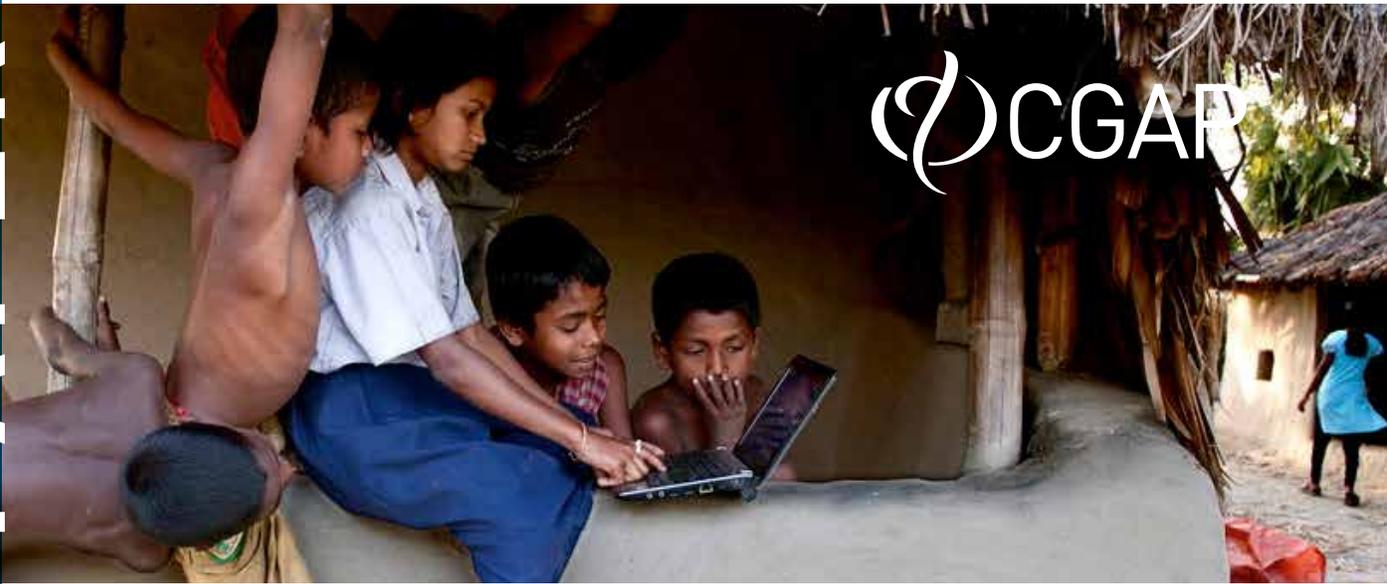


PAPER

WORKING



INDIA'S NEW APPROACH TO PERSONAL DATA-SHARING

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LIST OF ACRONYMS

AA	Account Aggregator
API	Application Programming Interface
DSA	Distributed Sales Agencies
FIP	Financial Information Provider
FIU	Financial Information User
G2P	Government to Person benefit payment
GSTN	Goods and Services Tax Network
IRDAI	Insurance Regulatory and Development Authority of India
MeitY	Ministry of Electronics and Information Technology
MSME	Micro, small, and medium enterprises
PFRDA	Pension Fund Regulatory Development Authority
RBI	Reserve Bank of India
ReBIT	Reserve Bank Information Technology Private Limited
SEBI	Securities and Exchange Board of India
UPI	Unified Payments Interface

EXECUTIVE SUMMARY

OVER THE PAST DECADE, INDIA'S INVESTMENTS IN ITS DIGITAL financial infrastructure—known as “India Stack”—have sped up the large-scale digitization of people’s financial lives. As more and more people begin to conduct transactions online, questions have emerged about how to provide millions of customers adequate data protection and privacy while allowing their data to flow throughout the financial system. Data-sharing among financial services providers (FSPs) can enable providers to more efficiently offer a wider range of financial products better tailored to the needs of customers, including low-income customers. However, it is important to ensure customers understand and consent to how their data are being used.

India’s solution to this challenge is account aggregators (AAs). The Reserve Bank of India (RBI) created AAs in 2018 to simplify the consent process for customers. In most open banking regimes, financial information providers (FIPs) and financial information users (FIUs) directly exchange data. This direct model of data exchange—such as between a bank and a credit bureau—offers customers limited control and visibility into what data are being shared and to what end. AAs have been designed to sit between FIPs and FIUs to facilitate data exchange more transparently. Despite their name, AAs are barred from seeing, storing, analyzing, or using customer data. As trusted, impartial intermediaries, they simply manage consent and serve as the pipes through which data flow among FSPs. When a customer gives consent to a provider via the AA, the AA fetches the relevant information from the customer’s financial accounts and sends it via secure channels to the requesting institution.

