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AI in the Newsroom: Does the Public Trust Automated Journalism and Will They Pay for It?

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ABSTRACT

Artificial intelligence (AI) is increasingly being adapted for news production tasks in news outlets worldwide. Whether the public trusts news outlets relying on AI to produce news remains unclear. Further, the economic implications (willingness to pay and ad acceptance) and moderators remain unexplored. We conducted a pre-registered 2×2 experiment with a quota-based nonprobability sample from Germany ($N = 1{,}261$). Respondents were exposed to vignettes about a fictional online news outlet. We manipulated the production process (generative AI vs. trained journalists, between-subject) and the topic covered (politics vs. entertainment, within-subject). Participants trusted outlets with AI-generated news less, particularly political ones. They were less willing to accept seeing ads shown by AI outlets and outlets that covered entertainment. Willingness to pay was not affected. We explored moderators: Individuals with the perception that AIs spread incorrect information were less trusting in AI-generated news. These perceptions did not moderate the relationship with willingness to pay or ad acceptance. The opinion climate did not moderate the effect of the content production process. In sum, AI in the newsroom may decrease trust and ad revenue of outlets. This effect might be exacerbated depending on audience characteristics. We discuss implications for theory, future scholarship, and media organizations.

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Across the world, various news organizations actively use or experiment with artificial intelligence (AI) technologies in news production (Diakopoulos 2019). For instance, news outlets such as the BBC or the Washington Post have set up research labs to investigate opportunities of AI-driven journalism. Organizations such as the Associated Press, Reuters, or Forbes have been relying on AI to generate reports about finance, sports, and other topics for years. With the development of more sophisticated AIs, media organizations might be even more inclined to integrate these technologies into the production process (Lermann Henestrosa, Greving, and Kimmerle 2023; Møller, van Dalen, and

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Skovsgaard 2025). Particularly recent advances in the field of text-generating AI, such as large language models (e.g., ChatGPT), offer new incentives for news organizations and journalists to implement these technologies. According to a recent survey of journalists by the World Association of News Publishers, already half of the surveyed newsrooms work with generative AI tools such as ChatGPT (Henriksson 2023). Further, audience expectations seem to align with the rapid adoption of generative AI in journalism: In a recent general population survey in six countries, 66% of respondents reported that they expect that generative AI will have a large impact on the news media (Fletcher and Nielsen 2024).

Journalism scholarship has dedicated substantial attention to this phenomenon for over a decade (e.g., Van Dalen 2012). Thereby, scholars often turn to the term *automated journalism* to describe "the process of using algorithms or software to generate news stories automatically without human intervention" (Tandoc, Yao, and Wu 2020, 549). While initially limited in their capabilities, the technologies powering automated journalism have become more sophisticated (Lermann Henestrosa, Greving, and Kimmerle 2023). Thus, news organizations consider deepening the implementation of AI in their newsrooms, but they recognize that, along with the opportunities, there are also potential risks (Kim and Kim 2017). However, some of the risks of incorporating AI remain underexplored in journalism research. One could argue that the audience's trust in the journalistic content might be affected by introducing AI into the newsroom (Graefe and Bohlken 2020). This may alter a news outlet's ability to fulfill its democratic function of informing the public effectively (Strömbäck et al. 2020). Furthermore, automated journalism may also touch the commercial interests of news organizations on the demand-side (Kim and Kim 2017). For instance, news users might be less willing to pay for a subscription to access AI-generated content in contrast to content written by human journalists. Advertising which secures a large chunk of revenue for many news outlets is already today perceived as an annoyance by many users. When news content is primarily generated by AI, news users might be less inclined to tolerate various forms of advertising.

In this study, we advance previous scholarship on the audience perspective on automated journalism in four ways. First, while previous scholarship almost exclusively focused on the users' evaluation of content (e.g., an article) generated by or attributed to AI (Graefe and Bohlken 2020), we take a look at the bigger picture by investigating effects on the news outlet-level (e.g., trust in the outlet). Second, next to evaluations (i.e., trust), we investigate the unexplored question of how using AI for content production may affect the economic success of news outlets (i.e., advertising acceptance and willingness to pay). Third, we investigate context factors such as negative attitudes toward AI technologies or perceptions about the opinion climate in a society (i.e., level of perceived polarization and level of perceived dominance of one's opinion) since they may affect how audiences react to AI-generated news. Fourth, while previous research primarily focused on automated journalism about specific data-driven topics (e.g., football match report), with the advent of more sophisticated AIs, it is crucial to study the impact on much larger fields of journalism, such as political journalism and entertainment news in general.

To address these research gaps, we conducted a pre-registered 2×2 experiment with a mixed design in Germany ($N = 1{,}261$). Building on the insights from previous research about audience's content perceptions of AI-generated news, we study the effects on

media trust but also on willingness to pay and ad acceptance. Furthermore, we probe how perceptions about AI and the opinion climate affect the effect on the dependent variables.

Previous Research on Automated Journalism

There is ample research on AI and journalism. Scholarship has been discussing how AI shapes journalism from a variety of perspectives. For instance, while some studies discussed the implications (e.g., job loss due to automation of routine tasks) and opportunities (e.g., more time for in-depth researching, data journalism) for newsrooms and journalistic practice, others investigated how AI-powered news recommendation systems affect the news citizens consume and how they evaluate the curation processes (e.g., Van Dalen 2012). Another strand of research focuses on AI-assisted production of journalistic content—practices often labeled as automated journalism. This line of research examines how the news production process, such as the writing of articles, can be assisted or taken over by AI-based applications. Furthermore, scholars investigated whether and how news consumers' perceptions about automatically generated news (e.g., text-based) differ from perceptions about content produced by journalists. A meta-analysis synthesizing the evidence from twelve studies suggested that people consider texts labeled as human-written more credible, readable, and of higher quality (Graefe and Bohlken 2020). The picture portrayed in narrative reviews (Danzon-Chambaud 2021) and some recent studies (e.g., Lermann Henestrosa, Greving, and Kimmerle 2023) is less clear-cut, concluding that human-generated and computer-generated stories are evaluated similarly.

