 (Van Leuven et al., 2019) shows that our sample is not far off the mark in terms of gender (20% female (our sample of political journalists) vs. 31% female (all journalists)), mean age (43 years old (our sample) vs. 48 years old (all journalists)), and average seniority (18 years (our sample) vs. 21 years (all journalists)). So, all in all, we believe our sample is plausibly more or less representative for the population of Belgian political journalists.

While we speak of ‘journalists and reporters’ throughout this article, it should be noted that the data represent only the opinions and perceptions of journalists and reporters that deal with national politics and domestic affairs, which was the study population of the political journalism survey. By selecting journalists from the same newsbeat, we can rule out the possibility that differences among journalists are due to differences in specialization. We only aimed for sufficient variance in the level of exposure and use within one (fairly) homogeneous group of journalists. However, we therefore refrain from generalizing the findings beyond the realm of political journalism, even though this group forms a substantial part of daily news journalism. Also, according to figures from another recent survey among Belgian professional journalists, 22 percent of them mentioned politics as (one of) their field(s) of specialization (Van Leuven et al., 2019: 14).

Survey questionnaire and measurements

The respondents received a personalized link to an online survey, which took 21 minutes on average to complete. To measure our central variables related to metrics the survey first asked respondents how often they are exposed to or actively monitor audience metrics in their newsroom. In addition, the survey also focused on the attitudes towards audience analytics. We drew on the survey questions of existing scholarly research such as the studies of Hanusch and Tandoc (2017), Tandoc and Ferrucci (2017) and (Tandoc, 2015). In particular, we used the following variables:

Frequency of exposure. The extent to which journalists are exposed to audience analytics is measured by asking respondents: “How often does your editor or someone from your newsroom inform you about the traffic to news reports of your medium?” Answer choices comprise “never”, “several times a month”, “several times a week”, “daily”, or “constantly”.

Frequency of use. The dependent variable in RQ1, the extent to which individual journalists have access to analytics, is measured by asking the respondents about their traffic monitoring routines: “How often do you check the traffic to news reports of your medium?” Response options are “never”, “several times a month”, “several times a week”, “daily”, or “constantly”.

Attitude towards analytics. The dependent variable in RQ2, attitude concerning audience analytics, was measured using a scale created. The respondents rated their agreement with each of the following three items, using a 5-point Likert scale: “Using web analytics reduces the time I spend on irrelevant topics”, “Using web analytics makes it easier for me to get to know my audience”, and “Using web analytics makes my journalistic work better”. Answers to the three items were combined in a scale, which exhibited acceptable internal reliability, Cronbach’s $\alpha = .69$.

In addition, to control for individual characteristics, organization type and journalistic perceptions a number of other questions was asked:

Individual characteristics. Individual differences among political journalists, including age (in years), experience (in years) and gender, could affect their use and perception of audience analytics. Journalists with more experience, for instance, might be more hesitant about using audience analytics or more concerned about the potential negative effects.

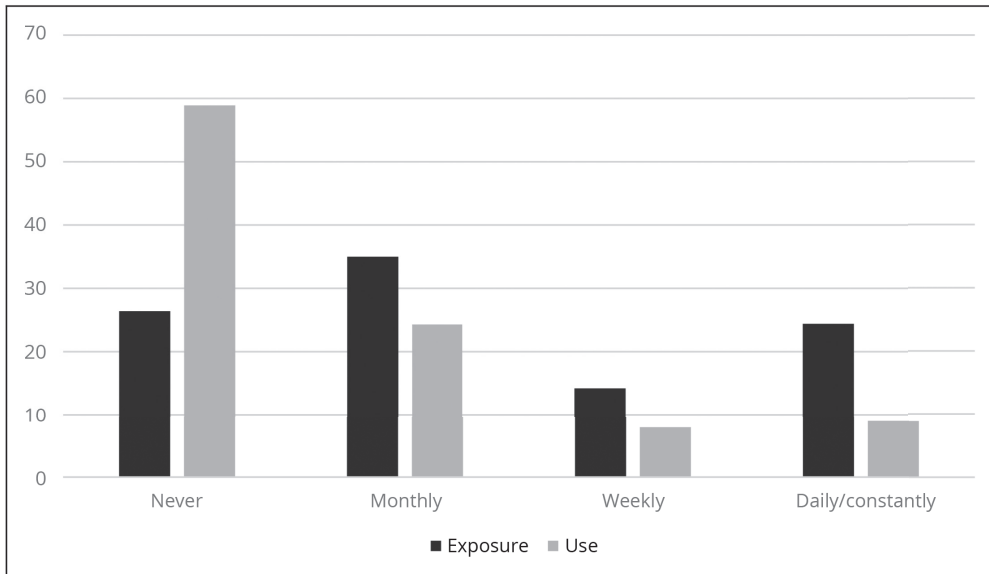
News organization type. Differences among the news organizations for which the respondents work might affect to what extent they use audience analytics and how they perceive them. News organization type was recoded in the analysis. A dummy variable was created with 1= “working for public service media” and 0= “working for commercial media”.

Praise. The last variable measures the respondent’s perception of journalistic standards within their newsroom. Instead of broader role perceptions, we very specifically wanted to measure practices that deal with how journalists get rewarded for making ‘popular’ news items. For which news items you recently worked on did your chief or colleagues compliment you? They were given seven answer options and could tick all boxes that apply: (1) scoops; (2) most-read news items on the website; (3) news items with political consequences; (4) viral news items on social media; (5) news items that got picked up by other news media; (6) news items of great journalistic quality; and (7) other.

Results

Have audience metrics become part of the daily routine of political journalists? As shown in **Figure 1**, the answer is positive for about one out of four (24.4%) of the journalists who reported that they get daily or constant updates. An equally large group (26%) reports to be never confronted with audience metrics by their editors. Overall, the majority of the journalists in our sample (73.6%) gets informed about the traffic to the news reports of their medium on at least on a monthly basis. The personal, more active exposure to audience metrics is clearly lower. Almost six out of ten journalists reported that they never monitor audience metrics themselves (58.9%). Nearly one-quarter (24.3%) of the journalists said they proactively check audience metrics several times a month, while only a small minority of the journalists said they did so weekly (7.9%) or daily/constantly (8.9%).

Furthermore, 64.1% of the respondents said they are not required to use analytics to monitor audience feedback to the news reports on the website, even though a combined 41.2% reported that their editors do value the incorporation of audience feedback in their editorial decisions. We also measured journalists’ perceptions of editorial policies about metrics more implicitly in terms of recent news stories for which they received compliments. Findings indicate that journalists are not primarily praised for stories that perform well in terms of audience metrics. Less than a quarter of the respondents said they had recently received compliments because a story of them went viral on social media (23.8%). A third of the respondents say they were informed about a news piece of them that reached the list of most-read articles on the website (33.8%). However, journalists are most often complimented for news items of great journalistic quality (48.9%) as well as for news items that were picked up by other media (42%) and scoops (38.5%). (As respondents could give more than one positive answer, the relative frequencies sum up to more than 100 per cent.)

Figure 1. Self-reported exposure to and use of audience metrics (N=231)

Frequency of use and exposure to audience metrics

As the frequency of use is measured as a discrete variable at the ordinal level, we employed ordinal logistic regression to explore our first research question and to test our accompanying hypotheses. As the results of the likelihood ratio test ($\chi^2 = 5.48$, $df = 9$, $p > .05$) do not indicate a violation of the proportional odds assumption, the effect of the independent variables is uniform over all the categories of the dependent variable. The pseudo R^2 suggests that the relationship between the dependent variable, frequency of use, and the independent variables, experience¹, gender and news organization type is rather small.

1 The survey asked two questions concerning age. As the Pearson correlation indicates a strong correlation between experience in journalism and age ($r = .924$), we only used experience as one of the independent variables to avoid multicollinearity problems.

Table 1. Ordered logit results: the effect of individual characteristics and news organization type on analytics use and exposure (N= 166).

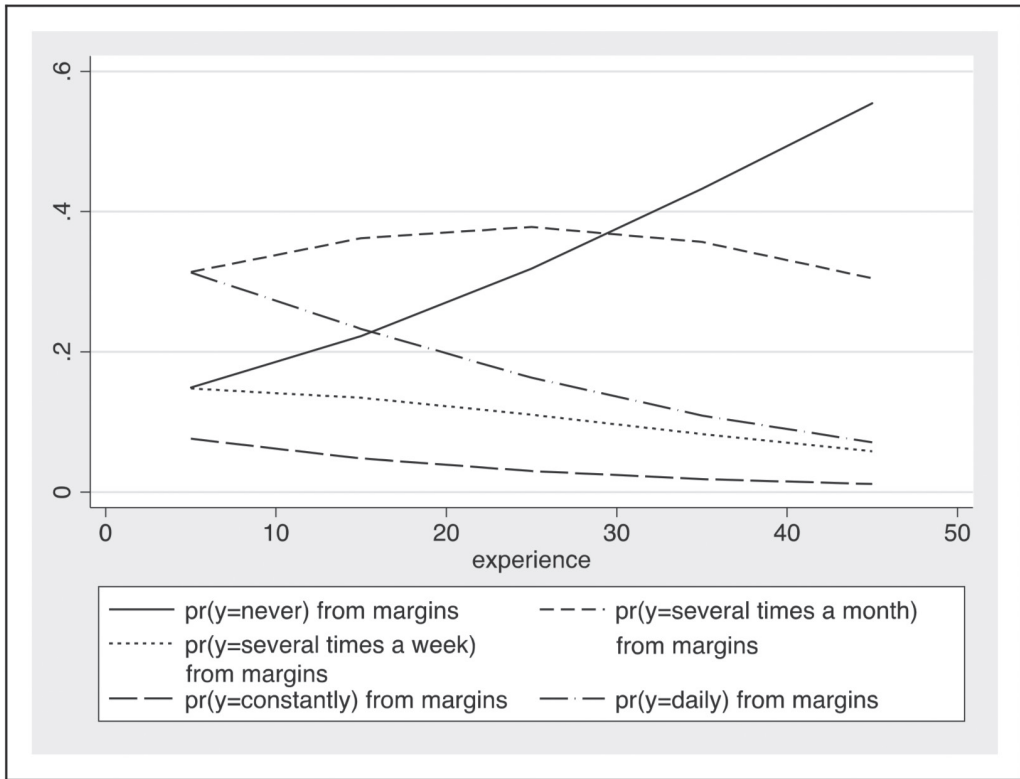
Independent variables	Dependent variables modeled			
	Exposure		Use	
Individual characteristics				
Experience	-.049**	(0.016)	-.060***	(0.018)
Gender	-.126	(0.375)	-.555	(0.416)
News organization type	.258	(0.317)	.654+	(0.351)
Ancillary parameters				
Cut 1	-1.927		-.677	
Cut 2	-.329		.678	
Cut 3	.271		1.412	
Cut 4	2.323		2.408	
N	162		166	
Probability > c²	0.01		0.003	

Note. + = $p < .1$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$. Coefficients are ordered logit coefficients with standard errors in parentheses.

RQ1 deals with the frequency with which journalists and reporters are exposed to or actively monitor audience metrics. **Table 1** reports the results of the ordinal logistic regression analysis in which frequency of exposure and use are the dependent variables. As expected on the basis of previous studies, experience in journalism is negatively correlated to the frequency of using audience analytics ($p < .001$).

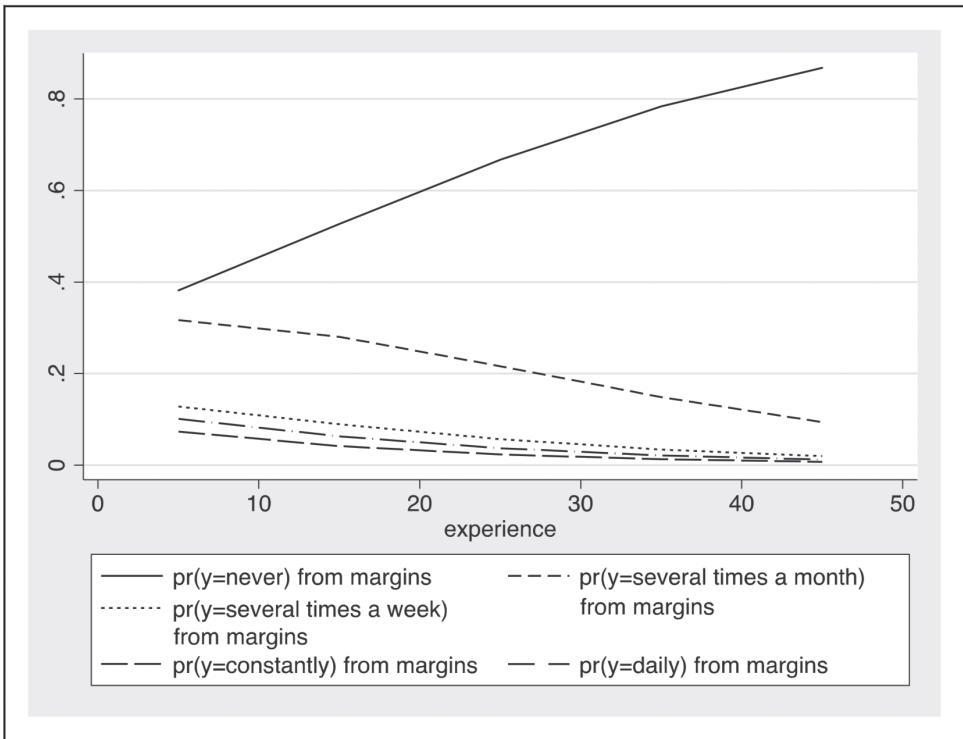
Firstly, we wanted to shed light on how journalists are socialized into the use of analytics and metric data mainly through exposure by their editors. We found that the higher journalists' experience in journalism, the less likely journalists will be exposed to audience metrics ($p < .01$). If we look at the two lines that start at the bottom left in **Figure 2**, we see that the likelihood of being exposed to audience metrics on a daily or constant basis decreases with experience. Conversely the continuous line shows us that the probability of never being exposed to audience metrics increases with experience.

Figure 2. The predicted probabilities of frequency of exposure by years of experience in journalism



Besides the level of exposure, we were also interested in the level of access journalists have to audience metrics. The line that starts at the top left in **Figure 3** shows that the probability of never using audience metrics is around 38% for journalists with five years of experience and more than 86% for journalists with 45 years of experience. Conversely, the two lines that start at the bottom left shows that close to 10% of the less experienced but hardly anyone of the more experienced journalist are likely to use audience metrics daily or constantly.

Figure 3. *The predicted probabilities of frequency of use by years of experience in journalism*



Finally, results demonstrate that there was no significant association related to gender and usage and exposure patterns, while the difference between public service and commercial media was of borderline statistical significance ($\beta = -.258, p < .10$). So, usage and exposure patterns do not seem to differ significantly between commercial and public service media and across gender.

Attitude towards audience metrics

In terms of individual attitude items, respondents agreed the most with 'using web analytics makes it easier for me to get to know my audience' ($M = 3.05, SD = 1.03$). This was followed by 'using web analytics makes my journalistic work better' ($M = 2.51, SD = .95$) and 'using web analytics reduces the time I spend on irrelevant topics' ($M = 2.42, SD = .97$). However, the low means suggest that the ordinary journalists were generally not really convinced about the usefulness of audience metrics in their journalistic news work.

Next, RQ2 asked about the impact of use, exposure and individual characteristics on journalists' attitude towards audience analytics. We conducted a multiple linear regression to assess the impact of several individual and contextual factors on the journalists' attitude. The regression model was significant, $F(9, 146) = 3.393, p < .001$, accounting for 12.2 percent

of the total variance in journalists' attitude towards audience analytics. Our results show that use and exposure to audience metrics positively predicted the journalist' attitude towards them. Journalists who consult audience analytics themselves on a weekly ($\beta = .196, p < .05$) or on a daily/constant basis ($\beta = .339, p < .001$) have a more positive attitude towards them than journalists who never use them. This demonstrates that the more journalists use audience analytics themselves, the more likely they are to hold positive attitudes about them. However, daily/constant exposure to analytics was a negative predictor for the respondents' attitude towards audience analytics ($\beta = -.197, p < .001$). Thus, journalists who are informed about audience analytics by their editors on at least a daily basis, tend to hold more negative attitudes towards audience analytics compared to journalists who are never informed about them. Finally, regression results showed no significant differences in attitudes towards metrics across experience, gender or the news organization type journalists work for (see Table 2).

Table 2. Linear regression with attitude towards audience metrics as independent variable

	Coef	Model I SE	β
Frequency of exposure			
Monthly	-.834+	.461	-.173
Weekly	-.605	.622	-.087
Daily/constantly	-1.052*	.521	-.197
Frequency of use			
Monthly	.489	.429	.094
Weekly	1.702*	.690	.196
Daily/constantly	2.664***	.660	.339
News organization type	-.423	.414	-.087
Experience	-.022	.020	-.094
Gender	-.455	.567	-.083
Constant	8.644***	.568	
N	231		
Adjusted R	.184		

Note. + = $p < .1$, * = $p < .05$, ** = $p < .01$, *** = $p < .00$

Discussion and conclusion

This study asked whether contemporary journalists' news work is driven by metrics. Based on a survey of 231 Belgian political news journalists, we can conclude that findings are mixed and nuanced. Individual journalists are familiar with the use of audience metrics in news work, since three quarters are informed by an editor about the metrics about traffic to the news reports of their medium on a regular basis. However, information about metrics does not equal active usage, with six out of ten respondents say they never consult metrics or analytics themselves. This latter finding is important, as it indicates that the use of analytics is actually more limited than many studies over the past decade have assumed. Although newsrooms have welcomed

analytics with great enthusiasm, Belgian political journalists do not seem to have assimilated yet. However, journalists who actively consult metrics themselves tend to be more positive about them. Contrariwise, mere passive exposure to metrics seems to make journalists more skeptical and negative about their usefulness or capacity to make journalism better. This correlation between exposure and attitudes seems to suggest a division among journalists and their relationship with metrics. While a large majority of journalists are informed about the popularity of some writings, only a small part really embraces metrics and also consult them personally. They consider them useful and believe that metrics can have a positive influence on their work. In contrast, another group of journalists is at least sporadically informed about how much traffic the news reports of their news outlets are able to generate, but they do not look into these numbers themselves, and they generally have more negative views on the role of these metrics. They see these metrics as a threat for their journalistic autonomy, or traditional news values that determined the way they cover the world of politics. This study therefore calls attention to the tensions that exist between managerial priorities and the attitudes that regular news reporters have towards news work. As editorial management positions often appear to have different ideas about the usefulness of audience metrics and how they should be implemented (see Bélair-Gagnon et al., 2020; Lamot & Paulussen, 2020), they are thus likely to run into some form of employee resistance when they attempt to discipline and incentivize their journalists by exposing them too much to audience metrics (Tandoc & Ferrucci, 2017). Our findings could therefore be seen as a signal that journalists have at least partially managed to sustain their editorial autonomy against technological and economic influences. Furthermore, our analysis lends further support to the conclusions of earlier research that usage and exposure vary across organizational context and by the journalists' position within the editorial hierarchy (Bélair-Gagnon et al., 2020; Bunce, 2017; Hanusch, 2017). Even though journalists are all socialized in the values of the same journalistic field, there appear to be important variations between individuals. We showed that less experienced journalists are more likely to be part of the group of 'positive users'. What we can actually deduce from this finding is that it is not so much 'seniority' as exposure and use that result in more positive attitudes. Just as Zamith et al. (2020) found that the more positive attitude of managers (compared to non-managers) is related to the fact that they have received more training in analytics, we find in this study that the use of the technology itself has a socializing effect. Using analytics, journalists seem to familiarize with audience metrics and normalize them in their daily routines.

