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case study

How India is Reimagining Consent to Empower People

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Venkatesh Hariharan

Key Insights

1. **India's Data Empowerment and Protection Architecture (DEPA) is an ambitious attempt to re-architect data flows from the current organization-centric model to an individual-centric model.** The Account Aggregator (AA) framework, introduced in India as the first implementations of DEPA, gives individuals more control over and insight into how their personal financial data is used.

2. **While the implementation of the AA framework is still in its infancy, there are a number of emerging lessons regarding business models and use cases.** Further experimentation is required to refine the AA business model and ensure it serves the needs of different demographics, but these early lessons reinforce both the economic opportunities and the potential to reimagine how individuals engage with and benefit from their personal data.

3. **Enacting a consent network is not just a technical process. It requires human capacity, relevant institutions, and the right enabling environment.** India's experience demonstrates how critical a clear policy narrative is for developing and sustaining alignment of incentives among policymakers and regulatory authorities. It further demonstrates the need to have the structures in place that enable implementation and enforcement.

4. **India's experience also shows that a consent network is a critical piece of digital public infrastructure (DPI).** DEPA is a compelling model for building a consent network, and the early experiences from the implementation of the AA framework offer important lessons to other countries about introducing and scaling a consent network. DEPA can also be the nucleus for cross-border sharing of consented data flows that would be useful in areas like visa processing, cross-border investments, university applications, and others.

SECTION 1

Introduction

Consent networks in context

As governments build out identity, payment, civil registration, and other foundational layers of digital public infrastructure, civil society organizations, privacy advocates, and others are understandably raising concerns over surveillance and privacy. While DPIs drive greater efficiency in service delivery for citizens, they also raise fears that governments will be able to track citizens' data. One method of balancing governments' need for efficiency with citizens' right to privacy and their desire to have agency over their personal data is by implementing a consent network as a foundational layer of DPI.

A well-implemented consent network will:

- Give individuals greater control over their digital data that resides with entities such as government departments, banks, mutual funds, hospitals, and doctors, thereby enabling them to approve/reject data requests, revoke access to data, and share data at a granular level. For example, individuals can apply for a loan on an app, get information requests from multiple lenders, select the best lenders, and share only relevant data with them, thereby giving consumers more control and insight into how their personal data is being used.

- Shift the data economy from an organization-centric architecture to an individual-centric one.

- Enable greater efficiencies in the economy by reducing friction across transactions. For example, a health care provider can use a consent network to access a patient's previous blood test reports stored across multiple pathology labs by sending a request to the patient. In the financial sector, a lender can quickly get back to a borrower by requesting digitally signed information that helps them assess the borrower's ability to repay. This will benefit a vast majority of small and medium enterprises that have cash flows but do not have collateral to offer.

This paper aims to document early lessons from India's efforts to implement its Account Aggregator framework, its version of a consent network based on DEPA.

SECTION 2

India's Account Aggregator Framework

Reimagining Consent

Account aggregators provide a standardized mechanism for sharing data between individuals and institutions in a secure manner. In the past, banks and financial institutions depended on antiquated data-sharing practices like screen scraping and manual printing and scanning when dealing with sensitive information like bank account statements and utility bills. This system was costly, prone to fraud, inefficient, and difficult to scale. The net result was that financial institutions excluded the poor from access to credit, savings, and other financial products because they set transaction thresholds that were too cumbersome.