Four aspects of the current literature are striking. First, most empirical research on the public's evaluation of AI in journalism focuses on the content-level but largely ignores the media outlet-level. Research investigating perceptions about automated journalism typically measures how news users perceive specific media content allegedly produced by AI. Thereby, most studies present participants with specific (journalistic) texts, manipulating the source (i.e., human- or AI-written), the disclosed source, or both. Only a few studies attributed the experimental stimuli to existing media brands (but then did not assess the effect on brand evaluations, Waddell 2019); others measured trustworthiness on the writer-level (i.e., journalist) but not on the media brand-level (e.g., Liu and Wei 2019). By focusing on the content-level, these studies miss the impact of AI integration on the outlet-level. This is, however, particularly crucial since media selection (e.g., choosing an online media subscription, clicking on a link) is often driven by perceptions on the outlet-level and not exclusively based on evaluations of the specific media content.

Second, the current literature focuses on audiences' evaluation of content (e.g., credibility, quality, etc.) but ignores commercial consequences tied to the integration of automated journalism related to audiences' acceptance of incurring costs. To fulfill their democratic function, news media's product should be accessible, informative, and trusted by the public. Clearly, these evaluations are important. However, most media companies around the world do not only provide the public with informational value but also sell a product. Many media companies pursue commercial interests and have to generate revenue to survive as economic actors. Currently, the literature on automated journalism discusses supply-side dynamics (e.g., cost-efficiency in newsrooms) but hardly considers

economic consequences on the demand-side that may result from AI journalism. In other areas of research, it has been shown that purchase intentions for human and AI-generated content may differ (e.g., Granulo, Fuchs, and Puntoni 2021).

Third, whether audiences trust and are willing to incur costs for AI-generated news may depend on a variety of other factors. Potential moderating factors have received so far only limited attention in this area of research (but see, Jang, Kwak, and Bucy 2022; Liu and Wei 2019). For instance, news consumers' attitudes about AI such as the fear that AI spreads misinformation may alter how fond they are of automated journalism. Investigating such moderating factors is crucial since it can have fundamental implications for news companies depending on the characteristics of their core audience.

Fourth, research on the content evaluations of automated journalism primarily focused on data-driven topics, such as finance, weather, or sports. A couple of years ago, automated journalism was largely constrained to such highly structured and data-driven topics given that the AI tools delivered subpar results for other topics in need of more interpretative and in-depth reporting (Thurman, Dörr, and Kunert 2017). AI-generated text was still far away from the complexity of human-written text (Lemelshtrich Latar 2015). However, with AI technologies becoming more sophisticated, automated journalism is becoming more prominent and relevant for a variety of more complex and less data-driven news (Lermann Henestrosa, Greving, and Kimmerle 2023). This is also indicated by recent research on newer generations of large language models. For instance, in a chain of experiments, Jakesch, Hancock, and Naaman (2023) showed that people were not able to distinguish between AI-generated and human-written self-presentations in various contexts. With this in mind, media organizations across the spectrum, from those focused on hard news to those primarily catering to entertainment motives of the audience, might be more inclined to make use of AI for the production of less data-driven topics. However, whether the use of AI is appreciated or tolerated by audiences may also depend on the domain of journalism in which it is used.

Automated Journalism's Impact on Two Pillars of the News Media

Impact on Media Trust

To fulfill their democratic function of informing citizens about current affairs, it is crucial that citizens not only use but also trust the news media (Strömbäck et al. 2020). Most news outlets strive for the public's trust and implement practices and campaigns to improve this trust. For example, they may aim to improve their trustworthiness by being transparent about their news production (e.g., Stroud and Van Duyn 2023; Uth, Badura, and Blöbaum 2021). Importantly, audience's knowledge and perceptions about the news production process can affect the public's trust in a news outlet, and it seems as if media organizations are also well aware of this when it comes to automated journalism (e.g., Kim and Kim 2017).

There are various ways in which automated journalism could affect news user's trust. On the one hand, AI-generated news might be perceived as more trustworthy. For example, some scholars argue that journalists have quite a bad reputation and are typically framed negatively (Jung et al. 2017). But this argument might be limited to countries

where distrust prevails (Tandoc, Yao, and Wu 2020). Others have argued that machines might be considered as objective or accurate by (parts of) the public or in some situations (e.g., Liu and Wei 2019; Waddell 2018). Consumers may infer objectivity based on the information that the content was produced by a computer and not a human (Sundar 2008).

On the other hand, journalists might be more trusted than AI for various reasons. News often also revolve around more complex topics than a sports match report. Reporting about more complex topics requires background knowledge and needs the author to evaluate and weigh different pieces of information. Potentially, audiences may not trust algorithms to fully incorporate such nuances (Lermann Henestrosa, Greving, and Kimmerle 2023).

As mentioned, most studies in the field of automated journalism investigate trustworthiness and credibility on the content-level (e.g., Waddell 2019). In these studies, participants evaluate a certain piece of journalistic content (e.g., article about a football match) coming with a source label (e.g., AI-written vs. the name of a journalist). The empirical findings are mixed. Building on a rather small number of studies, a meta-analysis reports increased credibility for texts allegedly written by humans in comparison to computer-generated texts (Graefe and Bohlken 2020). More recent studies show no difference regarding credibility or trustworthiness (Lermann Henestrosa, Greving, and Kimmerle 2023). In sum, most researchers in the field consider the evidence as mixed (e.g., Danzon-Chambaud 2021; Tandoc, Yao, and Wu 2020). Thus, we state the following research question.

RQ1: Does media trust differ for the AI and the journalist media outlet?