The Indian government has developed a comprehensive technology framework to guide the implementation of its policies for consensual data-sharing, including the establishment and operation of AAs. It provides a set of guiding design principles, outlines the technical format of data requests, and specifies the parameters governing the terms of use of requested data. It also specifies how to log consent and data flows.

There are several operational and coordination challenges across these three types of entities: FIPs, FIUs, and AAs. There are also questions around the data-sharing business model of AAs. Since AAs are additional players, they generate costs that must be offset by efficiency gains in the system to mitigate overall cost increases to customers.

It remains an open question whether AAs will advance financial inclusion, how they will navigate issues around digital literacy and smartphone access, how the limits of a consent-based model of data protection and privacy play out, what capacity issues will be encountered among regulators and providers, and whether a competitive market of AAs will emerge given that regulations and interoperability arrangements largely define the business.

INTRODUCTION

ACCOUNT AGGREGATORS (AAs) IS ONE OF THE NEWEST CATEGORIES of nonbanking financial companies (NBFCs) to figure into India Stack—India’s inter-connected set of public and nonprofit infrastructure that supports financial services.¹ India Stack has scaled considerably since its creation in 2009, marked by rapid digitization and parallel growth in mobile networks, reliable data connectivity, falling data costs, and continuously increasing smartphone use. Consequently, the creation, storage, use, and analyses of personal data have become increasingly relevant. Following an “open banking” approach,² the Reserve Bank of India (RBI) licensed seven AAs in 2018 to address emerging questions around how data can be most effectively leveraged to benefit individuals while ensuring appropriate data protection and privacy, with consent being a key element in this.

Background

Before the advent of AAs, India Stack comprised the core layers of identification, payments, and data, which themselves are made up of several pieces. Components such as the Aadhaar Payments Bridge, which supports government benefit transfer, and the Unified Payments Interface (UPI), which supports real-time interoperable payments, had reached impressive scale.³

As these services have scaled, paper-based processes that had required time-consuming, costly, physical due diligence efforts were transitioned to digital processes that are low cost, more trustworthy, and often remote. Digitization along with advances in mobile networks, connectivity, falling data costs, and smartphone use put a spotlight on the gathering and use of personal data.^{4,5,6}

1. For a brief video about India Stack, see “India Stack: New Financial Inclusion Infrastructure,” CGAP, <https://www.youtube.com/watch?v=suE8CQkCqOQ>.
2. We define open banking as “data-sharing schemes that are mandated or supported by regulators with a goal of creating competition and fostering innovation in financial services” (Staschen and Plaitakis 2020).
3. The volume of transactions went from ~93,000 in August 2016 to just under 2 million in December 2016 to over 1.3 billion in February 2020 (<https://www.npci.org.in/product-statistics/upi-product-statistics>).
4. Data costs have fallen 95 percent since 2013 (Kaka et al. 2019).
5. The number of internet users has more than doubled from 239 million to 560 million between 2014 and 2018; the number of smartphones has more than quadrupled from 5.4 to 26.2 per hundred people (Kaka et al. 2019).
6. The number of mobile phone internet users has grown from 243 million users in 2015 to 421 million in 2019 and is expected to reach 501 million users by 2023. See “Number of Mobile Phone Internet Users in India from 2015 to 2018 with a Forecast until 2023,” Statista, <https://www.statista.com/statistics/558610/number-of-mobile-internet-user-in-india/>.

The Role of Account Aggregators

RBI created AAs to address the challenges posed by the proliferation of data by enabling data-sharing among financial institutions with customer consent. The intent is to provide a method through which customers can consent (or not) to a financial services provider accessing their personal data held by other entities. Providers are interested in these data, in part, because information shared by customers, such as bank statements, will allow providers to better understand customer risk profiles. The hypothesis is that consent-based data-sharing will help poorer customers qualify for a wider range of financial products—and receive financial products better tailored to their needs. See Box 1, “Why use an open banking model?”

Despite the nomenclature, AAs are, by regulation, barred from seeing, storing, analyzing, or using client data. They simply are consent managers who act as trusted and impartial intermediaries between users and providers of data. The concept of AAs emerged from discussions at the Financial Stability and Development Council, the apex body for Indian financial sector regulators, in 2015.⁷ In 2016, RBI released the Account Aggregator Master Direction, and the four financial sector regulators—RBI, Securities and Exchange Board of India (SEBI), Insurance Regulatory and Development Authority of India (IRDAI), and Pension Fund

BOX 1. Why use an open banking model?