The AA system changes this by making it easy for individuals to share their data so they can do things like buy mutual funds, open a bank account, and apply for credit. For financial information users (FIUs) like lenders and wealth managers, the AA system makes transactions cost effective by providing digitally signed, machine readable information that can be processed quickly and easily. In turn, this enables financial inclusion by reducing the threshold for providing loans, mutual funds, and other services.
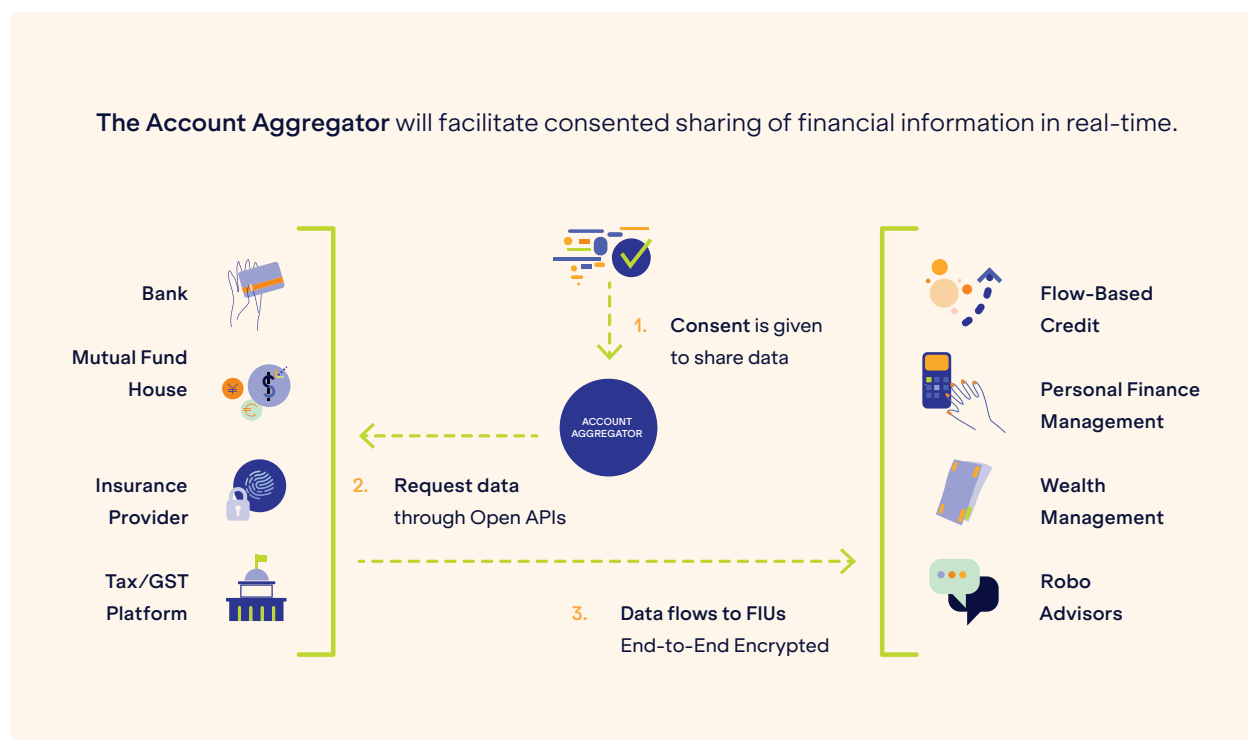
"

Financial institutions excluded the poor from access to credit, savings, and other financial products.

The Data Empowerment and Protection Architecture (DEPA)[1] is an open specification[2] that aims to transform the current organization-centric data architecture to a human-centric system by giving people the power to decide how their data can be used. Since India did not have a privacy law at the time the DEPA was conceptualized, it was designed with the European Union's General Data Protection Regulation (GDPR) in mind. DEPA provides a technological framework for implementing data protection laws and regulations. DEPA launched in 2018 and of August 2022 there were 1.1 billion live accounts, including all major public and private bank accounts,[3] on the DEPA open banking network.[4]

India's AA framework is one of the first implementations of the DEPA data sharing framework globally. While AAs have been designed as sector-agnostic platforms, their first application is in the world of finance. The need for accelerating financial inclusion brought together the four major financial sector regulators in India to establish the AA framework: the Reserve Bank of India (RBI), the Securities and Exchange Board of India (SEBI), the Insurance Regulatory and Development Authority of India (IRDAI), and the Pension Fund Regulatory and Development Authority (PFRDA). Under this system, the RBI has licensed AAs as nonbanking financial companies (NBFCs). AAs are regulated entities that act as information fiduciaries that transmit data from financial information providers (FIPs) to financial information users with the user consent.

Figure 1: Overview of Account Aggregators

The Account Aggregator will facilitate consented sharing of financial information in real-time.