Regardless of whether or not AI is used in the production process, media outlets often differ regarding the topics they cover for their audiences. Some specialize in in-depth reporting of hard issues such as politics, the economy, or foreign affairs, while others tend to provide softer topics and concentrate on amusing their audiences (Reinemann et al. 2012). Scholars have argued that the proliferation of tabloid-style entertainment and soft news might have harmed the public's media trust (Ladd 2012). Previous research suggests that news outlets focusing on so-called hard news are more trusted than those focusing on entertainment-centered soft news. For instance, in a recent study (Knudsen and Johannesson 2019), hypothetical news outlets featuring primarily entertainment news were less trusted.

When we consider the bulk of research on automated journalism, we see that most studies on audience perceptions focused on topics such as sports or finance (Graefe and Bohlken 2020). This is because these topics were among the first ones news outlets tried automating (Diakopoulos 2019). However, with the advances in AI, automated journalism will also conquer other topics and realms of news reporting. Whether users trust automated journalism may depend on the area of application. For hard-news content accuracy and incorporating nuances might be more crucial than for entertainment topics. Thus, we state the following:

H1: Participants trust the entertainment media outlet less than the politics media outlet.

RQ2: Does the relationship in H1 differ for the AI and the journalist media outlet?

Impact on Audience's Willingness to Pay and Advertising Acceptance

While trust is clearly a concern for media outlets when debating the use of AI, economic considerations are closely related to these discussions too (Kim and Kim 2017). Previous scholarship dedicated quite some attention to the economic consequences of automated journalism (e.g., Kim and Kim 2017; Tandoc, Yao, and Wu 2020), however, almost exclusively looking at the supply-side of the news production process. For example, it has been debated whether and how AI can be used to replace human work in content production processes (Van Dalen 2012)—something that is, from a merely economic perspective, desirable for companies since it cuts one of the costliest parts of news production, human labor. Though, in most media companies, AI might, at least for now, primarily take over routine tasks, allowing journalists to focus on more creative tasks and in-depth research (Van Dalen 2012). Research in the field often discusses how automated journalism can rationalize the newsroom and improve cost efficiency (e.g., Kim and Kim 2017; Lemelshtrich Latar 2015). Strikingly, this focus ignores the demand-side of journalistic products. To survive and flourish economically, many media companies need to generate revenue, often by selling subscriptions or ads. In other words, they rely on audiences willing to pay for the news product with money or time and attention that the media company can sell to advertisers. In this study, we borrow the concept of advertising acceptance from advertising research, which has been used to refer to the willingness to receive or be exposed to advertising, often in exchange for incentives (e.g., free use of a service or product; Hanley and Becker 2008). Importantly, the audiences' willingness to incur costs (e.g., seeing online ads) for the journalistic product might be affected by the use of AI.

A few studies investigated, next to the evaluation of human vs. computer-written text, how inclined individuals were to use the news source in the future (Jang, Kwak, and Bucy 2022; Wölker and Powell 2021). While studying news selection provides some initial "evidence about whether journalistic automation might affect readership numbers" (Wölker and Powell 2021, 90), it is only partially informative about future revenue possibilities. Future intended use might strongly depend on the costs involved, which are not assessed in these studies. It should be noted that none of these studies found significant differences in self-reported use (intentions). Though, it is likely that the studies also did not have the statistical power to detect small effect sizes.

There are two reasons why news users might be more inclined to incur costs for media content that is produced by journalists than by AI. First, for audiences, news media content does not only carry an instrumental but also a symbolic value. (News) media content allows consumers to situate themselves in social reality within their culture. News consumption also affects the self-concept of individuals and structures interpersonal relationships. Thereby, news can be considered as products that carry substantial symbolic value (Solomon 1983). Recent research showed that individuals favor human labor over robotic labor in a variety of consumption situations, but this difference is even exacerbated in symbolic consumption situations (Granulo, Fuchs, and Puntoni 2021).

Second, human-written journalism might be perceived by audiences as more cost-intensive. Journalists put hours of their lifetime into the product and must be paid accordingly. For fully-automated journalism, the total costs consist of development (or license), server, and infrastructure costs combined with labor costs that are rationalized toward

maintenance tasks. As noted in the literature (e.g., Kim and Kim 2017), AI production is probably cheaper than human production. Consumers are likely to include the (perceived) costs on the supply-side in their mental calculation for the product valuation.

H2: Participants are more willing to (a) pay for and (b) accept advertising shown by the journalist media outlet than for the AI media outlet.

In contemporary media environments, news consumers might be more willing to incur costs for political than for entertainment news. According to previous scholarship, the production of soft and entertainment news might be less expensive than producing political news and in-depth reporting (e.g., Hamilton 2004), since it may not require the same level of investigative research and scrutiny. Subscription fees for hard news-oriented media tend to be more expensive and media tend to hide news about politics and the economy more often behind a paywall (Myllylahti 2017). In other words, audiences are used to incurring higher costs for political than for entertainment news. A study from Germany also suggests that users are more willing to pay for hard news topics online (Buschow and Wellbrock 2019). Taken together with H2, we expect that news users are the least willing to incur costs for AI-driven media outlets that primarily focus on entertainment news.

H3: Participants are more willing to (a) pay for and (b) accept advertising shown by the politics media outlet than for the entertainment media outlet.

H4: The relationship in H2 is moderated by the media outlet's topic. Participants are more willing to (a) pay for and (b) accept advertising shown by politics media outlets using AI as compared to entertainment outlets.

The Moderating Role of Risk Perceptions About Generative AI

How people evaluate the use of AI in different contexts might heavily rely on the perceived risk. This perception could be shaped by media presentations (e.g., Fast and Horvitz 2017) and prior experiences with, and knowledge about the technology (Sundar 2020). Although AI has made significant technological advancements, concerns have been raised by the public about potential risks and possible misuse of AI (Pew 2023). A potential risk is that information generated via generative AI might lead to spreading misinformation or distorting facts (van Dis et al. 2023). Some studies suggested that generative AI tools showcase low factual accuracy (Kung et al. 2023), or even produce nonsensical or repetitive texts (Jakesch, Hancock, and Naaman 2023).

