



The Promises and Challenges of Digitalization and Development in Major Emerging Markets

Laura C. Mahrenbach

Technical University of Munich

It is important to recognize that Big Data and real-time analytics are no modern panacea for age-old development challenges. That said, the diffusion of data science to the realm of international development nevertheless constitutes a genuine opportunity to bring powerful new tools to the fight against poverty, hunger and disease.

UN Global Pulse 2012

“Big Data for Development: Challenges and Opportunities”

Observers have noted we are now in the midst of a “Fourth Industrial Revolution” whereby new digital technologies and big data both offer the potential to address longstanding developmental challenges and simultaneously raise questions about traditional modes of governance and production (see Brass and Hornsby 2019). This new pattern of change is especially relevant for emerging and developing economies. How can data and digitalization provide new approaches to stubborn development problems? What challenges do governments face in pursuing such efforts? And what are the global governance dimensions within these processes?

In this commentary, I answer these questions, examining the opportunities and challenges of digital- and data-led development in Brazil, India and China. The main research finding is that emerging markets are using their growing resources and diplomatic clout to pursue data-led development strategies at home and abroad. Their experiences provide valuable lessons for similar efforts in the Global South and highlight how global governance can assist actors in achieving the promise of digitalization and development.

Reasons for excitement regarding digitalization and development

Actors in the Global South are embracing big data and digitalization with enthusiasm. The excitement tends to cluster around two areas of emerging opportunities.

First, incorporating data and digitalization into public services supports the pursuit of *desired developmental outcomes*. The [Africa Data Revolution Report \(ADRR\)](#) underlines that more and better quality data is being generated and collected in Africa than ever before. More data means a larger evidence base to draw upon in making policy decisions, as well as the potential to use that data to forge new solutions to old development problems. For example, in [Rio de Janeiro](#), the local government has teamed up with social media app Waze to address problems of urban expansion, to include improving trash collection and decreasing emergency response times. Similarly, a public-private collaboration in Senegal has created the [Data for Development Senegal Challenge](#), in which researchers compete to demonstrate how data can be used to boost outcomes in health, agriculture, energy and transportation. Further, a collaboration between the United Nations (UN) and several Asian governments has led to the formation of [National Disaster Loss and Damage databases](#), which have improved resource allocation and natural disaster responses in 16 countries.

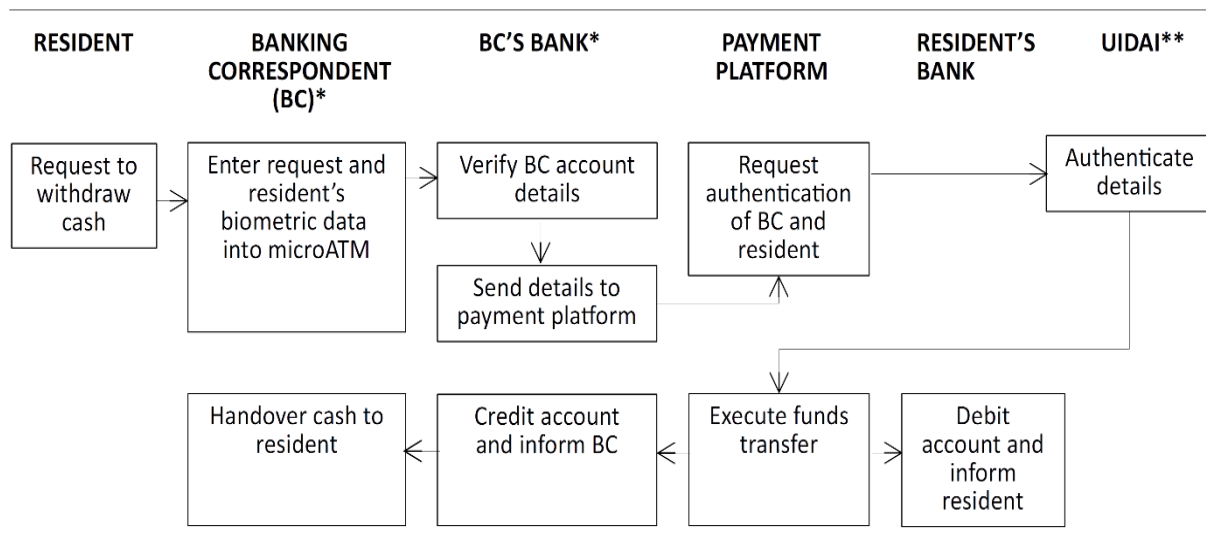
Second, Southern actors increasingly value digital development approaches because they offer the potential to *self-determine development priorities and procedures* within their own countries and regions. As the ADRR observes, data in Africa has historically been used to support colonial or outside ideologies and goals, and has tended only to acknowledge populations that conform to those ideologies. In the new context of digital advances, however, contemporary governments have made progress in establishing new principles (e.g., the right to be included in national statistics) and new procedures (e.g., ensuring equal access to birth certificates) at the regional and national levels – achievements which observers describe as “[revolutionary](#).” Importantly, this is not a phenomenon localized to Africa: 29 of the 53 countries listed on [Data.gov](#) as having open data sites are Southern countries, representing all regions of the world. The data available also covers a broad range of sectors, from health and energy to infrastructure and

