

Technology in the Newsroom

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Like many other fields, journalism has undergone a rapid digital transformation, reshaping how news is discovered, produced, distributed, and consumed. While emerging technologies have long influenced journalistic practice (Pavlik, 2000), digital tools in particular have had a profound impact on newsroom workflows and on journalists' day-to-day work. These tools speed up and simplify processes, but their adoption has also increased the demand for multimedia journalists, requiring new skills and greater time resources (Spyridou & Veglis, 2016).

Digital technologies have also redefined the relationship between journalists and their audiences. Social media platforms, for instance, offer new spaces for public debate and the distribution of journalistic content. At the same time, they introduce challenges such as heightened competition for legacy media (Nielsen et al., 2016) and indirect communication risks like misinformation (Allcott & Gentzkow, 2017). These developments contribute to a redefinition of the journalist's traditional gatekeeping role. As content flows more freely across platforms, journalists face growing challenges in maintaining editorial authority and curatorial control (Scheffauer et al., 2024).

The Worlds of Journalism Study 3 (WJS3) examined these dynamics in detail. This chapter focuses on journalists' use of technologies for analyzing online audiences and the use of social media as journalistic tools, as well as the use of automation technologies in newsrooms (see Table 17). Notably, the first two types of technologies were

measured at the individual level, whereas the use of automation was assessed as newsroom-level practice.

TECHNOLOGIES TO ANALYZE ONLINE AUDIENCES

Contemporary journalists have the ability to monitor their audiences almost in real time, tracking behaviors and characteristics. Nearly one-third of surveyed journalists reported that they always or often use technologies that track and analyze information about online audience behavior. While this is more directly relevant to digital media than to print, radio, or television, the near-universal online presence of news outlets makes this practice increasingly important across all media types. Regional differences are modest, but the highest usage is observed in Southeast Asia, particularly in Indonesia (more than three-quarters of respondents) and Thailand (more than half), with India, Singapore, and the Philippines also ranking among the top 10. Conversely, journalists in Portugal and Nepal reported the lowest adoption, with fewer than one in ten using such technologies frequently.

SOCIAL MEDIA AS A TOOL FOR JOURNALISTS

The use of social media among journalists is considerably more widespread than the use of technologies to analyze online audiences. About two-thirds of surveyed journalists reported that they always or often use social media to dis-

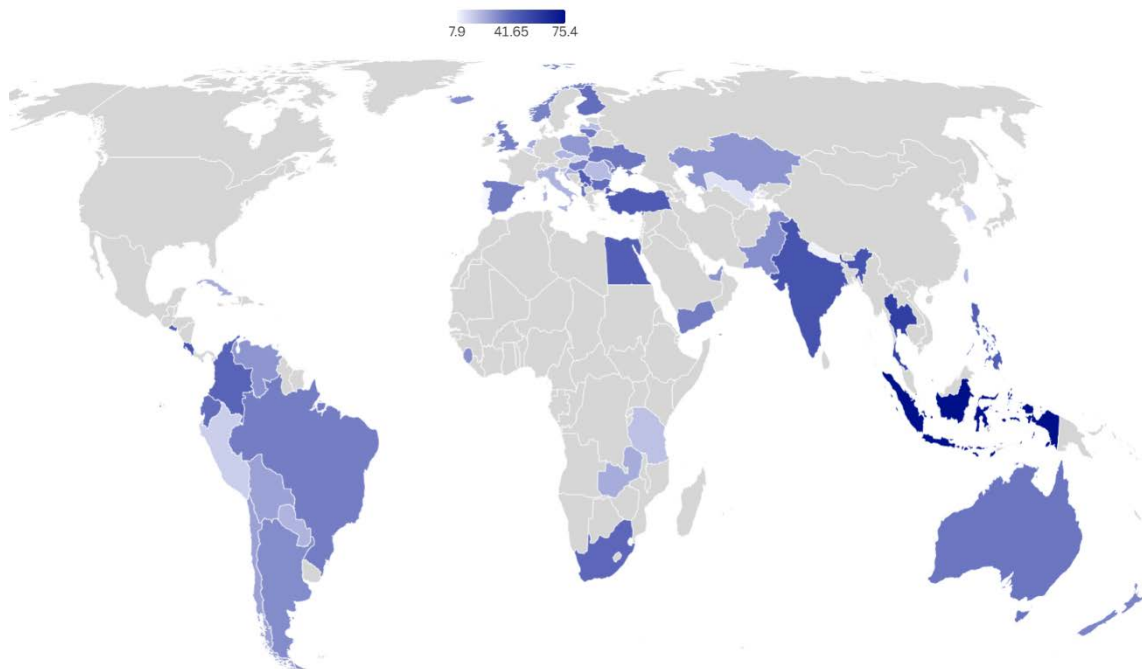


FIGURE 9: USING TECHNOLOGIES TO TRACK THE AUDIENCE

Percentages of journalists who "always" or "often" used technology that tracks and analyzes information about the characteristics and behavior of online audiences

cover potentially newsworthy events, find sources, and gather information or opinions for their stories. Additionally, more than half of the journalists reported using social media to promote journalism produced for other platforms, effectively employing it as an additional distribution channel.