Bank

Mutual Fund
House

Insurance
Provider

Tax/GST
Platform

ACCOUNT
AGGREGATOR

1. **Consent** is given
to share data

2. **Request data**
through Open APIs

3. **Data flows to FIUs**
End-to-End Encrypted

Flow-Based
Credit

Personal Finance
Management

Wealth
Management
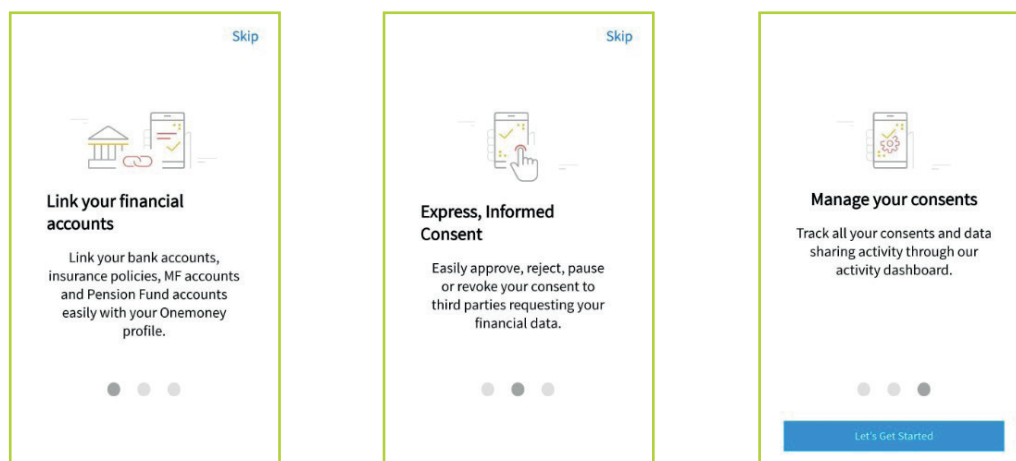
Robo
Advisors

Individuals can choose to download any AA app and link to a bank, provident fund, mutual fund, or insurance account. At present, six AAs have been licensed by RBI, and eight have received in-principal approvals. The screenshots of the OneMoney AA app below illustrate a user's experience of using an AA.

Once an individual has signed up, they can easily share their data with lending institutions, wealth managers, and other FIUs. This reduces the time and effort that individuals spend collecting paper documents from multiple sources.

Figure 2: One Money Account Aggregator App

Skip

Link your financial accounts

Link your bank accounts, insurance policies, MF accounts and Pension Fund accounts easily with your Onemoney profile.

Skip

Express, Informed Consent

Easily approve, reject, pause or revoke your consent to third parties requesting your financial data.

Manage your consents

Track all your consents and data sharing activity through our activity dashboard.

Let's Get Started

DEPA, and by extension AA, has been designed using the ORGANS principles:[5]

- **Open standards:** The consent architecture must follow open standards and ensure all institutions use the same approach.

- **Revocable:** The consent granted by the user can be revoked at any stage.

- **Granular:** The consent granted has to be presented at a granular level, where the data is broken down in terms of its characteristics and how long it can be used.

- **Auditable:** All the events in the consent architecture flow must be digitally signed and logged using the Ministry of Electronics and Information Technology's log artifact.

- **Notice:** The user must be informed and given due notice when consent is created or revoked and when data has been requested, sent, or denied.

- **Security by design:** The internal and external software to be used in DEPA must be designed from the ground up to be secure and provide end-to-end security of data.

The ORGANS framework gives individuals an unprecedented level of control over their data. It also means that the AAs cannot monetize user data as the data flows between FIPs to FIUs are encrypted. Eventually, as more and more data streams become part of this ecosystem, the AA will give individuals greater control of their data sources that are scattered and difficult to control using current technology frameworks.

