



Re-evaluating journalistic routines in a digital age: A review of research on the use of online sources

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Abstract

This review article provides a critical discussion of empirical studies that deal with the use of online news sources in journalism. We evaluate how online sources have changed the journalist–source relationship regarding selection of sources as well as verification strategies. We also discuss how the use of online sources changes audience perceptions of news. The available research indicates that journalists have accepted online news sourcing techniques into their daily news production process, but that they hesitate to use information retrieved from social media as direct and quoted sources in news reporting. Studies show that there are differences in the use of online sources between media sectors, type of reporting, and country context. The literature also suggests that verification of online sources requires a new set of skills that journalists still struggle with. We propose a research agenda for future studies.

Keywords

Journalism, online sources, review article, social media, sourcing

[N]ews is event-driven, not Twitter-driven.

Moon and Hadley (2014: 301)

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Introduction

Journalists increasingly use social media, websites, and online encyclopedias as sources (e.g. Hermida, 2013; Tylor, 2015; Vis, 2013). Online sources offer a convenient, cheap, and effective way for journalists to gather background information on developing stories (Pavlik, 2000), and they can also trigger news (Broersma and Graham, 2012). Online sources give easy access to both elites as well as the “man on the street” perspective on a topic (Broersma and Graham, 2013). Consequently, a growing number of scholars are interested in understanding how the availability and use of online sources has changed the journalistic news production process, as well as the journalistic profession as a whole. These studies aim to understand why and when journalists use online sources, and what the consequences of the use of online sources are for audience perceptions of journalism.

In this review article, we evaluate the available research on online news sourcing. We show how the online revolution has impacted journalistic sourcing routines (Lariscy et al., 2009; Schifferes et al., 2014) in terms of (1) *which* online sources are selected and (2) *how* their information is verified. In this way, we can show if the availability of online sources has changed journalistic practice and information gathering, and if online sourcing has brought about a change in the power balance between journalists and their sources. Arguably, the proliferation of user-generated content on online platforms could lead to loss of control for elites, and increase the visibility of nonelite citizen voices in the media (Hermida and Thurman, 2008). Online sourcing also brings new challenges to the journalistic skillset (Cassidy, 2007; Mitchelstein and Boczkowski, 2009), which is covered by studies examining verification strategies (Arant and Anderson, 2001; Diekerhof and Bakker, 2012). Our review examines, if traditional news production routines translate into the world of online sourcing.

We find that, so far, online sources, such as the use of Twitter quotes or search engines to gather information, have not replaced traditional sourcing strategies. Rather, online sources complement traditional sourcing, and most journalists now combine newsgathering via telephone, press conferences, and personal interviews with information that can be retrieved online. At the same time, however, research suggests that journalists are challenged by keeping up with the complex process of actually verifying online sources. Also, the rise of social media has by no means ended the dominance of elite sources in news media coverage. We conclude this article with a brief research agenda that may inform future studies on journalistic sourcing strategies online. There is a particular need to study the sourcing routines of freelance journalists, whose work makes out a significant portion of news content today. Also, the effects of using online sources on audiences are understudied.

Methodology

In this review, we discuss published journal articles that deal, in some way or other, with journalistic news sourcing online. This means that we discuss newsroom studies, as well as results from content analyses and effect studies. Our review comprises both qualitative and quantitative research. The search strategy for this review included five steps.

First, we searched academic databases¹ for literature and examined the leading journals in the field using specific keywords (see Dundar and Fleeman, 2014). The keyword “sourcing” was most often used, often in combination with “journalism” or “journalistic” and “online” or “social media” (this resulted in 157 studies in e.g. Web of Science). In a second step, we checked the reference sections of all selected papers for further relevant studies, and we asked a number of experts in the field for help in finding further related works. In a third step, we made sure that all selected studies were published in relevant journals or books in the field of new media and journalism. In a fourth step, we used Google Scholar to double-check whether all relevant studies were included. In the final step, we read all articles and excluded them from our review article, if they did not focus on online sourcing practices of journalists. In sum, this furnished this review with a final sample of $k = 22$ studies.