However, not only media reporting about AI might shape people's risk evaluations. Also, one's own experience and knowledge regarding this technology might influence peoples' risk evaluations. A study showed that participants with lower knowledge regarding algorithmically generated news prefer human-written texts compared to machine-authored texts (Jang, Kwak, and Bucy 2022). Although, studies showed that the risk of producing inaccurate text highly depends on the knowledge people have because "incorrect, biased or misleading prompt information may derail the model's ability to give a good answer" (Zuccon and Koopman 2023, 1), the knowledge about these technologies might shape risk evaluations. Moreover, according to the Human–artificial intelligence Interaction and the Theory of Interactive Media Effects (HAII-TIME) model (Sundar

2020), disclosing the use of generative AI can act as a symbolic cue that might lead to activating underlying stereotypical perceptions. Further, the model argues that these perceptions are shaped by prior experiences with the technology. A study showed that the fear related to the use of AI in general might evoke more negative heuristics regarding the use of AI (Molina and Sundar 2022). In sum, we expect that risk perceptions about generative AI shape the trust people put into journalistic content produced by AI. Relatedly, risk perceptions might also shape the audience's willingness to incur costs.

H5: The difference of trust for the AI and the journalist media outlet is moderated by informational risk perceptions about generative AI. Participants with higher risk perceptions about generative AI trust the AI media outlet less.

H6: The relationship in H2 is moderated by informational risk perceptions about generative AI. Participants with higher informational risk perceptions about generative AI are less willing to (a) pay for and (b) accept advertising shown by the AI media outlet.[1]

The Moderating Role of Perceived Polarization and Majority Opinion Climate

As mentioned, some of the literature in the field states that, according to the machine heuristic, machines are perceived as more objective than humans, leading to greater trust (Sundar 2008; 2020). In the context of the present study, this could mean that people apply a mental shortcut: When a machine performs a journalistic writing task, the results will be more objective and, therefore, more trustworthy than when humans perform the same task (Lee 2023). The machine heuristic crucially depends on generalized knowledge or stereotypes about how machines work. However, when comparing AI with a human journalist, the machine heuristic may also depend on the generalized knowledge about how humans perform. In fact, according to Molina and Sundar (2022), human judgments may be perceived as biased, as they are inherently subjective, depending, for instance, on norms or political orientation.

In line with this, we theorize about two contextual situations in which humans may have generalized judgments about other humans' biases, affecting whether human or AI journalism is favored. First, in the context of polarized information environments, it can be assumed that humans put less trust in other humans when polarization is high. In such environments, citizens learn that humans do not agree about basic facts, leading to disagreement and a refusal to acknowledge other perspectives. According to the machine heuristic, AI, by contrast, may be perceived as less affected by a polarized information environment because AI-based judgments are considered to be less subjective compared to human ones (Lee 2023). Thus, a polarized information environment may strengthen the impact of the machine heuristic: Machines are seen as more objective compared to humans, particularly in a polarized environment. This should foster trust in AI-generated texts as well as the willingness to pay or accept advertising.

Second, a similar argument can be made for the perceived opinion climate, a concept originating from spiral of silence research (see Matthes, Knoll, and von Sikorski 2018). Humans can infer the opinion climate from their observations of others, either interpersonal or mediated. When people perceive themselves in a majority opinion climate, they have the impression that most humans agree with their views. This would also apply to journalists. In that case, there are no grounds to stress human biases.

However, when people see themselves in a minority climate, they may conclude that most people are against their views. In other words, they may also consider the status quo of reporting as biased. Therefore, the machine heuristic may be stronger: In a minority opinion climate, machines are more objective as compared to humans, leading to trust as well as the willingness to pay or accept advertising. Taken together, highly polarized contexts as well as situations in which individuals see themselves in the minority should lead to better evaluations of the AI since humans are considered more biased in these contexts.

H7: The difference of trust for the AI and the journalist media outlet is moderated by (a) perceived polarization of the media outlet's topic and (b) perceived dominance of one's own opinion. Participants with (a) higher perceived polarization of the media outlet's topic and (b) lower perceived dominance of one's own opinion trust the AI media outlet more.

H8: The relationship in H2 is moderated by (a/c) perceived polarization of the media outlet's focus and (b/d) perceived dominance of one's own opinion. Participants with (a/c) higher perceived polarization of the media outlet's focus and (b/d) lower perceived dominance of one's own opinion are more willing to (a/b) pay for and (c/d) accept advertising shown by the AI media outlet.

Method

Design and Sample

We conducted a pre-registered[2] (https://osf.io/38zc2) 2 × 2 experiment with a mixed design. We manipulated the topic of the news outlet (i.e., political vs. entertainment) as a within-subject factor and the content production process of the news outlet (i.e., articles written by trained journalists vs. generative AI) as a between-subject factor. The study received IRB approval on 8 September 2023 and was part of a larger data collection. Data was collected between 10 October 2023 and 19 October 2023. Based on quotas for gender, age, and education, an online panel provider recruited a nonprobability sample of 1,904 respondents aged 18–60 in Germany. Due to missing consent or full quotas, 474 respondents did not continue. For individuals who participated more than once, we retained the first questionnaire. One hundred and twenty-five participants did not finish the experiment. We excluded speeders and inattentive respondents, as detailed in the pre-registration (44 cases). Unfortunately, one of the three attention checks was not correctly programed, so that 9% of the sample did not see the question. For these respondents, we relied only on two attention checks to determine inattentive responding. Backed by an a-priori power analysis, we aimed at 1,200 participants (see Online Appendix A). For the final analyses, we relied on N = 1,261 and, thus, 2,522 measurement points (two observations per respondent). The final sample was 49.56% female (50.28% male and 2 individuals diverse). The average age was M = 40.86 years (SD = 11.76). Educational background was diverse (ISCED 0–2: 12.69%, ISCED 3–4: 57.97%, ISCED 5–8: 29.66%). Data, analysis script, full question wordings, and an Online Appendix are available on the OSF (https://osf.io/puf2j).