India’s efforts in consent-based data-sharing are not alone. The AA model arrives in the context of a larger global discussion around open banking. The European Union, the United Kingdom, and Australia have regulations and legislation mandating financial institutions to share data upon customer consent. Other countries are considering a voluntary approach.

In each scenario, there are differences in the types of data involved, the entities that can participate, and the regulators involved. However, all focus on putting the customer in control of their data. They also share a focus on cost-effectively expanding access to data to third parties that may be better positioned to enable delivery of services to underserved and unserved people.

Cost-efficient information exchange may make the business case for serving previously underserved and unserved customers. This may be especially the case if stores of data beyond just financial data—of which these customers might have very little—can be accessed. Open banking models also often have some significant government engagement, support, or involvement. What makes India’s approach distinct for now is that a regulated intermediary—the AA—records consent and facilitates data exchange.^a

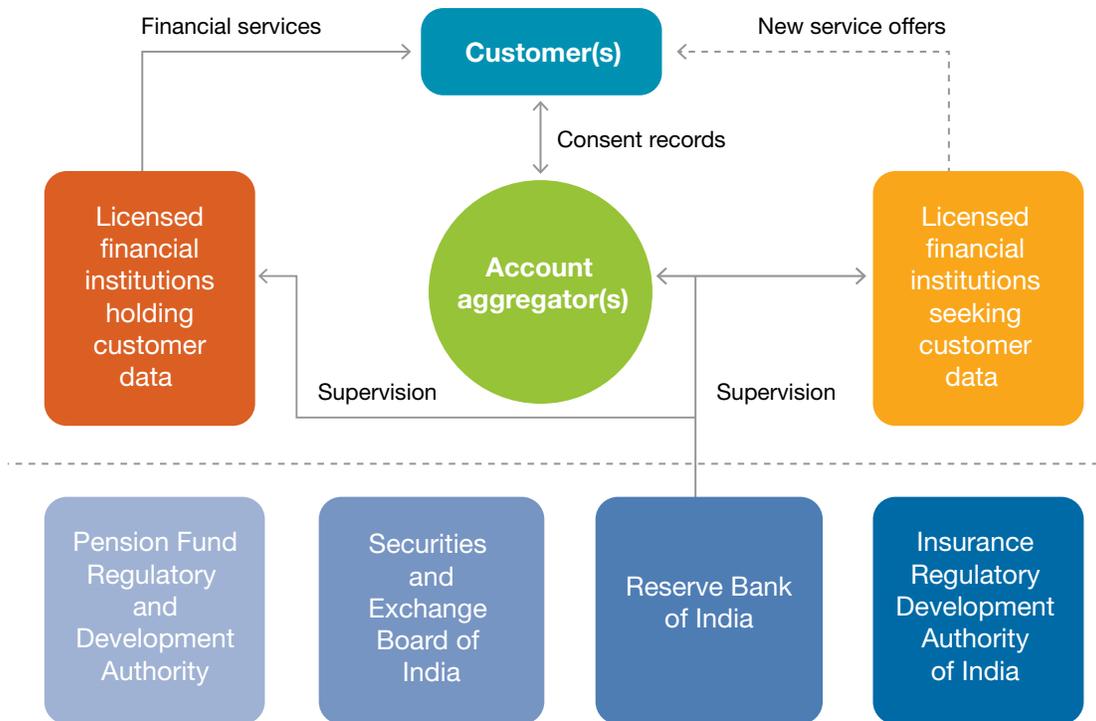
a. Note that India’s AAs are different from a “digilocker” in that they are unable to store data. A digilocker is a platform that enables individuals to access, *store*, and share a wide range of digital documents in their personal locker such as vehicle registrations, medical records, and graduation certificates.

7. “RBI Central Board Meets at Chennai: RBI to Allow Account Aggregator NBFCs; to Set up Financial Inclusion Advisory Committee,” RBI, press release, 2 July 2015, https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=34345.

Regulatory and Development Authority (PFRDA)—agreed to allow their regulated entities to participate.^{8,9}

Figure 1 illustrates the relationships between various entities and the new AAs. In 2018, seven AAs were granted in-principle licenses. Three of them have received an operational license (as of June 2020). The first go-live is expected in 2020 (Radhakrishnan 2020).

