FIVE TRENDS TO WATCH IN JOURNALISM[1]

LINDA L. AUSTIN[2]

ABSTRACT. So much is changing in journalism and media, where should you focus your attention to be prepared for the next big thing? Through statistics and cases studies, this keynote speech suggests watching these five trends: mobile, messaging apps, voice, artificial intelligence and audiences. It offers a key takeaway for each trend. Discover the implications for users and publishers as audiences consume more news via mobile devices, messaging apps and smart speakers. Identify the opportunities and pitfalls of the increased use of artificial intelligence in the creation of news stories and the increased reliance on audiences to finance newsgathering.

Keywords: journalism, trends, mobile, messaging apps, voice, artificial intelligence, audiences, future, news delivery, revenue, smart speakers, aggregation, chat apps, robo-journalism, computer vision, personalization

---

Thank you for the opportunity today to discuss with you five trends to watch in journalism. For each, I'm going to offer the statistics for why it's a trend and then a case study of a media outlet that's used that trend to its benefit and a takeaway for you.

So, what's in this for you? Can anyone identify the people in this photo?

Photo credit: National Archives via pingnews

Many of you will recognize former U.S. President Jimmy Carter on the left. The man on the right is Ed Bradley, who was the first black TV correspondent to cover the White House. As Bradley said, "The harder you work and the better prepared you are, the more luck you might have." My goal here is help you be better prepared for what's coming in journalism and therefore luckier.

Trend No. 1: Mobile.

How many of you have a smartphone? How often do you check your phone? How many, at least once an hour? How many, every half hour? How many, every quarter hour?

In the United Kingdom and the United States, research indicates people check every 12 minutes. (Asurion, 2018)

Have you ever accessed news on your mobile phone? How often do you access news on your mobile phone? Once a day? More often?

Use of mobile for news has doubled in the last six years in most of the 36 countries that the Reuters Institute surveys. Now, 62 percent have used mobile to access news in the last week, compared with 64 percent who used a computer. (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2018)

In Romania, two-thirds are now consuming news on smartphones, a 10 percentage-point increase from last year. More are using computers at 71%. In the U.S., news consumption on mobile is now higher on the phone at 56 percent than on the computer at 54 percent. (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2018)

Case study: Quartz or qz.com

How many of you are familiar with the Quartz app, or Qz.com? Quartz is a business-news outlet directed at younger businesspeople globally. It focused on mobile delivery from its start in 2012. It did not even have a desktop website at launch. It started with a staff of 20. Last year, Atlantic Media sold it to Uzabase, a Japanese company, for $75 to $110 million. Its staff has since grown to 215, and it has an audience of 20 million, half of whom come from outside the U.S., with editions in India and Africa. (Heath, 2018)

What's in this for you? Do any of you have a newspaper with you? If so, take a single sheet, fold in half, and that takes it down to tabloid size. Fold it in half again, and that takes it to tablet size. Fold it in half again, and it reduces it to the size of a smartphone screen. Notice how little real estate that leaves you for storytelling.

What is this a photo of?

Photo credit: Joyce Pedersen under CC BY-NC 2.0

Yes, it's the Sistine Chapel in the Vatican. It is the equivalent of the broadsheet newspaper.

What is this a photo of?
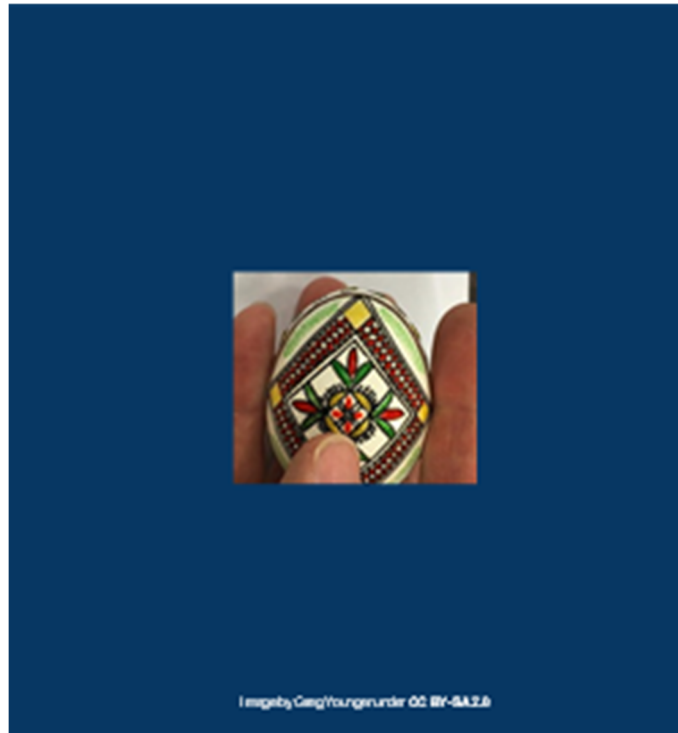
Photo credit: Greg Younger under CC BY-SA 2.0

Yes, a lovely Romanian Easter egg. It is the equivalent of the smartphone screen.