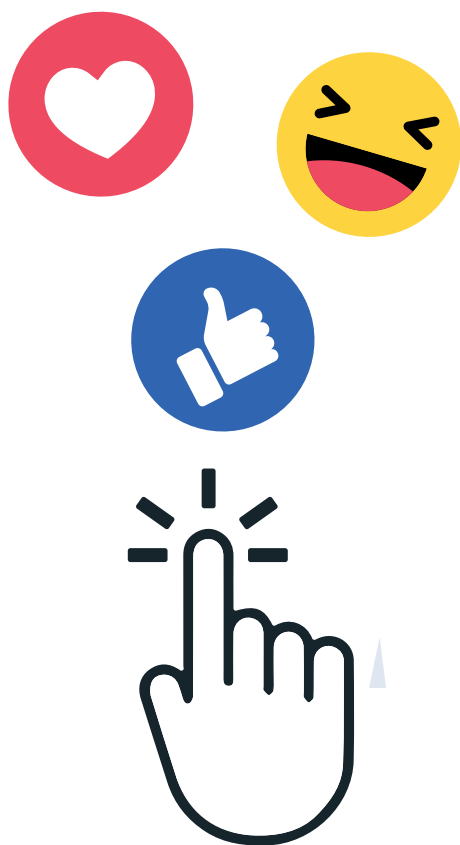
Overall, novices in the profession tend to have a stronger affinity to audience metrics, compared to older generations of journalists that started working at a time when print mentality still prevailed and when those tools were not yet ubiquitous. As online newsrooms have become staffed by increasingly younger reporters, which are socialized within a digital-first culture and are now expected to possess skills associated with new technology, it is likely to assume the use of audience metrics will become even more normalized in the years to come (Tandoc, 2019). Another explanation could be that more experienced journalists enjoy greater professional autonomy, which makes it often easier to deviate from editorial policy (Breed, 1955; Reich & Hanitzsch, 2013). Bunce (2017) argued that traditional and more experienced journalists do not always comply with new managerial priorities as they do not know how to follow them or because they simply did not want to. This could explain why we found that more experienced journalists will tend to resist the introduction of these web metrics and remain dubious of their potential.

Interestingly, journalists working for commercial media do not use metrics more intensely than journalists from public service media. This can be explained by the fact that also public service media are under pressure to demonstrate their social relevance in the contemporary media environment, a factor which is impinging on public broadcasters in other countries as well (Hanusch, 2017). In addition, the Belgian public service broadcaster has a much larger online editorial team than most commercial media, in which a lot is invested, so that may also explain why the pressure is higher on them to reach a wide audience with their (broadcast and online) news and information channels. Furthermore, the public service broadcaster has recently employed a “Head of Audience Engagement”, who is devoted to communicating analytical information to the journalists on the newsroom floor and helping them to make sense of audience data, whereas many commercial news outlets still lag behind on this front (Ferrer-Conill & Tandoc, 2018). According to Zamith et al. (2020) regular journalists mostly learn norms around analytics and metrics through observation and top-down communication of such positions.

With this study, we hope to contribute to the current knowledge and understanding on the normalization of the use of analytics in journalism. Our study emphasizes the role of technology on the socialization of news-workers. We found that the degree to which journalists are exposed to and familiarized with analytics in their daily work has a positive effect on their perceptions and attitudes towards audience metrics. Although this may sound obvious and intuitive, it reminds us of the normative aspects of implementing new technologies in the newsroom. Whereas Belair-Gagnon et al. (2020) show that journalists’ role orientations influence their attitudes towards metrics, our study suggests that the relationship also goes in the other direction, as the use of metrics can also affect journalists’ attitudes and role orientations.

Of course, as with any study, we have to be aware of the limitations of our research. A first limitation is that our findings are based on a survey of Belgian political reporters and editors, so we have to be careful in generalizing our conclusions. Overall, we believe that political journalism is a context to find relatively modest effects of metrics on journalists, as there is little discussion that political issues are socially relevant and need to be reported. Recent evidence suggests that audience metrics play a bigger role for the selection and placement of soft news rather than hard news (Lamot & Van Aelst, 2020; Nelson & Tandoc, 2018), and therefore the impact of metrics is probably larger for journalists that work on soft news (entertainment, lifestyle, ...) stories that have a lower intrinsic societal value and are probably more dependent on audience taste. However, we expect that the general division between passive and active users of metrics also runs to other news beats. Of course, further research is needed to broaden the scope to journalists working in other news beats and other countries, and to deepen our understanding of how individual journalists negotiate and resist the beneficial and malicious uses and effects of metrics in their news work. A second limitation is that we did not account for print, broadcast and online organizational differences. Research has shown how the primary media vehicle has an impact on the use of analytics across organizations (Hanusch, 2017; Zamith et al., 2020). Therefore, it would also be plausible to infer that analytics may differ in terms of exposure and frequency with journalists working exclusively for the online counterpart of their news medium using them more extensively. Since this is increasingly difficult to disentangle for journalists working in

converged newsrooms, journalists did not have to disclose this information in the survey. Finally, as our survey questions were only part of a larger questionnaire sent to political journalists, the survey remains largely descriptive and consequently, the explanatory power of our regression model is also rather low. Although we believe this is not a problem for an exploratory study such as this, we encourage future research to delve further into other contextual and individual factors influencing journalists' usage and perceptions of audience metrics. At this stage, we conclude that the impact of audience metrics on individual political news journalists should not be overstated. At least in political journalism, many reporters (and editors) seem to keep metrics at arm's length. However, those who do embrace audience metrics by consulting them more actively, tend to be more positive about the role and impact of audience metrics in news work, which suggests that analytics are steadily becoming normalized in contemporary news work.





CHAPTER 4

Beaten by Chartbeat?

An experimental study on the effect of real-time audience analytics on journalists' news judgment

Reference: Lamot, K., & Van Aelst, P. (2020). Beaten by Chartbeat? An Experimental Study on the Effect of Real-Time Audience Analytics on Journalists' News Judgment. *Journalism Studies*, 21(4), 477-493. doi:10.1080/1461670x.2019.1686411

Abstract

Traditionally, journalists had the autonomy to decide what is worthy enough to be considered news. However, the growing centrality of audience analytics in the news selection process warrants greater scrutiny in how these tools are likely to influence journalistic perceptions on which news stories the public is most interested in. Taking a quantitative approach, we conducted a survey-embedded experiment among political journalists in Belgium ($n = 136$). The journalists were asked to rank a set of five headlines from most to least prominent on a fictional homepage of a news outlet. Stories with positive analytics were genuinely ranked higher compared with stories in the control condition, whereas stories with negative analytics were ranked lower. Especially for soft news items, it seems that audience analytics can make a difference. However, for hard news, the effect was not significant. Furthermore, the effect of audience analytics remains limited compared with the impact of a traditional news value such as negativity. In this way, this study confirms, but also nuances, the impact of audience metrics.

Introduction

Every day, journalists and editors have to choose which events deserve their attention and which will be ignored, which will be placed upfront and which will be given a more modest spot in the news. In the pre-internet era, this whole process of news selection and news placement was clearly guided by journalists as the prime gatekeepers. Using news values and their professional gut feeling, journalists determined what the public would be interested in. However, advances in audience measurements have given journalists greater and more precise knowledge of audience preferences than before, which have made the audience a more influential player in the news selection and production process. Using specialized tools such as Chartbeat or Google Analytics, journalists and editors are now able to measure in real-time how the audience responds to and engages with news content through clicks, likes, and shares (Tandoc, 2014). As a consequence, online readers are increasingly influencing what stories are featured prominently on the homepages of news websites (Schaudt & Carpenter, 2009). The growing importance of audience metrics on news selection has raised the concern that this will lead to a news agenda dominated by “a culture of click” (Anderson, 2011). *This leads to the central question of this paper: are audience metrics replacing or rather validating the role of traditional journalistic perceptions of newsworthiness?*

Although the research on the recent intrusion of audience metrics in the world of journalism is growing rapidly, several shortcomings remain. First, most studies focus on editors and webmasters that decide on the placement of (online) news stories, while devoting less attention to the effects on ordinary journalists (but see Hanusch, 2017). Second, most research that studies the effect of analytics on journalistic practices is based on in-depth interviews or ethnographic research (Cherubini & Nielsen, 2016; Ferrer-Conill & Tandoc, 2018; Tandoc, 2014; Usher, 2013). Although this research provided valuable insights on how journalists deal with these new data, it does not measure to what extent they are influenced by audience metrics in their news decision process. To study the effect of metrics on news judgment, a more quantitative and direct approach is needed (see Tandoc, 2015; Vu, 2013; Welbers et al., 2016). This study tries to address both lacunas by using an experimental approach to study the influence of real-time analytics on the placement of news stories by political journalists. We fielded a survey-embedded experiment among political journalists in Flanders, the Dutch-speaking part of Belgium ($n = 136$). Journalists in the experimental condition judged the newsworthiness of five fictional headlines, within which we carefully manipulated three characteristics: the type of news (hard vs. soft news), the tone of the news (positive vs. negative) and audience analytics (increasing vs. decreasing traffic). In this way, we do not only study the main effect of audience metrics but also how this information interacts with the type and tone of the news headline. Journalists in the control condition also ranked the fictional headlines but were given no additional information about audience data. This experiment allows us to consider *whether* and *to what extent* journalists are willing to subordinate their judgment of newsworthiness to audience analytics. In other words, can a tool like Chartbeat beat traditional journalistic perceptions when it comes to determining which stories deserve a prominent place in the news?

The remainder of the paper is structured as follows. The first section introduces previous research regarding gatekeeping and newsworthiness and the influence of web analytics on journalistic news selection. Next, we discuss the methodological choices undertaken and the results of the experiment. Our study confirms the impact of audience analytics but also indicates their relative limited and contingent influence. Finally, the paper ends with a discussion of these nuanced findings and suggests ways for future research.

Literature review

Audience gatekeeping

Journalists have long considered the task of news gathering and selection as their exclusive occupational turf (Shoemaker & Vos, 2009). This gatekeeper role, first applied to the newsroom by White (1950), describes the selection process that determines which of potentially newsworthy events and information are allowed to pass through “the gates” of the newsroom (Bruns, 2005). The gatekeeping theory, in essence, places journalists and editors at the core of the news production process, arguing that the news is shaped by the news judgment of professionals. This one-way communicative structure of mass-mediated journalism has led to audience preferences being largely ignored (Coddington, 2018). Although media workers have turned to audience research to give them some notion about the general interests of their readers, it did not come often enough to help them adjust their daily editorial decision-making (Shoemaker & Reese, 1996). Consequently, news in the pre-internet era was generally a top-down product, with stories produced independently of news audiences (T. Schultz, 1999). According to Gans (1979, p. 230), most editors held the impression that “what interested them would interest the audience” as well. Instead of seeking out specific information about the wants or tastes of the audience they addressed, journalists tended to prioritize commonly shared news values (Boczkowski & Peer, 2011; Singer, 2011). These professional news values contained some notion of what the public is interested in but remained rather implicit or vague about what the public actually wanted, leaving plenty of room for journalistic interpretation and autonomy (MacGregor, 2007). However, the unidirectional gatekeeping power of journalists has weakened in the past decades, as the rise of new, digital media technologies has made the audience much more obtrusive to journalists. Via new, “unmediated” communication channels such as websites, blogs, and social media, a broad range of ordinary people is now able to interact with news content in unprecedented ways. For example, readers can write comments that appear below a news item, repost an article’s link to their social media profiles or simply “like” the news content. Besides greater interactivity and input of the audiences, digital technologies have also made it possible for news organizations to record what people choose to read or interact with online (MacGregor 2007). The aggregated outcomes of these interactions can be seen as a news item popularity and an assessment of a news item’s value according to the audience (Shoemaker et al. 2011). Popularity cues, which, according to Haim, Kümpel, and Brosius (2018), represent “metric information about previous users’ behavior or their evaluation of entities,” might indicate the relevance users attribute to news stories (Porten-Chée et al. 2018). Hence, journalists’ perceptions of the newsworthiness of an event nowadays interact with the readers’ perceptions of relevance. This may alter the logic of news production from

being driven by internal standards of newsworthiness (Galtung and Ruge 1965; Gieber 1999), to being steered more by audience feedback and preferences (Shoemaker and Vos 2009; Strömbäck and Karlsson 2011). Harcup and O'Neill (2017) even suggested that popularity cues have become a news value in their own right (see also Hermida et al. 2012; Paulussen, Harder, and Johnson 2017; Philips 2012). They argue that stories “thought likely to generate sharing and comments via Facebook, Twitter, and other forms of social media” have become a more important consideration in the journalistic news selection process (p. 13). Through either their intended (likes and shares) or unintended (clicks) patterns of news consumption, audiences, hence, can have an impact on gatekeeping practices, albeit indirectly (Strömbäck and Karlsson 2011). According to Shoemaker and Vos (2009) “the most significant impact of the audience channel is that it requires the revision of the original gatekeeping model” that gave primacy to journalists (p. 129). Shoemaker et al. (2011) proposed revision accounts for emerging practices of “audience gatekeeping” as the online audience is now able to influence subsequent decisions by journalists through their news consumption experiences.

Web metrics

With technological developments like Chartbeat or Google Analytics, journalists can now instantly and more accurately assess the popularity of particular stories online. Forced to cope with declining print circulation and contiguous advertising revenues, increased exposure to audience feedback appears to encourage journalists to become more consumer-oriented and produce news that people want to know while journalism’s role has traditionally been understood as providing the people with the news that they need to know (Hanusch & Tandoc, 2017; Tandoc & Thomas, 2015). Tandoc and Vos (2016) spoke of “marketing the news” as journalists now seem to produce news aimed at the widest possible audience, allowing audience analytics and thus, market logic to influence news production, rather than their journalistic judgment. This initial skepticism among scholars and practitioners about the impact of audience metrics on journalism seems to have shifted towards a more nuanced and sometimes, even optimistic view (see for example Cherubini and Nielsen 2016). The effects of audience metrics appear to be more limited than originally anticipated, with recent scholarship observing mixed attitudes, behaviors, and impacts on content (Petre 2015; Zamith 2016). According to Zamith (2018), these nuances have led to new discourses that emphasize how audience metrics can be used as complementary tools to journalistic values. Hindman (2017) for example, argued that “journalists now have a positive obligation to use these new audience measurement tools” in order for them to understand what audiences want and how they interact with content.

The growing acceptance of audience metrics may thus, lead towards journalists slowly normalizing the technology into their existing routines and practices of news production (Lasorsa, Lewis, and Holton 2011; Nelson and Tandoc 2018). However, we know relatively little about how much impact these systems are having on the journalistic behavior of individual reporters and the content they produce, as the majority of studies focused on senior editorial ranks (Hanusch 2017; Zamith 2018). Especially, editors tasked with the daily management of the homepage and treatment of stories seem to have embraced web analytics in their news work, which has resulted in increased power for audiences in the gatekeeping process.

A number of studies have focused on the short-term impacts of increasing and decreasing traffic on story placement on the homepage. A. M. Lee et al. (2012) found that audience clicks affect subsequent story placement on the homepage of a news organization and that the effect of these clicks on story placement is stronger than the inverse. Bright and Nicholls (2014) showed that most-read articles were less often removed from the homepage and that this effect was broadly similar for both soft and hard news and surprisingly greater for “quality” publications than for their “popular” counterparts. Tandoc (2014) spoke in this regard of “de-selection,” a new gatekeeping practice, which implies that news media decide to take stories out on the website to replace them by a new story based on audience metrics instead of relevance. Based on the growing importance and acceptance of audience metrics in the newsroom, we also expect that journalists’ judgment of the “newsworthiness” of news stories is increasingly being influenced by the analytics that show and predict the “noteworthiness” of these stories (A. M. Lee & Chyi, 2013). This leads to our first hypothesis:

H1: Journalists evaluate headlines with positive analytics as more newsworthy than headlines with negative analytics.

Judgments about newsworthiness and normative assumptions about the quality of journalistic content often go along with the broad classification of news in terms of “hard news” and “soft news.” In general, soft news is considered as more entertaining or personally useful, and hard news as being socially relevant and useful to understand public affairs (Reinemann et al. 2011). The distinction between hard and soft news is also closely related to the concept of newsworthiness. The news values associated with “hard news” tend to be more dominant and less open to contestation in comparison with those of “soft news” items (I. Schultz, 2007, p. 196). Therefore, hard news is implicitly regarded as carrying more newsworthiness. However, particularly in the online context, there seems to be a divergence, as the most popular stories are usually not what journalists consider to be the most important (Boczkowski, Mitchelstein, and Walter 2010). While journalists tend to prioritize public affairs or hard news stories, what online audiences click upon more often consists of soft news stories. A story attracting lots of clicks might imply some form of public endorsement by the reader (Thorson 2008). Even if these clicks do not perfectly correspond with what kinds of news content people really value, they might influence what stories journalists think the public is interested in (Welbers et al. 2016). Some authors argue that the emergence of real-time audience analytics might, therefore, lead to a “softening of news,” whereby popular and often softer content is favored over hard news (Bright 2016; Schaudt and Carpenter 2009). Nelson and Tandoc (2018) for example, found evidence that editors won’t decide which hard news topics to cover based on audience metrics, while they acknowledge doing exactly that when it came to soft news. That leads to our second hypothesis:

H2: The effect of analytics on the placement of a news headline is larger for soft news than for hard news.

Even though “good news,” as well as “bad news,” are both considered newsworthy (Harcup and O’Neill 2001, 2017), journalists still appear to be particularly keen on negative news stories. A large body of empirical research has found evidence for the predominance of negativity in mass media reporting (Gieber 1955; Lengauer, Esser, and Berganza 2011). Some scholars have tied the media’s negativity bias to journalistic professionalism and the

watchdog role of the media (Leung & Lee, 2014). Negative developments are more likely to become news because the media are expected to draw public attention to problems and situations that need solutions, while there is less need to highlight positive and routine occurrences (Shoemaker 2006). Although Shoemaker (1996) suggested that people are “hardwired” to consume negative news, positive news tends to attract clicks as well. Yet, the question remains whether increasing popularity of a positive news item can challenge journalists’ internalized preference for negativity. Since market considerations could drive the news media to produce more positive news stories, we expect that audience metrics stimulate journalists to correct their preference for negative news:

H3: The effect of analytics on the placement of a news headline is larger for positive news than for negative news.

While most research on web analytics has drawn conclusions about newsrooms and media organizations in general, we incorporated journalists on an individual level to scrutinize whether these tools have altered individual selection routines and individual conceptions of newsworthiness. Since there is a strong tradition of socialization in the newsroom, we expect that the overall differences between journalists will be limited. For instance, an experimental study of the effect of political messages on political journalists indicated that the perceived importance of news values (in political messages) was hardly affected by journalistic characteristics (Helfer and Van Aelst 2015). However, in the case of audience analytics, a fairly recent innovation, we might expect that journalistic experience plays a role. While we assume that senior journalists have a more fine-tuned sense of news judgment than newer journalists (I. Schultz, 2007), we expect them to be more hesitant towards embedding quantified knowledge of the audience into their conceptions of newsworthiness, which leads to our fourth hypothesis:

H4: The effect of analytics on the placement of a news headline becomes weaker the more experience journalists have.