FIGURE 1. **Account aggregator(s) in the context of regulators and financial institutions**



8. RBI/DNBR/2016-17/46, Master Direction DNBR.PD.009/03.10.119/2016-17, <https://rbidocs.rbi.org.in/rdocs/notification/PDFs/MD46859213614C3046C1BF9B7CF563FF1346.PDF>.

9. India has four financial sector regulators: RBI regulates banking, nonbank financial companies, and payments system providers; IRDAI regulates all types of insurance providers; PFRDA regulates pension providers; and SEBI regulates capital markets.

INDIA'S CONSENT-BASED DATA-SHARING MODEL

PAPER-BASED DATA COLLECTION IS INCONVENIENT, TIME-CONSUMING, and costly for customers and providers. Where models for digital-sharing exist, they typically involve transferring data through intermediaries that are not always secure or through specialized agencies that offer little protection for customers.¹⁰ India's consent-based data-sharing model provides a digital framework that enables individuals to give and withdraw consent on how and how much of their personal data are shared via secure and standardized channels.

India's guiding principles for sharing data with user consent—not only in the financial sector—are outlined in the National Data Sharing and Accessibility Policy (2012) and the Policy for Open Application Programming Interfaces for the Government of India.^{11,12} The Information Technology Act (2000) requires any entity that shares sensitive personal data to obtain consent from the user before the information is shared.¹³ The forthcoming Personal Data Protection Bill makes it illegal for institutions to share personal data without consent.¹⁴

India's Ministry of Electronics and Information Technology (MeitY) has issued an Electronic Consent Framework to define a comprehensive mechanism to implement policies for consensual data-sharing. It provides a set of guiding design principles, outlines the technical format of the data request, and specifies the parameters governing the terms of use of the data requested. It also specifies how to log both consent and data flows. This “consent artefact” was adopted by RBI, SEBI, IRDAI, and PFRDA.

Components of the consent artefact structure include the following:

- **Identifier.** Specifies entities involved in the transaction: who is requesting the data, who is granting permission, who is providing the data, and who is recording consent.

10. One example of such an agency is Perfios (<https://www.perfios.com/index.php/money-manager-for-consumers/>). Historically, Perfios provided a service to customers of banks to extract electronic bank statements using customer-provided internet banking login IDs and passwords. This relies largely on good faith that a company like Perfios will not abuse customer consent and data, rather than relying on a formal framework, such as the account aggregator framework. In another model, outsourced companies act as direct sales agents of banks who collect physical copies of documents from customers, which offers even lower protection and accountability.

11. See National Data Sharing and Accessibility Policy (2012) at https://dst.gov.in/sites/default/files/nsdi_gazette_0.pdf.

12. See Policy for Open Application Programming Interfaces at https://meity.gov.in/writereaddata/files/Open_APIs_19May2015.pdf.

13. See the Information Technology Act, 2000, <https://indiacode.nic.in/bitstream/123456789/1999/3/A2000-21.pdf>.

14. India's Personal Data Protection Bill was introduced in Parliament in December 2019. It is possible that once the Bill is enacted, practices and processes will have to be modified to conform to it.

- **Data.** Describes the type of data being accessed and the permissions for use of the data. Three types of permissions are available: view (read only), store, and query (request for specific data). The artefact structure also specifies the data that are being shared, date range for which they are being requested, duration of storage by the consumer, and frequency of access.
- **Purpose.** Describes end use, for example, to compute a loan offer.
- **Log.** Contains logs of who asked for consent, whether it was granted or not, and data flows.
- **Digital signature.** Identifies the digital signature and digital ID user certificate used by the provider to verify the digital signature. This allows providers to share information in encrypted form.

INSTITUTIONAL FRAMEWORK

AS THE LEAD REGULATOR OF THE AA ECOSYSTEM, RBI HAS OPTED for an intermediated approach.¹⁵ Licensed AAs are authorized to act as neutral intermediaries. They manage consent requests by seeking and sharing data based on consent. However, AAs are barred from viewing, storing, or processing customer data.