Procedure and Manipulation

After informed consent, demographics and moderators were assessed. As a distractor task, participants then took part in an unrelated study, answering questions about

social media, climate change, smoking behavior, and other unrelated topics. Respondents received the following vignette (translated from German):

> Next week, a new innovative media company called Daily Scoop [Daily Briefing] will launch in Germany.
>
> Daily Scoop [Daily Briefing] is an online news product. The content will be available as an interactive smartphone app, desktop software, and in the browser to make it available to you anywhere, anytime. New articles and multimedia content about regional politics, national politics, and international politics [entertainment topics, popular culture, and lifestyle] will be available for you daily. Trained journalists [Generative artificial intelligence] create[s] the articles and content published by Daily Scoop [Daily Briefing].

Respondents had to remain at least five seconds on the vignette before the dependent variables were assessed on the next questionnaire page. After factual manipulation checks, respondents saw the second vignette. Respondents were made aware that the second vignette refers to another media outlet not related to the first one. This time, participants saw the other topic of the news outlet and the other brand name but the same content production process (i.e., trained journalists vs. generative AI). The order of the topic of the news outlet and brand name were randomized. After spending at least five seconds on the second vignette, dependent variables were assessed. Participants were fully debriefed.

Measures

Media Trust

Dependent variables were assessed right after exposure to each vignette. We adapted measures by Strömbäck et al. (2020) to assess media brand-related media trust with three items on a seven-point scale (1 = do not agree at all, 7 = strongly agree): "[BRAND] will report fairly," "[BRAND] will report correctly," and "[BRAND] will report unbiased." Items were averaged per vignette (M = 4.07, SD = 1.28, α = .92, $r_{\text{between vignettes}}$ = .75).

Willingness to Incur Costs

Willingness to incur costs was operationalized with (a) willingness to pay and (b) advertising acceptance. Drawing from previous work (e.g., Fletcher and Nielsen 2017), we assessed willingness to pay by asking respondents "how likely or unlikely" it is that they will " … pay for a subscription for [BRAND] in the future," and " … pay for individual articles and posts from [BRAND] in the future" (seven-point scale; 1 = very unlikely, 7 = very likely). Items were averaged per vignette (M = 2.45, SD = 1.67, $r_{\text{Spearman-Brown}}$ = .93, $r_{\text{between vignettes}}$ = .83).

To measure advertising acceptance, we asked "how likely or unlikely" it is that respondents will: " … use [BRAND] if [they] have to watch a 15-seconds ad clip daily," and " … use [BRAND] if [they] see banner ads next to the articles" (seven-point scale; 1 = very unlikely, 7 = very likely). Items were averaged per vignette (M = 3.19, SD = 1.77, $r_{\text{Spearman-Brown}}$ = .88, $r_{\text{between vignettes}}$ = .79). Willingness to pay and advertising acceptance were correlated with r = .66.

Moderators

Prior to assessing informational risk perceptions about generative AI, respondents received a definition of generative AI (see Online Appendix C). Based on Stubenvoll, Heiss, and Matthes (2021), we asked respondents whether "generative AI produces information … " " … that turns out to be wrong after further investigation," " … that does not match the facts according to third sources," and " … of which the content proves wrong after checking it" (seven-point scale; 1 = do not agree at all, 7 = strongly agree). Items were averaged (M = 3.90, SD = 1.41, α = .91).

We assessed perceived polarization about politics and entertainment with three items each by asking "to what extent [respondents] think people in Germany are united or divided on" different topics (seven-point scale; 1 = Germany is completely united, 7 = Germany is completely divided). Items were averaged per topic. For politics, we asked about "regional politics," "national politics," and "international politics" (M = 4.96, SD = 1.26, α = .84). For entertainment, we asked about "entertainment topics," "pop culture," and "lifestyle" (M = 4.31, SD = 1.12, α = .80).

Perceived dominance of one's own opinion about politics and entertainment was assessed by asking "to what extent [respondents] think people in Germany agree with [their] opinion regarding … " the six items used to assess perceived polarization (seven-point scale; 1 = Most people do not share my opinion, 7 = Most people share my opinion). Again, items were averaged per topic and respondent (politics: M = 4.21, SD = 1.27, α = .87, entertainment: M = 4.06, SD = 1.18, α = .84).

Manipulation Checks

After the first vignette, we implemented two factual manipulation checks. We asked respondents to what extent they agree with the following two statements (seven-point scale; 1 = do not agree at all, 7 = strongly agree): "[BRAND] primarily deals with entertainment topics, pop culture, and lifestyle," (M = 3.84, SD = 1.57) and "[BRAND]'s articles are written by trained journalists" (M = 4.09, SD = 1.73).

Analysis

Since we have multiple observations per participant (i.e., two vignettes), the vignettes were our unit of observation. To account for the dependence between the observations within participants, we used mixed model ANOVAs, as foreshadowed in the pre-registration. We relied on the implementation provided by the R package afex (Singmann et al. 2023). We ran separate models for each dependent variable. To probe the moderation hypotheses, we included one continuous moderator at a time (i.e., three-way interaction between the continuous moderator and the two experimental factors). All moderators were mean-centered prior to analysis. Additional information about the analysis strategy is available in the Online Appendix B.