For the purpose of this review, we only select studies that focus on the influence of new channels of acquiring information online, such as websites or social media, on the journalistic news production process. This means that we include studies that examine the extent to which the rise of the Internet as a new communication platform has replaced more traditional forms of journalistic newsgathering. It also means that we exclude studies that focus on the use of “online sources,” such as blogs or social media by audiences themselves to produce news (without journalistic intervention), and we also do not focus on studies that investigate the increasing personal or professional use of online media (e.g. social media) by journalists to break stories and report on daily politics (Vis, 2013). In short, we examine online sources as a journalistic technique, rather than as a communication channel in itself. We further define the concept of journalistic sourcing and online sourcing in the following section of this article.

Why examine studies on online sources?

The relationship between journalists and their sources is the single most defining aspect of news reporting (Reese et al., 1994; Tiffen et al., 2014). News sources define the reality of news coverage and give structure to the news production process. Journalism has developed certain routines on how to handle sources. These routines dictate how to contact credible sources, how to verify information obtained from these sources, and how to organize sources to produce balanced or objective news coverage. The relationship between journalists and their sources has been described as a “tug-of-war” (Gans, 1979) or a “tango” (Strömbäck and Nord, 2006). Sources have an agenda-setting function (McCombs, 2005), and can introduce their own frames into media coverage (Hänggeli, 2011). This can be connected to the idea that a considerable part of journalistic news production is focused on (political) elite sources, and that these elite sources have the upper hand during the news production process (Fishman, 1980). Interestingly, however, both politicians and journalists believe that the other is firmly in charge of the news production process (Van Aelst et al., 2008). Accordingly, studies observing traditional journalistic sourcing routines notice a distinct lack of civilian or nonelite sources in news media coverage (e.g. Atton and Wickenden, 2005; Hallin et al., 1993).

It is unlikely that the Internet has *not* changed news sourcing techniques, and with it the complex relationship between journalists and (elite) sources. Journalists employ

a list of sourcing techniques to acquire and verify information obtained from both elite and nonelite sources. It is a change in these sourcing techniques that we focus on in this review article. Based on recent literature, we can assume that a change in available channels and tools to contact sources will also alter the visibility of certain sources, such as political elites, in news media coverage (e.g. Dylko et al., 2012), and that it will change the structure and content of news (e.g. Broersma and Graham, 2013). For instance, journalists traditionally gather information in a mix of what can be called “structured” and “unstructured” newsgathering techniques. Structured techniques refer to coordinated media activities arranged within press strategies developed by (political) actors, such as press conferences, interviews, and photo ops. Unstructured, or spontaneous, sourcing techniques traditionally refer to stake outs, phone inquiries, observation of an event, and background research (e.g. Sellers and Schaffner, 2007). Today, any information search should, in theory, be increasingly conducted online. Thus, one can ask whether that also means that journalists would replace citations stemming from a (structured) personal interview with a politician with the use of (unstructured) quotes from this politician’s Twitter feed. Along the same lines, one can expect that journalists would increasingly conduct background searches on Google, rather than via reliable contact networks and telephone inquiries. A number of scholars argue that changes in newsgathering techniques will also permanently alter journalistic ecosystems, and might even lead to the emergence of new journalistic genres. For instance, recent changes might blur the distinction between journalists sourcing online, and reporting techniques of new forms of online journalism such as blogging or social media reporting (see, for example, Anderson, 2010; Farrell and Drezner, 2008). Graves (2015) sees so-called “annotative journalism” emerging; an investigative journalistic technique that operates through “publicly dissecting and comparing news accounts and other evidence through the lens of a wider media and political critique” (p. 100). As a hybrid of online and traditional sourcing, it is rooted in both fact-checking journalism, as well as blogging.

In this review, we thus evaluate just that: we ask whether the availability of new information platforms and ways of contacting sources has really changed journalism in that they alter how journalists (1) select and (2) verify sources during their daily newsgathering routine. First and foremost, the question of source *selection* is connected to the democratizing potential of the Internet. If, as some scholars assume, the Internet functions as a new public space wherein a diverse range of voices can be heard (Papacharissi, 2002), then this should also change which of these voices are selected for news reports. Traditionally, journalists gravitate toward elites as sources, but some assume this would change in a world where reporting has gone digital (Hermida, 2013). The rise of social media makes it easier for journalists to follow important events, contact members of the public, but also to get insights into alternative views of an issue. All this might just lead to more variety, less majority- and power-driven sourcing in journalism (see, for example, Poell and Borra, 2012). Second, a change in source selection might affect the quality of news coverage. For instance, the increased availability of information online might make the production of a news story not only easier and quicker, but could also furnish journalists with the ability to better explain complex political problems to their audience (e.g. via the use of links in an article).