As of October 14, 2022, 1.71 million accounts were linked to the AA ecosystem, according to Sahamati. The Sahamati collective is in its early days and has fulfilled 1.7 million consent requests successfully as well.[6]
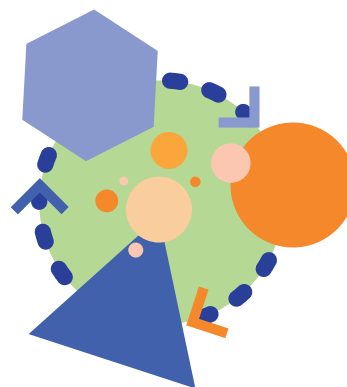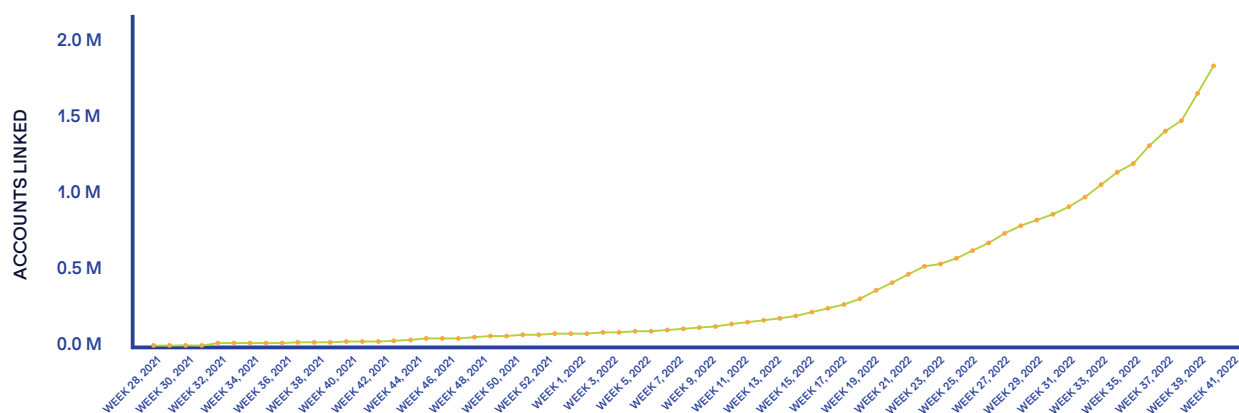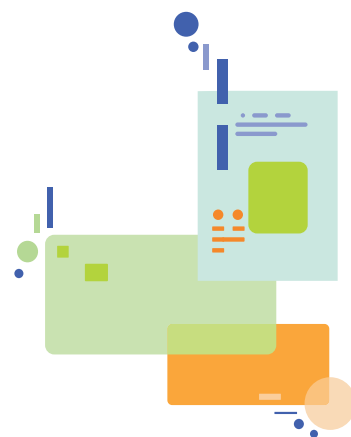
Figure 3: Sahamati Account Aggregator Ecosystem Performance Dashboard — FIP

SECTION 3

Early Insights From Account Aggregator Implementation

DEPA is an audacious attempt to re-architect digital data flows. Over the last decade, the growth of digital technologies led to a situation where individuals have their data scattered across multiple silos from social media to banks, mutual funds to hospitals. Individuals have few meaningful levers to control their data and share it with others for their own benefit. Against this siloed approach, DEPA provides an alternative where data remains federated and stored across various sources while still enabling the individual to exert meaningful control over it. Building a framework like this requires policy support, the right technical architecture, strong market incentives, and adoption by individuals. While these are very early days for the AA ecosystem globally, some evidence has begun to emerge from the pioneers who are implementing AA in India.

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> **Individuals have few meaningful levers to control their data and share it with others for their own benefit. Against this siloed approach, DEPA provides an alternative.**

Insight #1: Benefits to companies using AAs have been immediate and measurable.

Based upon data shared with Sahamati by two fintechs—Snapmint and LendingKart—it is clear that the AA framework has the potential to introduce efficiency gains and commercial benefits.

- **Snapmint** is a buy now, pay later (BNPL) platform that aims to facilitate the purchases of millions of customers for products like electronics, clothing, and accessories. It claims to have more than 4 million consumers on its platform—many of whom are from small, underserved towns in India—and serves more than 27,000 pin codes across India.[7] Snapmint uses data to provide instant credit to customers at the point of purchase.