Research design

In order to disentangle if and to what extent audience analytics influence journalists’ judgment, we conducted a survey-embedded experiment. Since most studies on the effects of audience analytics consist of case-studies and in-depth interviews, A. M. Lee et al. (2012) argued that the challenge for future research is “to move beyond self-reports of journalistic perception and behavior, and instead use quantitative methods that reveal a more precise rendering of the relationship between audience behaviors and editorial decisions” (p. 521). Hence, an experiment has great potential to discern the causal mechanisms behind the algorithmic selection of news.

Participants

The experiment is part of a larger survey that was conducted online, and targeted political journalists working for national news outlets in Flanders, the Dutch-speaking part of Belgium, containing 60% of the population. To identify these journalists, we consulted a list that was provided by the Flemish Association of Journalists and supplemented with contact details

found on the news outlets' websites throughout the years. The list contains journalists from all types of news outlets, including all the newspapers, the two main television broadcasters, and several news magazines. We defined political journalists broadly and included all journalists that are in contact with political actors at least occasionally. Data collection took place between June and September 2018. Journalists were first contacted via an invitation e-mail that contained a link to the Qualtrics survey. If journalists did not yet participate after the initial round of invitations, we used personalized reminder e-mails and phone calls. In total, 300 journalists were contacted by the research team: 148 journalists completed the survey (49%), 23 journalists accessed the survey but did not finish it (8%), and four journalists refused to take part (1%). The remaining journalists could not be reached or were, in some cases, no longer active as a journalist (42%). Of the 148 journalists that finished the entire survey, 92% (n = 136) eventually completed the experimental part.

The majority of the journalists that participated in the experiment were male (79%); female journalists comprised 21%. The average political journalist in our sample is 43 years of age (standard deviation [SD] = 11.65) and has 18 years of experience in journalism (SD = 10.34). The journalists that participated worked as regular reporters and were diverse in terms of the media they work for, with 32% working for the public broadcaster, 8% for the commercial broadcaster, 14% for popular newspapers, 24% for quality newspapers, 6% working for the Belgian press agency, 8% for regional media, 3% for alternative media, and 5% for other media. Since we aim to assess the influence of metrics on story placement, we also measured the journalists' exposure to audience data. We specifically asked journalists how often their superiors confronted them with audience data and whether they proactively checked audience data. About three out of four of the journalists in our sample (74%) have at least occasionally access to audience data. We will focus on the role of journalistic experience and use gender, age, and self-reported personal exposure to audience data as control variables.

Procedure

In the experiment, journalists were presented with the following hypothetical situation:

"Suppose you are appointed as responsible for the website of your medium. When you start your shift in the afternoon, the five news items below are on the homepage. (The user data (via Chartbeat) show that certain stories are clicked upon more than others.) How would you compose the homepage yourself? Make a ranking of the titles where [1] becomes the most prominent article on the site and [5] the least prominent. Click and drag the titles from the left to the box on the right and put them in the correct order for their prominence."

As our main goal is to consider whether audience analytics influence journalistic judgment, we manipulated one part of our hypothetical scenario (cf. the underlined part). Participants in the experimental treatment received information about increasing or declining popularity of the headlines via a replica of the homepage plug-in of Chartbeat, which is one of the most commonly used audience analytical tools in Belgian newsrooms (see Lamot and Paulussen 2019). Participants in the control condition were given no additional information about audience analytics.

Below the introductory text, five headlines were presented to the journalists in randomized order. For one of these headlines, we carefully manipulated three characteristics: (1) the type of news (hard vs. soft news), (2) the tone of the news (positive vs. negative), and (3) audience analytics (increasing vs. decreasing vs. control condition), as we expect these independent variables to influence story placement. This experiment thus consists of a $2 \times 2 \times 3$ between-subjects design. The manipulated hard news headline dealt with unemployment (young people finding a job easily or not) and the manipulated soft news item was about a popular TV show (announcing a new season of it or not) and were either confronted with increasing or declining Chartbeat figures. Participants in the experimental treatment were then randomly assigned to one of these eight conditions. Since measuring the prominence of a news item in the news media can be seen as a reliable and valid proxy of a news item's newsworthiness (Shoemaker 2006), we took the ranking of the manipulated headline to be our dependent variable. With the exception of the manipulated headline, we persistently kept the independent variables for the four remaining headlines constant. For reasons of comparability and to ensure that our manipulated headline was viewed as equally newsworthy as the four constant headlines, half of the continuous headlines were positive news items and half of them were negative news items; three out of four were hard news items, and one of them was a soft news item; each of these constant headlines was accompanied by constant analytical data (increasing, decreasing, or stagnating). A complete overview of all headlines and stimuli can be found in the Appendix B: Experimental design.

Results

To test our hypotheses and research question, an Analysis of Variance (ANOVA) was conducted. The central independent variable (Chartbeat) aggregates the effect of analytics across all experimental conditions. Next, two dummy variables were constructed for the type of news (soft vs. hard) and tone of news (positive vs. negative). By looking at the interaction between analytics and the two other independent variables, type and tone of news, we can assess whether they yield significant differences in journalists' perceived newsworthiness of the headline. The main results of the experiment are shown in Table 4.1.

Our first hypothesis suggests that journalists would evaluate headlines with positive analytics as more newsworthy; whereas, they would rank headlines with negative analytics as less newsworthy. In order to find support for H1, the mean ranking for the headline should yield significant differences between the treatment condition and the control condition. Journalists generally ranked stories with positive analytics ($M=3.00$, $SD=1.53$) higher than stories in the control condition where they had no information about audience analytics ($M = 2.67$, $SD = 1.41$). We also found that journalists ranked stories with negative analytics lower than stories in the control condition ($M = 2.46$, $SD = 1.46$). Since the differences between the experimental group and the control group are significant, ($F(2) = 4.25$, $p < .05$, $\eta^2 = .063$), the first hypothesis is accepted.

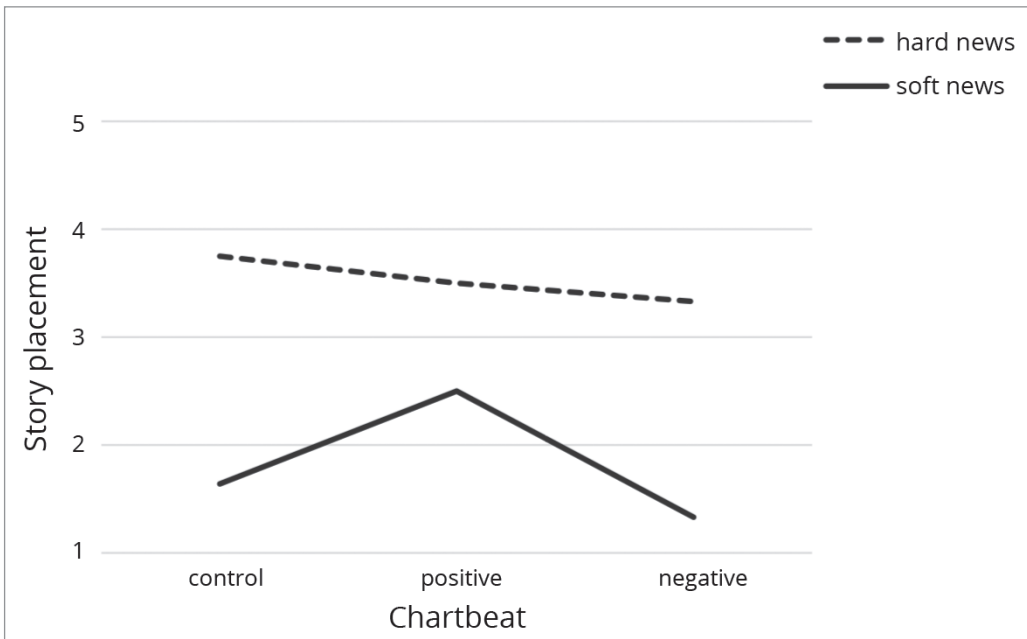
Table 1: Analysis of variance with story placement as dependent variable

Variable	Model I					Model II					Model III				
	Sum of Squares	df	Mean Square	F	η^2	Sum of Squares	df	Mean Square	F	η^2	Sum of Squares	df	Mean Square	F	η^2
Chartbeat	12.905	2	6.452	4.751*	.064	11.912	2	5.956	4.253*	.063	15.701	2	7.851	5.36**	.087
Type (negative)	13.796	1	13.796	9.518**	.068	12.703	1	12.703	9.071***	.067	15.205	1	15.205	10.903**	.085
Type (hard news)	89.960	1	89.960	62.061***	.321	87.456	1	87.456	62.455***	.330	74.567	1	74.567	53.471***	.312
Chartbeat*tone						3.000	2	1.500	1.071	.017	2.772	2	1.386	0.994	.017
Chartbeat*type						8.730	2	4.365	3.117*	.047	8.530	2	4.175	2.994#	.048
Chartbeat*experience											3.53	3	1.177	0.844	.021
Chartbeat*exposure											2.053	3	0.684	0.491	.012

Note. N = 136
*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; # $p < .10$
Adjusted R Squared Model I = 0.346
Adjusted R Squared Model II = 0.369
Adjusted R squared Model III = 0.368

Secondly, corresponding to our theoretical expectations, there is a significant and strong main effect of the type of news, ($F(1) = 62.45$, $p < .001$, $\eta^2 = .33$). Not surprisingly, hard news stories are considered as more newsworthy than the soft news story. However, of principal interest to our study is the interaction between analytics and the type of news. It stood out that analytics have a stronger influence on the ranking of soft news items than on the ranking of hard news items. Soft news items with positive analytics are ranked considerably higher on the website ($M = 2.52$, $SD = 1.55$) compared with the control condition ($M = 1.64$, $SD = 0.63$), while soft news items with negative analytics are ranked considerably lower ($M = 1.38$, $SD = 0.71$). At the same time, there is barely any impact of analytics on the ranking of hard news items. This is reflected in Figure 4.1. The line for hard news is flattening, while the graph is substantially steeper for soft news. As the interaction effect between analytics and type of news is significant ($F(2) = 3.12$, $p < .05$, $\eta^2 = .047$), our data thus provide support for our second hypothesis (H2) that audience analytics have a greater effect on the story placement of soft news headlines compared with hard news headlines

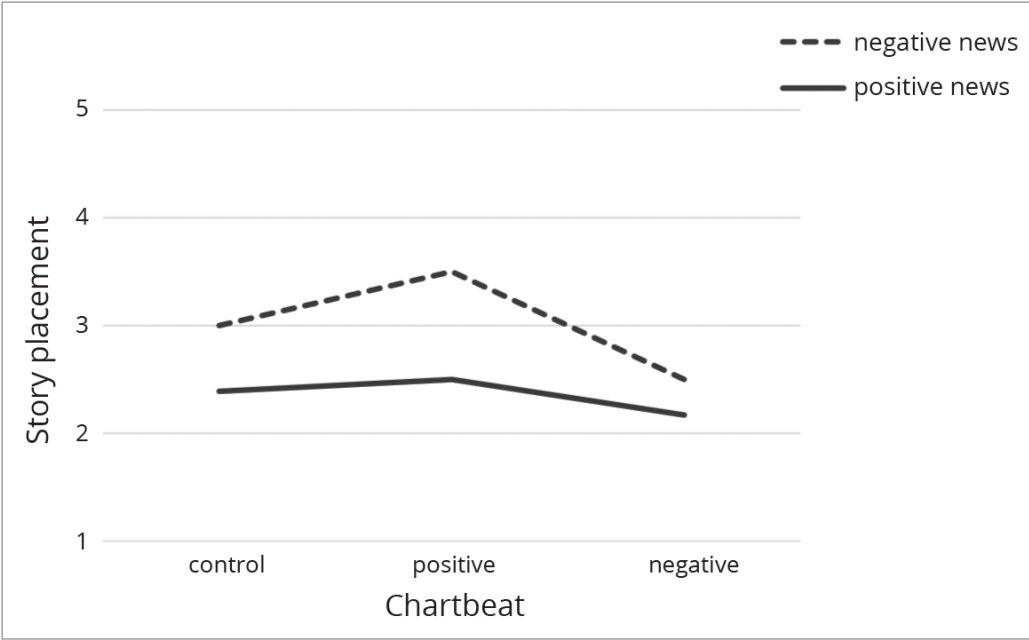
Figure 1. Interaction effect of Chartbeat analytics and type of news on story placement (1= least prominent; 5= most prominent)



Third, the tone of news again proved significant in the expected direction: journalists consider negative news headlines as more newsworthy than positive headlines. However, we did not find the expected interaction effect between analytics and tone. As visualized Figure 4.2 in which we plotted the interaction effect, negative news is genuinely ranked higher than positive news (main effect), but the graph representing negative news is reasonably steeper compared with the graph representing positive news. Negative news headlines with positive analytics are ranked considerably higher ($M = 3.48$, $SD = 1.50$) than items in the control condition ($M = 3.0$, $SD = 1.30$), while negative items with negative analytics are ranked

considerably lower ($M=2.50$, $SD=1.50$). The effect on positive news items is less pronounced. Positive news headlines with positive analytics ($M= 2.46$, $SD = 1.39$) are ranked higher than the control condition ($M = 2.31$, $SD = 1.49$), while positive news headlines with negative analytics are ranked lower ($M = 2.42$, $SD = 1.33$). It thus seems that in contrast with our expectations, analytics have a greater effect on the story placement of negative news headlines instead of positive news headlines, although this interaction is not significant ($F(2) = 1.07$, $p = .346$, $\eta^2 = .017$). Our third hypothesis (H3) should, therefore, be rejected.

Figure 2. Interaction effect of Chartbeat analytics and tone of news on story placement (1= least prominent; 5= most prominent)



We also constructed two sub-sampled ANOVAs, splitting the sample into hard news (unemployment) and soft news (TV show) group to look at the influence of negativity in closer detail. The effect of negativity is significant for the soft news headline, while it is borderline significant for the hard news headline ($p = .065$). So the negative variant for both types of news is ranked significantly higher than the positive variant. Yet, similar to the full model, we did not find any interaction effects between audience metrics and negativity in our sub-sampled models.

In addition, we looked at the individual level and the journalistic experience, in particular, which might have a potential influence on journalists' judgments. However, journalists do not differ among each other when it comes to determining news prominence. They ranked the headlines all in the same way regardless of their journalistic experience (H4). Also, the interaction effect with metric information proved non-significant ($p=.473$). This finding is in line with previous studies and seems to suggest that socialization among journalists is quite

strong. In addition, we controlled the individual journalists' exposure to analytics since digital editors are sometimes the sole proprietors of these data in the newsroom. As the interaction effect with metric information yielded no significant results, it seems that even journalists that do not routinely access analytics themselves are not insusceptible to the influence of audience metrics. Finally, we also controlled the differences for age and gender, but these also turned out to be non-significant (not in the table).

Discussion and conclusion

This study presented the results of a survey-embedded experiment among political journalists in Belgium, designed to examine the effect of audience analytics on news judgment and story placement. Nowadays, newsrooms are extensively relying on audience analytics in their daily news work. Journalism scholars, however, have warned against the use of audience analytics for ends that are purely commercial (Hanusch and Tandoc 2017; Nguyen 2013; Tandoc and Thomas 2014). These authors argued that when journalists are merely starting to follow the dictates of the traffic, it would inevitably lead to a dumbing down of the news. This study scrutinizes the role of audience analytics in the news production process and how this technology can shape an item's "newsworthiness" in the eyes of journalists.

Our results confirm the expectation that audience analytics affect journalists' placement of news headlines. News headlines accompanied by audience analytical data generated a substantially different position compared with news headlines where journalists had no access to analytical information. Journalists ranked stories with increasing traffic signals higher, whereas they ranked stories with decreasing traffic signals lower. Audience analytics seem to influence the norm of what constitutes newsworthiness. News content today requires not only to be newsworthy from the journalists' perspective but also needs to be deemed noteworthy by the news reader (Lee and Chyi 2014). Since we studied journalists at an individual level, the results suggest that the pervasiveness of analytics goes beyond the (online) news editors that normally decide on the prominence of news stories. The effect works across the board, as we find no differences between journalists with varying levels of journalistic experience.

At the same time, however, our results strongly nuance the effect of real-time audience data. First, because the two other variables incorporated in our study, news type and news tone, proved to be more important in explaining news prominence than analytical data (see effect sizes in Table 4.1). Put differently, the fact that a news story is negative or deals with hard news makes it more newsworthy than news that simply receives numerous feedbacks from the public. Second, it seems that audience data mainly work in the case of soft news and much less for hard news headlines. This implies that journalists are mainly inclined to use this information in terms of entertaining or personal stories but that it applies less for the bulk of their work on societal and political stories. As has been argued in the literature, the value of hard news is considered more self-evident and undisputed, while the newsworthiness of soft news is often debatable and disagreed upon (Schultz 2007; Shoemaker 2006). While it seems that journalists are following their own "nose for news" covering hard news topics regardless of their observed audience reception, they are willing to let analytics tell them otherwise for

soft news items (see also Nelson and Tandoc 2018). A possible explanation could be that audience analytics offer intrinsic information about the audience against which journalists can compare their news judgment as they seek validation of their choices for soft news. Audience analytics could, in that way, serve as an extra heuristic for journalists to determine whether soft news is worthy enough of becoming news. Further research might focus on the effect of the presence of soft news elements in hard news stories on audience metrics. For instance, does a more personal story about the private life of a politician yield more public interest than a story about his/her policy stands? Our experimental design allows studying to what extent political journalists are encouraged to “soften” their hard news approach.

Third, our hypothesis concerning the interaction between audience analytics and tone of news was rejected. Journalists did rank positive news items with positive analytics higher, but the effect seemed more salient for negative news. The effect was, however, insignificant. A plausible explanation for the insignificance of this result could be that the negativity bias that already exists among journalists is reinforced when journalists’ judgment is confirmed by the metrics. Research dating back to the 1950s has stated that media are inclined to overplay and emphasize negative news items (Gieber 1955). Due to this ubiquitous “negativity bias” in the news, journalists could feel less ambiguity when it comes to defining the newsworthiness of negative news items. Journalists could hence rely more on “instinct” and practice rather than that they need audience analytics to inform and endorse their decisions about the merit of negative news stories.

Overall, we can confirm that real-time analytics do influence story placement. At the same time, our results indicate that audience analytics are not completely reworking or overruling traditional news practices or journalists’ gut-feeling but rather influence the professional judgments on the newsworthiness of news stories in specific circumstances. So, the idea that journalists across the board are guided by the numbers and driven by a market logic should be put in perspective. This study rather nuances the concern in the literature that increased reliance on audience analytics will accelerate tabloidization and lead to a dumbing down of news content (Hanusch and Tandoc 2017; Nguyen 2013). The effect of audience analytics is only significant for soft news, implying that audience analytics mainly provide yardsticks of newsworthiness when the value or relevance of news is less clear.