Verification is central for understanding journalistic modern source routines. As great as the Internet might be for conducting information searches, journalists are also confronted with a potentially overwhelming amount of information online. Anonymity online brings up further questions of credibility of online information (Bucy, 2003; Cassidy, 2007). If we assume that the rise of social media leads to an increased use of quotes from these media in news reports, then this also opens up new challenges about how to verify these quotes for credible news reporting. In the following sections, we discuss empirical studies that have tested these assumptions regarding source selection and verification. Table 1 is a summary of all studies included in the review.

Source selection

When discussing the selection of online sources, most studies are concerned with the question whether the emergence of online possibilities of sourcing has led to displacement of “offline” sourcing techniques, such as press conferences, interviews, or stake outs (Sellers and Schaffner, 2007) and thus to a disruption in traditional journalistic sourcing routines. However, the available research largely takes the point that online sources will not replace offline sources, but that they are a (welcome) addition to journalistic sourcing routines. Also, online sourcing has so far not changed much regarding the dominance of elite sources in news reporting.

Specifically, research shows that journalists often use online sources in reporting, and studies focusing on professional motivations suggest that these journalists also feel that online sources are very important for their daily information gathering (Jordaan, 2013; Paulussen and Harder, 2014). Websites, particularly political websites or established news websites, are the most popular online source (Lariscy et al., 2009). For example, Knight (2012) shows that, during the 2009 Iranian elections, British journalists did use online media regularly, but often gravitated toward elite sources. Thereby, these journalists ensured that “traditional voices and sources are heard above the crowd” (p. 71). This thus suggests that journalists choose elite sources online—just as they would “offline.” Along these lines, research also shows that journalists still rely on “traditional” news sourcing that favors elites, such as telephone or press conferences (e.g. Machill and Beiler, 2009; Van Leuven et al., 2014). For the case of Belgian journalists, Van Leuven et al. (2014) could not find a decline of traditional ways of reaching sources after online sources became important. Rather, online sources are a back-up for “offline” sources or may provide indirect inspiration for news reporting later on (Tylor, 2015). This means that, so far, the available data contradict expectations regarding the democratizing and disruptive power of online sourcing techniques.

A number of contextual factors that predict the selection of online sources give a more detailed picture: research indicates that journalists use online sources more when reporting on soft or human-interest news (Moon and Hadley, 2014). In addition, journalists working for online media outlets use online sources regularly (Gulyas, 2013). This might be explained by the fact that online journalists usually work under greater time pressure when reporting. The necessity to constantly update a news website, paired with the increasing popularity of live-blogging news online (Thurman and Walters, 2013), renders it difficult for journalists to collect information via traditional and often slower channels.

Table 1. Studies on online sources.

Study	Where in the journalistic process? ^a	Method ^b	Online source(s) studied	Key result ^c
AlMaskati (2012)	Media coverage	Content analysis	Social media and mainstream/traditional sources	Journalists relied on traditional sources rather than social media in reporting the 2011 Egyptian uprising
Bakker et al. (2013)	Media effects	Experiment	Twitter	An online source (i.e. Twitter source) was not perceived as more credible than an offline source (i.e. from an interview)
Broersma and Graham (2012)	Media coverage	Multi-method	Twitter	Twitter triggers stories and is used to add background and opinion; (Dutch) politicians use Twitter to increase their visibility in the news
Broersma and Graham (2013)	Media coverage	Content analysis	Twitter	Twitter is a regular and rich source of opinions and information; tweets are often taken at face value
Garrison (2000)	Journalists	Survey	Internet	Online sources are increasingly important, but journalists are not always able to use them efficiently
Gulyas (2013)	Journalists	Survey	Social media	Print journalists use social media less than TV and online journalists, but there are country differences (e.g. this is the case in the United Kingdom, but not in Germany)
Harrison (2010)	Journalists	Observation	User-generated content (UGC)	UGC counts as newsworthy, but rarely alters the news agenda (BBC hub case study)
Hermida et al. (2012)	Media effects	Survey	Social media	Online audiences are positive or indifferent toward the use of social media content by journalists
Hermida et al. (2014)	Media coverage	Content analysis	Twitter	NPR's Andy Carvin used a considerable number of nonelite voices on Twitter as sources during the Arab Spring; Twitter may serve as a means to broaden the range of voices in the news
Jordaan (2013)	Journalists	Survey	Social media	Social media change journalistic routines; journalists feel their role is changing due to immediacy of social media
Knight (2012)	Media coverage	Content analysis	Websites/social media	Journalistic practice favors traditional voices; social media not used much in reporting Iranian election 2009
Lariscy et al. (2009)	Journalists	Survey	Social media	Webpages are the most important online source; social media are seen in a positive light but not often used
Machill and Beiler (2009)	Journalists	Multi-method	Internet	The Internet plays an important role when searching for information, but the telephone is still a major factor in sourcing

