

# **Data Journalism Roadmapping: A Conceptual Approach to Embrace Data Storytelling Formats in the Journalism Business Model**

## **Abstract**

It has been almost a decade since the term data journalism was coined. Since then, much has changed and often in unexpected ways. Data journalism has become a global phenomenon. However, much of the ongoing and fast-paced evolution of the practice still occurs in well-resourced news outlets. Smaller organizations continue to struggle to understand how to deploy data skills in their newsrooms. This study draws on extensive research involving over 60 interviews with experts on four continents (Americas, Europe, Asia, and Oceania) and participant observations in four well-known data-driven news outlets—La Nación (Argentina), ProPublica (US), Al Jazeera (Qatar), and BBC (UK)—to illuminate best practices that transcend organizational differences and contribute to calibrating the execution of journalistic data-driven projects. By examining the infrastructure levels of these organizations, that is, key activities, key resources, and partner networks, I propose a roadmap that conceptually describes the key factors in the business model decisions of news organizations to enable the emergence of data-driven storytelling in newsrooms. Ultimately, this study notes that this roadmap is not a solution but a way to provide guidelines for news outlets that are willing to adopt data journalism practices.

## **Extended Abstract**

During these more than ten years, data journalism has had to adapt and change to embrace technological trends and evolutions in recent years. Thus, data journalism has drawn significant attention in academic literature and industry practices. Furthermore, the pandemic brought a whole new set of challenges and opportunities for data journalism. Some media outlets had to leverage the use of data and technology in time to produce stories about global death toll and infection rates.

The practice helped the news industry reach new developments in digital news production, reshaping how the public consumes information. The practice can be a source to regain readers' trust, as evidence-based reporting is primarily trusted by the public (Heravi and Harrower 2015). Living in a post-truth world, fact-based journalism combined with excellent storytelling skills backed by data is more in demand than ever before. Even with a certain skepticism about the objectivity that data could bring to journalism (Tong and Zuo 2021), fact-based journalism allows producing quality journalism that engages the public and maintains a healthy democracy. However, it is essential to elucidate best practices that transcend organizational differences and calibrate the execution of journalistic data-driven projects beyond award-winning, cross-border projects (Heft, Alfter, and Pfetsch 2019; Konow-Lund 2019; Alfter 2016).

## **Picturing Data Journalism as a Strategic Differentiator**

Since 2019, I have been working on understanding how data journalism is intertwined with the business model of media organizations. This research project draws on extensive research involving over 60 interviews with experts on four continents (Americas, Europe, Asia, and Oceania) and participant observations in four well-known data-driven news outlets—*La*

*Nación* (Argentina), ProPublica (US), Al Jazeera (Qatar), and BBC (UK)—to illuminate best practices that transcend organizational differences and contribute to calibrating the execution of journalistic data-driven projects in newsrooms.



The guidelines are structured following the categorization of infrastructure proposed in the Business Model Canvas (BMC) by Osterwalder and Pigneur (2010). The authors define infrastructure as one of the four areas that comprise the nine building blocks utilized to describe how an organization creates, delivers, and captures value, as well as the interconnections among them. This report considers the three building blocks of infrastructure as part of the discussion of data journalism as a strategy for news organizations. Specifically, it aimed to understand the infrastructure levels of these organizations, that is, key activities, key resources, and partner networks.