- **LendingKart** is a fintech company that provides micro, small and medium enterprises (MSMEs) with working capital loans. Most MSMEs are wary of the onerous paperwork, long processing times, and multiple visits needed to access loans from mainstream banks. It is estimated that, as of early 2022, there are over sixty-three million MSMEs in India, contributing approximately 30% of the country's GDP, 40% of its manufacturing output, and nearly 50% of total exports (latest figures).[8]

Organizations like the Federation of Indian Small and Medium Enterprises (FISME) estimate that only around 5% of MSMEs access institutional funds through banks and financial institutions.[9] In the absence of funding from mainstream financial institutions, most Indian MSMEs have to rely on the informal lending sector, their own internal accruals, or borrowing from friends and family for growth capital. Therefore, unlocking credit to this sector can have a significant impact on employment generation, which is critical in a country where more than 50% of the population is under the age of 25 and more than 65% under the age of 35.[10]

One of the major reasons why banks refrain from lending to MSMEs is lack of reliable financial information. The high transaction costs involved in lending small amounts to MSMEs is another major barrier. The International Financial Corporation (IFC) estimates that small businesses in developing economies need more than $2 trillion to fulfill their working and growth capital requirements.[11] The World Bank estimates a credit demand-supply gap of $380 billion in India alone.[12]

Many Indian fintechs like LendingKart aim to step into this breach and fulfill demand with easy documentation and quick turnaround times for borrowers. The AA framework is already helping pioneers like Snapmint and LendingKart in the following ways:[13]

1. **Reduced transaction processing costs:** Snapmint reported that its cost of manually processing customer requests was Rs 440 per case. The digitized process with AA has brought this down to Rs 90 - 110. LendingKart reported that the AA framework enabled it to do more with less, resulting in 65% potential savings in infrastructure costs.

2. **Reduced fraud:** Snapmint reported that fraud rates with AA have been zero. LendingKart reported that the chances of credit defaults caused by fraudulent or tampered with banking information are very low. It also reported a 66% cost reduction in fraud detection services due to the digitally signed data flows from AAs.

3. **Greater efficiencies:** Snapmint reported that before AA, 7% to 10% of its customers completed the income verification process for increasing their credit limits. After integrating AA into its workflow, Snapmint reported that this increased to 35% to 45%. As a result, average credit limits have gone up by 55%, translating to a 27% increase in average order values.

4. **Increased customer base:** Snapmint reported that the number of consumers verifying their accounts with AA has increased fivefold, and overall nonperforming assets have decreased by 0.5% of the loan book. This has led to a 4% to 5% improvement to the bottom line. LendingKart reported that 58% of eligible customers are adopting AA. This has resulted in 8% better conversion for customers using AA for sharing banking information and an 11% increase in customer serving themselves.

Insight #2: A clear policy narrative is essential for aligning the incentives of policymakers and regulatory authorities.

Policy professionals know that getting four sectoral regulators together is no easy task, and aligning incentives to sustain meaningful engagement is even more difficult. Getting support from RBI, SEBI, PFRDA, and IRDA was possible because of enlightened leadership and support from the finance ministry, which oversees these four financial sector regulators. India's finance minister, Nirmala Seetharaman, has also urged the public-sector banks that hold a sizeable chunk of checking and savings accounts in India to join the AA framework.[14]

India's Supreme Court has declared privacy to be a fundamental right,[15] and the government is working on a privacy bill.[16] When the privacy bill is approved by the Indian Parliament, AA might see an uptick in adoption, as it provides organizations a method for compliance with privacy laws.

In India, the policy narrative is around individual empowerment, financial inclusion, and market expansion to those who can be supported more sustainably through digital technologies. Advocates for a consent network should evaluate their local context and craft strategies according to the policy priorities important to their country. In developing economies, financial inclusion and health inclusion might drive the policy narrative. In more developed countries, the policy narratives might be more about open banking, innovation, and enabling competition.

Insight #3: The business models for AAs are still being refined, and overall market incentives remain a risk.