Table 1. (Continued)

Study	Where in the journalistic process? ^a	Method ^b	Online source(s) studied	Key result ^c
Messner and Distaso (2008, Study 1)	Media coverage	Content analysis	Weblogs	Weblogs have emerged as a popular and credible source for newspapers
Messner and South (2011)	Media coverage	Content analysis	<i>Wikipedia</i>	Newspapers frame <i>Wikipedia</i> as a credible and accurate source of information
Moon and Hadley (2014)	Media coverage	Content analysis	Twitter	Twitter is more attractive as a source in soft news and for less important topics; TV journalists use Twitter more often than newspaper journalists
Paulussen and Harder (2014)	Media coverage	Content analysis	Social media	Social media are part of daily newsgathering routines, and are often used to display nonelite sources
Schifferes et al. (2014)	Journalists	Experiment	Social media	Journalists require the ability to verify social media sources and to adapt social media information to their own stories
Sundar (1998)	Media effects	Experiment	Websites	Stories with quotes were rated as more credible than stories without these quotes
O'Sullivan and Heinonen (2008)	Journalists	Survey	Internet	Journalists count the use of online sources as one of the most important aspects of their skillset
Taylor (2015)	Journalists	Multi-method	Internet	Newsgathering strongly relies on search engines (Google); journalists focus on the first page of search results which shows limitation to verification behavior online
Van Leuven et al. (2014)	Media coverage	Content analysis	Social media and mainstream/traditional sources	Belgian journalists prefer traditional source channels (e.g. telephone) over UGC or social media

NPR: National Public Radio.

^aJournalists/Media coverage/Media effects.

^bQualitative interviews/Survey/Experiment/Observation/Focus groups/Content analysis/Other—Quantitative/Other—Qualitative/Multi-method.

^cSelected key result relating to use of online sources.

There is also evidence that broadcast journalists use online sources to a greater extent than newspaper journalists (Gulyas, 2013). Among newspaper journalists, those working for tabloids again use social media more frequently (Broersma and Graham, 2013, but see Paulussen and Harder, 2014). This, initially, suggests that media that are reputed for less in-depth reporting on news topics are also more open toward using online sources.

In addition, studies show that there are country differences—particularly when it comes to the use of social media as sources. Yet, so far, there are only very few comparative

studies published, which makes more general observations difficult. Broersma and Graham (2013: 460) found that British and Dutch newspapers differ in their use of Twitter as a news source. British newspapers quote more tweets than their Dutch counterparts, a finding most likely connected to the “competitive character of the UK market [which] leads to more personalized, conflict-oriented and sensational news. Twitter, as a personal medium *par excellence*, provides a lot of information that is useful for exactly these kinds of stories.” Broersma and Graham (2013) also show that British newspapers used Twitter more in entertainment and sport coverage, whereas Dutch newspapers used them in political news coverage.