Three types of entities are involved in the consent process:

1. **AAs** are nonbanking financial companies licensed exclusively to act as an intermediary for consent-based data exchange. The paid-up capital requirement for an AA is INR 20 million (~\$270,000).
2. **Financial information providers (FIPs)** are financial institutions and nonfinancial institutions—as permitted by RBI—that hold customer data that potentially can be shared.¹⁶
3. **Financial information users (FIUs)** are financial institutions that seek to access customer data from FIPs, based on explicit customer consent.¹⁷

Unlike other open banking regimes, where FIPs and FIUs directly connect and share data, AAs sit between FIPs and FIUs to facilitate data exchange. As mentioned, AAs do **not** actually aggregate account data; rather, they serve as consent managers and the pipes through which data flow upon consumer consent. Electronic consent flows from the consumer to the AA, which then enables the information fetch from the various FIPs specified by the consumer. This information then flows back through the AA to the FIU or the consumer itself.

To ensure AAs act in the best interest of the consumer and to avoid instances of conflicts of interest, they may not view, store, or use customer data. Data visibility is obscured through end-to-end encryption, while storage, use, and processing of data are disallowed by regulation.

15. RBI leadership appears circumstantial: AAs have been licensed as NBFCs, an institutional category traditionally regulated by RBI, and the first wave of participants are banks, which also are regulated by RBI. Other sectoral regulators for insurance, securities, and pensions also are involved in the broader effort but are less active. See RBI (2019a).

16. The regulation includes “bank, banking company, non-banking financial company, asset management company, depository, depository participant, insurance company, insurance repository, pension fund and such other entity as may be identified by the Bank” (RBI Master Direction: DNBR.PD.009/03.10.119/2016-17).

17. “[A]n entity registered with and regulated by any financial sector regulator” (RBI Master Direction: DNBR.PD.009/03.10.119/2016-17).

Furthermore, AAs are not permitted to conduct any other business; however, they can be subsidiaries of other companies that conduct other businesses.¹⁸

Regulations limit participation in the AA ecosystem to entities regulated by one of the four financial sector regulators as both FIPs and FIUs. An exception has been made to allow the unique Goods and Services Tax Network (GSTN) to participate as an FIP.^{19,20} GSTN has been set up to provide IT infrastructure and services to the central and state governments, tax payers, and other stakeholders for implementation of the Goods and Services Tax. The rationale is that this provides more accurate turnover information about micro, small, and medium enterprises (MSMEs) given that MSME invoices with large upstream suppliers (such as fast-moving consumer good companies) are expected to be more accurately recorded. This, in turn, will enable formal providers to better serve this underserved segment, which typically transacts in cash and without the benefit of formally documented cash flows. Small businesses only recently have started generating digital footprints through low-cost and accessible payments systems such as UPI. These newly generated data could enable smaller businesses to prove their creditworthiness at lower cost to financial institutions.

Governance

Notwithstanding RBI regulations, there are several operational coordination challenges across the three entity types—FIPs, FIUs, and AAs—involved in consent and data flows. Some questions include the following:

- How will participants work together?
- How will differences in provider systems achieve a smooth flow of information?
- What is the incentive for large players, those who have relatively more data to share than to receive, to join?
- Will FIPs and FIUs on one hand and AAs on the other hand enter into bilateral agreements or multilateral ones?

DigiSahamati Foundation was created in response to RBI's "Report of the High Level Committee on Deepening of Digital Payments" (May 2019).²¹ The Foundation (referred to as Sahamati henceforth) is a membership-based collective. It was created as a nongovernment not-for-profit company to manage scheme governance in the AA ecosystem.²² For example,

18. Master Direction—Non-Banking Financial Company—Account Aggregator (Reserve Bank) Directions, 2016, <https://rbidocs.rbi.org.in/rdocs/notification/PDFs/MD46859213614C3046C1BF9B7CF563FF1346.PDF>

19. Another exception is a public credit registry, which would participate as an FIP. It is expected to be operational by mid-2020. This raw registry can provide data in real time and promises to provide a holistic picture of the borrower's credit history, bring down the due diligence cost of lenders, and include those previously left out of the credit market. It will not provide credit scores or analytical information.

20. See "About GSTN," <https://www.gstn.org.in/>.

21. RBI (2019b) recommends the creation of a self-regulatory organization to regulate AAs and build regulatory capacity.

22. The company is registered under a provision that allows it to turn a profit, but it is only able to reinvest such earnings into growing and operating the company. It is barred from providing shareholder returns.

RBI regulations do not mandate that FIUs have to be FIPs. However, Sahamati and its members have agreed to this requirement to promote fair participation in the ecosystem.