Results

Manipulation checks were successful. Individuals exposed to the entertainment media outlet in the first vignette (M = 4.21, SD = 1.54) agreed more often that the first vignette's brand "primarily deals with entertainment topics, pop culture, and lifestyle"

($t(1259) = 8.59$ (Welch), $p < .001$) than individuals first exposed to the politics media outlet ($M = 3.47$, $SD = 1.51$). Similarly, respondents in the journalist media outlet group ($M = 4.81$, $SD = 1.53$) recalled more often that "trained journalists" produced the content than respondents in the AI media outlet group ($M = 3.45$, $SD = 1.65$, $t(1254) = 15.18$ (Welch), $p < .001$).

RQ1 asked whether media trust differs for AI ($M = 3.87$, $SD = 1.30$) and journalist media outlets ($M = 4.29$, $SD = 1.21$). We found a significant main effect of the between-subject manipulation ($F(1, 1259) = 39.79$, $p < .001$). H1 predicted that entertainment media outlets ($M = 4.08$, $SD = 1.26$) are less trusted than politics media outlets ($M = 4.06$, $SD = 1.29$). Since we did not find a significant main effect ($F(1, 1259) = 0.57$, $p = .449$), H1 was rejected. However, answering RQ2, we found a significant interaction, $F(1, 1259) = 5.30$, $p = .022$. Respondents reported lower trust for AI media outlets focusing on politics. Next, we turn to the outcomes touching on the economic dimension of automated journalism. H2 stated that respondents are more willing to (a) pay for and (b) accept advertising shown by journalist (willingness to pay: $M = 2.52$, $SD = 1.70$, advertising acceptance: $M = 3.43$, $SD = 1.75$) than AI media outlets (willingness to pay: $M = 2.39$, $SD = 1.65$, advertising acceptance: $M = 2.98$, $SD = 1.77$). We found a significant main effect for advertising acceptance ($F(1, 1259) = 22.61$, $p < .001$) but not for willingness to pay ($F(1, 1259) = 2.11$, $p = .146$). H2a was rejected while H2b was supported. Testing H3, we found a similar picture. Individuals were more likely to accept advertising shown by politics media outlets ($M = 3.23$, $SD = 1.78$) than for entertainment media outlets ($M = 3.15$, $SD = 1.77$, $F(1, 1259) = 6.24$, $p = .013$), but there was no effect on willingness to pay (politics: $M = 2.47$, $SD = 1.68$, entertainment: $M = 2.44$, $SD = 1.67$, $F(1, 1259) = 1.03$, $p = .310$). Again, H3a was rejected and H3b was supported. We also found partial support for H4. There was no significant interaction effect of the experimental treatments on willingness to pay ($F(1, 1259) = 0.28$, $p = .596$), letting us reject H4a. But, in line with predictions of H4b, participants were less willing to accept advertising shown by AI media outlets featuring primarily political topics ($F(1, 1259) = 7.20$, $p = .007$). Figure 1 visualizes the main effects and interactions.

In H5, we argued that the difference between trust in journalist and AI media outlets should be increased for individuals with higher information risk perceptions. We found a significant two-way interaction between the between-subject manipulation and the moderator ($F(1, 1257) = 8.86$, $p = .003$), supporting H5. Importantly, the three-way interaction was also significant, suggesting that the moderation is even stronger for entertainment news outlets ($F(1, 1257) = 3.95$, $p = .047$). There were no significant interactions between the manipulations and information risk perceptions about AI for willingness to pay ($F(1, 1257) = 0.16$, $p = .694$) or advertising acceptance as dependent variable ($F(1, 1257) = 0.10$, $p = .756$). H6 was rejected. Turning to the continuous moderators related to the opinion climate, we found no significant interactions. Neither perceived dominance of one's own opinion nor perceived polarization of the media outlet's topic moderated the relationship between the between-subject manipulation and media trust (H7a: $F(1, 2191) = 0.00$, $p = .948$, H7b: $F(1, 2396) = 0.03$, $p = .855$), willingness to pay (H8a: $F(1, 1910) = 1.26$, $p = .262$, H8b: $F(1, 2090) = 0.22$, $p = .639$), and advertising acceptance (H8c: $F(1, 2053) = 3.21$, $p = .074$, H8d: $F(1, 2256) = 0.05$, $p = .821$). H7 and H8 were rejected.