education. These are only a few of the examples of how big data and the principle of data transparency are promoting development efforts and self-determined institutional changes across the Global South.

Digital development efforts of major emerging markets

Major emerging countries can generally be distinguished from other so-called “Southern” states by their relatively greater economic and military capabilities, their more expansive diplomatic ambitions (global rather than regional) as well as the acknowledgement of their international status by other states (see [Mahrenbach 2019](#)). What similarities and differences do we see in relation to other developing countries regarding digital and data-led development efforts in the national context?

Like the Southern states discussed in the previous section, Brazil, India and China see technological advances as useful for achieving their desired development policy goals. In a recent paper by Mahrenbach, Mayer and Pfeffer in *Third World Quarterly*, we find that the governments of Brazil, India and China view data and digitalization as tools for increasing transparency and improving the quality of state governance, facilitating economic and social development, and improving the efficiency and effectiveness of government service provision. Also like other Southern countries, they have already begun to implement these plans. Brazil’s [Public Digital Bookkeeping System](#) uses big data analytics to counter tax evasion. India’s [Aadhaar](#) program, a digital ID program, facilitates access to/use of bank accounts for the financially excluded (Figure 1). Meanwhile, the Chinese government has created a ‘judicial big data center’ to enable the Supreme People’s Court to implement judicial decisions more effectively, and has also [collaborated with IBM](#) to help improve air quality in Chinese cities.



*Banking correspondents are local businesspeople who serve as “bankers” in rural villages where no banks are available.
 **UIDAI is the government body which administers Aadhaar.

Figure 1. Aadhaar-enabled payment platform [Modified from *Bhat 2013, 350*]

Unlike poorer Southern states, major emerging markets have a relatively larger resource base (e.g. large sovereign wealth funds, deeper technological expertise) on which they can draw when implementing their visions. For instance, in recent years, private actors have assumed a prominent role in digital development efforts. While multinational corporations are the primary private actors in most Southern countries, governments in Brazil, India, and China can collaborate with their own corporate giants to pursue development goals. For instance, the Indian government leveraged India Inc.’s technology reputation and skills when creating the Aadhaar program, naming Infosys’s founder as the program’s chairman and staffing Aadhaar’s administrative body with public *and* private actors to boost creativity and eliminate red tape. Similarly, the TataSTRIVE initiative of India’s Tata Group puts the Indian population at the center of its outreach efforts, seeking to “equip communities with information, technology and the capacity to achieve improved health, education and livelihood outcomes” via technology seminars, vocational training courses and professional coaching.

The big emerging markets also resemble other Southern states in their desire to leave a mark on the priorities and principles of digital development. Digitalization and data are having a fundamental impact on state governance at home, increasing the transparency and inclusiveness

of policymaking. For example, the Brazilian government has created two different platforms for citizens to discuss proposed policies and additionally has created an Open Data Portal. China is trying something similar, creating microblogs at the county- and city-levels to engage citizens and provide information.

The role of global governance

Unlike other Southern states, Brazil, India and China have *also* pursued their digital developmental policy principles and goals at the global level. For instance, Brazil has advocated at the UN for sovereignty, human rights protection and democracy as basic requirements for government data use. India promoted similar principles in its bid (though unsuccessful) to establish a UN Committee on Internet-Related Policies and in its hosting of ICANN's (Internet Corporation of Assigned Names and Numbers) public meeting in 2016. China, in turn, has sought to reshape concepts prevalent in big data debates, such as "cyber-security," and has started implementing these modified concepts by hosting events like the International Big Data Expo, which has taken place annually in Guiyang since 2015.