In interview and survey studies, journalists often indicate that social media are particularly important for their work, and that there is a strong need for additional skills and changed newsgathering processes within the profession (Jordaan, 2013; O’Sullivan and Heinonen, 2008). Yet, when it comes to actually using social media as direct sources in new productions, content analytical studies show that there are limitations. A number of authors argue that social media are not actually that visible in media coverage (Knight, 2012; Machill and Beiler, 2009). Also, there is evidence that social media are predominantly used to provide background on an already visible elite source (e.g. a tweet of a politician) or to add explosive “man on the street” opinions and “flavor” to a story (Broersma and Graham, 2012, 2013). In this sense, the idea that social media, such as Twitter, are an online space, and that they provide journalists with convenient and new ways of accessing sources is valid. Still, whether they represent a “beat” in their own right, as argued by Broersma and Graham (2012), is unclear at this point in time. Rather, recent case studies conclude that social media sources are only used when nothing “better” is available, such as when access for foreign journalists is limited, as was the case in the Arab Spring (e.g. AlMaskati, 2012; Hermida et al., 2014).

In sum, online sourcing techniques thus do not lead to a more diverse, public-centered way of reporting the news. The public has not become an elite actor, but social media sources replace the proverbial market place, where journalists gather *vox pop* segments to enrich a story already heavily based on elite sources. Yet, we must be cautious when drawing conclusions on the influence of social media at this point in time: there is the strong possibility that all available observations may have to be adapted in the future, given the rapid adoption and spread of social media use in many countries. Studying online sourcing, and social media use in particular, remains a moving target.

Verification strategies

The abundance of information online, paired with an accelerating 24-hour news cycle, renders verification the most important aspect of online sourcing (Hermida, 2013). On the most basic level, the study of verification strategies online has focused on the study of journalists’ level of Internet literacy, or their ability to actually identify “who is a reliable source, filtering out fake pictures and video content, and using geo-location to cross-check where individuals actually are” (Schiffes et al., 2014: 415; see also Garrison, 2000). Research shows that, while journalists have really embraced the presence of

online information (e.g. the use of search engines such as Google) into their daily routines, there are a number of challenges.

Unsurprisingly, journalists often use search engines and online encyclopedias such as Wikipedia to find online sources and information. In fact, research shows that journalists perceive Wikipedia and Google as accurate and credible online information sources (see, for example, Lih, 2004; Messner and Distaso, 2008; Messner and South, 2011). Yet, there is reason to believe that such trust may be misplaced, as journalists are not sufficiently aware of the way online search tools function. For instance, Tylor (2015) shows that journalism students did often not click further than the first page of a Google results output. This suggests that journalists in this study trusted Google's selection mechanism for top search results maybe too much. This also means that journalists might be prone to following Google's architecture of information online, and that their news reporting is in turn shaped by this architecture. This renders current work on identifying verification techniques and skillsets, as suggested by Schifferes et al. (2014), even more important.

In any way, online sourcing requires a very different skillset than offline news sourcing (Bruno, 2011; Tylor, 2015). Where verification strategies used to be phone calls with trusted sources to confirm a new piece of information, there are now questions of acquiring geo-location (i.e. from where was the information posted), identifying where social media content comes from, or understanding where trustworthy eyewitness information could be obtained (Schifferes et al., 2014). In some way, this might also be the reason why journalists shy away from using social media information for serious and substantial reporting, and why this kind of sourcing strategy is more often used on light entertainment and sports stories as found by Broersma and Graham (2013). Importantly, the sheer impossibility to fully understand the complex architecture of online information has prompted some researchers to start developing computerized tools that may help with verifying information online. This not only further integrates technological change and knowledge into the study of journalism, but it also reflects a professional journalistic development: researchers report that some media outlets have also developed their own tools to verify information online:

[F]ollowing the Costa Concordia disaster in 2011, the BBC social media team tried out different search terms on Twitter and looked for images on Twitpic and yfrog, and on YouTube for video. They tried to anticipate words people might use, such as "sinking" and "rocks." They used geo-location services to drill down to people who might have been nearby (Trushar Barot, personal communication, January 2013). (Schifferes et al., 2014: 409)

But these tools may not offer enough "fine-grained control" and are often not able to locate where information comes from (Social Sensor Project as named in Schifferes et al., 2014: 409). When looking at media coverage itself, verification strategies are difficult to discern. However, Broersma and Graham (2013) note that in tabloid newspapers "tweets seem to be taken at face value. There are no signs that the source or other sources were contacted to verify information that was twittered. This might indicate 'sloppy journalism' and erodes journalism as a practice of verification" (p. 461). Observations such as this resonate with findings regarding increased trust levels for online sources, as discussed by Tylor (2015).