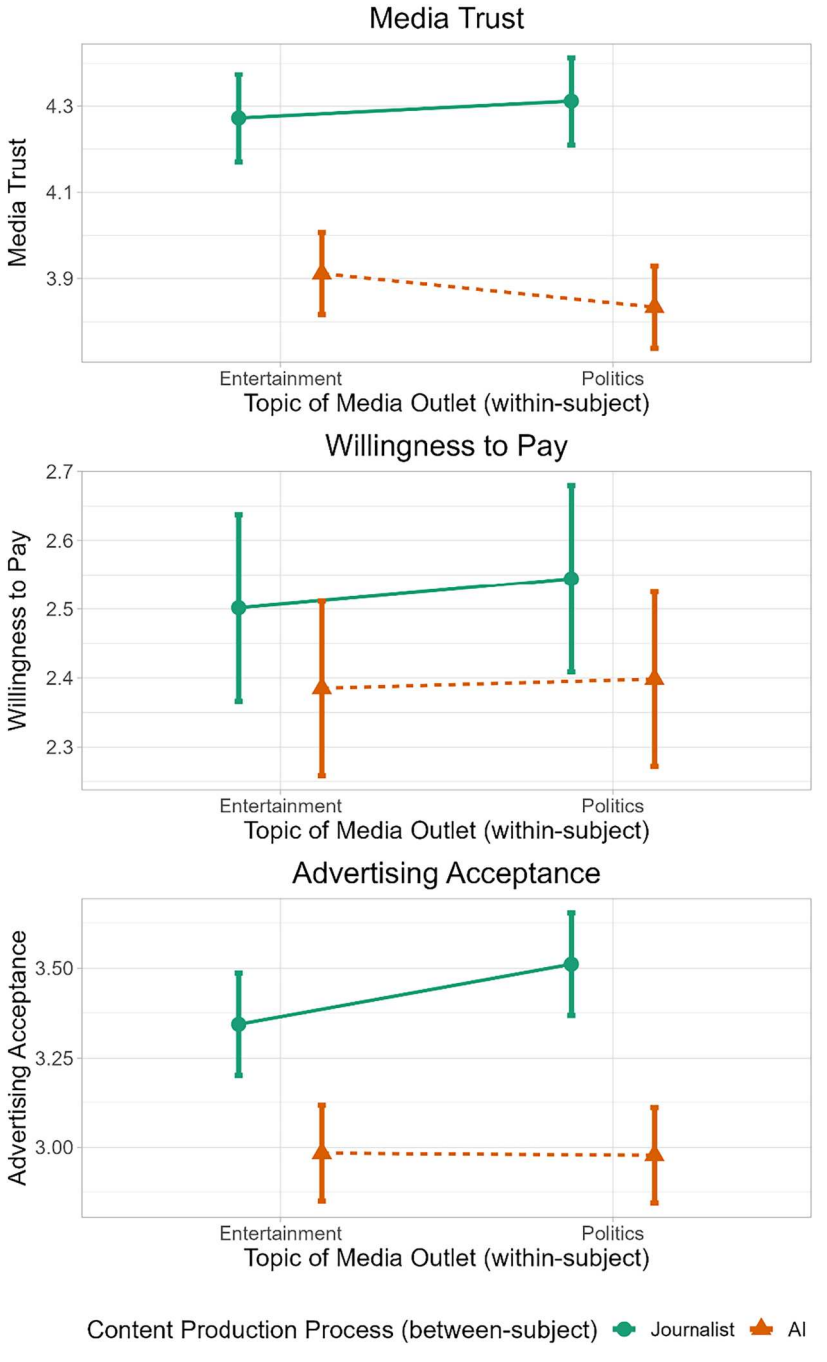

Figure 1. Media trust, willingness to pay, and advertising acceptance by manipulation.

Note: 2522 observations clustered in 1261 respondents. Error bars show 95% confidence intervals. Dependent variables were assessed on seven-point scales.

Discussion

AI technologies have found their way into newsrooms. While they may have often played only minor roles in the news production process in recent years, it is likely that new technological advancements in this area will propel their integration into news production. In this study, we investigated how audiences react to AI-driven news outlets. Below, we outline four core contributions.

First, we shift the attention from the content-level to the outlet-level and show how the evaluation of news production processes affects evaluations. Previous scholarship in this area confronted individuals with a text plus an alleged author (AI vs. journalist) and investigated how this affected the evaluation (e.g., credibility) of the news content (e.g., Waddell 2018). After consuming the full content, respondents often had different evaluations depending on the attributed source (Graefe and Bohlken 2020). In our study, we did not confront individuals with news content but only with a description of a news outlet and its news production process. Indeed, news consumers have pre-formed opinions about AI. Our findings showed that the public trusts new, unknown news outlets that rely on AI-generated content less than similar news outlets featuring content by trained journalists. Averaged across political and entertainment topics (i.e., within-subject factor), we found a substantial effect with the magnitude of Cohen's d = .36 of the production process on media trust. We also saw that advertising acceptance, an important foothold for many (online) news organizations, was lower for AI news outlets (Cohen's d = .27). In a highly competitive media market, these effects may threaten the economic livelihood of a media company relying on advertising revenue. Concerning the willingness to pay for news, we did not find a difference between the AI and the journalist outlet (Cohen's d = .08; non-significant). Taken together, respondents in our study valued with regard to trust and advertising acceptance media outlets that rely on humans to create journalistic content. In a world in which AI becomes ubiquitous in many sectors of society, traditional media organizations may benefit from emphasizing the ongoing role of journalists in communication to both current and potential consumers. Future research is needed to investigate whether advertising by media outlets might be more effective if it communicates the journalist-agency in the news production process.

Furthermore, we believe that the outlet-level approach chosen in this study adds substantially to the study of the consequences of automated journalism for media organizations. Whether people click on a link (and thereby generate ad revenue), is rarely driven by people's evaluation of the actual content on the webpage. In most media use and selection decisions, media users do not have the full information they would need to make an ideal decision with certainty. Thus, in hardly any of these situations, media users collect all the information before making a decision (Marewski, Galesic, and Gigerenzer 2009). To put it in other terms: no one reads the book to decide whether to buy the book. With the exception of free trials leading to subscriptions, the decision to subscribe to a news outlet does not always include a full vetting of the content published by the news outlet but is based on cues, such as information about friends who are subscribers, the main topic dealt with, the political leaning of the outlet, or the news production process (e.g., Buschow and Wellbrock 2019). We argue that this also applies to media trust. In digital media environments, trust is often the

driver of selection and not the other way around. For instance, news users choose media because of source cues or recommendations by their peers. They seldom select content, consume it in its entirety, and then evaluate whether they trust the information. Since political actors and governments (e.g., the European Union's AI Act) discuss or plan to regulate the labeling of AI-generated content and AI-driven tools, cues about the (news) content production process may become more common. While the findings clearly suggest that being aware of AI use in news production affects people's media trust and advertising acceptance, it remains an open question for future research to investigate how the effects found here compare to other important factors such as perceived political slant, ownership, or recommendations by friends. These factors are known to drive media selection, willingness to incur costs, and media trust to a considerable extent.

Second, our study highlights the unexplored economic consequences on the demand-side. Scholars have extensively debated how automation may reduce labor costs in newsrooms (e.g., Kim and Kim 2017; Tandoc, Yao, and Wu 2020). However, the question of whether news users' reactions to AI-generated content affect the economic viability of news organizations has not been investigated. Our study showed that news consumers are less inclined to accept ads shown to them by AI-generated outlets. Interestingly, we did not find any effect on willingness to pay for the news outlet, which might be rooted in the notoriously low willingness to pay for online news. This is also shown by the rather low means on this variable. The field is in urgent need of research into the demand-side economics of automated journalism. This study provided only the initial foundation for more research in this direction.