As mentioned earlier, AAs are licensed in India by RBI. Sahamati – as a collective of AAs – is set to interact with the data protection authority (DPA), which is likely to be set up when a privacy bill is approved by the Indian Parliament. While this model can be replicable across countries, it is important to note that a collective like Sahamati is likely to be most effective in countries where market capacity exists.

AAs are expected to function as data fiduciaries acting on behalf of the user. By design, AAs are not allowed or able to sell user data to third parties since the data flows are encrypted end to end. Therefore, their business models are designed to charge FIUs or users. As multiple sources of data begin to flow through AAs, the volumes could make them an attractive business proposition. But at this point in time, the business models have not been firmly established. Business models, incentive alignments, and licensing are areas that might evolve differently in different countries.

Some questions remain as to whether AAs should be licensed entities, since consent and data sharing are not licensed activities worldwide. Today, most data sharing happens through bilateral agreements between the individual and the data controller. When data protection authorities are set up, these AAs, FIUs, and FIPs (or their equivalent institutions in other countries) can be regulated as data fiduciaries instead of being licensed by a sectoral regulator like RBI.

The difference between FIUs and FIPs is critical. Traditionally, banks are be FIUs for lending and other purposes, while mutual funds and provident funds, for example, are most likely to be FIPs. In the AA framework, however, it is mandated that if an organization wants to be an FIU, it also has to be an FIP. This ensures that data flows are a two-way street and that institutions do not just take data, but share data as well. For this reason, there is a need for creating financial incentives that work for both types of entities.

At present, most AAs do not charge any usage fees. With global trends being against usage fees, it remains to be seen if AAs will be able to levy usage charges or if they will have to depend on usage fees from FIUs. Early reports indicate that some AAs have reached out to FIUs with the offer of bundled services, where they provide data through AAs and analytics through an affiliated organization. Since AAs have been envisioned as pure data fiduciaries that are accountable to the individual and help transport data but not trade in it, transactions where an organization related to an AA runs analytics could lead to potential conflicts of interest.

Insight #4: Expanded use cases will be a key determinant in ensuring adoption by individuals.

A consent network will need to create multiple use cases to ensure greater adoption by individuals. Currently, people can use AA apps to provide consent to their banks. Anecdotal evidence from users suggests that the biggest use case for AA right now is loan applications.[17] That said, insurance, mutual fund, and provident fund companies are in the process of being onboarded. And as different types of financial companies, health care organizations, and others come on board, use cases will grow, driving greater adoption.

The convenience of AA enables individuals to save both time and money. They can save time by accessing multiple data sources with a single click, rather than having to log in to multiple mutual fund houses, stock brokerage firms, provident fund accounts, and others to calculate their net worth.

They can save money when FIUs are able to use AA to reduce the costs of providing services. This occurs when FIUs receive data in a machine-readable form, which not only improves accuracy and reduces errors when collating data, it enables the processing of large volumes of data at a low cost using machine learning and artificial intelligence. FIUs can then pass on those savings and provide greater financial inclusion by lowering their fees for loans, wealth management, and other products.

Another advantage for individuals is having a standardized interface for consent, which gives them greater control over their data compared to the confusing legalese and non-standardized user interfaces that different services provide.

Consent networks like AA are very complementary to privacy laws. While laws prescribe the "rules of the road," AA enforces them. It does this by baking in the ORGANS principles. In an ideal world, privacy laws and enabling tech like AA should be implemented simultaneously. However, the real world is messy and such synchrony is not always possible.

Work on DEPA started immediately after the Indian Supreme Court declared privacy to be a fundamental right in 2017.[18] Following this judgment, the government of India created a committee chaired by Justice BN Srikrishna to draft a privacy bill. The committee submitted its recommendations and a draft bill after extensive public consultations. These recommendations were diluted in the bill that was ultimately submitted to the Indian Parliament, leading civil society and privacy advocates to object to the fact that the revised bill would give the government powers to carve out a lot of exceptions for itself. Currently, the Indian government is working on a new privacy bill.