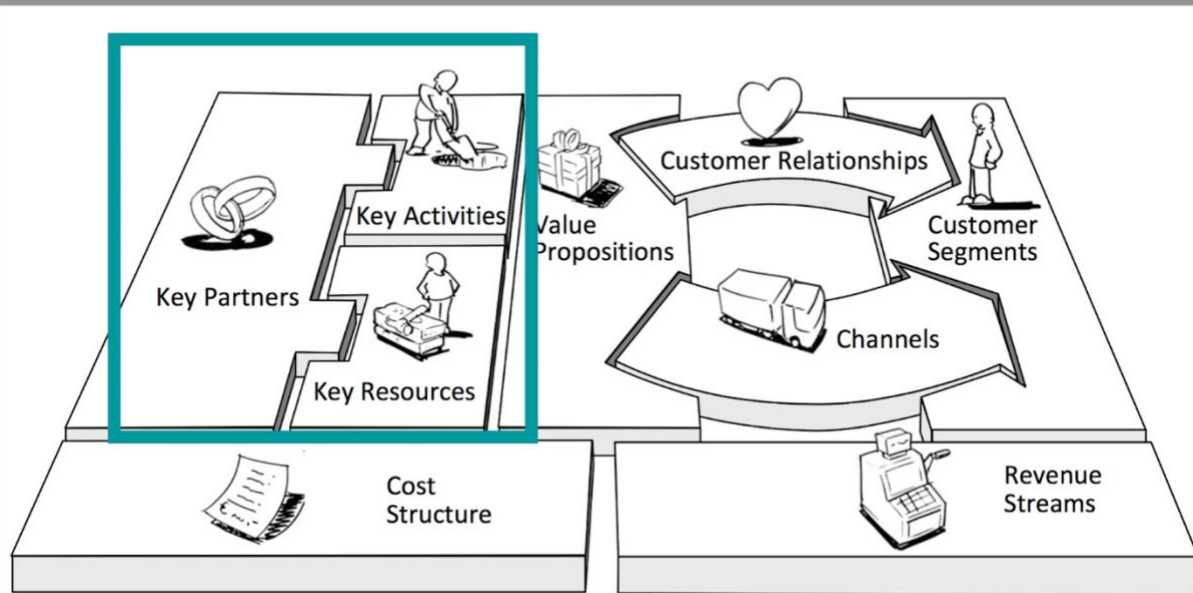
The key activities differ from business to business depending on the product or service offered. They are performed to support a company's value proposition, which requires the key resources. These resources are the main assets needed in a successful business model (Osterwalder and Pigneur 2010; Zolnowski and Böhmman 2014). They are also the core enabler for a company's successful implementation of operational strategies, which can be physical assets, intellectual property, human resources, or financial resources. Finally, the partner network is an essential chain of associates and suppliers that enable an organization to achieve its value proposition by providing critical resources and performing main activities. Forming alliances with other companies can strengthen organizations' business models by limiting risks and providing new resources (Osterwalder and Pigneur 2010; Zolnowski and Böhmman 2014). This does not mean that companies can no longer compete. Instead, organizations form strategic partnerships to achieve a common goal (De Reuver, Bouwman, and Haaker 2013). In the news industry, this is commonly seen in collaborative journalistic projects (Carson and Farhall 2018; Heft, Alfter, and Pfetsch 2019; Heft and Baack 2021).

### **The Infrastructure of Data Journalism**

In this research, I sought to understand how specific elements functioned inside these organizations and identified common factors that enabled these practitioners to produce data stories. Respondents mentioned that adopting data journalism requires strong leadership to drive the transformation and embrace the pace of change. Thus, a congruent and sustainable action that drives organizational leaders' decision-making toward data journalism is essential to ensure a long-term investment strategy and sufficient incentives to deploy data skills in the newsroom (Kosterich 2020; Lewis and Usher 2014; De Maeyer et al. 2015).

Practitioners mentioned the importance of establishing working structures at the outset and agreeing on the responsibilities and activities of data journalists. This can be done following the infrastructure of BMC, as shown in the figure below.

# BUSINESS MODEL CANVAS



## Analyzing Key Activities and Execution Possibilities

Compiling, cleaning, combining, and giving context for data are the central working units to produce data stories. Furthermore, these professionals are expanding their knowledge boundaries to perform activities that were not previously habitual in the field and interact with other actors, thereby expanding their network. Media managers must guarantee that data teams are not seen as service desks but as a unit dedicated to scrutinizing data to interpret trends, events, and areas of concern. Similarly, technology's normative values of transparency, iteration, tinkering, and participation became important activities that data journalism practitioners bring to newsrooms and incorporate into their daily work. This includes the open data culture, the promotion of the Freedom of Information Act (FOIA), and open-source codes.