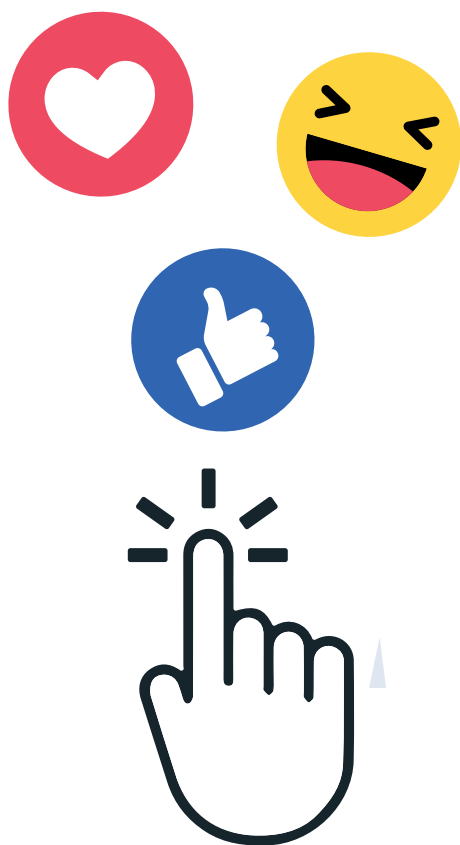
Despite the significance of our findings, the research is constrained by several limitations. First, as with any experiment, we have to be cautious about external validity. The survey experiment allowed us to study the use of audience analytics in relation to newsworthiness in a controlled experimental setting, which, according to Helfer and Van Aelst (2015), is an advantage over traditional gatekeeping studies. Nonetheless, we have to bear the artificiality of experimental research in mind as much as the fact that the reality of the news selection process is more complex. As Shoemaker and Reese (1996) have argued in their hierarchical model of news making, there is a wide array of influences on journalists’ decisions, both inside and outside the media organization. In this experiment, we measured journalistic behavior by asking journalists to behave as editors. Future research should try to go one step further and develop a design that resembles closer to the daily setting in which journalists operate. For instance, by manipulating characteristics of a political story and testing how

this would affect audience responses. Yet, our study also measured journalists' exposure to audience metrics. With three out of four journalists in our sample that has at least occasional access to audience data, we argue that we can actually make a rather strong claim concerning the external validity of our experiment. However, putting the survey in a Chartbeat direction might also have raised social desirability among the respondents.

Second, as our study only measures political journalists in Belgium, it cannot be generalized to other types of journalists or journalists working in another context. For instance, the strong position of the public broadcaster in the Flemish medialandscape, less driven by profit and audience maximization, might create a news environment that tempers commercial pressures and the role of audience metrics (Soroka et al. 2012). However, since many studies in Western democracies have found evidence for the centrality of analytics and the universality of gatekeeping practices in newsrooms across countries, we generally expect that experimental studies in other media markets will find similar results.

Third, our research design only tested the influence of audience metrics based on two clearly distinct news topics (unemployment and a TV series announcement). The question remains whether their effect would be different if we included more or different topics in the analysis. In particular, the choice for a classic and substantial topic such as unemployment might have downplayed the effect of audience data. Including a more diverse set of topics would also provide more insights on the extent to which audiences' and journalists' perceptions of newsworthiness is issue-dependent. Further research could also test whether audience metrics might matter more or less for stories about politicians and politics itself (e.g., a political scandal) or news stories that blend hard and soft news elements (e.g., politician participating in a TV show). Fourth and finally, we only tested how audience metrics related to the hard-soft and positive-negative distinction. However, these alone do not represent the range of criteria that affect news selection. Future studies include more and different news factors to see how these classical (implicit) determinants of newsworthiness interact with actual data on what news stories the public consumes. Moreover, other scholars can compare the potential divergent perceptions of individual journalists working for legacy media on one hand, and the digital editions of these newsrooms on the other.

In conclusion, this experiment seems to indicate that journalism has not hit rock bottom. Like Nelson and Tandoc (2018), we noticed that individual journalists have managed to maintain some level of autonomy. This feeling of autonomy might be lower for digital editors who are more firmly committed to using analytics in their daily routines and practices. Furthermore, if journalists have to meet certain click-goals, as is gradually being practiced in various newsrooms, then these journalists can probably also be expected to act differently than journalists in a non-metrics driven newsroom.





CHAPTER 5

What the Metrics Say

The Softening of News on the Facebook Pages of
Mainstream Media Outlets

Abstract

The contemporary high-choice media environment, characterized by information abundance, makes it increasingly difficult for media outlets to capture audience attention. This concern is particularly pressing for social media, and more specifically for Facebook. Because user engagement is a crucial input factor for the algorithm, fears have risen that journalistic content on digital news media and especially on social media is becoming softer to help adjust to news consumer's interests. A content analysis was conducted on four consecutive weeks of all news items published online by five market-leading Belgian media outlets (N=10,579) in order to analyze whether the news supply is adapted to 'what the metrics say' and, subsequently, to what extent that metric data is used to promote a 'softer' supply of news on Facebook. To measure audience engagement, we used unique metrics provided by the news organizations themselves. The results show that audience metrics support and enhance news softening on the Facebook pages of mainstream media outlets.

Keywords: Facebook, audience engagement, metrics, analytics, soft news, content analysis

Introduction

The contemporary high-choice media environment, characterized by information abundance, makes it increasingly difficult for media outlets to capture audience attention (Fletcher & Nielsen, 2017). Journalists have turned to audience analytics and metrics, systems and software that enable the measurement, collection and analysis of digital data on user behavior, in order to draw the audience back in (Zamith, 2018). Debates around the topic have been marked by the fear that market-driven journalism will lead to a ‘dumbing down’ of news in which journalism would be no longer able to fulfil its information function in society (Tandoc, 2015; Tandoc & Thomas, 2015). The idea is that when journalists start to focus on stories that are likely to be popular, “the news as a whole could start to shift towards a more populist, ‘soft news’ style of news publishing, where entertainment is prioritized over information” (Bright & Nicholls, 2014, p. 172).

This concern is particularly pressing for social media, and more specifically for Facebook. As Facebook has become an important news source for many people in recent years (Newman, Fletcher, Kalogeropoulos, & Nielsen, 2019), news outlets have felt the urge to publish on these platforms in order to find new audiences and to increase revenues (Hille & Bakker, 2013). On Facebook however, the visibility of news content, and thus the likelihood of attracting audience attention, is largely dependent on the Facebook algorithm (Bucher, 2012; DeVito, 2017). News outlets thus lose some control over the distribution of news, as the algorithmic recommender systems curate content according to user preferences and engagement (Lischka, 2018). As a consequence, this algorithmic logic of Facebook might alter news making conventions, and ultimately, shape the news supply on Facebook. Therefore, news softening might be present to a stronger degree on Facebook as a means to strike a balance between news consumer’s interest and traditional journalistic standards (Steiner, 2020).

A few content analyses have already shown how the news supply on social media is adapted to user preferences, leading to an increase in soft news at the expense of harder, quality content (Lischka, 2018; Lischka & Werning, 2017; Steiner, 2020). Although most of this research departs from the premise that there is a close connection between user engagement and news softening, none of them actually account for the demand side of news. The present study aims to contribute to this knowledge gap by looking at the interplay between news demand (what audiences actually pay attention to) and news supply (the selection of the journalists). We conducted a content analysis in order to gain insight into whether the news supply is adapted to ‘what the metrics say’ and, subsequently, to what extent that metric data is used to promote a ‘softer’ supply of news on Facebook. To measure audience engagement, we were granted unlimited access to the Google Analytics platform or in-house dashboards of the newsrooms.

Theoretical framework

Catching audience attention and news engagement

In the history of news production, news publishers faithfully assumed that their content reached large audiences (B. A. Williams & Carpini, 2011). The development of online journalism, however, has altered the dynamics of how audiences consume news, giving them increased control and choice over what and how they consume news (Bruns, 2008a; Napoli, 2011). Due to greater audience autonomy, news consumption is no longer concentrated in a few outlets but increasingly fragmented across an abundance of news outlets that all have to compete among another (Trilling & Schoenbach, 2013; Webster & Ksiazek, 2012). What follows is a media ecosystem in which news organizations are continuously on the lookout for audience attention, now a highly coveted and increasingly scarce good (Webster, 2014). Given that audience attention has also grown to be of monetary value in the form of advertising or reader revenue (Myllylahti, 2020), paying attention to usage patterns has become paramount in journalism. In order to secure the attention of the 'spoiled' and easily distracted consumer, the news must become more closely aligned with the wishes and needs of that consumer. Hence, it has become more important for news organizations to optimize the flow of information between their editorial and business departments to learn what their audience wants and subsequently, provide them with that content in order to navigate an ever-more competitive battle for attention.

Primarily, the digital media environment has contributed to the datafication of audience behavior through quantitative data (Livingstone, 2018) and has subsequently fostered a more "data-driven audience understanding" (Wang, 2017, p. 2). Audience analytics and metrics have allowed news organizations to observe in increasingly granular detail how the news user behaves and to anticipate in real-time what kinds of content will appeal to the audience in terms of pageviews, amount of viewing time or social media interactions (Anderson, 2011; MacGregor, 2007; Napoli, 2011; Vu, 2013). Several studies have already shown that analytical information seems to affect journalists' decisions on news selection and distribution. For example, when traffic figures signal that a story is popular, editors often react by placing this story more prominently on the homepage while less popular stories are moved further down or even removed completely (Bright & Nicholls, 2014; Lamot & Van Aelst, 2020; A. M. Lee et al., 2012; Tandoc, 2014). Other work illustrates that when a particular topic is doing well, editors will instruct journalists to expand coverage on that topic (Karlsson & Clerwall, 2013; Lamot & Paulussen, 2020; Moyo et al., 2019; Welbers et al., 2016). In the long run, audience analytics point out which topics generally attract a lot of traffic, lowering the threshold to plan more coverage on them in the future (Arenberg & Lowrey, 2019; Tandoc, 2019). However, there is also a stream of work that has indicated relatively limited impacts of analytics on journalistic behaviors. Lamot and Van Aelst (2020) and Nelson and Tandoc (2018) for example, showed that news editors are willing to let audience analytics inform their news decisions, but only when it comes to 'soft news'. Furthermore, there is evidence that also news formats and styles of news presentation have changed under the influence of audience metrics. One traffic-driven development is the increased use and importance of visual content (graphics, photos and videos) (Duffy, Ling, & Tandoc, 2017). Next, research indicates that news stories are often modified to boost traffic by changing the headlines or adding videos and pictures (Bélair-Gagnon, 2019; Hagar & Diakopoulos, 2019).

Taken together, the emergence of all these different metrics-driven practices has led to a widespread concern among researchers and practitioners that it would bring journalists to adopt a more market-oriented approach to journalism (Ferrucci, 2020; Hanusch & Tandoc, 2017; Tandoc & Thomas, 2015). If journalists were to follow this market logic, they would use audience analytics and metrics to pursue the content that is the most popular, serving the largest possible audience that communicates its preferences through clicks, likes, shares (Tandoc & Vos, 2016). However, what the audience wants and what it needs are two ostensibly different things. Boczkowski and colleagues empirically investigated this want vs. need dichotomy and arrived at the conclusion that a “news gap” exists between what news professionals provide and the news that news consumers apparently desire. They showed how the preferences of the audiences tend to gravitate towards softer news content over hard news as opposed to the preferences of journalists (Boczkowski et al., 2011; Boczkowski & Peer, 2011). As increased competition leads news organizations to embrace market logic, journalists might insist on the narrowing of this gap by actually ‘catering’ to what news users express through metrics. If metric patterns ‘show’ that users prefer the softer, junk news, one way to bridge that gap might be accommodating to the news consumers’ demand. In her systematic review, Fürst (2020) argues how datafication has hence established new norms of judgment. She suggests that the use of audience metrics has not only stimulated the selection and more prominent placement of soft news but also the tabloidization of formats and styles of news presentation.

The belief that a stronger focus on economic gains will lead to a dumbing down of news content is not new (Kvalheim & Barland, 2019). However, audience datafication has prompted revived attention to news softening, which carries echoes of the tabloidization debate. Scholarly research dating back to the late eighties has discussed tabloidization in terms of the substantive transformations in the form of presentation and the content of news coverage that are underway at different types of news media operating under increasingly economic pressure (Esser, 1999; Hautekeete, 2004). A central argument in these strands of literature is that there is a persistent shift in the supply of so-called ‘soft news’ at the expense of ‘hard news’. This softening of news can be studied on different levels, including media (‘tabloidization’), genre (‘infotainment’) and content (between and within articles). On the content level, many scholars make a dichotomous distinction between ‘hard’ and ‘soft’ news. According to Reinemann et al. (2011) the hard/soft classification can be used to examine different dimensions of news softening. On the one hand, they identify a topic dimension, which implies a classification on the basis of the topic of the news item. News topics such as politics, economy or science and technology are traditionally considered as hard news, while reports about celebrity, health, lifestyle, media and entertainment are often understood to be soft news topics (Curran, Salovaara-Moring, Coen, & Iyengar, 2010; De Swert, 2007). On the other hand, Reinemann et al.’s conceptualization also comprises a focus and a style dimension to take into account that classifying entire topics as purely hard or soft is perhaps too crude a measure (Otto et al., 2017). Seemingly soft topics might also be framed as socially relevant, while hard news topics may be presented in a human interest or sensational manner. The latter dimension thus accounts for this limiting approach and refers to how a news story can also be presented in a softened ‘way’ in terms of framing or visual style elements. Since softening of news is thus a longstanding concern, it is reasonable to suspect that audience metrics will accelerate this process.

Therefore, we ask:

RQ1: To what extent might audience metrics contribute to the softening of the news supply on the news outlets' websites and Facebook pages?

Online news outlets seek to attract large shares of online attention to keep their audience engaged. Audience engagement is often defined as a broad phenomenon that describes all sorts of user attention and involvement with media (Napoli, 2011). In analogy with Ksiazek, Peer, and Lessard (2016), we conceptualize engagement as an array of various metrics ranging from mere exposure to more interactive user behavior. For a long time, online news media have predominantly relied on measures of exposure to gauge their audiences. Pageviews, also referred to as 'clicks' or 'hits', are recorded whenever a page is viewed by the news reader by any method such as clicking on a link, typing in a URL or refreshing a page (Cherubini & Nielsen, 2016; Petre, 2015). These metrics have been taken at face value by both researchers and media professionals alike as primary measure of popularity or preference (Porten-Chée et al., 2018; Schaudt & Carpenter, 2009; Tenenboim & Cohen, 2015). For instance, most-viewed lists often seem to be dominated by entertainment, crime and sports news, indicating that news users prefer softer news over news about public affairs (Boczkowski & Peer, 2011; Tenenboim & Cohen, 2015; Tewksbury, 2003). Based on past evidence of a preference for soft news among the audience, we assume a positive relationship between pageviews and soft news:

H1: Soft news tends to generate more pageviews than hard news

News organizations are slowly starting to move away from a focus on clicks towards newer integrated metrics of engagement that provide a more complete picture of audience behavior (Ksiazek et al., 2016). 'Time spent' is generally defined as the amount of time (in minutes or seconds) that visitors have spent on a particular page (Cherubini & Nielsen, 2016). Furthermore, it has been proven to be a useful metric for audience attention because it allows comparison across platforms (Thurman, 2017). Time spent has become a key performance indicator in some newsrooms already (Hendrickx et al., 2021), as it is generally considered to be a more valid measure of whether the audience perceives something as meaningful than pageviews, and therefore, is more closely aligned with journalistic values (O'Donovan, 2014). Hence, this metric may be used to support claims that the audience is actually more interested in public affairs news than what pageviews seem to suggest (Groot Kormelink & Costera Meijer, 2020). A study by von Krogh and Andersson (2015) revealed that there was a significant increase in news associated with public affairs if the focus lay on time spent rather than clicks. We propose the following hypothesis:

H2: Hard news tends to generate more time spent than soft news

In the context of Facebook, audience engagement can also be understood in terms of numbers of likes, shares and comments. These popularity cues form a distinct, more interactive type of engagement than the ones we mentioned above, as they involve a kind of action on part of the user (Ksiazek et al., 2016). Firstly, liking is arguably the least demanding kind of interaction on Facebook as it only requires one click (Hille & Bakker, 2013). The number of likes could

be seen as an applicable indicator to assess the degree of public appeal of a post online (Porten-Chée et al., 2018). Larsson (2018b) found that news of the softer variety emerged as particularly more likeable. Secondly, sharing can be seen a somewhat more demanding mode of news usage as it allows users to redistribute content originally posted by the news outlet. In this regard, sharing has become an increasingly important functionality from the point of view of the news organizations to escalate audience attention and boost virality (Kalsnes & Larsson, 2018; Larsson, 2016). Kalsnes and Larsson (2018) found that softer news topics are more frequently shared than harder news topics from all media outlets, with sensational and celebrity news being the most successful in terms of gaining 'virality'. Lastly, the practice of commenting signals a process of even higher elaboration on part of the news consumer compared to liking and sharing. Tenenboim and Cohen (2015) examined the relationship between two mechanisms of online engagement clicking and commenting, showing that the heavily clicked items were different from the highly commented-upon items. While sensational items were more prominent among the heavily clicked items, political and societal issues were among the most commented-upon news items, which might indicate that news users are actually more invested in the latter. In contrast, Larsson (2018b) discovered that the content which succeeded in gaining higher amounts of comments in their analysis dealt more with tabloid or 'softer' news items. Given the fact that most functionalities seem to interact more with softer content, we argue that:

H3: Soft news tends to generate more interactions on Facebook than hard news

Facebook's effect on news softening

There also seems to be a particularly strong association between metrics-driven practices of journalism and the relevance that social media platforms and their algorithms have for the distribution and consumption of news (Loosen, 2018). Initially, news outlets were eager about partnering with social media such as Facebook (Stassen, 2011) towards creating audience engagement and by striving towards expanding advertising exposure via click-through traffic to their sites (Steensen & Westlund, 2020). As Facebook grew to replace the news sites as place where audiences find news, many news outlets have been keen to adjust their editorial strategies to comply with the type of content that the News Feed algorithm was promoting (Poell & van Dijck, 2014). Tandoc and Maitra (2017) observed how news companies altered their postings in response to the algorithm as they feared they would otherwise risk losing audience attention and traffic. The fact that Facebook has hence acquired the upper hand over news content and distribution has led authors to coin the concept of a "platform-press" that has been found to have "reengineered journalism" (Bell & Owen, 2017).

However, the eagerness to work in tandem with Facebook has dropped in 2018 when the company announced that it would henceforth deprioritize traditional news stories in its News Feed in favor of posts produced by user's friends and family, resulting in a drastic decrease of exposure of and engagement with news on the platform. The Facebook MSI the algorithm has resulted in a massive shift in revenue models because advertising revenues have migrated mostly to the platform itself (Kaye & Quinn, 2010), while news outlets have attempted to monetize their readership. Yet, "a fear of missing out" at the same time prevents news outlets

to stop engaging with the platform (Kleis Nielsen & Ganter, 2017). According to Myllylahti (2018) the reason for this is that news outlets are being caught in an “attention economy”, which implies that they will continue to distribute their content on the platform in order to chase audiences and eyeballs. Moreover, to be part of the News Feed, news organizations are urged to rely on platform data and attention metrics that act as online currency (Myllylahti, 2020) and simultaneously as popularity cues for practitioners and users alike (Haim, Kümpel, & Brosius, 2018).