Social media thus function primarily as a tool for sourcing and research, although they are also important for content distribution. Notably, there is a strong correlation between these two uses: journalists who rely on social media as a source are more likely to also use them as a distribution channel, and vice versa. Regional differences are less pronounced, but Latin American countries rank among the highest in social media adoption for journalistic purposes.

While journalists in the Philippines most frequently report using social media to discover news, sources, or information, many Latin American countries appear in the top 15 globally. Similarly, for promotion of journalism across platforms, Cuban journalists show the highest usage worldwide, with several other Latin American countries also in the top 15. In contrast, journalists in North Cyprus and Uzbekistan report comparatively lower use of social media in their professional work.

TECHNOLOGIES TO AUTOMATIZE JOURNALISTIC PROCESSES

Much less frequent is the use of technologies that automate journalistic work—those in which the decisions of human journalists are either aided or directly substituted by machines. Around 12% of the surveyed journalists claimed that “automated” or “robot” journalism, in which computer software automatically converts data into news texts, is used in their newsrooms.

“News personalization,” where computer software automatically selects which stories are shown to audience members and how prominently, is used in 18% of newsrooms. In the majority of countries, adoption of these technologies is at or below 10%, while only in a few countries do usage rates reach one-third to one-half of newsrooms.

Once again, newsrooms in Southeast Asian countries tend to adopt these technologies more commonly. Indonesian newsrooms report the highest use of “automated” or “robot” journalism, with more than four in ten journalists indicating its presence. Countries like Singapore, Pakistan,

and Thailand also show above-average adoption. Similarly, more than half of journalists in Thailand claim their newsrooms use “news personalization,” with Singapore, Indonesia, Pakistan, and the Philippines also above average. In contrast, all surveyed Paraguayan journalists claimed that these technologies are not used in their newsrooms.

CONCLUSIONS

Three main interpretations emerge from these findings.

First, there is a growing trend among news organizations to base decisions on audience analytics (Dodds et al., 2023), but this does not necessarily reflect frequent use of such technologies by individual journalists. Two potential explanations can be offered: (1) media analytics are often handled at the organizational rather than individual level, and (2) despite their potential, adoption of these tools has been uneven and has not fully met the expectations set when they were first introduced (Nelson & Tandoc Jr., 2019). Furthermore, these tools may intensify audience-driven pressures on newsrooms, favoring content likely to generate engagement over stories grounded in traditional public interest criteria (Focás, 2023).

Second, social media platforms play a central role in journalistic work, even though they carry potential risks, such as exposure to hate speech targeted at journalists (see Chapter 4). Despite these challenges, it is evident that social media have become an indispensable tool for sourcing, reporting, and distributing news.

Third, the limited use of automated technologies in newsrooms may be due to their lack of refinement and limited performance at the time of the study. However, these technologies have improved rapidly in recent years, and systems such as generative AI chatbots have quickly become normalized among journalists and newsrooms (Diakopoulos et al., 2024). Consequently, while automation was not widespread during data collection, its adoption is likely to have increased since then.

Regarding national and regional differences, Southeast Asian countries tend to use digital technologies more frequently, whereas Latin American countries appear to dominate social media use for journalistic purposes. Nevertheless, the study does not allow for precise comparisons or the identification of clear global patterns.