Sahamati's role includes helping to ensure that its members conform to relevant technical standards, for example, application programming interface (API) specifications were created by the fully owned technology subsidiary of RBI, Reserve Bank Information Technology (ReBIT).²³ In conjunction, RBI has issued a notification to ecosystem participants to adopt the specifications.²⁴ Sahamati also intends to leverage member working groups to play a part in developing standards for data exchange that have the widest applicability among its members. It currently is working to develop a directory service that lists regulated AAs, FIPs, and FIUs along with end point, public key, and other relevant data. The service is expected to be operational in 2020.

Sahamati membership is open to any company, including those offering nonfinancial services. Various aspects of the governance arrangement are not yet finalized.²⁵ Some licensed large banks and AAs are among the first members. Operating entities under other financial sector regulators (e.g., insurance) are expected to join.

Business model

Unlike other open banking regimes, the Indian regime includes AAs as additional players that create additional costs that have to be offset by efficiency gains to mitigate an overall cost increase to consumers.

AAs are permitted to charge consumers directly, but it is unlikely that consumers will go directly to AAs to request data. The value proposition to customers is more likely to be framed in terms of (i) FIUs' ability to offer a better or more competitively priced product and (ii) quicker turnaround time on accessing data through an AA. Thus, the revenue aspect of the AA model stems from charging either the FIU or the consumer. To minimize conflicts of issues arising, ecosystem players are considering having FIUs issue a voucher to consumers who then use it to pay an AA of their choice. This approach enables consumers to choose from the host of AAs available since all AAs should be connected to all FIUs. In paying the AA directly for providing a trusted data courier service, the idea is that consumers may begin to think of AAs as a fiduciary that offers value worth paying for. How AAs price their services and differentiate themselves from one another, given that much of the business is defined either by regulation or interoperability arrangements, is yet to be seen.

23. "AA API Specifications," ReBIT, <https://api.rebit.org.in>.

24. Technical Specifications for All Participants of the Account Aggregator (AA) Ecosystem, RBI/2019-20/96. DOR NBFC (PD) CC.No.104/03.10.001/2019-2, <https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=11729&Mode=0>.

25. Sahamati was formally registered on 17 September 2019 with the registrar of companies.

Operational model

The consent process begins when a financial services provider, acting as an FIU, requests an AA to obtain **customer consent** to share **specific data** (within standardized parameters) from **certain** (possibly several) **sources** to be shared for a **predetermined length of time** for a **stated purpose**. The request shared through the AA is expected to be presented in a format that makes it easy for customers to know what they are consenting to with some granularity and to decide to share or not. One example is privacy permissions offered by some apps: one simply can touch a toggle button against various data-sharing choices to grant or deny consent. Upon consent, the AA requests the relevant data from across multiple FIPs. Finally, the AAs receive, collate, and pass on the data in machine readable form to the requesting FIU.

Figure 2 illustrates the entities involved in and the information flow for fulfilling a consensual data request.

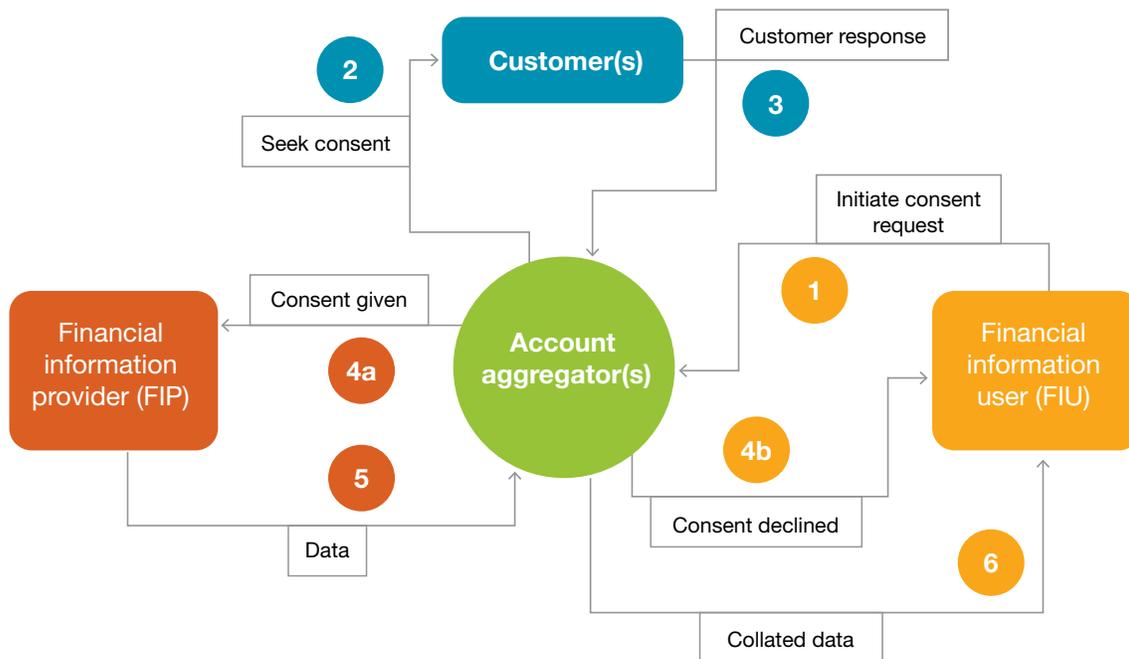
Even more critical than the specific flow of information, the AA mechanism provides a standardized structure to seek and obtain consent. The structure is programmable, achieved electronically, and keeps a central record of consents being given.