Effects on audiences

Keeping in mind that journalists seem to have both accepted and integrated online sourcing into their daily news sourcing routines, a next group of studies wonder if this might also change how audiences perceive the quality of journalism. These studies often build on more general work that, on the whole, suggests that online media could actually be judged as more credible than traditional media (Johnson and Kaye, 1998). However, relevant empirical evidence remains anecdotal, as these first studies have been conducted at the turn of the century. The Internet's impact on journalistic news production has simply changed since then. Particularly, the popularity of social media has, until now, not been taken into account in media effects research on sourcing. So far, two studies examined the consequences of the use of online versus offline sources on audiences. Bakker et al. (2013) test whether the use of a Twitter source in a news story affects the perceived credibility of a news source. They found that an online source (i.e. the Twitter source) was not perceived as more credible than an offline source (i.e. information from an interview). Similarly, Hermida et al. (2012) found that audiences were in general positive or indifferent toward the use of materials that were obtained by journalists via social media.

The lack of further studies on online versus offline source credibility is surprising, given that many scholars have previously emphasized the importance of sources in the news. For example, Sundar (1998) asserts that if articles contain quoted sources (articles with source attribution), they will be perceived as more credible and of high quality. This could result in a better understanding of the news story. Findings by Bakker et al. (2013), however, indicate that online sources and offline sources are both regarded as credible news sources. Besides the distinction "online vs. offline," other cues might be important (e.g. Go et al., 2014; Lucassen and Schraagen, 2012). For instance, Go et al. (2014) emphasize that, if a source mentioned in a news article is regarded as highly believable (i.e. an expert), then a story is positively evaluated also. Alternatively, the temporal orientation of a source (e.g. proximity vs distal sources; see Kang et al., 2011) might play a role and could interact with the immediacy of online information. Further studies that investigate such relationships for *online* news sources are needed.

In addition, studies that have proposed theoretical or empirical thoughts on the effects of online sourcing have almost exclusively focused on the dependent variable of perceived credibility. Yet, there is abundant room for future research in determining the effects of the use of online news sources on measures that go beyond that. Further work could, for instance, examine whether the use of online news sources affects readers' perceived liking, importance, and relevance of the news story (see, for example, Sundar, 1998). Equally important are conditional effects or the study of moderators in this field. Previous research has found that citizens' educational level might explain different source effects (Yang and Grabe, 2011). Others emphasized that reliance on online and traditional news predicts to what extent different media channels are perceived as credible (Johnson and Kaye, 2000; 2013). These effects have not yet been replicated for online versus traditional news sources.

A research agenda for journalism studies

Based on our analysis of the available literature, we formulate a number of points for further research. The below list is by no means comprehensive, but highlights a number of open questions that our examination of online news sourcing studies has raised:

1. We conclude that many research articles published so far find that social media are used in news reporting, but that their impact on journalistic agenda-setting is not as fundamental as previously expected. However, this conclusion is mainly based on newsroom studies, which neglect the fact that much of what is “news” today is actually produced by freelancers outside of the newsroom (Witschge and Nygren, 2009). These freelancers work based on limited financial security and often churn out news reports at high speed. One could assume that this higher speed leads to an increase in the use of quick and easily available online sources. This could also lead to factual mistakes during the fast-paced news production process (Singer, 2003). This effect may be reinforced by a lack of professional networks outside of a newsroom. So, the study of sourcing routines among freelance journalists should be a substantial part of future journalism research.
2. The existing research offers only very limited insights into how online news sources are treated once they are selected. There is evidence that news sources are selected more for soft or human-interest news, but are they integrated as direct quotes, paraphrases or do they play a more indirect role in news production? In addition, research suggests that journalists believe that online news sources should be treated with caution (Pleijter, Hermans and Vergeer, 2007). However, it is unclear to what extent the gatekeeping role of journalists is changed with the increased use of online news sources (and the credibility of online information is sometimes difficult to determine; Diekerhof and Bakker, 2012).
3. There is a clear need for more comparative work when it comes to online sourcing and social media use in journalistic news production. Existing studies suggest differences between countries, but so far no clear structure emerges.
4. Internet literacy, or the ability of journalists to verify online sources, remains understudied. Literacy is particularly important concerning the verification of sources online and the identification of the geo-location or origin of online social media information. Various research projects (e.g. Schifferes et al., 2014: 409; Social Sensor Project) are currently concerned with the development of journalistic tools that may be used for verification. Also, it is important to better understand if Internet literacy is a generational problem in journalism (as it might be in the wider population). Some suggest that the Internet is used for verification of regular information, but there is a need to understand how the Internet is used to verify *online* information (Pleijter et al., 2007). Along the same lines, we know only little about the motivations that underlie journalistic (mis-)trust in specific online sourcing techniques such as search engines or social media. Future studies might want to not only observe the adoption process, but should also evaluate how journalists rationalize the altered and changing news production process.