As a consequence, Hågvær (2019) argues that news organizations on social media need to adjust to the rules of the platforms for whom journalistic norms remain under continuous negotiation. Whereas selection and presentation of content on their own websites is prompted by journalistic logic, the algorithmic selection logic of Facebook is biased towards the popular and what generates meaningful social interactions. To chase readership and grab their attention on these platforms, journalists and publishers may adjust to social media logic by promoting softer and lower-quality content to maximize audience attention (Lischka, 2018; Steiner, 2020). However, relatively little studies have empirically investigated whether concerns about news softening are more prevalent on Facebook compared to traditional and online outlets. Through content analysis, Lischka and Werning (2017) compared the print editions of three regional German newspapers with their respective Facebook pages in terms of topic selection. They found that the outlets posted a significantly greater share of soft news items on Facebook, not only to ensure reach but also to lure audiences to more important hard news items. Next, Lischka (2018) noted that topics such as health and entertainment were posted more often on Facebook compared to the news outlet’s website, and this to the disadvantage of (foreign) politics and economic news. She found that hard news topics were also given more lightweight characteristics by social media editors in order to be appropriate for social media. Similarly, Hågvær (2019) notes how Norwegian journalists have developed soft news presentation strategies on Facebook, focusing more on emotions and subjective language. A study of Magin et al. (2021) shows that the news supply of quality newspaper FAZ is slightly more softened online and on Facebook, while the trend towards news softening for the tabloid newspaper BILD was, counterintuitively, less pronounced in comparison with its offline news supply. Furthermore, Steiner (2020) analyzed news softening in political Facebook posts of four German media outlets. She draws the comparison between Facebook posts and website teasers to examine whether news softening is stronger on Facebook than on news websites. The study indicates that while news softening is higher on Facebook, the overall degree of news softening is low to medium across all outlets, hence alleviating fears that normative quality standards are degenerating. All-in-all, these studies seem to suggest an adjustment of standards of news making for social media news that results in changes to the social media news supply (see also Lischka, 2018). It is likely to assume that social media editors also turn to audience analytics to guide these decisions as the engagement-rewarding algorithm of Facebook becomes observable through these metrics. Studies suggest that social media editors tend to promote content that is already attracting lots of traffic, hoping to lure more readers to the news sites that way (Lischka, 2018; Tandoc, 2014). Therefore, this study aims to address the following hypothesis:

H4: The news supply on Facebook is softer in terms of news topics and style than the news supply on the news outlet’s website

Method

To address our hypotheses and research questions a partially computational content analysis was conducted on four consecutive weeks (January 13 – February 14, 2020) of all news items published online by five market-leading Belgian Dutch-speaking media outlets. Two of the news outlets are generally regarded as popular newspaper brands: Het Laatste Nieuws and Het Nieuwsblad, whereas newspapers De Standaard and De Morgen and the public service broadcaster VRT are considered to be quality news brands. An appropriate interpretation of our results requires some additional contextual information on the Belgian case-study. The Belgian media market is generally deemed quite stable. It has a strong public service broadcaster VRT that manages to reach a large audience and is also taking the lead in terms of reach online. The four other outlets under study belong to two international media companies (DPG Media and Mediahuis) that still succeed to make profit and have hence undergone the digital transition quite successfully. All together, these five Flemish legacy news media are the most important brands in terms of weekly reach offline and online². However, despite the financial stability of the media groups to which they belong, digital news media in Flanders, like elsewhere in the world, are operating under commercial pressure as large players such as Facebook and Google have been skimming off significant shares of local online advertising markets, which for Belgium alone amounts to over 500 million euros according to the Flemish Media Regulator 2020 (p. 274). Besides, due to only moderate success and implementation of paywalls (Evens & Van Damme, 2016), subscription revenues have currently been unable to compensate for these losses. In such conditions, Belgian news media still have to turn to Facebook for their distribution, audiences, revenues and so on, but are not completely dependent on it. We believe that this constellation allows for the generalizability of our study's findings to at least other countries in Western Europe.

Units of analysis are the individual news items published on the news websites of the five outlets. An RSS-script and a crawler were developed to automatically collect and store all news articles in full-text, with their unique URL. The articles were automatically coded for the variables 'article length', 'date/time of publication' and 'media outlet'. For the purpose of this study, regional coverage, sports results, traffic reports, daily weather forecasts and concert/movie reviews were discarded from further analysis as we decided to focus on 'news' in the formal sense of the word. The omission of those articles happened part automatically, part manually. For some outlets these stories were identified through the news item's URL (e.g. /sport/, /regional/). However, sometimes they still ended up in the dataset. Coders received the instruction to identify these stories by reading the headline/lead and checking under which highlighted tabs the article was categorized ('Region', 'Sport') and then to delete them. This eventually resulted in a dataset consisting of 10,579 articles. In total, 1,431 articles were coded from VRT, 1,140 from De Standaard, 1,126 from De Morgen, 3,145 from Het Nieuwsblad and 3,737 from Het Laatste Nieuws.

To measure audience engagement, we use metrics provided by the media companies, which measure the number of pageviews and time spent per article. Additionally, we extracted

² CIM (Centre of Information on Media, <https://www.cim.be/>). The reason why we did not include *Gazet Van Antwerpen* (4th place) is because this newsroom works in synergy with the editorial staff of *Het Nieuwsblad* from whom they take most of their national and international reporting.

how many interactions (e.g. likes, reactions, comments, shares) a news item received through CrowdTangle, a public insights tool operated by Facebook that tracks posts on public Facebook pages. Our research is in this sense unique as metrics tend to be accessible exclusively through the news organizations themselves, which are generally rather reluctant to share this information. The three media companies measure pageviews and time spent through different software, which makes comparative research problematic as divergences between outlets could be caused by differences in what the data capture³. However, that poses no problem for the analyses in this study. The number of pageviews and time spent for every article was monitored for 24 hours after publication. The engagement for each news item URL was monitored for 7 days after publication.

To measure the second key concept of this study, 'news softening', we automatically flagged which articles were posted on the official Facebook pages of the news organizations by cross-referencing our dataset with data from CrowdTangle. A news article was given code 1 if it was redistributed to Facebook, while it received code 0 when the article did not appear on Facebook. What is important to note is that the news website was taken as a point of departure (N= 10,579). Facebook presence, the 30% of all articles in the dataset promoted on the news organization's website that were subsequently promoted on Facebook (N= 3,163), is used as a dependent variable in our regression analysis.

Subsequently, a team of four trained coders manually coded the news items on a range of other variables, of which the most important ones for this study are discussed next. The topic of a news item is a commonly used classification to differentiate between hard and soft news (HSN). We drew upon a detailed codebook provided by the Electronic News Archive (ENA), containing more than 43 topics out of which coders could attribute one to the news item. We recoded these original issue codes in twelve broader topic categories being: (Inter)national Politics, Law Enforcement/Crime, Economy/Finance, Social Affairs, Wars/Disasters/accidents, Science/Technology/Education, Mobility/infrastructure, Environment/Energy, Culture, Lifestyle/Travel, Media/Entertainment, Celebrity. According to previous scholarship on tabloidization and softening of news, the first eight topics can be understood as hard news topics, whereas the latter four would be included as soft news topics (see also De Swert, 2007).

Besides topic classification, news style was coded to take into account that an approach solely based on the topic dimension might be limiting (Otto et al., 2017). Following the line of inquiry of Reinemann et al. (2011) stating that soft news topics sometimes intersect with hard news, if a news item contained clear indications of sensationalism and/or personalization in the headline and lead of the article, it was given code 1, indicating a 'soft news style'. Sensationalism was operationalized as journalistic coverage aimed at arousing strong emotional reactions, for example by emphasizing drama or scandal (Grabe, Zhou, & Barnett, 2001; Otto et al., 2017). For personalization, we looked at whether an article had more of a human interest framing, accentuating a more personality-centered angle of coverage (see also Reinemann et al., 2011). We will analyze news softening on both the topic and the style dimension as well as combined. More information on the operationalization of both the independent variables can be found in the Appendix C: Content-analytic design.

3 The software systems used to capture the metrics studied in the analysis are Adobe Analytics, Google Analytics and in-house dashboards that among others use Google Analytics as their input channel.

The codebook was pretested by four coders that followed a training course. After the first news week was coded, a subsample of news articles was coded again by each coder and inter-coder reliability was calculated. As some variables approached the critical lower limit of 0.60, coders received an extra training course with elaborate instructions and rectified their previous coding with this newfound knowledge. At the end, inter-coder reliability was calculated again on a random sample of 300 articles. While less than the traditional 10-15% threshold, Lombard, Snyder-Duch, and Bracken (2002) have argued that the appropriate size of a sample for reliability analysis will rarely need to be greater than 300 units. The inter-coder reliability test resulted in Krippendorff's alpha values ranging from 0.74 to 0.83.

Results

News engagement on the website and Facebook

To answer RQ1, the analysis focused on audience engagement with news. Table 1 shows the average engagement that each topic category was able to generate both on the website and on Facebook. News about celebrity, social affairs and the environment and energy were among the most clicked and liked upon items, whereas news about politics, economy and finance and culture and arts were among the least clicked and liked news topics. However, engagement indicators such as time spent signal somewhat different patterns. News users tend to spend more time on topics such as politics, social affairs and science, technology and education. Furthermore, on Facebook the most viral news items were lifestyle and travel, media and entertainment and environment and energy. The most relevant effects are displayed in shaded cells.

Table 1: Average engagement per topic category

	Pageviews	Time spent (in s)	Facebook interactions (likes, shares, comments)
Celebrity†	34 976	74	711
Social affairs	34 806	108	758
Environment and energy	30 764	85	1112
Mobility and infrastructure	24 293	76	552
Lifestyle and Travel†	23 638	68	1394
Law Enforcement and Crime	22 478	86	701
Media and Entertainment†	19 725	86	1151
Science, Technology and Education	18 803	96	784
War, disasters and accidents	18 276	86	687
Politics	15 612	103	356
Economy and finance	14 191	71	597
Culture and Arts†	13 688	87	534

Note. Cell entries are mean values of engagement per topic category. † indicates that a topic was denoted as soft news topic.

To examine the factors determining audience engagement, we relied on negative binomial regression analyses. The first column of Table 2 presents the results of our baseline model (Model I). First of all, on the level of topics, we found that news users are less likely to engage with political news as compared to other topics and this across almost all popularity indicators. News topics such as celebrities, social affairs, and mobility were among the most strongly engaged with topics categories on the website. On Facebook, soft news topics such as lifestyle and travel or media and entertainment did increasingly better than hard news topics such as politics, environment and social affairs. Moreover, we found that soft news style was a significantly positive predictor for audience engagement. As expected, news that is presented in a soft, lightweight style was more likely to attract pageviews and Facebook interactions.

The positive effect of soft news style on people's news engagement, combined with the finding that soft news topics are more popular, underscore our assertion made in H1 and H3: News softening leads to more pageviews and more Facebook interactions. Conversely, we assumed that time spent would favor hard news topics, as well as (hard and soft) news items presented in a soft news style (H2). Looking at the topic dimension, we found that almost all topic categories were significantly less likely to generate attention minutes in comparison with news about politics. The average time spent on soft-topic news items, such as lifestyle/travel and celebrity, is 25% lower as compared to news about politics. Moreover, the average time spent for items presented in a hard news style is 13% higher than for items with soft news style features. The findings thus provide evidence for H2: hard news items generate more attention time than soft news items.

Furthermore, as shown in Table 2, almost all controls affect the amount of audience engagement. Firstly, news items behind the paywall are less likely to generate traffic on the website (pageviews, time spent) and on Facebook than items that are freely accessible. Second, we also controlled for the length of the article, or more specifically, the number of words (divided by 100). Although article length should partly be indicative for the time news users spent on the article, including this control did not change the results about hard news style. Finally, story promotion on Facebook can increase the likelihood of generating interactions considerably. News items offered on Facebook logically also generated additional pageviews. Redistribution to Facebook also leads to a higher average attention time, but the effect is less outspoken than for pageviews. The effects of interaction between news topics and news style can be found in Model II (Table 2).

All-in-all, we think we can affirmatively answer our research question that soft news content is able to generate more audience engagement on mainstream media outlet's website and Facebook pages, at least while looking at traditional exposure metrics such as pageviews and Facebook interactions.

Table 2: Negative binomial regression of topics and style: pageviews, time spent and Facebook interactions

	Model I Main effects			Model II Interaction effects		
	Pageviews	Time spent	Facebook interactions	Pageviews	Time spent	Facebook interactions
News style	0,15***	-0,13***	0,36***	0,13	0,07	-0,36
Topic (ref=Politics)						
Law Enforcement/Crime	0,20***	-0,20***	0,64***	0,16***	-0,19***	0,64***
Economy/Finance	0,04	-0,30***	0,45***	0,03	-0,30***	0,42***
Social Affairs	0,49**	-0,08*	0,68**	0,51***	-0,05	0,67***
Mobility/Infrastructure	0,64***	0,22***	0,37**	0,68***	-0,25***	0,45***
Environment/Energy	0,33***	-0,12**	0,93***	0,44***	-0,14**	0,77***
War/Disasters/Accidents	0,11*	-0,14**	0,53***	0,09	-0,13**	0,38**
Science/Tech/Education	0,13*	0,01	0,69***	0,16*	-0,003	0,69***
Culture	-0,19*	-0,15*	0,11	-0,08	-0,11	0,05
Lifestyle/Travel	0,23***	-0,28***	1,00***	0,14	-0,17	1,12**
Media/Entertainment	0,11*	-0,04	0,75***	0,14	0,07	0,20
Celebrity	0,74***	-0,26***	0,36**	0,65***	-0,23***	0,65***
Interaction effects						
Crime x news style				0,78***	-0,21	0,28
Economy x news style				0,04	-0,12	0,80#
Social affairs x news style				-0,13	-0,41**	0,61
Mobility x news style				-0,35	0,05	-0,05
Environment x news style				-0,39*	-0,10	1,10**
War/disasters x news style				0,56*	0,06	1,64***
Science/tech x news style				-0,20	-0,10	0,55
Culture x news style				-0,17	-0,26	0,78
Lifestyle x news style				0,12	-0,31	0,56
Media x news style				-0,02	-0,34*	1,35***
Celebrity x news style				0,13	-0,24	0,29
Control variables						
Paywall	-0,24***	-0,57***	-0,77***	-0,24***	-0,58***	-0,58***
Article length	0,07***	0,08***	-0,003	0,001***	0,0008***	-0,00003
Facebook	1,48***	0,21***		1,47***	0,21***	
Intercept	8,68***	4,29***	6,02***	8,68***	4,29***	6,04***
N (total)	10 506	8980	3163	10 506	8980	3163
AIC	223244.7	95581.19	46564.19	223195.8	95582.47	46541.65

Note: Cell entries are unstandardized regression coefficients. In the case of time spent (n= 8980), there were a few missing cases as this metric was not available for the public service broadcaster. For 73 news items we could not identify the amount of pageviews (n= 10 506). *p<.05; **p<.01; ***p<.001

News softening on Facebook

The analysis next considers whether the degree of news softening differs between the news supply on the website and Facebook. Of the 10,579 articles that were studied in the analysis, 7,465 articles (71%) consisted of hard style news items, while 3,114 (29%) had a soft style of news writing. Of the 10,579 that were posted on the websites of the five outlets, 3,163 articles were subsequently posted on their Facebook pages (30%). With only one third of the total online news supply being redistributed to Facebook, audiences consuming news exclusively through social media are thus at risk of not being informed sufficiently enough. Of these 3,163 articles published on Facebook, the majority were hard news items (71%), while 921 articles contained soft style elements (29%). At first glance, the values for soft news style suggest rather low and comparable degrees of news softening across both platforms. In order to test H4, a comparison was subsequently made between the 10,579 articles offered the website, and the 3,163 articles offered both on the web and on Facebook. Moreover, the news supply on Facebook hardly differs from the news supply on the website in terms of topics and style. An extensive overview of news topics and style can be found in the Appendix.

A binary logistic regression was run to predict the likelihood of an article being published on Facebook. Table 3 shows the main and interaction effects. We noticed that topics such as crime, environment and energy, social affairs and mobility and infrastructure are positively associated with the dependent variable, thus news outlets find these topics more attractive to post on Facebook than political news items. Crime news was 5% more likely to be posted on Facebook than political news, whereas the percentages for environmental and energy and social affairs news added up to 14% and 16%. Economy and Finance on the other hand were negatively associated with Facebook presence, being 5% less likely to be published on Facebook. Furthermore, we can see that the main hypothesis proves correct: softer news style is significantly and positively associated with the likelihood of being promoted on Facebook (H4). The difference is however small, soft style news is only seven percent more likely to be posted on Facebook than harder news. The control variables that were included in the regression analyses also provide some interesting results. We see almost all news outlets were significantly less likely to distribute their articles to Facebook in comparison with the public service broadcaster.

Drawing the comparison between media outlets, the analyses do not yield the expected interaction effects. Model III demonstrates that commercial media do not soften their news supply to a greater extent than the public service broadcaster within Facebook. The effect is even significant and negative for De Morgen and Het Laatste Nieuws, the two news outlets of DPG Media. Not only do they tend to promote less of their articles on Facebook, they also use remarkably less softening within Facebook than the public service broadcaster. Lastly, soft news style seems to be more likely to be published on Facebook, but the effect is only borderline significant and therefore not entirely robust, which points to the fact that only for a few outlets there is a difference between the hard and soft variety of news content. This means we can neither corroborate nor falsify the hypothesis saying news media apply news softening to a greater extent on Facebook.

Table 3: Logistic regression of topics and style on Facebook presence

DV: Facebook presence	Model I Main effect		Model II Interaction effects		Model III	
	B	Odds ratio	B	Odds ratio	B	Odds ratio
News style	0,27***	1,31	0,28	1,34	0,65#	1,92
Topic (ref= Politics)						
Law enforcement/Crime	0,19*	1,21	0,17	1,19	0,22*	1,24
Economy/Finance	-0,21*	0,81	-0,22*	0,80	-0,21*	0,81
Social Affairs	0,63***	1,88	0,64***	1,91	0,64***	1,90
Mobility/Infrastructure	0,27*	1,31	0,22	1,25	0,27*	1,30
Environment/Energy	0,54***	1,72	0,53***	1,70	0,56***	1,75
War/Disasters/Accidents	-0,06	0,94	-0,14	0,86	-0,12	0,89
Science/Tech/Education	0,22	1,25	0,31*	1,37	0,32*	1,37
Culture/Arts	-0,12	0,89	0,20	1,22	0,18	1,20
Lifestyle/Travel	-0,03	0,97	-0,04	0,96	-0,01	0,98
Media/Entertainment	0,05	1,05	0,05	1,05	0,03	1,03
Celebrity	0,02	1,02	0,24	1,27	0,24	1,27
Media outlets (ref = VRT)						
Het Laatste Nieuws	-1,61***	0,20	-1,62***	0,20	-1,42***	0,24
Het Nieuwsblad	-1,14***	0,32	-1,15***	0,31	-1,24***	0,28
De Morgen	-0,93***	0,39	-0,94***	0,39	-0,67***	0,51
De Standaard	0,15	1,16	0,15	1,16	0,22*	1,25
Paywall	0,03	1,02	0,02	1,02	0,06*	1,06
Topic x news style						
Crime x news style	-	-	0,42	1,51	0,26	1,29
Economy x news style	-	-	0,13	1,13	0,03	1,03
Social affairs x news style	-	-	-0,14	0,87	-0,11	0,89
Mobility x news style			0,35	1,42	0,25	1,28
Environment x news style			0,008	1,009	-0,11	1,75
War/disasters x news style	-	-	1,96***	7,13	1,87**	6,50
Science/tech x news style	-	-	-0,56	0,57	-0,59	0,55
Culture x news style	-	-	-0,53	0,59	-0,60	0,55
Lifestyle x news style	-	-	-0,04	1,00	-0,07	0,93
Media x news style			-0,02	1,05	0,05	1,05
Celebrity x news style			-0,29	0,75	-0,25	1,16
Media outlet x news style						
HLN x news style	-	-	-	-	-0,68***	0,51
Het Nieuwsblad x news style	-	-	-	-	0,15	1,15
De Morgen x news style				-	-1,51***	0,22
De Standaard x news style				-	-0,37	0,69
Constant	-0,15*	0,86	0,14	0,73	-0,24**	0,79

DV: Facebook presence	Model I Main effect		Model II Interaction effects		Model III	
	<i>B</i>	Odds ratio	<i>B</i>	Odds ratio	<i>B</i>	Odds ratio
<i>N</i>	10579		10579		10 579	
-2log likelihood	-5928,55		-5909,95		-5863,77	
Pseudo R square	0,0813		0,0842		0,0913	
Chi square (df)	1049,39 (17)***		1086,59 (28)***		1178,94 (32)***	

Note: Cell entries are unstandardized regression coefficients and odds ratios from binary logistic regression. * $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

Amidst the heavy struggle for audience attention, news production is likely to become more metrics-driven. This situation has given rise to fears that journalistic content on digital news media and especially on social media is becoming softer. The study at hand has showed that news outlets have a slightly stronger tendency to soften their news supply on Facebook as compared to their websites. Whereas the results illustrate that the overall degree of news softening is still rather low across news outlets, we noticed a small shift in the selection of topics published on the Facebook pages of media outlets. Although the Facebook news supply serves informational needs to some extent, it features a reduced amount of economic, political and foreign news. Besides some discrepancies in topic selection, we were able to observe a clearer shift in news style. Even among the hard news topics, there appears to be a slight preference for soft news style that incorporates more elements of sensationalism and personalization on Facebook. In line with Lischka (2018) and Steiner (2020), this study finds that Flemish media outlets adjust their news supply to some extent on Facebook in favor of soft news on their respective websites. However, while the surveyed social media editors in Lischka's (2018) study merely hint that audience metrics guide these decisions, this study offers empirical evidence that they do.