> **Consent networks like AA are very complementary to privacy laws. While laws prescribe the "rules of the road," AA enforces them.**

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Lawmaking is a long process in most countries. But with a consent network, individuals can share data with peace of mind until the laws fall into place. Furthermore, once privacy laws are approved by lawmakers, consent networks can enable better compliance with these laws.

Sahamati, AAs, banks, and other financial sector players are still in the process of onboarding participants and fine-tuning their systems. Therefore, they have not gone as far as they could yet in advertising the benefits of using AA. Past experience with Unified Payments Interface (UPI),[19] India's instant, bank-to-bank, mobile-based payment network, suggests that AA usage could take off steeply once more players come onto the network and more use cases are available to users. It has been reported that India's Goods and Services Tax Network (GSTN) might also become part of the AA network soon.[20] When that happens, businesses will be able to share their sales invoices through AA and access financial capital through bill discounting, which is a massive use case for the financial sector.

Usage fees will also have an impact on adoption. For example, the Indian government subsidized UPI fees, making it free for both users and merchants in order to popularize digital payments, reduce cash payments, and improve tax collection. AA uptake will depend on the usage fees charged to end users and the fees FIUs will have to pay to access data through the AA network.

Insight #5: Consent networks are foundational DPI.

As countries implement DPI in identity, payments, civil registry, and other areas, they should consider implementing a data exchange layer like AA for practical as well as privacy purposes. One country head of an identity project interviewed for this research noted that because they don't have a data exchange layer, they have to enable interoperability with almost 2,000 end user organizations individually. If there were a data exchange layer, the identity project and end users would simply have to plug into the system, saving everyone time and money. In India's case, the AA serves as both a consent network and a data exchange layer, but not every data exchange will have a consent network built in.

India built identity and payments as the first two layers of India Stack, a digital infrastructure for cashless, presence-less, and paperless transactions.[21] The consent network is now being built but, in hindsight, some of the technology architects of India Stack have acknowledged the how foundational consent is to facilitating trusted data exchange -- whether that be identity, financial, or other types of data -- and have suggested that the consent network should have been a starting point for the India Stack. Countries that are embarking on their DPI journey could learn from India's experience as they prioritize investment in DPI.

In terms of privacy, implementing a consent network along with other DPIs would give users greater control over their data, as well as the ability to periodically audit how their data is used. However, implementing a consent network does not automatically guarantee privacy. Strong system design plays a significant role. For example, if the network is designed to allow government users to access data without seeking user consent, users will not have privacy protection against government misuse of their data.

SECTION 4

Conclusion

Throughout the world, there is a growing consensus that users should have greater agency over their data, but making this a reality is a work in progress. India's efforts to build a consent network — using a management and data-sharing platform — is a model that embraces both the private and public sectors is garnering a lot of attention.

Since DEPA is an open specification, it is hoped that many countries will implement it on their own and some global best practices might emerge soon. The early evidence shows that AA provides a convenient way for individuals to provide consent and share their data with FIUs. For FIUs, AA has resulted in convenience, fewer errors, and reduced costs in data processing. The savings that result enable FIUs to break down the entry barriers for customers and enable financial inclusion. In a country like India, where the penetration of loans and savings products are low, a network like AA can enable financial inclusion at scale.

In more developed countries, AA would allow for greater individual empowerment, more innovation and competition, and enabling anti-trust action. All countries, multilateral agencies, and development institutions should look at implementing a consent network along with identity and payments as DPI. This would ensure that the efficiency gains from implementing DPIs are balanced with empowering individuals with agency over their data and mitigating the privacy concerns associated with digitization.

Given its scale and progress in implementation, India's AA framework and ecosystem being built around it is a compelling example of how to build and implement a consent network and will continue to be a source for learning as it matures. Fortunately, there are other examples of innovation and experimentation around reimagining consent for data sharing and use, some of which will be explored in a forthcoming paper.

Endnotes

1   For further background on DEPA, see the World Bank's report "Unraveling Data's Gordian Knot," which includes a case study on India titled, "India: Data Sharing to Empower Individuals." See: "Unraveling Data's Gordian Knot : Enablers and Safeguards for Trusted Data Sharing in the New Economy," https://openknowledge.worldbank.org/handle/10986/35119.