## Implementing Key Resources and Capabilities

Data journalism is often perceived as a time-consuming, labor-intensive, and expensive practice (Jamil 2021). Still, identifying tools and capabilities that support the sustainability and longevity of the production of data stories in newsrooms can buffer these issues. As coding requires time and practice, most journalists do not have significant spare time to do it. Newsrooms have resorted to third-party solutions to build interactive and visual stories without the necessary expertise and knowledge of coding. This is particularly important in newsrooms that feature a one-man-band atmosphere, that is, a single data journalist responsible for the entire production pipeline. These tools allow one person to produce a story without data-specific knowledge (de-Lima-Santos and Mesquita 2021a). Third-party solutions impose some limitations, such as a lack of “features, premium subscription costs and the potential for changes to these services” (de-Lima-Santos, Schapals, and Bruns 2021, 164). To overcome this, news

outlets hire multidisciplinary teams that cooperate across different disciplines toward a common goal of producing scalable products for their newsrooms instead of relying on out-of-the-box solutions. These in-house tools are customized to company-prescribed guidelines and deliver visualizations and interactive features that align with the visual identities of the organizations. In fact, these different approaches create a dichotomy in the news industry. While well-resourced news outlets are developing in-house solutions, small and medium-sized news organizations, which do not enjoy the same financial resources as large newsrooms, adopted third-party solutions. Another essential resource for data journalists is access to open data and Freedom of Information (FOI) laws. Without them, this becomes an activity for these professionals who have to build datasets from documents or studies or collect their own data.

### **Creating Partner Networks to Leverage the Capabilities of Data Journalism**

The scholarly literature recognizes the collaborative nature of data journalism. However, this cooperative endeavor emerges at different levels and amplitudes in various organizations, from micro and meso to macro levels. Data journalists work at data desks and collaborate with other newsrooms' departments (micro level). By cooperating, journalists and non-journalist actors have the opportunity to create innovative practices that positively impact the implementation of data journalism (meso level). Similarly, the partner network can be built through external collaborations (macro level). Intending to maximize the impact of its stories, ProPublica had 228 publishing partners at local and international levels in 2019. These collaborative alliances are an important strategy for reaching this goal, particularly at the local level. Consequently, ProPublica developed the Local Reporting Network with over 20 newsrooms across the United States. Each newsroom pays its salary and gets access to our research team, news app data, and engagement. These alliance members also republish ProPublica's content and are also supply and knowledge sources from local stories (de-Lima-Santos 2022). Similarly, grassroots communities have been essential in establishing data journalism as a trend in Latin America (de-Lima-Santos and Mesquita 2021b). Ancillary organizations, such as the Mexican non-profit organization SocialTIC, which is responsible for the *Escuela de Datos* (School of Data, in Spanish), Internews, the International Center for Journalists (ICFJ), and Abraji (the Brazilian Association of Investigative Journalism), promoted courses and seminars and published numerous works for the data journalism community in Latin America.

### **Conclusion**

This roadmap has sequentially discussed the core elements of implementing data journalism practices in newsrooms. A central finding of this roadmap is that many key activities, resources, and alliances collaborate to produce data stories. Importantly, these points are not collinear, as each news organization has its own operating culture, processes, and financial situation. However, adopting some of these best practices may allow organizations to remain focused and foster a long-term strategy to develop data journalism in small and medium-sized news outlets. Generally, long-term plans have been hijacked by shorter-term projects (Küng 2017), which places news organizations at a strategic disadvantage vis-à-vis their early adopters and disrupts competitors. This conceptual roadmap is essential because it identifies a potential infrastructure area that describes the rationale of how an organization creates, delivers, and captures value (Osterwalder and Pigneur 2010). Therefore, this roadmap is not a solution but a way to

offer guidelines for news outlets willing to adopt data journalism practices. It notes that transforming news organizations is difficult and often risky work that depends on how processes are articulated and calibrated for this transformation. I profoundly hope that this work simplifies the task for practitioners by identifying change levers and sharing best practices so that more newsrooms can adopt data-driven practices in their storytelling.