Audience metrics offer an explanation for the shift in news topics and style on Facebook in that they seem to suggest that those choices by news editors are the most engagement-rewarding choices, at least, depending on the metric used. When we compare the metric outcomes with the range of published articles on Facebook, the results show some alignment between patterns of popularity and the supply of content on social media. This might point to the fact that editors have a better understanding of what users do as a courtesy of audience metrics and may anticipate this in real-time by pushing certain content more on Facebook at the expense of others. To determine what they should promote on Facebook, journalists primarily seem to base their decisions on pageviews and interactions they get on the platform. The higher share of topics like social affairs, environment and energy for Facebook news can be juxtaposed with the positive relation we found between these topics and the variables pageviews and Facebook interactions. However, when looking at the metric 'time spent', we could not identify a similar dynamic of alignment between the news supply and news demand. On the contrary, while time spent signals an interest for hard news topics such as politics and hard news style (see

also von Krogh & Andersson, 2015), we do not see this reflected in the news supply distributed to Facebook. While it has been suggested that time spent functions as a key performance indicator in some newsrooms (Hendrickx et al., 2021), the current study has been unable to support these findings. However, as we predominantly looked at the news outlet's promotion strategy on Facebook, caution must be applied, since time spent might be a more important consideration when shaping the news supply on the news outlet's website. This research may thus help us to understand how metrics are rationalized in different ways to tailor the news supply to audience interests. One of the issues that emerges from the findings is that as long as newsrooms, with the business and advertising side of the news organization in particular, tend to focus on mere numbers and quantification of user behavior, these metrics might contribute to a further softening of the news supply. From the vantage point of commercial logic, doing 'what the metrics say' is a good strategy as journalists seem to be rewarded for these choices in terms of pageviews and interactions.

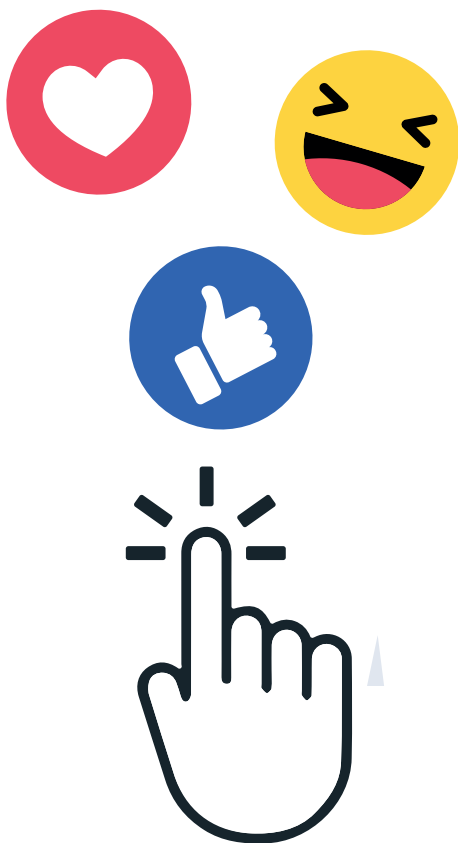
One unanticipated finding was that the public service broadcaster applies softening to a somewhat stronger degree than the commercial media in our sample. Part of the reason for the rather surprising result may lie in the fact that the PSB wants to use Facebook in ways to target and address a mostly younger audience, which may serve as a rationale for the softened news posts. Hence, the PSB may seem commercialized, while their posting behavior in fact involves more of an anticipation on social media/algorithmic logic in order to effectively attract a unique public to public service news. However, further research involving interviews or ethnographic research should be carried out to triangulate the findings and arrive at a more complete picture of the specifics of each news outlet's social media strategy.

The findings of this study should be examined within the context of a few limitations. Firstly, we chose to study Facebook interactions on an aggregated level. Distinguishing between the three different types of Facebook-related interactions by comparing the frequency of likes, shares and comments on hard and soft news articles would help us to establish a greater degree of accuracy on this matter. Secondly, we largely ignored that audience behavior and subsequent engagement with content is affected by the platform and algorithmic changes (Myllylahti, 2020). Our findings indicate that Facebook is a significant driver of traffic to the news outlet's website. This finding deserves further critical elaboration, knowing that Facebook to a large extent controls its user's news feeds and the amount of visibility and prominence that news organizations' content is attributed on the platform through the algorithms (Myllylahti, 2020; Zamith, 2019). The Facebook MSI algorithm will for example display hard news for those with such peers in their networks, and soft news if those peers have a preference for that type of content. Investigating to what extent metrics are affected and manipulated by the Facebook algorithm lies outside the scope of this current paper but would be valuable to analyze in its own right. Thirdly, as the contribution of this study lies primarily in the comparison between the website and Facebook, we can only reflect on news softening at one point in time. A longitudinal content-analytical design would enable us to test whether news softening has actually increased over time or might point to a ceiling effect, implying that news softening is a process that already takes place on the news outlet's website and therefore can hardly be further increased on Facebook (see also Steiner, 2020). Fourthly, we must guard against comparison with media markets outside the West European context.

More fragile media markets may have a much stronger dependency on Facebook for their distribution strategy. Lastly, whilst this study was able to analyze audience engagement using unique metrics provided by the news organizations themselves, the disadvantage is that we also equate popularity with news appreciation or interest. This resonates with the concern voiced by other researchers that all these metrics, even time spent, are not necessarily good parameters, but are rather designed by the news industry to quantify and sell user attention to advertisers (Groot Kormelink & Costera Meijer, 2020; Napoli, 2011). Further research should be undertaken to investigate and include other metrics, as this study shows that 'time spent' and 'page views' exhibit different patterns. In the context of Facebook, it might be worth looking into metrics that measure 'retention' or referral traffic to the news sites as this might be better predictors for the softening of the news supply.

Conclusion

All together, these results offer an important contribution to the study of how news organizations approach audience metrics and platforms such as Facebook, and the consequences for the news output. The extent to which media have become more considerate of the audience has for years been accompanied by general concerns about journalism conforming to audience demand and corresponding tabloidization tendencies. This study has shown that the news supply has undergone incremental changes when media invoke audience measurement to inform their news selection. Notably, it found that Belgian news outlets mostly continue to seek audience attention in terms of likes and pageviews on Facebook and that these metrics encourage news outlets to distribute a slightly softer news supply on Facebook than compared to the news outlet's website. At the same time, we hope that this study illustrates that results are mixed and nuanced. Therefore, it remains relevant to investigate the complex relationship between the measurement of audience data and the selection and presentation choices that are deduced from them. Particularly, the concept of softening has proved relevant as it allowed us to discuss changes in the news output in terms of news topics and style without making inferences about journalistic quality and its normative underpinnings that were inherent to the tabloidization debate. From a democratic point of view, one could express concerns about social media audiences not accessing enough civically valuable news on Facebook to be informed citizens. However, this study does not wish to engage with the question whether softening is inherently good or bad for journalism. What we do conclude from this research is that the implementation of new technology evokes different judgments and choices. We therefore encourage scholars to continue studying the interplay between audience engagement and the news output.





CHAPTER 6

Discussion and conclusion

The present dissertation was driven by the motivation to better understand the use of audience analytics and metrics in journalism and their impact on the journalistic news production process. There are two recurring aims in this dissertation. Firstly, it wanted to investigate the ways in which audience analytics are used in the newsroom, both on an organizational and individual level. Secondly, it considered the implications of the use of audience analytics for the news output and journalistic perceptions, whereby it critically assessed the claim that audience analytics may fuel further softening in journalism. In this concluding chapter, I bring together the various findings and insights that I have gathered from the different sub-studies. Such triangulation is highly beneficial, for doing so helps to take a helicopter view of the research and cascade what I have observed. The remainder of this chapter is structured as follows. To start with, I will give a systematic overview of the key findings I have obtained throughout four years of studying audience analytics in journalism. Next, the second section lays out the limitations of the research and looks at how future research may step in. The final part of this chapter is concerned with the social implications of the findings and offers some recommendations for researchers and practitioners alike.

Key findings

Uses of analytics

Based on twenty-one in-depth interviews with digital news editors, I found that the use of audience analytics is well established in Belgian news organizations. Most interviewees enthusiastically told us that audience analytics helped their editorial decision-making but assured that they at all time let journalistic standards take precedence over audience metrics. Six uses of analytics were identified from this analysis, of which some prompt reasonable concerns.

First, the use of tools such as Chartbeat and Google Analytics to manage story placement on the website appeared to be quite common in 2018. Articles that were well read, were generally assigned a more prominent location on the website. However, editors stressed that they would not suddenly breach with traditional news values if this was what audience analytics proposed. They argued that they would always strive for a 'good news mix' of news topics on the homepage adhering to both the preferences of the audience and journalistic standards.

Second, news organizations are known to use audience feedback to better "package" a story. What we did not know is that almost all the digital editors in the Flemish newsrooms thought this was an important application of analytics and so they regularly decided, based on the metrics, which headline a story would get and which photos would be added to it. What our interviews also taught us is that the digital editors did not want us to confuse an "attractive headline" with a "clickbait title". They warned that this would eventually avenge itself: analytics show that readers are quick to leave if a title raises expectations that the piece does not meet. According to our interviewees, content optimization in itself is inherent to the journalistic process and does not have to cause any harm. They shared the belief that it is journalists' task to make information accessible for the broader public.

Third, a more substantive use of audience analytics is *story planning/selection*. Audience analytics are also used by the interviewed editors to make decisions on which stories or topics to report about and that this influence runs across multiple channels. Although the editors seemed to suggest that analytics do not change the ways in which newsrooms have been working for decades, in the sense that editorial decision-making processes have always been informed by what has already proven to appeal to the audience's attention, the increasing influence of audience metrics on news selection fuels the concern that journalists will focus more on popular news that gets clicked a lot (what the audience wants to know cf. softening of news) rather than the news that really matters (what the audience needs to know). The findings in Chapter 5 in no way alleviate this concern, as softer news tends to generate more clicks as compared to political, foreign or economic news and was consequently, more selected on the Facebook pages of the news outlets.

Fourth, Flemish news editors said to use social media analytics to monitor how their own articles and those of their nearest competitors perform on social media channels. They contend to “*imitate*” articles of other news outlets on the basis of analytics, if they discover stories that perform excessively well which they hadn't brought themselves yet. Although the editors recognized the commercial logic behind such routines, it was rather seen as a matter of good practice than something to give a moment's thought. While the latest media mergers (DPG Media, Mediahuis) have posed significant problems for the news diversity in the Flemish media landscape already (Hendrickx & Ranaivoson, 2019), metrics might further instigate homogeneity of published news content across different titles.

Fifth, the issue of *performance assessment* is another intriguing one, particularly given recent leakage that British newspaper The Daily Telegraph plans to link their journalists' salary with article popularity (Bland, 2021). Journalists who attract and retain the most subscribers would be rewarded accordingly. At the time of our study, we did not detect any evidence for such evaluation system in Belgian newsrooms. Only at the digital-born news medium analytics were systematically used for performance evaluation, whereas other newsrooms socialized their journalists in a much less obtrusive manner through soft rewards of well-performing staffers. However, last year, the Flemish vocational magazine *De Journalist* reported that a journalist at one of DPG Media's news titles got fired, with the reason for his dismissal being that his articles did “not achieve as much audience reach as their business model required” (Deltour, 2020). Vigilance is thus warranted as it may set a precedent for other news organizations.

Sixth, analytics shape journalists' understanding of audiences. However, the precise mechanism of using audience analytics for audience conception and its implications for journalism practice remains to be elucidated. Recently published research upon that alley has argued how divergent sources of audience perception may lead to very different conceptions of the audience and consequently, other types of news (Coddington, Lewis, & Bélair-Gagnon, 2021). In his book “*Imagined Audiences*”, Nelson (2021) has illustrated the tight bond between how journalists perceive their audience and how they ultimately pursue them. He argues that a side-effect of perceiving the audience as a mass of people is that news organizations will limit their approach to mainly “reception-oriented methods” (tracking the audience through metrics). The fact that Belgian news media organizations' primary aim is to

attract large audiences may thus explain why journalists who actively use audience metrics in Chapter 3 may also become more susceptible for the consumer-oriented objectives of their organization and why page views still seem to largely drive selection in Chapters 4 and 5.

To fully understand the role of audience metrics in journalism, it does not suffice to look only at the organizational uses of analytics in the newsrooms. As Cherubini and Nielsen (2016) argue that socialization is of vital importance to create 'a culture of data', it is relevant to also investigate how individual journalists use analytics in their daily work. Surveys by Bélair-Gagnon et al. (2020) and Zamith et al. (2020) suggested that individual levels of access and information can shape the individual uses and perceptions that individual journalists have about audience analytics and metrics. The study in Chapter 3 was conducted in the form of a survey to understand the various perceptions that exist among journalists who actually use audience analytics. Overall, the political journalists exhibited a nuanced or rather critical attitude to metrics and displayed large differences in usage and exposure patterns. Whereas three-quarters of the journalists is regularly exposed to audience metrics by their editors, a fair share of journalists is still not familiar with using analytics themselves. Furthermore, journalistic perceptions varied from the more accepting, less experienced reporters to the more senior writers that were much more reticent to incorporate audience metrics in their decision-making. As newsrooms will become staffed by increasingly younger staffers and digital natives who are also expected to have basic knowledge to deal with this technology, we could likely expect to observe a more metrics-oriented mindset in journalism in the years to come. It is interesting to note that there thus seems to be a split between on the one hand editors and colleagues in more audience-oriented profiles who want to measure those articles, and on the other hand, journalists who are producing articles. The opinions of the individual political journalists in our sample show a greater skepticism than what emerged from the interviews we conducted with the digital editors in Chapter 2. At the same time our study also emphasizes the importance of socialization for news workers, given that mere exposure and active use display different dynamics. Journalists who use audience analytics themselves a lot were found to have more positive attitudes towards them. Passive exposure, on the other hand, resulted in more negative attitudes towards audience analytics. Hence, while metrics might perhaps not directly affect the news production of these regular reporters, they do seem to induce a certain way of thinking about journalism and news distribution.

Effects of analytics

After studying the organizational and individual uses of analytics in journalism, the research analyzed the effects of this usage on journalistic behaviors and the news output produced. Chapter 4 established an experimental framework for detecting to what extent journalists are influenced by metrics in judging the story placement a news story deserves. Although the findings are nuanced with analytics barely having an effect on the ranking position of hard and negatively framed stories, the experiment suggests that metrics affect journalists' news decisions in subtle ways. We found that audience analytics had a significant and positive impact on the story placement of soft news stories. A simple aspect such as confronting journalists with increasing metric data, was found to incentivize them to display soft and positively framed news stories more prominently in the news environment.

Next, Chapter 5 explored whether soft style elements in hard news topics might likewise elevate audience metrics. Based on a large content-analysis of 10,579 Flemish news articles, I investigated whether the news supply is adjusted to audience analytics and metrics and, subsequently, to what extent this might contribute to a 'softer' supply of news on Facebook. The study is unique in the sense that it used data directly derived from the analytic dashboards, to which we were granted unlimited access by the different news organizations in the sample. This allowed us to connect the analysis of the news supply to the exact engagement metrics for each news article.

The findings of this investigation suggest that the story with regards to news softening is not so black and white either. On the one hand, the overall degree of news softening is still rather low across outlets, with fairly comparative levels of news softening between the news website and Facebook. Additionally, the Facebook news supply continues to serve its informational purposes, as it features a significant amount of hard news topics. On the other hand, there are signs that point to the further softening of news. The news supply on Facebook contained more elements of news softening as compared to the news outlets' websites. It included more soft news topics and style and this to the disadvantage of political, foreign and economic news. This could plausibly be attributed to the spread of metrics. On Facebook, news organizations mainly seem to select news that brings instant gratification in terms of pageviews and Facebook interactions. This outcome is contrary to that of Chapter 2 in which the digital editors expressed cynical views towards page views and claimed that they mainly use them for story placement and packaging. When it comes to story selection, they thus seem to say one thing and do another. Implication is that if news organizations continue to judge their performance on the basis of these criteria, this encourages a news supply where soft news may outshine the more substantive coverage that does not succeed in attracting as much web traffic and social media traction. A note of caution is due here since, the metric time spent was not the focal point of this research. Since time spent was more closely correlated with hard news topics and hard news style, it hints towards more optimistic predictions. More and more authors consider it to be the driving metric in journalism today, so, if journalists were to cater to time spent, the Facebook news supply may feature more news concerning politics, science and social affairs that are likely to engage the audience for a substantively longer period of time. However, while my research found that the news supply and the news demand as reflected by time spent are not perfectly compatible on Facebook, this may be much more the case on the news outlets websites.

Limitations and future directions

In this section, I would like to acknowledge and reflect on some of the limitations that constrained this dissertation. A few of these limitations directly relate to the methods used in the dissertation. Firstly, the in-depth interviews in Chapter 2 offered us valuable insights into the perceptions of news editors, however, they suffer from the fact that these editors may not give a fully honest account of their actual behavior. Selection bias is another potential concern, as Chapter 3 and 4 rely on a sample of primarily political journalists. Although political journalists comprise a substantive part of Belgian journalists (Van Leuven et al., 2019), this dissertation was unable to encompass the entire population of journalists.