TABLE 17: TECHNOLOGY USAGE IN NEWS PRODUCTION

| Country | Technology that tracks and analyses information about the characteristics and behavior of online audiences ¹ | Social media for purposes such as to discover potentially newsworthy events, and/or to find sources, information and opinions for stories ¹ | Social media to promote journalism produced for other platforms ¹ | “Automated” or “robot” journalism in which computer software automatically converts data into news texts ² | “News personalization” where software automatically selects which stories are shown to audience members and how prominently ² |
|----------------|---|--|--|---|--|
| Albania | 38.3% | 77.2% | 69.6% | 5.7% | 4.0% |
| Argentina | 32.6% | 82.1% | 80.9% | 8.8% | 23.5% |
| Australia | 38.0% | 66.9% | 58.9% | 8.1% | 23.3% |
| Austria | | | | 11.3% | 17.8% |
| Belgium | 15.5% | 61.1% | 40.2% | 10.2% | 28.7% |
| Bolivia | 27.6% | 84.5% | 67.6% | | |
| Brazil | 36.0% | 81.1% | 79.7% | 7.4% | 12.8% |
| Bulgaria | 40.1% | 71.2% | 59.1% | 5.8% | 6.7% |
| Chile | 27.7% | 83.2% | 58.5% | | |
| Colombia | 42.3% | 82.0% | 73.6% | 6.5% | 27.2% |
| Costa Rica | 48.8% | 83.9% | 75.0% | 8.9% | 15.8% |
| Croatia | 25.3% | 71.9% | 58.0% | 4.3% | 6.3% |
| Cuba | 24.7% | 85.3% | 85.0% | 11.1% | 12.5% |
| Czech Republic | 23.0% | 70.0% | 42.1% | 8.7% | 11.6% |
| Ecuador | 39.8% | 77.8% | 71.1% | 19.1% | 36.7% |
| Egypt | 44.3% | 68.1% | 64.6% | 14.9% | 18.5% |
| El Salvador | 45.8% | 85.8% | 84.3% | 19.1% | 27.0% |
| Finland | 39.7% | 62.8% | 51.2% | 11.8% | 24.4% |
| Germany | | | | 10.7% | 18.1% |
| Hong Kong | 11.8% | 67.9% | 41.2% | 9.2% | 11.7% |
| Hungary | 35.8% | 62.6% | 39.5% | | |
| Iceland | 31.8% | 68.2% | 58.0% | | |
| India | 48.9% | 54.7% | 51.7% | | |
| Indonesia | 75.4% | 52.2% | 55.0% | 43.6% | 34.4% |
| Italy | 23.3% | 63.3% | 35.0% | | |
| Kazakhstan | 30.5% | 47.5% | 35.0% | 36.6% | 46.2% |
| Kosovo | 42.9% | 77.6% | 61.3% | 7.9% | 6.7% |
| Latvia | 21.4% | 77.4% | 55.0% | 1.8% | 8.3% |
| Lithuania | 36.9% | 82.8% | 44.5% | 8.1% | 9.1% |
| Moldova | 32.1% | 74.6% | 65.2% | 4.8% | 5.2% |
| Nepal | 8.8% | 32.2% | 35.7% | 1.3% | 2.8% |
| Netherlands | 26.0% | 77.1% | 47.3% | 10.8% | 32.3% |
| New Zealand | 34.5% | 67.3% | 40.4% | 6.2% | 9.8% |
| North Cyprus | 44.1% | 15.8% | 18.6% | 10.3% | 8.5% |
| Norway | 35.2% | 64.9% | 48.0% | 16.3% | 27.6% |
| Pakistan | 32.0% | 47.4% | 50.1% | 24.5% | 25.6% |
| Paraguay | 23.3% | 75.7% | 59.0% | 0.0% | 0.0% |
| Peru | 17.0% | 72.6% | 72.3% | 24.0% | 28.8% |
| Philippines | 44.5% | 88.7% | 79.9% | 8.8% | 18.8% |
| Poland | 29.9% | 62.5% | 50.5% | 31.5% | 38.9% |
| Portugal | 7.9% | 85.0% | 39.0% | 0.5% | 6.6% |
| Romania | 21.5% | 59.2% | 51.9% | 7.8% | 5.2% |
| Serbia | 45.0% | 68.7% | 57.6% | 2.9% | 5.0% |
| Sierra Leone | 31.3% | 52.2% | 56.8% | 8.6% | 3.9% |
| Singapore | 45.0% | 77.8% | 57.8% | 38.2% | 43.0% |
| Slovakia | 15.7% | 59.4% | 38.8% | 8.6% | 13.3% |
| Slovenia | 19.7% | 54.2% | 47.2% | 6.0% | 5.5% |
| South Africa | 41.3% | 77.3% | 61.7% | | |
| South Korea | 16.8% | 61.1% | 35.5% | 13.0% | 18.9% |
| Spain | 36.1% | 72.6% | 66.5% | 4.9% | 8.4% |
| Switzerland | | | | 15.3% | 21.2% |
| Taiwan | 22.2% | 54.5% | 49.8% | 13.4% | 30.3% |
| Tanzania | 20.2% | 42.5% | 42.7% | 13.3% | 37.3% |
| Thailand | 56.8% | 79.8% | 82.0% | 19.9% | 56.8% |
| Turkey | 45.8% | 63.1% | 53.1% | 14.0% | 11.3% |
| UAE | 30.8% | 63.9% | 56.6% | 15.1% | 14.7% |
| UK | 35.5% | 70.7% | 58.1% | 9.2% | 14.8% |
| Ukraine | 37.9% | 82.0% | 62.4% | 7.1% | 4.2% |
| USA | | | | 8.3% | 13.5% |
| Uzbekistan | 12.8% | 16.5% | 15.9% | 34.1% | 27.2% |
| Venezuela | 30.5% | 84.3% | 76.3% | 7.3% | 15.4% |
| Yemen | 36.2% | 75.0% | 69.6% | 15.0% | 5.6% |
| Zambia | 24.9% | 62.9% | 59.9% | 4.0% | 4.3% |
| Average | 32.4% | 67.6% | 56.0% | 12.2% | 17.8% |

¹Percentage of respondents saying “always” or “often.” Question: “Please tell me how frequently you use the following technologies for journalistic purposes.” (Scale: 5 = Always; 4 = Often; 3 = Sometimes; 2 = Rarely; 1 = Never.)

²Percentage of respondents saying “yes.” Question: “Please tell us whether these technologies are used in any of the newsrooms you work in.”