## References

Alfter, Brigitte. 2016. "Cross-Border Collaborative Journalism: Why Journalists and Scholars Should Talk about an Emerging Method." *Journal of Applied Journalism & Media Studies* 5 (2): 297–311. [https://doi.org/10.1386/ajms.5.2.297\\_1](https://doi.org/10.1386/ajms.5.2.297_1).

Carson, Andrea, and Kate Farhall. 2018. "Understanding Collaborative Investigative Journalism in a 'Post-Truth' Age." *Journalism Studies* 19 (13): 1899–1911. <https://doi.org/10.1080/1461670X.2018.1494515>.

de-Lima-Santos, Mathias-Felipe. 2022. "ProPublica's Data Journalism: How Multidisciplinary Teams and Hybrid Profiles Create Impactful Data Stories." *Media and Communication* 10 (1): 5–15. <https://doi.org/10.17645/mac.v10i1.4433>.

de-Lima-Santos, Mathias-Felipe, and Lucia Mesquita. 2021. "The Strategic Value of Data Journalism." In *Journalism, Data and Technology in Latin America*, edited by Ramón Salaverría and Mathias-Felipe De-Lima-Santos, 1st ed., 97–136. Cham: Palgrave Macmillan Ltd. [https://doi.org/10.1007/978-3-030-65860-1\\_4](https://doi.org/10.1007/978-3-030-65860-1_4).

de-Lima-Santos, Mathias-Felipe, Aljosha Karim Schapals, and Axel Bruns. 2021. "Out-of-the-Box versus in-House Tools: How Are They Affecting Data Journalism in Australia?" *Media International Australia* 181 (1): 152–66. <https://doi.org/10.1177/1329878X20961569>.

Heft, Annett, Brigitte Alfter, and Barbara Pfetsch. 2019. "Transnational Journalism Networks as Drivers of Europeanisation." *Journalism* 20 (9): 1183–1202. <https://doi.org/10.1177/1464884917707675>.

Heft, Annett, and Stefan Baack. 2021. "Cross-Bordering Journalism: How Intermediaries of Change Drive the Adoption of New Practices." *Journalism*, March, 146488492199954. <https://doi.org/10.1177/1464884921999540>.

Heravi, Bahareh Rahmanzadeh, and Natalie Harrower. 2015. "Sourcing and Trust." In *Proceedings of the 2015 International Conference on Social Media & Society – SMSociety '15*, 1–5. New York, New York, USA: ACM Press. <https://doi.org/10.1145/2789187.2789194>.

Jamil, Sadia. 2021. "Increasing Accountability Using Data Journalism: Challenges for the Pakistani Journalists." *Journalism Practice* 15 (1): 19–40. <https://doi.org/10.1080/17512786.2019.1697956>.

Konow-Lund, Maria. 2019. "Negotiating Roles and Routines in Collaborative Investigative Journalism." *Media and Communication* 7 (4): 103–11. <https://doi.org/10.17645/mac.v7i4.2401>.

Küng, Lucy. 2017. "Going Digital: A Roadmap for Organisational Transformation." *Twist*. Oxford, UK.

Osterwalder, Alexander, and Yves Pigneur. 2010. *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. 1st ed. Hoboken: Wiley.

Reuver, Mark De, Harry Bouwman, and Timber Haaker. 2013. "Business Model Roadmapping: A Practical Approach to Come from an Existing to a Desired Business Model." *International Journal of Innovation Management* 17 (1): 1–18. <https://doi.org/10.1142/S1363919613400069>.

Tong, Jingrong, and Landong Zuo. 2021. "The Inapplicability of Objectivity: Understanding the Work of Data Journalism." *Journalism Practice* 15 (2): 153–69. <https://doi.org/10.1080/17512786.2019.1698974>.

Zolnowski, Andreas, and Tilo Böhmann. 2014. "Formative Evaluation of Business Model Representations – The Service Business Model Canvas." *ECIS 2014 Proceedings – 22nd European Conference on Information Systems*, no. July: 1–15.