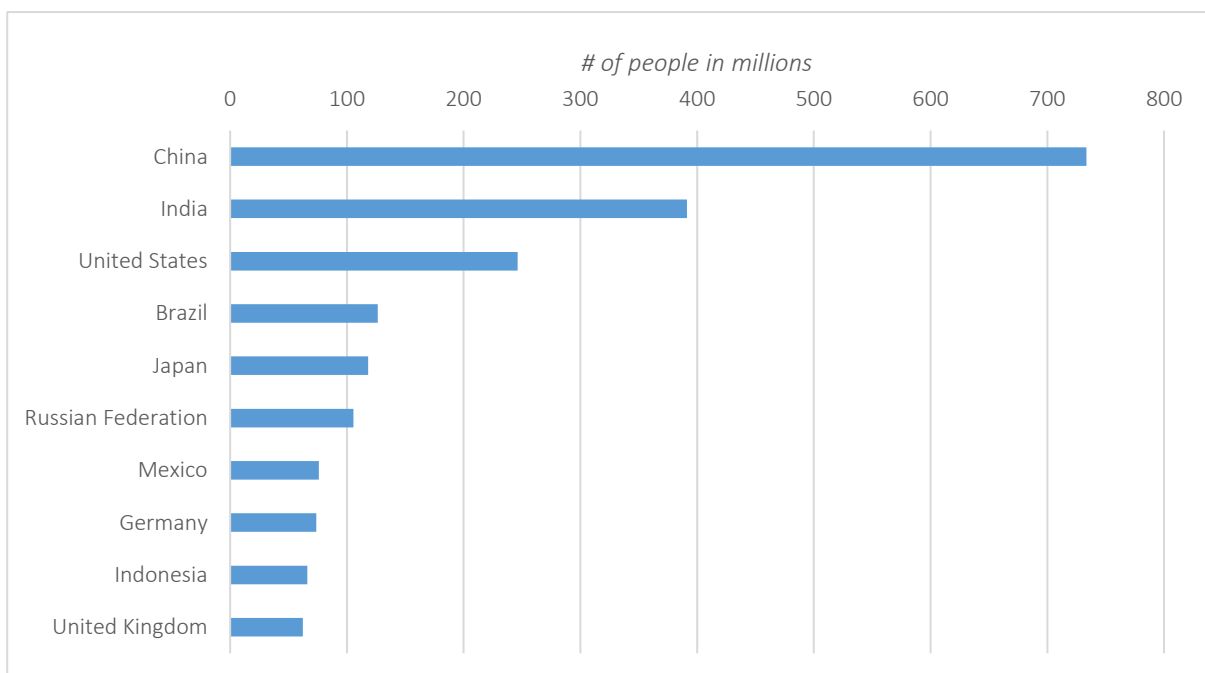


Figure 2. Top 10 countries in terms of internet users in 2016 [Own calculations using World Bank data]

As such, the opportunities of big data for major emerging states are not limited to advances at home. Rather, big data and digitalization are platforms on which to advance collectively new or modified understandings of development governance standards and principles. One example is the BRICS' 2018 joint statement, which commits to creating a "Partnership on New Industrial Revolution" to deepen "cooperation in digitalization, industrialization, innovation, inclusiveness and investment," an Advisory Group to determine digital priorities and a network of science parks and businesses to facilitate information exchange. It will be illuminating to track the global activism of major emerging market countries related to digital governance and development in the future, as the large size of their internet populations and expected user growth trends (see Figure 2) imply strong incentives for them to continue to engage in these activities.

Looming challenges

Although there is much to be gained across the developing world from incorporating technology into national development efforts, several challenges nonetheless remain. Three seem particularly important. First, despite current achievements, Southern states may face *challenges of policy implementation*. For example, governments may fail to provide necessary financial resources for digital development programs. India's National eGovernance Plan sets out 44 projects using technology to improve, among other things, health, security and farming. However, the federal government seems to have avoided responsibility for financing these projects, leaving it instead to India's cash-strapped states. At the same time, the growing number of domestic stakeholders involved in digital policymaking may further complicate implementation. In legitimizing its digital governance strategy, Brazil held three preparatory meetings, three technical workshops and an invitation-only seminar, and submitted a draft strategy for public comment via a dedicated website. Such activities are time- and resource-intensive, presenting implementation challenges for Brazil and India, and potentially putting them beyond the capacity of many Southern countries.