Please look on your phone at a website you follow for news. How many of you are looking at a solid wall of text?

What could you add to break up the text? Here are possibilities:
- Bullet points
- Bolded words
- Lists, such as "What we know/what we don't know" about a breaking-news event
- A map

- Audio clips
- Annotation
- Embedded social media posts
- Chart or infographic
- Photos or video

Key takeaway for you for Trend No. 1 – Mobile: Mobile requires a different presentation for scanners in a hurry. Think Easter egg instead of the Sistine Chapel ceiling.

Trend No 2: Messaging apps.

How many of you use a messaging app? Which messaging app do you use? WhatsApp? Facebook Messenger? Viber? How many of you consume news on that messaging app?

What would you say are the four top messaging apps globally in terms of users? They are WeChat, Viber, WhatsApp and Facebook Messenger.

And what would you say are the four top social networks globally? They are Twitter, Facebook, LinkedIn and Instagram. As of 2015, the combined user base of the top four messaging apps surpassed than that of the combined user base of the top four social networking sites. The combined total monthly active users of the top four messaging apps topped 4.1 billion in 2018. (Smith, 2018) That means more than half of the Earth's 7.7 billion people are on messaging apps.

Even Facebook CEO Mark Zuckerberg gets it. A recent article in The Washington Post suggests that Zuckerberg plans to go all in on the faster-growing messaging apps his company owns – WhatsApp and Messenger – to counter declining user numbers for Facebook in the United States. (Dwoskin, 2019)

How many of you use WhatsApp? How many of you use Facebook Messenger?

Well, the most popular app in Romania is WhatsApp, and in the U.S., it's Messenger. (Bobrov, 2019)

How many of you use WhatsApp to get news?
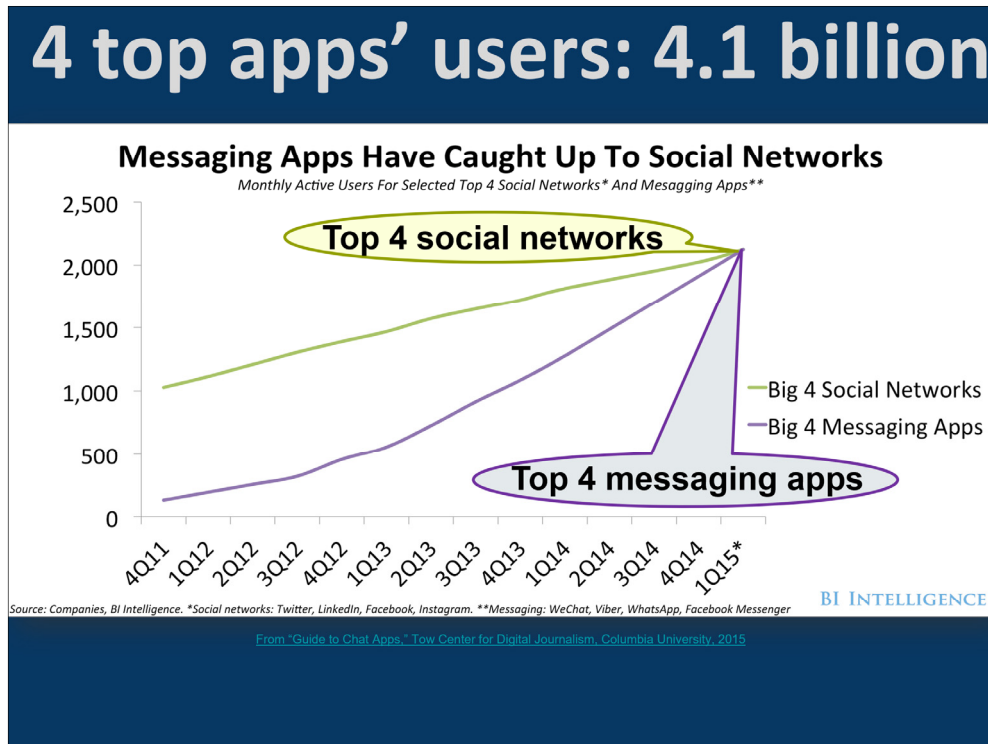
(Barot & Oren, 2015)

The proportion of people in the Reuters Institute's global sample who use Facebook for news has been falling since 2016, and is now at 36%. But the proportion using WhatsApp for news has doubled to 14% in four years. (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2018)

51

Case study: Bloomberg | Quint

Our case study for messaging apps comes from India. Bloomberg | Quint is India's first WhatsApp news service, which launched in November 2017. It is a partnership between the U.S. business-news service, Bloomberg, and India's Quintillion Media. It has a level of personalization with stock market watchlists.

It has grown to more than 400,000 subscribers and gets around 5 million page views a month.

It has generated ad revenue through logo placements and native advertising. Who can tell me what native advertising is? It is content that resembles the online publication's editorial content but is paid for by an advertiser and intended to promote the advertiser's product.