ReBIT's specifications on interfacing applications, backed by an RBI notification, are examples of standardization in the Indian market.²⁶ Standardization of specifications is common (although not universal) among open banking models globally. It helps to ensure interoperability among providers and improve speed to market.

In the AA model, each FIU should be able to use any AA, and each FIP has to work with all the AAs. The consumer chooses which AA to interact with. Sahamati plans to provide a centralized address translation service to facilitate interoperability between AAs. Since the implementations will be based on the standard API specifications, once an FIP or FIU completes integration with any one AA, the process will be easily replicated with any other AA that starts operations. Similarly, once an AA is part of the system, it does not have to write additional code when new members are added to the ecosystem.

26. Technical Specifications for All Participants of the Account Aggregator (AA) Ecosystem, RBI/2019-20/96. DOR NBFC (PD) CC.No.104/03.10.001/2019-20, <https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=11729&Mode=0>.

FIGURE 2. Account aggregator ecosystem



The information flows as follows:

1. FIU initiates a request to AA for specific data (with predefined, standardized parameters) for a specific purpose.
 2. AA sends the customer a message to obtain her consent to share the requested data for the purpose specified in the request.
 3. Customer examines the request and chooses to either accept or reject the data request.
 4. AA processes the customer's response:
 - 4a. If customer consents to the request, AA forwards a request to fetch the data from FIPs.
 - 4b. If consent is denied, AA informs FIU that the customer has declined the request.
 5. FIPs examine the request, obtain the data from their systems, encrypt the data, and send the data to AA.
 6. AA can collate data into one package if there are several FIP sources for a single request and forward the package to the requesting FIU. AAs cannot view, store, modify, use, or analyze customer data. This makes AAs materially different from credit bureaus and distributed sales agencies (DSAs).^a The AA is a "data blind" messenger.
- a. DSAs are third parties that help banks collect physical records such as bank statements. They are used by financial services providers to assess risk and eligibility. They present a risk of data theft. Credit bureaus are different in that they use data to create scores based on analytics.

REMAINING QUESTIONS

Benefits for financial inclusion

For smaller merchants and individuals who do not generate much digital data, questions remain about the ultimate impact of any data-sharing model. The hypothesis is that lenders regulated by RBI will be able to use tax and transaction data to consider lending to this previously underserved segment. Poor people in India appear to accept that these services will take time to trickle down—the financially poor also are data poor. Advances in technology and infrastructure are leading to falling costs associated with collecting relevant data. Thus, lenders can reduce costs of servicing small-ticket loans and make it a viable business.

Digital literacy and access to smartphones

The first AA products are expected to be smartphone applications. It is not clear how the AA model can serve low-literate, feature-phone-using individuals. Even smartphone users may face capacity, comfort, and perception issues that make it difficult for them to use the new AA products.²⁷

Furthermore, poor Indians typically lack literacy and tend to want assisted models of financial transactions (preferably from a trusted member of the community). To address their needs, AAs will need to develop services that support high-touch, hand-holding experiences in the consent-giving process. As it stands, questions remain around the assisted model of giving consent. Risks include misuse of data and consent that originates from the assistant and not from the customer herself. User interface and user experience principles can go a long way in helping AAs design consent services for low-literate smartphone users. However, there remains a risk that this ecosystem may deepen the digital divide rather than bridge it.

Limits of the use of consent

Is it unfair to impose on individuals the burden of providing consent as a means of protecting their data? To answer this question, some issues need to be considered, including the following:

- A large proportion of the population is opening accounts or coming online for the first time.

27. Omidyar Network's Currency of Trust Report (2017) finds that Indian consumers view digital financial services as being overly complex and that even financially savvy consumers are weary of accessing financial services on their phones.