Second, Southern states may confront *challenges of digital exploitation*. Despite the diversification of institutional actors involved in data collection and analytics, Southern citizens are still largely data consumers. As such, corporate actors have a powerful role in determining which data is available to Southern governments to use in national development efforts, and additionally exercise strong influence over how that data is used. Some observers anticipate this could lead to the exclusion of critical voices and knowledgeable stakeholders who might otherwise usefully contribute. Given the prominence of Northern multinational corporations in data collection, storage and distribution in Southern states, an Indian critic has even spoken of a “digital replay of colonial exploitation.” The core of these critiques is a worry that, in allowing private corporate actors strong influence over national development policymaking and efforts, Southern governments may be sacrificing their national developmental goals to expediency. This could ultimately undercut broader public support, which is considered especially crucial for national digital development efforts.

Finally, governments of developing countries may face *challenges of societal exclusion* while implementing national data visions. For instance, citizens may voluntarily choose to exclude themselves from using digital tools and technologies to get involved in policymaking due to concerns that their suggestions could have unforeseen consequences later. This is especially worth tracking in China, where the deadline for the creation of a nationwide social credit score system is imminent and, simultaneously, regulations have been introduced to restrict anonymous online discussion. Alternatively, citizens in developing countries may also choose not to participate due to limited expectations that digital advances will make a dramatic difference in the quality of governance: in 2016, substantial majorities in India, Kenya, Nigeria and South Africa had never used – and said they never would use – digital technologies to participate in politics. Structural factors may also inhibit citizens from participating. Despite being some of the most advanced developing countries in terms of internet and computer penetration, Brazil, India and China remain significantly behind Northern countries in terms of income disparities, the availability of telephone lines and human capital. Similar factors affect the willingness of Indian citizens to use e-governance portals. As such, global structural factors can result in the overrepresentation of some populations (e.g. Northern or urban citizens) and the underrepresentation of others (e.g. Southern, rural, or elderly citizens) in digital governance initiatives.

Outlook

I conclude with a few observations and recommendations drawn from the experiences of these major emerging countries regarding the use of digitalization and big data in future national development efforts.

First, developing country officials should continue to discuss digital development plans with Southern partners within the context of governance fora, including China's Internet Roundtable for Emerging Countries or Brazil's NETmundial Initiative. Doing so can help address the challenge of implementation by developing a "best practices" dialogue among Southern states, and, relatedly, by seeking to forge new international consensus for global discussions of digital development.

Second, governments must actively work to legitimize their national digital strategies vis-à-vis the citizens who are affected by data-led development. One means of doing so is to focus on projects that demonstrate the benefits of digital development in everyday life and communicate these benefits in plain language. In promoting electronic payment systems, for example, India's prime minister said the following:

Many will be surprised to know that now there are about 30 Crore, i.e. 300 million RuPay Cards in India [...] These 300 million people can immediately become part of this rewards scheme [...] if there is a child studying in 10th or 12th standard in your family, he or she will also be able to teach you well about this. It is as simple as sending WhatsApp messages on the mobile.

Such messages combine contemporary characteristics of Southern communities, such as class/family/religious identities and pervasive mobile phone technology, to overcome disadvantages such as a lack of human capital, which could complicate efforts to achieve strategic goals.

Third, regarding the challenge of digital exploitation, excluding private actors from data-led development is not viable. After all, corporations possess much of the digital technology and

platforms on which government efforts are built. Rather, governments should focus on developing strong regulatory frameworks and a set of incentives that align corporate interests with the interests of governments and citizens. In this regard, the Brazilian, Indian and Chinese governments' recent flurry of activity to simultaneously amend their legal frameworks related to data and privacy while formulating their digital development strategies is promising. Specifically, the Brazilian legislature passed an Internet Bill of Rights in 2014 to regulate discriminatory practices in internet provision; the Indian Supreme Court declared privacy a constitutionally protected human right in August 2017; and China passed a cybersecurity law in 2017 and personal information protection standards in May 2018. While it remains to be seen how (and if!) these rules will be enforced, this legislation is a useful first step towards limiting the challenge of digital exploitation. It could potentially also serve as legislative or regulatory models for other Southern states.

Finally, facilitating technological exchange and discussion, via the BRICS Plus initiative started by the Chinese government in 2017, for example, can help address some of the structural reasons for the challenge of societal exclusion. New institutions can help too. The New Development Bank, created by the BRICS countries in 2014, has made using technology to facilitate sustainable development and improve infrastructure one of its lending guidelines. In addition, demonstrations of government efficacy in using digital technologies to achieve development goals prioritized by citizens could help build trust and encourage citizen adoption of digital development tools. For instance, moving beyond simple identification, Indian citizens can now use Aadhaar to apply for birth certificates, share medical records, register for exams, and perform employee background checks. The success of this approach is evident in the growing use of Aadhaar for authentication purposes (Figure 3).