Bloomberg | Quint has also used it as a tool to drive subscriptions to a new premium product called BQ Blue, which costs about 9 Euros a month. Eighty percent of the subscribers to that product are coming from WhatsApp. (Gupta, 2019)

Key takeaway for Trend No. 2 – Messaging apps: Messaging apps provide too big an audience to ignore. According to Ankit Dhadda, Bloomberg | Quint's head of marketing and digital product, providing news on WhatsApp:

> "has helped create a completely new and relatively unexplored avenue for traffic and revenue generation for publishers. Moreover, it also helps drive considerable loyalty among users, without the challenge of having to compete with multiple publishers, such as on search engines and social media." (Dhadda, 2019)

Please note: a change in WhatsApp policy in June 2019 could adversely affect publishers' efforts to deliver news on WhatsApp: "In an effort to crack down on 'automated or bulk messaging, or non-personal use' on the platform, WhatsApp will no longer allow publishers to send out newsletters through the app as of December 7, 2019," NiemanLab reports. (Owen, 2019)

Trend No. 3: Voice.

How many of you have a smart speaker in your home? Amazon Echo? Google Home? Can you describe how you use it? A smart speaker is a digital assistant, powered by cloud-based software, that understands voice commands and can complete tasks and fetch information for you. How many of you are on a first-name basis with Alexa or Siri or Google on your phones? It's the same concept but with a different device.
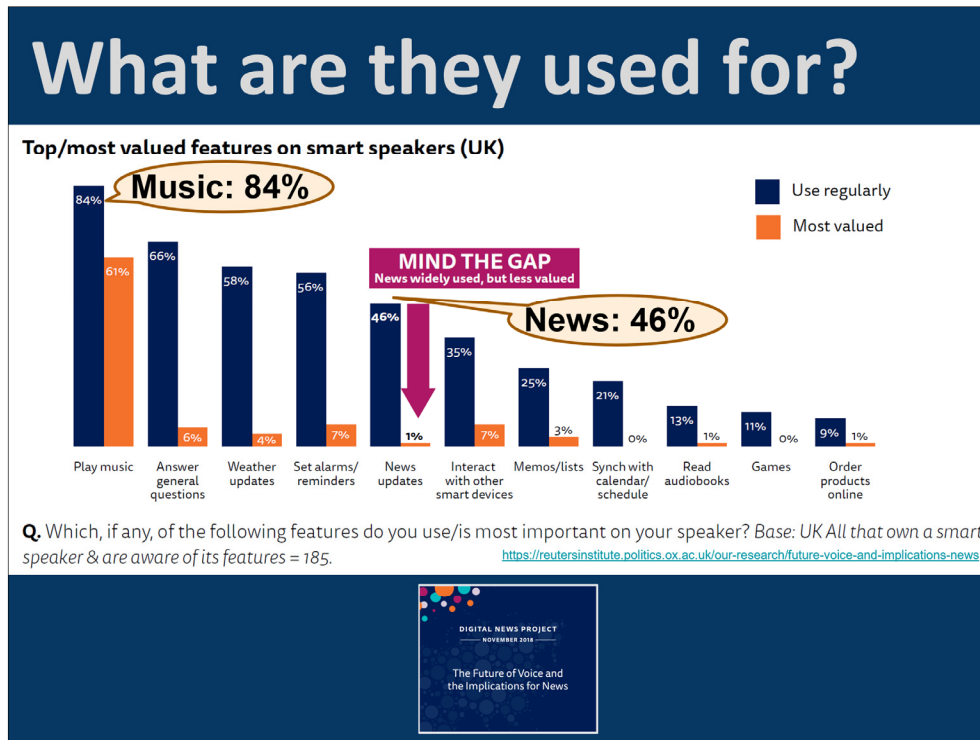
In 2017, only 7 percent of Americans owned smart speakers. As of January 2019, 21 percent, or 53 million U.S. adults owned smart speakers. In 2018, there were 14 million new smart-speaker owners in the U.S. (Edison Research, 2019)

"Usage in the UK (10%) and Germany (5%) is a little lower but has roughly doubled in the last year," according to the Reuters Institute. (Newman, The Future of Voice and the Implications for News, 2018)

Amazon was the first to develop smart speakers, offering them in November 2014. (Newman, Journalism, Media and Technology Trends and Predictions 2019, 2019) Voice interfaces have been adopted faster than nearly any other technology in history, according to Recode.net. (Molla, 2018) And the Business Review in Romania projects that by the end of this year, 250 million smart speakers will be in use globally, turning smart speakers into a $7 billion industry. (Dragan, 2019)

In the United Kingdom, the no. 1 use of smart speakers — at 84 percent — is for music; 46% percent use it for news, but for only 1 percent of users is news the most valued use. (Newman, The Future of Voice and the Implications for News, 2018)

Seventy-eight percent of publishers polled in a Reuters Institute study predicted that voice will change how media is accessed over the next few years. (Newman, Journalism, Media and Technology Trends and Predictions 2019, 2019)

What are they used for?