2   Open specifications are "… technical documents for protocols, computer languages, standards support, and data portability." For more information, see "Open Specifications content launches on docs.microsoft.com," https://learn.microsoft.com/en-us/teamblog/announcing-open-specifications-migration.

3   For more information, see: "Status of FIPs & FIUs Implementation in the Account Aggregator Ecosystem," https://sahamati.org.in/fip-fiu-in-account-aggregators-ecosystem/.

4   Note: The open banking framework is separate from the AA ecosystem more narrowly. For more info on the story and a link to the data, see: "India's open banking revolution is here, but convenience comes at a price," https://restofworld.org/2022/newsletter-south-asia-account-aggregators/.

5   For more information, see page 10 of the DEPA Framework, which is available online. "Data Empowerment And Protection Architecture: Draft for Discussion," https://www.niti.gov.in/sites/default/files/2020-09/DEPA-Book.pdf.

6   "Sahamati Website," https://sahamati.org.in/aa-dashboard/.

7   "BNPL platform Snapmints bags $21 mn in debt and equity funding," https://www.businesstoday.in/latest/corporate/story/bnpl-platform-snapmint-bags-21-mn-in-debt-and-equity-funding-350082-2022-10-17.

8   "India must transform its micro, small, and medium enterprises," https://www.atlanticcouncil.org/blogs/southasiasource/india-must-transform-its-micro-small-and-medium-enterprises/.

9   "GSTN and UPI will help expedite financial inclusion," https://www.livemint.com/Opinion/N51DpQA4bQBLpvOf7M2uhM/GSTN-and-UPI-will-help-expedite-financial-inclusion.html.

10   For more information and the latest numbers, see the World Bank profile for India: https://data.worldbank.org/country/IN

11   "Two Trillion and Counting: Assessing the Financial Gap for Smaller Enterprises in the Developing World," https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/resources/two+trillion+and+counting.

12   "Tech-ing on the Credit gap: How Start-Ups are Using Technology and Alternative," https://www.entrepreneur.com/en-in/finance/understanding-the-reasons-behind-indias-msme-credit-gap/332324#:~:text=The%20World%20Bank%20estimates%20a,secure%20access%20to%20operational%20capital.&text=Why%20does%20this%20gap%20exist%3F.

13   Data collected through author's consultations with Sahamati.

14   "FM Nirmala Sitharaman directs PSBs to onboard accounts aggregator system," https://www.financialexpress.com/industry/banking-finance/fm-nirmala-sitharaman-directs-psbs-to-onboard-accounts-aggregator-system/2587028/.

15   "India's Supreme Court Upholds Right to Privacy as a Fundamental Right—and It's About Time," https://www.eff.org/deeplinks/2017/08/indias-supreme-court-upholds-right-privacy-fundamental-right-and-its-about-time.

16   "Without a Data Privacy Law, India Must Consider Hazards of 'Deanonymisation' of Non-Personal Data," https://thewire.in/rights/deanonymisation-in-non-personal-data.

17   This can be observed through customer testimonial from LendingKart describing AA usage. https://www.youtube.com/watch?v=zXRati1mEDs&t=39s.

18   "India's Supreme Court Upholds Right to Privacy as a Fundamental Right—and It's About Time," https://www.eff.org/deeplinks/2017/08/indias-supreme-court-upholds-right-privacy-fundamental-right-and-its-about-time.

19   UPI and AA have one similarity in that both these systems unbundle data control and data consent. Prior to UPI, the only way to make a payment was to do it through the bank's mobile app, net-banking, or by writing a check. UPI changed this because consent to debit one's bank account could now be given through any UPI app connected to the user's bank account. Similarly, AA allows a user to share their data residing in sources like mutual funds, provident funds, and insurance without logging into those sources.

20   "Credit to MSMEs gathers pace, but needs a tech push," https://www.livemint.com/economy/credit-to-msmes-gathers-pace-but-needs-a-tech-push-11664891829452.html.

21   You can read more about these two layers on the India Stack website. For more information, see: "India Stack Website," https://indiastack.org/.