A major drawback from both these sampling practices is that thoughts must be given to generalizability of the findings. Closely related to this is the fact that the reader should bear in mind that this doctoral thesis predominantly focuses on Belgium, and Flanders, the Dutch-speaking region of Belgium in particular. While defenses are that Belgian journalism has endured the same ailments as Western journalism and that through collaboration with Belgian news organizations, we managed to obtain unique metric data, we still should be careful in generalizing our conclusions to international journalism. For instance, a cross-national large scale study involving journalists from different news beats would be of great help in exploring how certain cultural factors may play a role in the implementation of audience analytics. Thirdly, critics of experimental research will contend that the study in Chapter 4 had limited external validity as it did not happen in a “real-life” editorial setting. A problem with this approach is that it fails to take into account that gatekeeping does not happen at the individual level but is rather the result of an editorial process involving various considerations. Lastly, although the content analysis enables us to make inferences about the effects of analytics on the news output, another weakness is that it largely overlooks the selection process that precedes it. The doctoral thesis does not consider the underlying strategies and dynamics that drive news organizations to promote certain topics or articles at the expense of others. Therefore, an ethnographic approach would have been useful to arrive at a more complete picture of metrics as it permits studying all these journalistic practices and the structures that enable and constrain them simultaneously. Hence, journalists and editors would be able to explain *why* specific decisions were taken, albeit warily or unwarily. Furthermore, the relationship between supply and audience engagement is not unambiguous. In this dissertation, we argue that the news supply is affected by audience engagement, but causal relations remain speculative: more popular news items might be attributed more visibility. In a real-time news environment, it is hard to disentangle whether a news item is read a lot because it simply is pushed a lot, or whether a news item is read a lot because it generates lots of interest. We cannot account for this directly, but we could still assess whether the association between audience engagement and news supply differs across news topics, news style and outlet types. Further research needs to examine more closely the links between story promotion and audience engagement. Yet, such analyses will require cross-media investigations of other channels such as Twitter and Instagram. Results may differ for other social media channels because news consumers may display different behaviors and preferences on those platforms.

On a related note, another limitation lies in the fact that this dissertation had issues to delineate what exactly can be inferred from those audience analytics and metrics. Metrics are often a flawed instrument, as collective behavior of readers can manipulate them in a particular direction. Their self-reinforcing nature therefore offers a distorted view of popular news. One of the most significant current discussions in the literature recognizes how the behavior of news users is not to be conflated with their true interests or preferences (Costera Meijer & Groot Kormelink, 2017; Groot Kormelink & Costera Meijer, 2018, 2020). Even sophisticated measures such as conversions or time spent paint only part of the picture of who the audience is and what it wants. Better measurement is needed to deliberate how news audiences feel and act, which goes beyond purely quantitative measurements such as subscriptions and reach. Next, if the debate is to be moved forward, a better understanding

of news consumers' relationship to metrics also needs to be developed. Further studies need to be carried out in order to validate whether audiences are actually aware that their behavior on news sites is being monitored and if so, to what extent this awareness might shape subsequent consumption habits (see also Petre, 2015).

Finally, since a holistic approach was utilized, with audience metrics being studied on an aggregated level, the dissertation makes no attempt to differentiate between different types of news outlets. Notwithstanding this limitation, the dissertation suggests that commercial and public service media, once popular opposites in their orientation towards the market, are moving closer to another. This really comes with no surprise, given that news users increasingly get their news via social media and are turning away from traditional media, no news organization is exempt from getting involved with metrics.

Social implications and recommendations

In the introductory chapter, I outlined how the audience turn in journalism signaled a widespread agreement that journalists must transition from a period in which they took audiences for granted to one in which they more explicitly listen and engage with them. However, there remains confusion surrounding how engagement should look like. Many news organizations have taken up a reception-oriented approach (Nelson, 2019), engaging with their audience through metrics when it is already published. As a result, the assessment of audience members in the contemporary media environment is primarily metrics-based (Nelson, 2021). Although the techno-optimists have argued how audience analytics metrics have the potential to restore journalists' relationship with their audience (Tandoc & Thomas, 2015), they have been found to trigger renewed interest in quality discourse as well. However, throughout the research process, I have come to realize that the quality concept is problematic when applied to journalism because it "is nearly impossible to articulate what elements make up the concept" (Picard, 2000, 97). As a result, the dissertation has sought to discuss the normative underpinnings of whether analytics change the journalist-audience relationship through the framework of the softening of news (Otto et al., 2017; Reinemann et al., 2011).

Basically, audience analytics are tools designed to help newsrooms and journalists get quantified data on people's news consumption behaviors and measure the performance of news stories in terms of engagement under the premise that it will increase their understanding of the audience. However, they only get to know user behavior in a quantified and narrow way, namely as the aggregation of clicking, reading, sharing and liking behavior of all the individual Internet users who interact with their news. In addition, by seeing the audience as such a quantified, homogenous mass, journalists risk privileging stories that reach large audiences.

Most notably, this has left journalists and editors convinced that audiences are uninterested in public's affairs news, as metrics tend to be geared towards softer and sensational content (Boczkowski & Mitchelstein, 2013; Nelson, 2021). The news organizations under study also seem to share this impression that of the audience, which has led them to adopt a model in which softening news operates as a subsidy for selection. For example, the experiment

showed that metrics are mainly considered when deciding on the placement of soft news items, which arguably is a journalistic reflex (Chapter 4). The content analysis, on the other hand, illuminated how certain hard news topics and style would not 'do as good' as soft news topics and style, which leads them to pursue a softer news supply as a means of keeping the audience satisfied and maintaining its relevance and economic stability in a competitive environment such as Facebook (Chapter 5).

However, a growing number of scholars believes that the low turnout for public affairs news as reflected through audience metrics does not indicate a lack of interest in that type of reporting, let alone how much the audience enjoyed it (Costera Meijer & Groot Kormelink, 2017; Groot Kormelink & Costera Meijer, 2018, 2020). Instead of assuming that people disproportionately click on soft news because this stems from an innate interest in this kind of news, news media organizations should realize that different forces are at play in the media environment that shape news behavior too (Nelson, 2021). Firstly, news media organizations should wonder whether it has to do with the way stories get packaged, pushed and distributed on the basis of audience metrics. Following Nelson's argument, I believe the fault may lie in the limited variety of topics the audience can be responsive to, rather than how audiences innately feel about them. Low audience turnout for the Brexit may not result necessarily from a lack of interest in the topic but rather from less visible distribution on the different platforms of the news outlet. Secondly, other things may lie beyond journalists' control. Within social media news feeds such as on Facebook or Twitter, audiences have little agency when it comes to determining what content they expose themselves to (Bucher, 2012). The algorithms that structure those feeds may steer audiences to engage in what scholars refer to as "incidental news consumption" (Fletcher & Kleis Nielsen, 2018) and lead to other consumption patterns than when they would have sought out the news all by themselves. In other words, focusing on audience behavior in the form of audience metrics inherently has limitations and implications for journalistic content, as they in fact only observe what audiences are doing, yet, do not reflect why they are consuming the news they have chosen and how they perceive and value it.

As the digital editors consider pageviews and likes as a valid and sound stand-in for audience preferences (see Chapter 2), they thus risk to come to inaccurate perceptions of what audiences want from news and what they do not want (see also Nelson, 2021). Bearing in mind that research has shown how journalists' traditional perception of audiences only favoring soft news does not really hold true, accommodating to audience metrics could alienate news users and further erode their trust in news (Groot Kormelink, 2019). Audience metrics are increasingly taking a toll on journalists' credibility, as made apparent in the comment sections of popular news articles online, with news users prompting questions such as "*Is this news?*". Furthermore, soft news and softened forms of hard news have been linked to feelings of political cynism (Boukes & Boomgaarden, 2014; Jebril, Albæk, & de Vreese, 2013) and alienation of politics and journalism (Bennett, 2003). The paradox could then be that while journalists producing and distributing soft news presumably expect it to satisfy their audience in some way, a news consumer may find their experience to end in annoyance or frustration because it does not accommodate their real demands and preferences (Costera Meijer, 2007; Wagner & Boczkowski, 2021). Though the connection is not yet made explicit in this dissertation, it is possible that people's

disenchantment in the face of popular journalism, softening the news might bring them to tune out from news altogether. As news avoidance is a potential democratic problem linked to declines in political knowledge and engagement (Skovsgaard & Andersen, 2020), focusing on avoidance rather than consumption can be a fruitful avenue for research. Many scholars agree with Nelson when he states that “regaining audience trust in journalism and restoring its loyalty are among the most significant challenges facing the profession today” (p. 142), but one may wonder whether metrics are the ways to overcome this challenge.

Yet, while the above criticism is mostly focused on the metrics themselves, the dissertation has found very nuanced results concerning what news organizations and journalists *do* with metrics. Firstly, a recurrent theme in the in-depth interviews was a sense amongst social media editors and news managers that they would never let metrics prevail over journalistic criteria (Chapter 2). They argue how clicks can still be very useful to gauge immediate interest. Note how one of the news outlets was able to unlock more resources for the science news beat and how many interviewed editors used clicks to help establish headlines to entice users to quality content, while simultaneously, shunning away from clickbait titles. Another reason why exaggerated fear concerning audience metrics are unnecessary is the fact that a significant proportion of journalists make little to no use of analytics and remains still quite skeptical about their usefulness (Chapter 3). Furthermore, while assessing the headlines of hard news items, journalists seemed to be barely influenced by rising or falling audience metrics (Chapter 4). Lastly, there is hardly any evidence of a clear trivialization, because both on the web and on Facebook there is a significant amount of “hard news” present in the news supply (Chapter 5).

All-in-all, if newsrooms handle and capitalize on metrics in an injudicious way, where the goal of improving impact is seen as part and parcel of the goal of maximizing clicks and other measures of audience size, that will likely lead to further softening of the news supply. However, if they intelligently extract insights from the metrics to better tailor their supply to the needs of news users by smart algorithmic personalization services where content is pushed once throughout the day and by platform, it can help journalism close the infamous news gap with the news consumer. The dissertation suggests that editors have come to realize this too, and that they seem to be looking for a middle ground where they endeavor to reconcile commercial and journalistic motives. To do so, journalists should move away from approaching analytics a purely data-driven and commercial way and instead keep them at arm’s length in a data-informed and journalistic way, where audience analytics are considered as an end to a mean rather than as the driver of editorial decision-making. For the latter approach to gain ground, I would advocate that journalists keep the following recommendations in mind:

When editors develop new job profiles that are tasked to make sense of audience analytics, they should add the journalist to the equation. The dissertation revealed that journalists are becoming more familiar with audience metrics. So, one can assume that as more journalists will start to get more acquainted with analytics, the purely commercial responses to metrics (where a story has a more prominent place if and as long as it ranks well) will be supplemented or offset by journalistic interpretations (how can we “repurpose” an important

item that is dropping in the rankings in such a way that it might get read?). Journalists should be encouraged to get involved in more active usage of audience metrics as tensions may arise when predominantly data-driven profiles start to interfere with editorial choices on the basis of audience data. They should not just leave the interpretation to the “commercial side” of the newsroom but should also assert (more) editorial control over the use of metrics and have the opportunity to overrule the data-driven profiles if needed.

News organizations need to rethink their business models. The ongoing softening of news may be partly due to the fact that sustainable sources of revenue have stayed out of reach for online journalism, with news organizations business models still largely being driven by advertising logic. A shift away towards a focus on subscription models may alter the design and the use of analytics as well. In an ad-based model, the role of audience analytics is to sell audiences to advertisers. In subscription models, their role is to sell subscriptions and paid content. Cools, Van Gorp & Opgenhaffen (forthcoming) have identified how subscriptions are starting to play a far more central role in Belgian newsrooms. Such “subscriber-first” goal will probably imply a different set of metrics. Besides, it may entice news organizations to cultivate smaller, more loyal and intentional audiences rather than maintaining a more shallow relationship with a larger, mass one (Nelson, 2021). Nelson (2018a) has argued how audience segmentation might potentially be the solution in building a stronger connection with audiences. While this may restore public trust in journalism, Katz (1996) warned that a journalistic approach focusing on distinct audiences might downsize the shared space where citizens could gather and discuss similar information.

Journalists should be involved in the creation or modification of in-house analytical tools and dashboards. If we want journalists to take responsibility about what and how to write and which pieces to promote, we must be critical about the tendency of news organizations to rely on commercial audience analytics. First, news organizations should refrain from using predictive analytics that forecast the success of a news articles by proactively giving recommendations based on news user’s reading history. However, as mentioned throughout the dissertation, data are inherently prone to bias as they are designed to exploit audience attention in order to turn a profit. Without human oversight and editorial control, it is likely that predictive analytics will push news organizations to serve the demand and consequently, lead to suboptimal content choices. Many of the third-party technologies (Chartbeat, Google Analytics) that news organizations employ today arrive with certain commercial values embedded in them that have limited applicability for quality journalism. The task of journalists involves then to outline which journalistic norms should be considered when designing those tools.

Editors need to reflect critically about which metrics they want to track. This dissertation invites journalists to think thoroughly about which metrics they want to cater to. As chapter 5 has shown, ‘time spent’ seems inherently more desirable to use, as it cultivates a taste for hard news. This finding, while preliminary, suggest that further work needs to be done to establish how a metric such as time spent and other metrics such as conversions could influence the journalistic process. There is no one-size-fit-all approach to handling metrics: news organizations have to properly consider their goals and priorities when composing their own toolbox of metrics (Cherubini & Nielsen, 2016; Christin, 2020). A timely example is the quadrant model at some of

the DPG Media titles in our sample. Their 'golden quadrant' is comprised of articles that were able to generate lots of clicks, attention minutes and conversions (Hinke, 2021). However, as the goal in such model is still to drive up these metrics, the fear that it will mainly contribute to further softening and tabloidization of journalism is legitimate. But if newsrooms start using metrics in a different way, they may help them to offer more valuable content, or content that is more attuned to the real needs, interests and preferences of the news user.

Epilogue

Imagine I invented a device that enabled me to travel through time, rocketing me back to the year 2017. When the time machine stops, I would find myself catching a glimpse of the once aspiring journalist sitting at her flex desk in a Flemish newsroom. She on her turn would find her guest stumbling in, knocking over her coffee, disoriented and tired from four years of research but her eyes shining and twinkling with new insights. They would sit down together, and the Time Travelling PhD Researcher would begin her story. Would the PhD researcher have any advice for her to finish her internship successfully? First of all, she would say: Don't worry too much about these metrics, they may give the impression that numbers don't lie, but you know better. However, you don't need to forswear them like they are some kind of pure evil that will lead to the eventual demise of journalism, because you encountered nuanced findings in your dissertation. Refrain from using page views, but look more into metrics such as time spent, bounce rates or conversion rates. But ask yourself foremost whether there could not be better indicators to measure audience appreciation or interest.

Next, be sure to trust your gut-feeling but don't let it put you in an ivory tower that makes you look down upon the audience. There could be so many considerations why they chose to click on your baby orca story, which in no way implies that they did not value your Brexit analysis. Instead, question whether you gave that story the same treatment as the former one. Besides writing a compelling piece, devote more of your thought and energy to market your civically valuable work. Be sure to pass on this information to fellow youngsters in the newsroom, as they're most susceptible to adopting a metrics-oriented mindset. And finally, be sure to accept the offer of doing a PhD on the relationship between journalists and their audiences in the social media age as it will allow you to obtain all these insights. If you can, teach students about the consequences and implications of metrics-driven journalism, as they are the journalists of tomorrow. And with that being said, the Time Travelling PhD Researcher whizzed back to the present to prepare her defense.



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APPENDICES

Appendix A: Interview guide

1. General

Can you give a brief description of your position and average work day?

- Which newsbeat do you work for?
- Are you mostly working from the newsroom floor? Where is your desk located?
- Which colleagues do you interact with the most?
- To what extent are you involved in editorial decision-making?
- How often do you attend editorial meetings?

To what extent do you feel you know the 'audience' of <your medium>?

- How would you describe your audience?
- Do you yourself sometimes interact with your audience?
 - How often and how?

How important have web analytics become as a tool to monitor reader behavior?

2. Tools

2.1. *Web analytics*

What tools does your newsroom use? (list)

1.	Chartbeat
2.	Google Analytics
3.	Visual Revenue
4.	Adobe Analytics/Omniture
5.	Parse.ly
6.	Other

Does the entire newsroom staff have access to those web analytics?

- Do you have screens at the newsroom floor?
- Do you have a specialist traffic team/person?

For what purposes do you use them?

STORY PLACEMENT

If an article generates lots of traffic, do you consider it something that is the audience finds interesting?

- Where would you place this article on the homepage?

If an article is not able to generate any traffic, will it quickly disappear from the website or are you also looking for ways to bring that in another way?

- Can you give an example of a news item that was placed prominently even though it had little success?

STORY PACKAGING

Are you familiar with A/B testing?

- Do you often test the headlines of your news outlet's articles?

STORY PLANNING

Do you signal popular news articles to the newspaper chiefs/broadcast editors or social media managers?

Do you have the tendency to post certain types of articles because they did well in the past?

- Which kind of articles generate the most interest among your readership?

Are there any particular themes that you published that you would have expected to generate a lot more engagement?

- Would you continue to publish these themes?

2.2. *Sociale media analytics*

How strongly do you monitor Facebook and Twitter?

Is the monitoring of social media done by a social media editor or rather by individual journalists?

Is there frequent mutual discussion of what is trending on social media? Do you keep each other informed about trending topics and how exactly is that done?

Do you use any particular tools to schedule posts on social media?

1.	Tweetdeck
2.	Hootsuite
3.	Buffer
4.	Echobox
5.	CrowdTangle
6.	Ezy Insights
7.	Other

2.3. *Audience conception*

Do you think social media is a good reflection of what's going on with the public?

Has your perception of your audience changed since using those tools?

- Do you know your audience better now?
- Has it become easier to estimate how the audience will respond?
- Can you predict yourself what will work out or not?

Do those data help in (and are they used for-) estimating whether something resonates with your readers?

Besides those web analytics and social media, are there other ways to get to know your audience?

- How important are polls and readership surveys?

3. Closing remarks

What are the advantages of using web analytics?

What are the disadvantages of using web analytics?

Do you think they mean the end of quality journalism?