Top/most valued features on smart speakers (UK)

Music: 84%

MIND THE GAP
News widely used, but less valued

News: 46%

Use regularly
Most valued

84% | 61% | 66% | 6% | 58% | 4% | 56% | 7% | 46% | 1% | 35% | 7% | 25% | 3% | 21% | 0% | 13% | 1% | 11% | 0% | 9% | 1%

Play music | Answer general questions | Weather updates | Set alarms/ reminders | News updates | Interact with other smart devices | Memos/lists | Synch with calendar/ schedule | Read audiobooks | Games | Order products online

Q. Which, if any, of the following features do you use/is most important on your speaker? *Base: UK All that own a smart speaker & are aware of its features = 185.*
https://reutersinstitute.politics.ox.ac.uk/our-research/future-voice-and-implications-news

DIGITAL NEWS PROJECT
— NOVEMBER 2018 —
The Future of Voice and the Implications for News

(Newman, The Future of Voice and the Implications for News, 2018)

Case study: NPR

NPR, or National Public Radio, already shares the top spot in the U.S. with CNN for delivery of news on smart speakers because few people change the defaults on Amazon or Google. (Simon, 2018) By last year, 16 percent of the live streaming that NPR was experiencing was coming through smart speakers versus mobile devices. (Macholan, 2018)

But the true potential for NPR to exploit smart speakers goes back to an app it launched in 2014 called NPR One that tracks which stories you like and recommends similar stories. And now, NPR just announced the ability to provide an NPR One-like feed personalized for you to Amazon's Alexa. (Benton, Asking Alexa for news no longer has to stop with the latest headlines, 2019)

The Reuters Institute projects that over the next few years, voice will become increasingly embedded in every part of our lives. We can see that already with the introduction of smart speakers with screens, and cars that talk to us, and Amazon is even offering a microwave that has Alexa built into it. (Newman, The Future of Voice and the Implications for News, 2018)

Key takeaway from Trend No. 3 – Voice: Voice will grow. And global ad spending on voice assistants — currently nonexistent — is projected to reach $19 billion by 2022, nearly the size of the current magazine-ad business, according to Juniper Research. (Juniper Research, 2017)

Will news get a share of that ad market? As media futurist Amy Webb says:

"News execs are discounting the importance of voice or giving away their content for free…. They aren't modeling out how our information consumption habits will evolve once we're all talking to the various machines in our lives." (Webb, AI Is Journalism's Next Big Threat (or Opportunity), 2017)

Trend No. 4: Artificial Intelligence.

Smart speakers provide an easy transition to our fourth trend: artificial intelligence, or AI. Google Home, Alexa, and Siri are just portals for AI, Webb says. What's in it for you? Well, of course, the fear for journalists is that AI will put them out of work. This video shows a news anchor that was created using artificial intelligence to simulate a real anchor on Chinese TV. (Xinhua's first English AI anchor makes debut, 2018)

How do you define artificial intelligence? It has two key elements, according to a free online course from a Finnish university: (University of Helsinki, 2018)

1. Autonomy: The ability to perform tasks without constant guidance by a user.

2. Adaptivity: The ability to improve performance by learning from experience, which for computers means being fed more and more data.

That is what Spotify does for you with music, learning from your choices.

Artificial intelligence has at least three current uses in journalism:

1. The AI-powered news anchor is an example of robo-journalism.

2. NPR One demonstrates the personalization of content for audiences. Several Chinese news apps are leading the world in their use of AI to deliver personalized news from a range of providers. Toutiao has 120 million users who are spending more than an hour a day with it. However, the Chinese government suspended Toutiao in April 2018 for carrying obscene and false information. Popularity-based algorithms were encouraging clickbait and other sensational material on it. (Newman, Journalism, Media and Technology Trends and Predictions 2019, 2019)

3. "Computer vision" can help editors quickly classify and organize huge amounts of images and video, speeding up editing and helping journalists to source evidence for investigations.

    For example, The Associated Press used satellite imagery from a company called DigitalGlobe to secure photos of a particular ship to document slavery in the seafood industry; its reporting won the Pulitzer Prize for Public Service in 2016. (Marconi, 2017)

    Artificial intelligence can also be applied to vast quantities of data, not just images, to help journalists "in situations where they know what information they are looking for in large amounts of documents but finding it would take too long or would be too hard," writes Marina Walker Guevara, who studied expanding the use of AI in reporting as a 2019 John S. Knight Journalism Fellow.

"Take the examples of Buzzfeed News' 2017 spy planes investigation in which a machine learning algorithm was deployed on flight-tracking data to identify surveillance aircraft (here the computer had been taught the turning rates, speed and altitude patterns of spy planes), or the Atlanta Journal Constitution probe on doctors' sexual harassment, in which a computer algorithm helped identify cases of sexual abuse in more than 100,000 disciplinary documents." (Guevara, 2019)

Case study: The Associated Press (AP)

Our case study for AI comes from The Associated Press, or AP. In 2014, AP began automating the writing of stories on corporate earnings. In 2016, it added automation of stories on minor league baseball games.