- Reading long, complex privacy notices is challenging, especially where literacy rates are low.
- Language and technology are persistent barriers.

Obtaining time-bound and specific consent is a clear improvement over the traditional approach of providing complex overarching disclosures. However, customers still need to understand the risks of what they are consenting to and weigh the advantages and disadvantages of doing so or not. In practice, most people do not read or understand privacy notices. Finally, it is yet to be determined how the Data Protection and Privacy Bill, with provisions such as the creation of “consent managers” and “data trust scores,” would be applied to and impact the AA infrastructure.

Financial services provider capacity

Financial services providers, especially large ones, may have their own hurdles to overcome. Some of them have slow-moving technology teams. Others have legacy systems that may not be able to model the data—if they are able to obtain them at all—to make them meaningful. This situation may provide opportunities for interesting and unexpected partnerships between banks and fintech providers.

Regulator capacity

Questions remain around the institutional capacity of RBI to ensure compliance, given that AAs are in the business of obtaining consent for the transfer of data, but regulated as an NBFC. While AA clients are financial services providers, AAs themselves are purely technology companies. In addition, the regulations ensure that AAs do not impose any financial risk: they do not accept deposits, provide loans, process payments, or even provide a credit score. Currently, they pose even less risk than the internet service provider that customers use to access their internet banking.

RBI needs to tailor its supervisory approach to the specific risk profile of this new type of NBFC. While RBI has shown foresight in creating ReBIT, cross-regulatory arrangements with the other three financial sector regulators and, eventually, the Data Protection Authority proposed in the Personal Data Protection Bill will need to be considered to ensure effective compliance.

Competitive market development

Given that AAs cannot provide value-added services based on analytics or anything else, it is not clear that a competitive market will develop. If they are all essentially offering the same service, how will they differentiate themselves from one another? While they have an opportunity to attract customers through superior user experiences, margins would be low and there may not be a sustainable way to retain customers. Ultimately it may be the case that the one offering the lowest price gets the customer. Among the many scenarios on this issue, one is that a single AA could operate as a centralized market utility, rather than forcing open-market competition.

CONSIDERATIONS FOR OTHER COUNTRIES

T HIS APPROACH TO CONSENT-BASED DATA-SHARING COMES AT A time when surging data generation and data-dependent product design and development are fuelling global concern about data protection and privacy. Issues on data ownership, data use, data collection methods, and who benefits from the use of data are coming into sharp focus. India's consent-based data-sharing infrastructure is being created in parallel to these developments and is aligned with its Personal Data Protection Bill. Stakeholders are debating the sequence of the development of institutions and legal framework, given that robust data protection and privacy regulations are critical to ensure that consent works in ways that do not harm individuals.

Law-making is a slow process, so a delicate balance must be struck between innovation and compliance. In the absence of a law, there are risks in allowing providers to start operating. Some risks could be mitigated by designing a system that incorporates privacy principles. Conversely, waiting to act until the law is in place could significantly delay the development of enabling institutions and systems. Regulatory sandboxes have been used as a tool to experiment in the spirit of encouraging innovation while minimizing harm.²⁸

Other countries that are looking to implement similar systems or systems to perform similar functions should examine the types of institutions and regulatory frameworks already in place. In addition, countries should examine their institutional capacity to implement, regulate, and supervise an open banking system and the potential demand for sharing financial information digitally.

28. A regulatory sandbox is a framework set up by a regulator that allows fintech start-ups and other innovators to conduct live experiments in a controlled environment under a regulator's supervision. See Jenik and Lauer (2017).

CONCLUSION

THE AA CONSENT-BASED DATA-SHARING MODEL BROKERS THE FLOW of data between producers and users of data, ensuring that sharing data is subject to granular customer consent. AAs manage only the consent and data flow for the benefit of the consumer, mitigating the risk of an FIU pressuring consumers to consent to access to their data in exchange for a product or service. However, AAs, as entities that sit in the middle of this ecosystem, come with additional costs that will affect the viability of the business model and the cost of servicing consumers.

FIUs most likely will urge consumers to go directly to an AA to receive fast, efficient, and low-cost services. However, AAs ultimately must market their services directly to the consumer. While AA services are not an easy sell, the rising levels of awareness among Indian consumers that their data are being sold without their consent or knowledge may give rise to the initial wave of adopters.

While the AA model is promising, it remains to be seen how and when it will have a direct impact on the financial lives of consumers, especially poor people.

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