Third, our results showed that the journalistic domain in which AI is used matters. We found that news users were less likely to trust and accept ads shown by AI news outlets when they were primarily covering political topics. Typically, the extent to which news outlets cover political topics is subject to change over time based on external events (e.g., elections). Future research may also investigate whether ad-based revenue is affected by the salience of political topics. Importantly, we want to point out that this might also be a result of the context of this study. For Germany, a media market with more than 80 million people, we found that skepticism toward political news produced by AI might be higher than for entertainment journalism. But this may not be the case around the globe. In other countries, with different cultures or collective attitudes toward new technologies, these patterns might differ. Cross-cultural research is needed. Relatedly, the implementation of AI in journalism may play out differently in countries with generally low levels of media trust. Further, in the context of strong ideological polarization with respect to perceived media bias, research may find more complex patterns.

Fourth, we investigated three moderators that may affect the evaluation of AI-driven news production processes. With perceived polarization of the media outlet's topic and perceived dominance of one's own opinion, we studied two moderators related to the opinion climate. For both, we did not find any significant moderating effects. One possible explanation, next to being an actual null relationship, is also a limitation of this study, i.e., that the content categories we manipulated were too broad. For example, the machine heuristic may possibly only be at play for specific subtopics of politics that are extremely polarized (e.g., migration). Further, our measurement of the moderator for the entertainment vignette (i.e., asking respondents how divided the country is on entertainment/pop

culture/lifestyle) may be criticized. The perceived division, or fragmentation, with regard to opinions about entertainment may not create the same dynamics as for political issues. Potentially, individuals even appreciate competing opinions about entertainment topics, such as art or music, since they may acknowledge that perceptions are inherently subjective in this area. Clearly, there are areas of entertainment media that divide individuals, but we did not ask for them specifically. Thus, the items may have been difficult to answer for some respondents. Future research that wants to continue to explore this in entertainment contexts must also assess the extent to which feelings of being divided or united on entertainment topics even create negative reactions. Another explanation might be that these effects depend on specific considerations individuals have about the unknown media brands. If they inferred their opinion based on their most-liked media brands, perceived polarization or opinion dominance may not trigger a heuristic that machines are more objective. Further research is needed. For the third moderator, tapping into the risk perception that AI produces incorrect information, we found a significant moderation. Indeed, individuals with high scores on the moderator reported even less trust in the AI outlet than individuals with low(er) scores on the moderator. While the finding itself may not be particularly surprising (and also must not be), it highlights an additional facet of automated journalism. Media organizations and journalists must keep the characteristics of their audience in mind. Many outlets specialize or find a niche in the competitive market. Thereby, they cater to a subpopulation of news consumers in a certain media market. Depending on the subpopulation and its characteristics, the adoption of AI into the production process may be more or less appreciated by the audience.

Beyond these contributions, we have to acknowledge some limitations. First, in our experimental vignettes, we referred to unknown, fictional media brands (see also Toff and Simon 2023). How individuals react to the introduction of automated journalism by news brands they know or are subscribed to remains a question for future research (but see Liu and Wei 2019). For instance, the effect might depend on past evaluations of the outlet. This includes the trust individuals place in a given news outlet, which typically develops over time. Consequently, the impact of AI adoption on advertising acceptance or future trust may depend on the level of trust previously established. In other words, consumers may be more inclined to view AI adoption favorably when it is implemented by a news organization they already perceive as trustworthy. Second, our topic manipulation featured either politics or entertainment and lifestyle topics. We believe that this misses various nuances. Third, our manipulation of the news production process missed some of the complexity in the real world, a limitation common to experimental designs. Often, AI does not work instead of but is used by trained journalists to produce news content. There are various gradients of AI integration (e.g., collaboration, see Waddell 2018). Furthermore, AI might be integrated into various steps of journalistic practices (e.g., news selection, news writing, and news distribution). Effects may differ. Fourth, the temporal validity of the study's findings might be subject to future research since generative AI development is a fast-moving field. For instance, generative AI tools that become available to citizens and journalists in the future or (policy) discussions about the consequences of generative AI might change the public's evaluation of automated journalism substantially. Finally, our measure of willingness to pay for the news outlet showed rather low mean values. Even though our measure can be considered

state-of-art (Fletcher and Nielsen 2017), it might be useful for future research to use even more sensitive measures. Additionally, it may have been difficult for individuals to report their willingness to pay based on the limited information available in the vignettes. Future studies may provide snippets or samples of fictional outlets to create a more realistic response setting.

Conclusion

To fulfill their societal function, the news media has to be trusted by the public and must be in an economically healthy state. Shifting toward AI-driven news production processes may affect these two pillars of the news media. Our study findings suggest that the public puts less trust in automated journalism and is less accepting of ads, potentially affecting the economic viability of news organizations that integrate AI into their production processes. With the recent advancements related to generative AI technologies, investigating the demand-side effects of automated journalism will become even more important in the future. Media organizations that consider integrating AI in news production are urged to consider how their audience's willingness to incur costs will be affected by using AI.

Notes

1. This hypothesis deviates from the pre-registered hypothesis. Erroneously, the preregistration stated that "[p]articipants with higher informational risk perceptions about generative AI are **more** willing to incur costs for the AI media outlet." It should state "less," as in H6 in the manuscript. This mistake happened during the preparation of the pre-registration and was not spotted by the authors. Strictly speaking, this hypothesis should not be considered as pre-registered.
2. Please see note 1 about H6.

Author contributions

CRediT: **Andreas Nanz:** Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing; **Alice Binder:** Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing; **Jörg Matthes:** Conceptualization, Funding acquisition, Methodology, Supervision, Writing – original draft, Writing – review & editing.

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