By 2018, AP was producing 3,700 earnings stories per quarter, 12 times more than before automation – with fewer errors. It was also saving 20 percent of its business journalists' time, allowing them to produce other, more complex stories. (Marconi, 2017)

By the end of 2019, AP plans to have produced 40,000 automated stories, mostly in business and sports news, according to the Reuters Institute. (Newman, Journalism, Media and Technology Trends and Predictions 2019, 2019)

Key takeaway from Trend No. 4 – Artificial Intelligence (AI): "We're already seeing new roles such as automation editors, but all journalists will benefit from…having understanding of these processes and their potential effects," according to an AP Insights e-book. (Houshmand, 2018) Artificial intelligence is man-made, meaning that all the ethical and editorial issues involved in producing any news content still apply. (Marconi, 2017)

Trend No. 5: Audiences.

The future of journalism will increasingly depend on audiences paying for the news directly, as Facebook and Google take up the lion's share of digital-advertising dollars.

By 2020, the top three – Facebook, Google and Amazon – are projected to capture 63 percent of the digital-ad market in the U.S. That means every other media outlet – from weekly newspapers and tiny radio stations to The New York Times and CNN – is scrambling to get a scrap from the one-third of the market that is left.
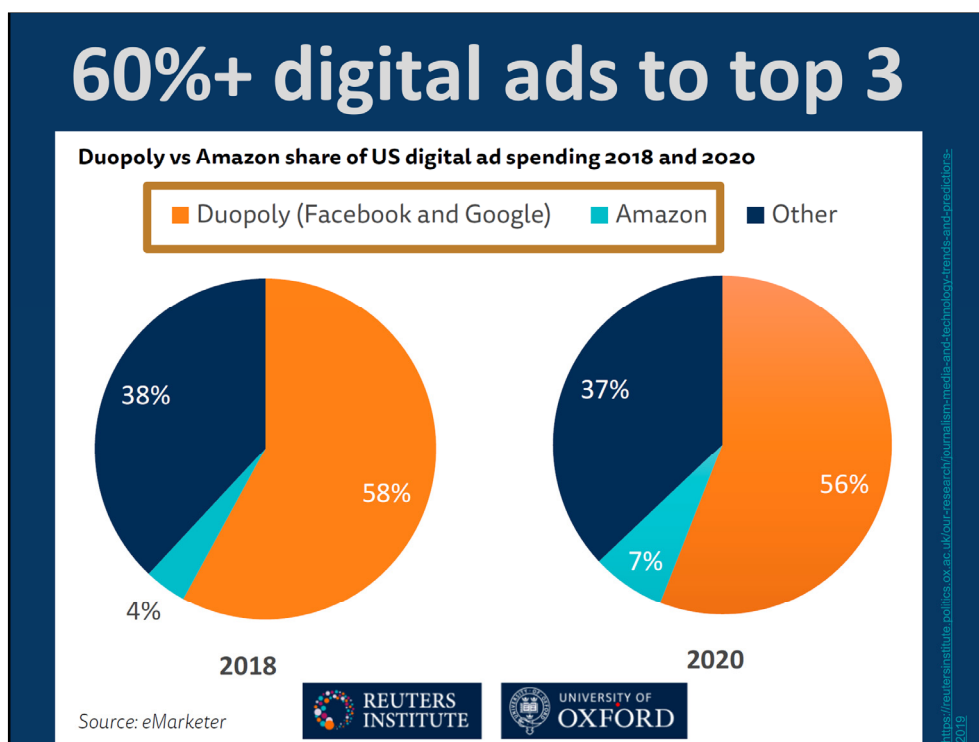

(Newman, Journalism, Media and Technology Trends and Predictions 2019, 2019)

No wonder that 52 percent of the 163 publishers interviewed by the Reuters Institute said that subscriptions are their main revenue focus for 2019. (Newman, Journalism, Media and Technology Trends and Predictions 2019, 2019)

How many of you pay for digital news?