5. An understudied, yet very influential, online platform is Wikipedia. Research results indicate that journalists perceive Wikipedia as a credible and convenient information source. But verification strategies in connection with Wikipedia content are complex, and journalists might not possess the necessary knowledge to judge the trustworthiness of information stemming from Wikipedia.
6. The influence of online sourcing on journalism theories is a hot topic for future research. Our evidence suggests that journalistic agenda-setting, for instance, seems to only be marginally affected by online sources. Similar conclusions can, so far, be drawn for effects on our understanding of the role of journalists as gatekeepers in society, and journalistic news values. Future research must address the possible disruption online sourcing presents for these and other mass communication and journalism theories.
7. Research must focus on the consequences of the use of online sources on readers' perceptions of a news story, as the use of sources might affect whether readers believe a news story is credible or not. In lieu of existing studies, we have already outlined a number of research avenues above. As journalists use various sources for their news stories (e.g. online sources, such as social media, search engines, and websites, and traditional news sources, such as stake outs, interviews, and press conferences), we know little about how citizens evaluate journalists who use online news sources (vs offline news sources) in their news reporting. Moreover, scholars have yet to explore which attributes of an online news source drive credibility or effects on other attitudes and beliefs about journalism. In addition, it is important to investigate the influence of individual differences, such as education levels, among citizens on media effects (Yang and Grabe, 2011). It might well be that some users are simply more open to accepting online sources than others (Sundar, 1998).

Conclusion

The online revolution continues to change journalism. This review article shows that when it comes to sourcing, most journalists seem to have embraced online information searching, and they take social media as an important inspiration for developing news stories. However, the research up until now also suggests that online sources have not led to a change in the actual news agenda. Journalists still gravitate toward elite sources, and do not show a decrease in traditional news sourcing techniques. In a sense, online news sources seem to have simply shifted a part of the information search routine into a new space (i.e. normalization). Twitter is one of the most important phenomena for journalism researchers; empirical evidence so far suggests that it plays an important role, but predominantly for soft and human-interest news and in situations where there is no direct access to other information. In general, authors are not euphoric regarding the democratizing potential of online news sources. Journalists are still gatekeepers, who select (elite) sources for their news reporting.

The real challenge lies with verification strategies. Recent research has uncovered that using online sources, such as Twitter or YouTube, in a responsible manner requires

skills that may go beyond those most journalists possess. Some media have reacted with new verification strategies online, and academic research is working on developing verification tools that may be used by journalists online. In addition, research on the effects of the use of online news sources on audiences is very limited. So far, only very few studies examined the consequences of online sources in news stories for audience perceptions and these studies find that audiences evaluate online and offline sources as equally credible. As this does not square with more theoretical works on changed journalism routines, future effect studies are required.

In sum, this review shows that more and more studies address the question of online sourcing. Yet, so far, these studies have only scratched the surface, and the influence of online information on journalistic news production must be the subject of future study. This review highlights a number of future avenues for research on the production, content, and effects of journalistic use of online sources.

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Note

1. The following databases were used: "Web of Science" and "Google Scholar." In addition, to grasp the most recent research, we also included paper presentations that were available online (via personal website or databases of the conference). The leading international academic journals we focused on are as follows: *International Communication Gazette*, *New Media & Society*, *Journalism and Mass Communication Quarterly*, *Digital Journalism*, *Journal of Broadcasting and Electronic Media*, *Journal of Media Practice*, *Journalism Practice*, *Journalism Studies*, and *Public Relations Review*.

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