Appendix B: Experimental design

Appendix B.1: Constant headlines









1. Nuclear exit in 2025 feasible and affordable 📉
2. New final attainment levels in education show too little ambition
3. Rock Werchter almost completely sold out
4. Overpopulation in Belgian prisons remains a problem 📈

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Appendix B.2: Participants per condition

Variable	N
Chartbeat	
Increasing popularity	55
Decreasing popularity	54
Control	27
Tone	
Positive	63
Negative	73
Type	
Hard news	69
Soft news	67

Appendix B.3: Experimental conditions

Condition	Hard-soft news	Positive-negative news	Chartbeat	Headline
1	Hard	Positive		Half of young unemployed people find a job within six months
2	Hard	Positive		Half of young unemployed people find a job within six months
3	Hard	Negative		Half of young unemployed people don't find a job within six months
4	Hard	Negative		Half of young unemployed people don't find a job within six months
5	Soft	Positive		New season of "De Mol" in 2019
6	Soft	Positive		New season of "De Mol" in 2019
7	Soft	Negative		No new season of "De Mol" in 2019
8	Soft	Negative		No new season of "De Mol" in 2019
9	Hard	Positive	None	Half of young unemployed people find a job within six months
10	Hard	Negative	None	Half of young unemployed people don't find a job within six months
11	Soft	Positive	None	New season of "De Mol" in 2019
12	Soft	Negative	None	No new season of "De Mol" in 2019

Appendix C: Content-analytic design

Appendix C.1: Codebook

Variable	Coding	Codes
Article id	Computational	Unique identifier of the news article For example: d197257e8239832d5e
Article url	Computational	Link to the newspaper article
Date of publication	Computational	dd/mm/yyyy
Time of publication	Computational	hh:mm:ss
Medium.	Computational	1= VRT 2= De Standaard 3= De Morgen 4= Het Nieuwsblad 5= Het Laatste Nieuws
Title	Computational	Title of the news article in words
Subtitle	Manual	Subtitle of the news article in words
Story synthesis	Manual	Short summary of the news article in words
Topic	Manual	1= Political organization 2= Elections and referenda 3= Judiciary, Justice and Crime policy 4= Crime 5= Rights and freedom 6= Migration, Integration and Asylum seekers 7= Finance 8= Economy 9= Consumer affairs 10= Labor 11= Social affairs 12= Demography 13= Mobility and traffic 14= Spatial planning 15= Environment 16= Nature 17= Energy 18= Agriculture 19= Music 20= Film 21= Performing arts 22= Literature 23= Visual arts 24= Patrimony 25= Lifestyle 26= Education 27= Science 28= Aerospace 29= Entertainment 30= Tourism 31= Religion 32= Media 33= Telecommunication 34= Defense and Weaponry 35= International Institutions and Treaty structures 36= Europe (institutionally) 37= War and peace 38= International relations 39= Third World relations 40= Disasters 41= Sports 42= Celebrity 43= Royalty

Variable	Coding	Codes
News style	Manual	0= Hard news style 1= Soft news style
Article length	Computational	Number of words
Pageviews	Computational/manual	Number of pageviews
Time spent	Computational/manual	Amount of (median) time spent on page
Facebook	Computational	0= article not posted on Facebook 1= article posted on Facebook
FB_linktitle	Computational	Title of the FB links in words
FB_Like	Computational	Number of likes
FB_Love	Computational	Number of Love
FB_Sad	Computational	Number of Sad
FB_Wow	Computational	Number of Wow
FB_Angry	Computational	Number of Angry
FB_Haha	Computational	Number of Haha
FB_Thankful	Computational	Number of Thankful
FB_Comments	Computational	Number of comments
FB_Shares	Computational	Number of shares

Table C.2: Recoded topics codebook

	Code	Topic	Subtopics
HARD	1	(Inter)national Politics	Political Organization, Election and Referenda, Migration, International Institutions and Treaty Structures, Europe, International Relations, Third World Relations
	2	Law enforcement and crime	Judiciary, Justice and Crime Policy, Crime, Rights and Freedom
	3	Economy and finance	Finance, Economy, Consumer Affairs, Labor
	4	Social affairs	Social affairs, Demography
	5	Mobility and infrastructure	Mobility, Traffic, Spatial Planning
	6	Environment and Energy	Environment, Nature, Energy, Agriculture
	7	War, disasters, accidents	War and Peace, Defense and Weaponry, Disasters/ accidents
	8	Science, technology and education	Patrimony, Education, Science, Aerospace, Telecommunication
SOFT	9	Culture and arts	Performing arts, Literature, Visual arts, Religion
	10	Lifestyle and travel	Lifestyle, Tourism
	11	Media and entertainment	Music, Film, Entertainment, Media
	12	Celebrity	Celebrity, Royalty, Sports Athletes

Krippendorff's alpha = 0.74

Table C.3: News style coding instruction

Code	Was the article presented in soft or hard news style?	
0	HARD	Hard news style Ex. "New board of directors for [public service broadcaster] VRT" Ex. "Four million euros of project grants for cultural sector in first round"
1	SOFT	Signs of Personalization News that is more personality-centered, focusing on persona rather than events Ex. "Trump congratulates wrong state for win Kansas City Chiefs in Super Bowl final"
		Signs of Sensationalism News that emphasizes scandal or drama Ex. "Instagram model takes fatal fall from cliff while taking selfie"
		If the article displays one of these signs, we categorize the article as displaying soft news style. If not, hard news style.

Krippendorff's alpha= 0.83

Appendix C.2: Comparison of topics between the news website and Facebook (in %)

	News website (N=10 579)		Facebook (N=3163)	
	Frequency	Percentage	Frequency	Percentage
Crime	1665	15,7	508	16,1
Hard	1606	15,1	483	15,3
Soft	59	0,6	25	0,8
Politics	1402	13,3	390	12,3
Hard	1348	12,8	373	11,8
Soft	54	0,5	17	0,5
Celebrity	1214	11,5	312	9,9
Hard	232	2,2	240	7,6
Soft	982	9,3	72	2,2
Social Affairs	1067	10,1	425	13,4
Hard	1060	10,0	380	12,0
Soft	125	1,1	45	1,4
Economy and Finance	1037	9,8	226	7,1
Hard	946	8,9	201	6,3
Soft	91	0,9	25	0,8
Media and Entertainment	821	7,8	240	7,6
Hard	161	1,5	193	6,1
Soft	660	6,2	47	1,5
War, Disasters and Accidents	815	7,7	212	6,7
Hard	787	7,4	193	6,1
Soft	28	0,3	19	0,6

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	News website (N=10 579)		Facebook (N=3163)	
	Frequency	Percentage	Frequency	Percentage
Lifestyle and Travel	736	7,0	201	6,4
Hard	67	0,3	17	0,6
Soft	669	6,4	184	5,8
Environment and Energy	629	5,9	261	8,3
Hard	454	4,3	183	5,8
Soft	175	1,6	78	2,5
Mobility and Infrastructure	506	4,8	171	5,4
Hard	448	4,2	143	4,5
Soft	58	0,6	28	0,9
Science, Technology and Education	461	4,4	143	4,5
Hard	380	3,6	121	3,8
Soft	81	0,8	22	0,7
Culture	226	2,1	74	2,3
Hard	86	0,8	29	0,9
Soft	140	1,3	45	1,4

Note. Spearman correlation showed that the degree of overlap between the news supply on the website and on Facebook was high (= .859, $p < .001$), indicating a strong association.

ES

ENGLISH SUMMARY

To measure how audiences interact with the news on their websites nowadays, news media use audience analytics, such as Chartbeat, SmartOcto and Google Analytics. These are analytical tools that provide real-time data and statistics (so-called "metrics") on the number of times an article is clicked, shared or commented on. In recent years, news media in Flanders have embraced analytics as well. However, the way in which "metrics" are used and what impact they have on the editorial choices that journalists make has not yet been investigated. This dissertation questions how Flemish editors use analytics and what effects they have on choices journalists make during news selection and on the news offer itself. It wants to examine, among other things, whether the growing attention for click and reading figures could have the downside that the news supply shifts towards softer, trivial topics that are more appealing to the public.

Based on the results of four empirical studies, we arrive at a number of insights and conclusions. In a first study, we distinguish six purposes for which analytics are used today in Flemish newsrooms. Analytics are used for content optimization such as (1) placement (2) packaging (3) planning and (4) imitation of an article, but also as (5) performance evaluation and for (6) audience conception. The digital editors that I have interviewed, expressed enthusiasm for the tools' capabilities, but they also put the impact it would have on news selection into perspective; in their view, editorial choices take precedence over user statistics. In a second study, based on a survey of political journalists, we showed that the use of analytics correlates positively with a positive attitude towards analytics. Those who actively use them, and these are often younger journalists, are less skeptical about the usefulness and impact of analytics on journalistic work than the (on average older) journalists who are mainly or only passively exposed to metrics. An experiment that we conducted with political journalists suggests that journalists, when faced with "rising" or "falling" metrics, also take them into account to determine the place of an article on the website. However, the effect of metrics on the journalists' selection choice was only seen for "soft" news headlines but disappeared for "hard" news headlines. In a final study, using a large-scale content analysis, we take a closer look at whether the use of analytics contributes to further "softening" of news headlines. We find that Facebook selection drives softer content based on analytics.

The overall conclusion we draw from the study is that audience analytics help newsrooms keep their finger on the pulse of the public. It allows them to even better tailor news offerings to the interests and preferences expressed by audiences through clicks, shares and comments to news stories. Still, vigilance is needed, as our research also shows that the strong focus on metrics has an impact on the choices that journalists make during news selection and on the range of news offered online and through Facebook, which seems to "soften" in both topic selection and news style.

A

NIS

NEDERLANDSE SAMENVATTING

Metrics voor nieuws. Het gebruik en de effecten van analytics in de journalistiek

Kwaliteitsjournalistiek werd vorige eeuw nog beschouwd als journalistiek die nauwelijks rekening diende te houden met haar publiek. Verschillende ontwikkelingen, zoals de toenemende commerciële druk en voortschrijdende technologische en digitale mogelijkheden, hebben echter gezorgd voor een grotere gerichtheid op het publiek, wat ook wel de “draai richting het publiek” wordt genoemd. Inmiddels hebben nieuwsmedia hun lezerspubliek omarmd en is het algemeen aanvaard dat redacties rekening houden met de interesses en voorkeuren van hun publiek. Tools als Chartbeat, Google Analytics en SmartOcto worden daarom verkocht aan redacties om hen te helpen om hun publiek beter te begrijpen en de “audience engagement” te verhogen. Om de connectie met hun publiek te behouden, is het voor redacties bijgevolg hoe langer hoe meer een noodzaak om op de metrics in te spelen. Toch zou dit de keerzijde kunnen hebben dat het nieuwsaanbod verschuift in de richting van zachtere, triviale onderwerpen die het publiek meer te behagen. Het doctoraat stelt zich de vraag hoe Vlaamse redacties analytics gebruiken en welke effecten dit gebruik heeft op de keuzes die journalisten maken tijdens de nieuwsselectie en op het nieuwsaanbod zelf. Het wil onder meer nagaan of de groeiende aandacht voor klik- en leescijfers leidt tot een zachter nieuwsaanbod.

In het tweede hoofdstuk beschrijf ik hoe het gebruik van analytics intussen ook bij Vlaamse nieuwsmedia goed ingeburgerd is. Die vaststelling maak ik op basis van 21 diepte-interviews met nieuwsmanagers en socialemediaredacteuren van 11 Vlaamse nieuwsredacties. Zo konden we in dit eerste artikel een inventarisatie maken van de verschillende praktijken waarvoor analytics zoal gebruikt worden. Analytics worden onder meer gebruikt voor contentoptimalisatie zoals (1) de plaatsbepaling (2) de presentatie (3) selectie en (4) imitatie van een artikel, maar daarnaast ook als (5) performantiemaatstaf en als (6) proxy voor publieke opinie. Geen enkele journalist die sprak, vond echter dat analytics een impact hadden op de journalistieke keuzes: het buikgevoel en de kennis van journalisten zijn volgens hen nog steeds sturend wanneer redactionele keuzes gemaakt worden. Analytics zouden eerder complementair gebruikt worden, bijvoorbeeld om het nieuws te verpakken en te verplaatsen om het zo toegankelijk en verstaanbaar bij het publiek te krijgen.

In hoofdstuk drie gingen ik na of datzelfde discours ook te vinden was bij individuele, politieke journalisten. Via een survey kon ik peilen naar het gebruik, de blootstelling en de attitudes van zo’n 231 Belgische journalisten. Uit de analyses bleek dat er toch wel verschillen zijn tussen de eerste groep geïnterviewde journalisten en de groep journalisten uit hoofdstuk drie. Veel journalisten zijn vandaag bekend met cijfers over wat hun publiek vaak aanklikt. Ongeveer 60% van de journalisten gebruikt die cijfers echter nooit zelf. De meerderheid van de journalisten wordt er wel op regelmatige basis over geïnformeerd door de nieuwschef. Journalisten die actief gebruik maken van analytics, staan er over het algemeen ook positiever tegenover. Passieve blootstelling daarentegen zorgt voor negatievere attitudes en meer scepsis over hun capaciteit om het journalistiek werk te verbeteren.

Naast een peiling naar attitudes en percepties, wilden we weten in welke mate journalisten zich laten beïnvloeden door metrics bij het beoordelen van de prominentie die een nieuwsverhaal verdient. In het experiment vroeg ik journalisten om vijf nieuwstitels te rangschikken, waarbij de vijfde steeds gemanipuleerd werd ("hard" of "zacht" bericht, positief of negatief geformuleerd). Een eerste vaststelling was dat journalisten over het algemeen het "harde" nieuwsbericht hoger rangschikten dan het "zachte". Ook werden negatieve headlines hoger gerangschikt dan positieve headlines. Die twee bevindingen liggen in lijn met de nieuwswaardetheorie. Daarnaast bleek dat het effect van de analytics op de headline van het zachte nieuwsbericht significant groter was dan voor het harde. De zachte nieuwsheadline met stijgende populariteit werd hoger gerangschikt in vergelijking met de controlegroep. De ranking van de harde nieuwsheadline werd daarentegen niet of nauwelijks beïnvloed door de analytics. Hoewel publieksdata dus steeds meer ingeburgerd zijn op de nieuwsredacties in ons land, lijken ze voorlopig nog geen grote impact te hebben op het politiek nieuws dat ze hun lezers aanbieden.

In hoofdstuk 5, ten slotte, bestudeerde ik het effect van analytics op de op het aanbod en of het gebruik ervan dan resulteert in een zogenaamd zachtere nieuwsoutput. Het vernieuwende aan de inhoudsanalyse was dat ik de analyse van nieuwsaanbod koppelde aan een analyse van de engagement metrics, waardoor ik kon analyseren welke onderwerpen goed en minder goed scoren en bovendien een vergelijking kon maken tussen het aanbod op de website en dat op Facebook. Het onderzoek schept echter geen duidelijk zwart-wit beeld. Hoewel het nieuwsaanbod op Facebook nog grotendeels informatiedoeleinden lijkt te dienen door en het nieuwsgebruiker nog een significante portie harder nieuws voorschotelt, lijkt er toch een lichte verschuiving op te merken in onderwerpen en stijl. In vergelijking met de nieuwswebsite bevatte het Facebookaanbod minder politiek en economisch nieuws. De aanwezigheid van zachte nieuwsstijl, die meer elementen van sensatie en personalisering in zich draagt, was daarentegen prominenter op Facebook. Hoewel de digitale redacteuren het belang van analytics relativeerden, lijkt het er dus op dat metrics wel degelijk de nieuwsselectie en niet enkel de plaatsing en presentatie beïnvloeden. Voornamelijk pageviews en likes lijken de distributie op Facebook deels te sturen. Deze engagement metrics toonden aan dat zachte nieuwsonderwerpen en stijl het beduidend beter doen op Facebook. Deze studie legde wel bloot dat de metric time spent andere patronen vertoont en sterker gerelateerd is aan harde nieuwsonderwerpen en harde nieuwsstijl. Wanneer time spent centraler gezet zou worden in de redactionele strategie, zou dit dus andere inzichten en een ander aanbod kunnen opleveren.

Hoewel er volgens de redacteuren geen reden tot zorg is, stelt het doctoraatsonderzoek vast dat de evolutie naar "verzachting van het nieuws" wel degelijk aanwezig is. Of dat per se wil zeggen dat de "kwaliteit" erop achteruitgaat, is een andere kwestie en hangt af van wat we verstaan onder "journalistieke kwaliteit". Beginnende journalisten geraken meer en meer gewend aan de metrics-gedreven redactie waarin "pageviews", "time spent" en "shares/comments" almaar meer gelijkgesteld worden met goede journalistiek (hoofdstuk 3). Verder lijken de metrics voor zachtere nieuwsheadlines wel in overweging genomen te worden (hoofdstuk 4). Tot slot lijkt het gebruik van analytics om de voorkeur van het publiek voor zacht nieuws te duiden ook te leiden tot de promotie van een zachter nieuwsaanbod op Facebook. Tegelijkertijd

nuanceren enkele bevindingen een al te kritische perceptie ten aanzien van het gebruik van metrics in de journalistiek. De digitale redacteuren benadrukken zelf in het tweede hoofdstuk dat ze de metrics nooit voorrang zullen verlenen op journalistieke beoordelingscriteria. Bovendien maakt een significant deel van de journalisten nog weinig gebruik van metrics en staan ze er nog vrij sceptisch tegenover. Het vierde hoofdstuk toont op zijn beurt aan dat journalisten zich bij de beoordeling van headlines van harde nieuwsberichten niet of nauwelijks laten beïnvloeden door een stijgende of dalende metric.

Als redacties dus op een onoordeelkundige manier omgaan en inspelen op metrics, zal dit langzaam maar zeker leiden tot een verdere verzachting van nieuwsaanbod. Als ze daarentegen op een verstandige manier inzichten halen uit de metrics om hun aanbod beter af te stemmen op de behoeften van nieuwsgebruikers doorheen de dag en per platform, dan kan het de journalistiek helpen om de kloof met de nieuwsgebruiker te dichten. Nieuwsredacties moeten beseffen dat de metrics geen valide en betrouwbare meting van de wensen van de nieuwsgebruiker zijn, maar eerder van de performantie van nieuwsartikels. Ze helpen journalisten enkel om het gebruikersgedrag te begrijpen op een bepaalde manier, namelijk als het geaggregeerde klik-, lees-, deel- en like-gedrag van alle individuele internetgebruikers die met hun nieuws in aanraking komen. Door de cijfers op dat geaggregeerde niveau te interpreteren, meten journalisten enkel populariteit en niet per se de waardering van de nieuwsconsument. Nieuwsconsumptie zit immers vol inconsistenties en de veronderstelling dat zachter nieuws de voorkeur van die consument wegdraagt, gaat niet altijd op. De paradox is dan door mensen te geven wat ze willen, media op termijn hun publiek verliezen wanneer dat betekent dat ze hun nieuwsaanbod trivialisieren.

De algemene conclusie die we uit het onderzoek trekken is dat web analytics nieuwsredacties helpen om de vinger aan de pols van het publiek te houden. Het stelt hen in staat om het nieuwsaanbod nog beter af te stemmen op de interesses en voorkeuren die het publiek kenbaar maakt via clicks, shares en reacties op nieuwsberichten. Toch is waakzaamheid geboden, want ons onderzoek toont ook aan dat de sterke focus op metrics een invloed heeft op de keuzes die journalisten maken tijdens de nieuwselectie en op het aanbod van het nieuws dat online en via Facebook wordt aangeboden, dat zowel in themaselectie als in nieuwsstijl lijkt te “verzachten”.

AB

AUTEURSBIJDRAGEN

Chapter 2: Six Uses of Analytics

Kenza Lamot (first author): conception of the study (50%); data collection (100%); data analysis and interpretation (60%); writing of research paper (50%).

Steve Paulussen (co-author): conception of the study (50%); data analysis and interpretation (40%); writing of research paper (50%)

Acknowledgment: We would like to thank the two student workers for transcribing a significant part of the in-depth interviews.

Chapter 3: Do metrics drive news decisions

Kenza Lamot (first author): conception of the study (60%); data collection (20%, as part of a research team effort); data analysis and interpretation (80%); writing the research paper (70%)

Steve Paulussen (co-author): conception of the study (20%); data analysis and interpretation (10%); writing of research paper (20%)

Peter Van Aelst (co-author): conception of the study (20%); data collection (10%, as coordinator of the journalist survey); data analysis and interpretation (10%); writing of research paper (10%)

Acknowledgement: We are thankful for the efforts of the research team consisting of additional members Kirsten Van Camp and Stefaan Walgrave in coordinating the journalist survey and collecting the data.

Chapter 4: Beaten by Chartbeat?

Kenza Lamot (first author): conception of the study (50%); data collection and processing (100%); data analysis and interpretation (60%); writing of research paper (50%).

Peter Van Aelst (co-author): conception of the study (50%); data analysis and interpretation (40%); writing of research paper (50%)

Acknowledgement: We are thankful for the efforts of the Belgian research team consisting of additional members Kirsten Van Camp and Stefaan Walgrave in coordinating the journalist survey and collecting the data.

Chapter 5: What the Metrics Say

Kenza Lamot (single author): conception of the study (100%); data collection and coding (100%); data-analysis and interpretation (100%); writing of the research paper (100%)

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