In Romania, about 11 percent of the population pays for digital news, compared with 16 percent in the United States and 30 percent in Norway. Globally, the figure is 14 percent pay, according to the Reuters Institute. (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2018)
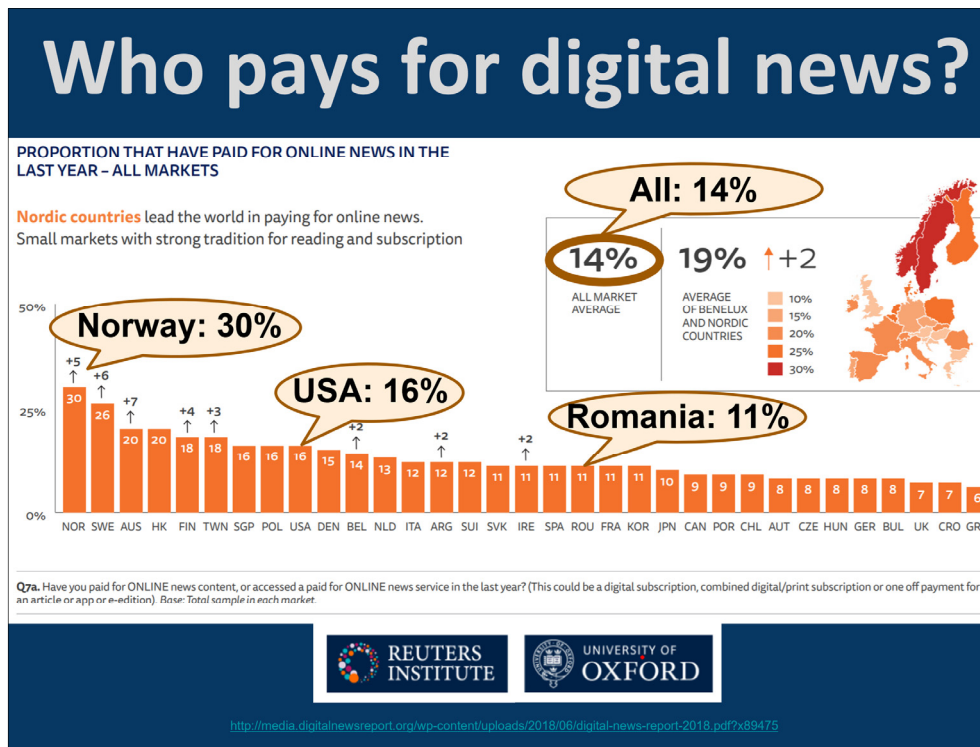
(Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2018)

Case study: Dagens Nyheter

Dagens Nyheter is a daily newspaper published in Stockholm, Sweden.

Like many newspapers, its print circulation has been declining. It lost 30 percent of its print circulation in the five years ending in 2018, but during that same time, its total number of subscribers – including digital subscribers – grew by 30 percent. (Jönsson, 2018)

In 2015, Dagens Nyheter had only 5,000 digital subscribers.

By 2017, digital-subscription revenue was up 92%, and that increase in digital-subscriber revenue was greater than the drop in print-ad revenue.

By 2018, it had 146,000 digital subscribers, and for the first time since 2012, the newsroom's budget increased, allowing key hires. (Jönsson, 2018)

Key takeaway for Trend No. 5 – Audiences: Publishers' focus on revenue from audiences could mean better journalism – for some. Instead of producing clickbait to increase traffic and boost ad revenue, increasing numbers of media outlets will try to create quality products that meet their audiences' needs and impel them to subscribe. The down side is that people who cannot afford to pay may miss out on quality news. What's an alternative way to tap readers for revenue? How many of you have ever read The Guardian? On every article is a request for a donation, and it just turned an operating profit for the first time since 1998. (Benton, Want to see what one digital future for newspapers looks like? Look at The Guardian, which isn't losing money anymore, 2019)
So, these are the five trends to watch:
1. Mobile
2. Messaging apps
3. Voice
4. Artificial intelligence (AI)
5. Audiences.

What others would you add?
I hope you feel better prepared and luckier for the hard work ahead!

Bibliography

American Press Institute and the Knight Temple Lenfest News Initiative. (n.d.). Retrieved July 8, 2019, from Better News: *https://betternews.org/*

American Press Institute. (n.d.). Need to Know newsletter. Retrieved July 8, 2019, from American Press Institute: *https://www.americanpressinstitute.org/category/need-to-know/*

Asurion. (2018, May 17). Americans Don't Want to Unplug from Phones While on Vacation, Despite Latest Digital Detox Trend. Retrieved from asurion.com: *https://www.asurion.com/about/press-releases/americans-dont-want-to-unplug-from-phones-while-on-vacation-despite-latest-digital-detox-trend/*

Barot, T., & Oren, E. (2015, November 9). Guide to Chat Apps. Retrieved July 8, 2019, from Columbia Journalism Review: *https://www.cjr.org/tow_center_reports/guide_to_chat_apps.php*

Benton, J. (2019, April 9). Asking Alexa for news no longer has to stop with the latest headlines. Retrieved July 8, 2019, from NiemanLab: *https://www.niemanlab.org/2019/04/asking-alexa-for-news-no-longer-has-to-stop-with-the-latest-headlines/*

Benton, J. (2019, May 1). Want to see what one digital future for newspapers looks like? Look at The Guardian, which isn't losing money anymore. Retrieved July 9, 2019, from NiemanLab: *https://www.niemanlab.org/2019/05/want-to-see-what-one-digital-future-for-newspapers-looks-like-look-at-the-guardian-which-isnt-losing-money-anymore/*

Bobrov, L.H. (2019, January 25). Mobile Messaging App Map of the World – January 2019. Retrieved July 8, 2019, from SimilarWeb: *https://www.similarweb.com/blog/mobile-messaging-app-map-january-2019*

Dhadda, A. (2019, February 26). The Changing Role of WhatsApp And Other Messengers For Publishers. Retrieved July 8, 2019, from Adgully: *https://www.adgully.com/the-changing-role-of-whatsapp-and-other-messengers-for-publishers-83825.html*