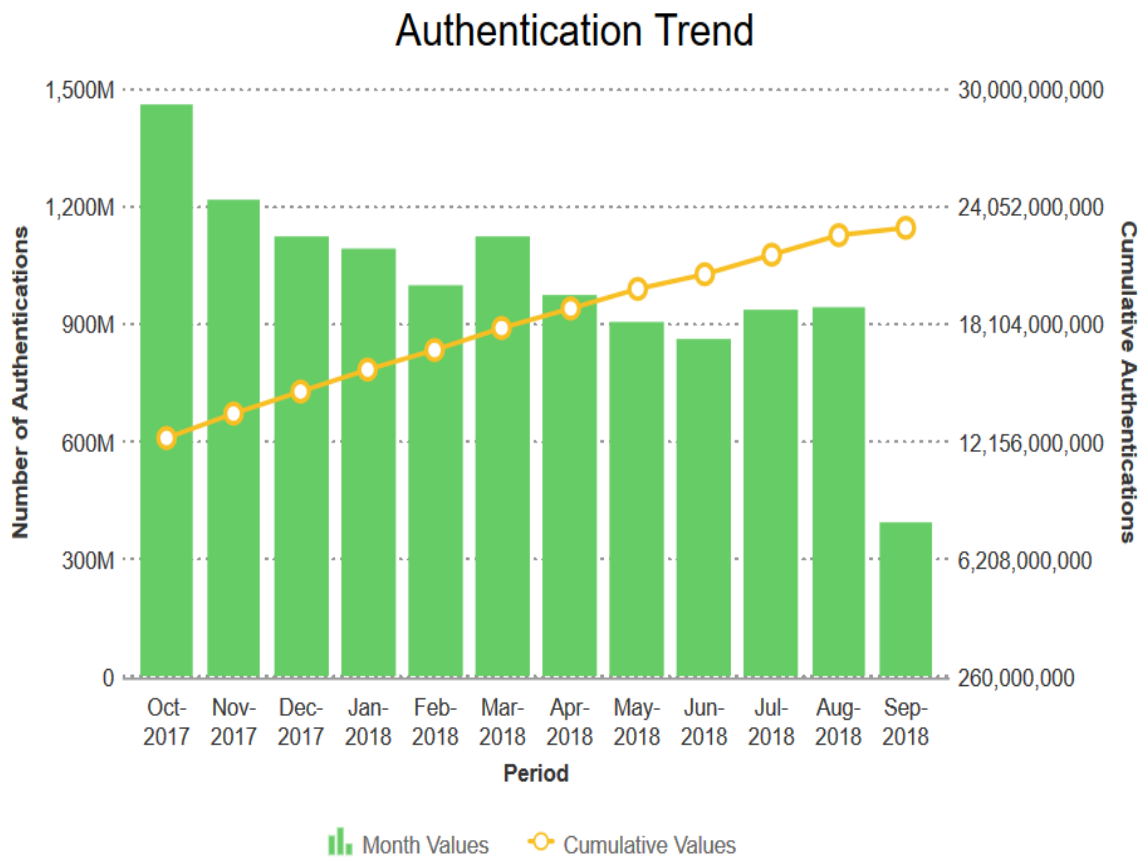


Figure 3. Use of Aadhaar for authenticating transactions over time [*Aadhaar Dashboard 2018, accessed 14 September 2018*]

In conclusion, major emerging markets have accumulated extensive experience in using digitalization and big data to promote development. As leaders and partners within the Global South, their experiences can serve as both inspiration and “lessons learned” for other Southern countries seeking to incorporate digital technologies and data-driven policymaking into national development efforts. Global governance platforms, such as the UN’s [Global Pulse](#), additionally provide interesting new spaces for promoting digital development via international cooperation. However, as the quote at the start of this piece suggests, the “genuine opportunity” of digital development for tackling longstanding development problems and helping people around the world will only be achieved if the needs of developing and developed countries remain at the center of these efforts.

Laura C. Mahrenbach is a Postdoctoral Fellow at the Bavarian School of Public Policy at the Technical University of Munich, Germany. Her current research on emerging powers is funded by Grant #369896954 from the German Research Foundation (DFG). More information about ongoing research is available [here](#) and on Twitter: [@LauraMahrenbach](#). Prior to her position in Munich, she held positions at the Technical University of Dresden, Curry College and the Ruhr University of Bochum.