Dragan, A. (2019, January 28). Study: The smart and connected speakers market to reach 250 million units and USD 7 billion in 2019. Retrieved July 8, 2019, from Business Review (Romania): *http://business-review.eu/tech/study-the-smart-and-connected-speakers-market-to-reach-250-million-units-and-usd-7-billion-in-2019-195493*

Dwoskin, E. (2019, March 11). Zuckerberg says he's going all in on private messaging. Facebook's declining user numbers tell us why. Retrieved July 8, 2019, from The Washington Post: *https://www.washingtonpost.com/technology/2019/03/11/zuckerberg-says-hes-going-all-in-private-messaging-facebooks-declining-user-numbers-tell-us-why/?utm_term=.c846f4e7d214*

Edison Research. (2019, January 7). Fifty-three million U.S. adults now own at least one smart speaker. Retrieved July 8, 2019, from Edison Research: *https://www.edisonresearch.com/fifty-three-million-u-s-adults-now-own-at-least-one-smart-speaker/*

Future Today Institute. (2018, September 17). Our 2019 Journalism, Media and Tech Trends Report Is Now Available. Retrieved July 8, 2019, from Future Today Institute: *https://futuretodayinstitute.com/2019-journalism-media-tech-trends/*

Graefe, A. (2016, January 7). Guide to automated journalism. Retrieved July 8, 2019, from Columbia Journalism Review: *https://www.cjr.org/tow_center_reports/guide_to_automated_journalism.php*

Guevara, M.W. (2019, March 25). International Consortium of Investigative Journalists. Retrieved July 9, 2019, from How Artificial Intelligence Can Help Us Crack More Panama Papers Stories: *https://www.icij.org/blog/2019/03/how-artificial-intelligence-can-help-us-crack-more-panama-papers-stories/*

Gupta, N. (2019, March 14). How BloombergQuint monetized WhatsApp through branded content. Retrieved July 8, 2019, from World Association of Newspapers and News Publishers: *https://blog.wan-ifra.org/2019/03/14/how-bloombergquint-monetised-whatsapp-through-branded-content*

Hansen, E., & Goligoski, E. (2018, February 8). Guide to audience revenue and engagement. Retrieved July 8, 2019, from Columbia Journalism Review: *https://www.cjr.org/tow_center_reports/guide-to-audience-revenue-and-engagement.php*

Heath, T. (2018, July 2). Atlantic Media sells Quartz to Japanese media company. The Washington Post.

Houshmand, K. (2018, March 13). E-book: What's the role of journalists in an era of algorithms? Retrieved July 8, 2019, from Associated Press Insights: *https://insights.ap.org/industry-trends/e-book-whats-the-role-of-journalists-in-an-era-of-algorithms?utm_source=aibusiness-com&utm_medium=press*

Jönsson, M. (2018). How Dagens Nyheter is creating a sustainable business model for quality journalism. Retrieved July 8, 2019, from VDZ Distribution Summit:
https://www.vdz-distribution-summit.com/fileadmin/user_upload/praesentationen/2018/vdz_martin_joensson_dn.pdf

Juniper Research. (2017, November 8). Amazon Echo & Google Home to reside in over 50% of US households by 2022, as multi-assistant devices take off. Retrieved July 8, 2019, from Juniper Research: *https://www.juniperresearch.com/press/press-releases/amazon-echo-google-home-to-reside*

Kent, T. (2015, February 24). An ethical checklist for robot journalism. Retrieved July 8, 2019, from Medium: *https://medium.com/@tjrkent/an-ethical-checklist-for-robot-journalism-1f41dcbd7be2*

Macholan, C. (2018, June 5). Smart Speakers Drive Live Streaming Growth for Public Radio. Retrieved July 8, 2019, from NPR Digital Services: *https://digitalservices.npr.org/post/smart-speakers-drive-live-streaming-growth-public-radio*

Marconi, F. (2017, April 5). Report: How artificial intelligence will impact journalism. Retrieved July 8, 2019, from Associated Press Insights: *https://insights.ap.org/industry-trends/report-how-artificial-intelligence-will-impact-journalism*

Media Insight Project. (2017, May 2). Paying for news: Why people subscribe and what it says about the future of journalism. Retrieved July 8, 2019, from American Press Institute: *https://www.americanpressinstitute.org/publications/reports/survey-research/paying-for-news/*

Molla, R. (2018, November 12). Voice tech like Alexa and Siri hasn't found its true calling yet: Inside the voice assistant 'revolution'. Retrieved July 8, 2019, from Recode: *https://www.vox.com/2018/11/12/17765390/voice-alexa-siri-assistant-amazon-echo-google-assistant*

Nakashima, R., & Cai, A. (2018, August 6). Report: New ways for publishers to capture digital revenue. Retrieved July 8, 2019, from Associated Press Insights: *https://insights.ap.org/industry-trends/new-ways-to-capture-digital-revenue*

Newman, N. (2018, November). The Future of Voice and the Implications for News. Retrieved July 8, 2019, from Reuters Institute: *https://reutersinstitute.politics.ox.ac.uk/our-research/future-voice-and-implications-news*

Newman, N. (2019, January). Journalism, Media and Technology Trends and Predictions 2019. Retrieved July 8, 2019, from Reuters Institute: *https://reutersinstitute.politics.ox.ac.uk/our-research/journalism-media-and-technology-trends-and-predictions-2019*

Newman, N., Fletcher, R., Kalogeropoulos, A., Levy, D.A., & Nielsen, R.K. (2018, June). Digital News Report 2018. Retrieved July 8, 2019, from Reuters Institute: *http://www.digitalnewsreport.org/survey/2018/*

NiemanReports. (2019, April 4). Smart Speaker Use Is Growing. Will News Grow With It? Retrieved July 8, 2019, from NiemanReports: *https://niemanreports.org/articles/reimagining-audio-news/*

Ovaskainen, E.-L. (2018). Visual storytelling on mobile phones. Retrieved July 8, 2019, from Reuters Institute: *https://reutersinstitute.politics.ox.ac.uk/risj-review/visual-storytelling-mobile-phones*

Owen, L.H. (2019, June 21). As of December, publishers will no longer be allowed to send out newsletters on WhatsApp. Retrieved July 8, 2019, from NiemanLab: *https://www.niemanlab.org/2019/06/as-of-december-publishers-will-no-longer-be-allowed-to-send-out-newsletters-on-whatsapp/*

Radcliffe, D. (2019, March 18). 50 Ways to Make Media Pay: Report Download. Retrieved July 8, 2019, from Medium: *https://medium.com/whats-new-in-publishing/50-ways-to-make-media-pay-report-download-b2d1e216673e*

Schmidt, C. (2018, November 28). 35 prototypes, one year, and lots learned: The BBC puts its mobile storytelling plan in action. Retrieved July 8, 2019, from NiemanLab: *https://www.niemanlab.org/2018/11/35-prototypes-one-year-and-lots-learned-the-bbc-puts-its-mobile-storytelling-plan-in-action/*

Simon, F. (2018, November 22). Will smart speakers disrupt the media? Retrieved July 8, 2019, from European Journalism Observatory: *https://en.ejo.ch/research/will-smart-speakers-disrupt-the-media*

Skibinski, M., & Price, R. (2019, January). Building subscriptions and memberships for quality journalism. Retrieved July 8, 2019, from *https://www.lenfestinstitute.org/lenfest-institute-digital-content-next-building-subscriptions-membership-quality-journalism/*

Smart Audio Report 2018 - Changing News Habits (2019). [Motion Picture]. Retrieved July 8, 2019, from *https://www.youtube.com/watch?v=y9bUacMXGIA*

Smith, J. (2018, April 4). The Messaging Apps Report: How brands, businesses, and publishers can capitalize on the rising tide of messaging platforms. Retrieved July 8, 2019, from Business Insider: *https://www.businessinsider.com/messaging-apps-report-2018-4*

Sonderman, J. (2014, June 10). Unlocking mobile revenue and audience: New ideas and best practices. Retrieved July 8, 2019, from American Press Institute: *https://www.americanpressinstitute.org/publications/reports/white-papers/unlocking-mobile-revenue-audience/single-page/*

The Guardian. (2018-2019). The Guardian Voice Lab blog. Retrieved July 8, 2019, from The Guardian: *https://www.theguardian.com/info/series/guardian-voice-lab*

Thomas, J. (2019, March 13). "WhatsApp has come in to fill the void": In Zimbabwe, the future of news is messaging. Retrieved July 8, 2019, from NiemanLab: *https://www.niemanlab.org/2019/03/whatsapp-has-come-in-to-fill-the-void-in-zimbabwe-the-future-of-news-is-messaging/*

University of Helsinki. (2018). How should we define AI? Retrieved July 8, 2019, from Elements of AI: *https://course.elementsofai.com/1/1*

Wang, S. (2018, March 27). What The Guardian's Mobile Innovation Lab has learned after two years of experimenting with better news delivery on phones. Retrieved July 8, 2019, from NiemanLab: *https://www.niemanlab.org/2018/03/what-the-guardians-mobile-innovation-lab-has-learned-after-two-years-of-experimenting-with-better-news-delivery-on-phones/*

Webb, A. (2017, April 24). AI Is Journalism's Next Big Threat (or Opportunity). Retrieved July 8, 2019, from NiemanReports: *https://niemanreports.org/articles/ai-is-journalisms-next-big-threat-or-opportunity/*

65

Webb, A. (2019). The Big Nine: How the Tech Titans and Their Thinking Machines Could Warp Humanity. New York, N.Y.: Hachette Book Group, Inc.

Xinhua's first English AI anchor makes debut (2018). [Motion Picture]. China. Retrieved July 8, 2019, from *https://www.youtube.com/watch?v=GAfiATTQufk&feature=youtu.be*