BASIQ

Visualising an Open Finance ecosystem

Overview

'Open Finance' is a term used to describe the accessibility of core financial services made available through APIs. This allows for the sharing of data across multiple financial institutions driven by consumer consent, as well as being able to do something with that data once shared, such as a payment.

The ultimate goal of Open Finance is to allow consumers to derive benefit from sharing their data and feel empowered to decide which financial product or service is suitable for them. This has great economic benefits including spurring new innovation in the financial sector and increased competition in the market.

Open Finance is typically referred to as the 'next step' following Open Banking, with the latter predicated solely on the sharing of Banking data. Open Finance is also more sophisticated than simply the sharing of consumer-consented data, as not only does it cover the whole financial services landscape - from crypto wallets to payments - but also allows for a suite of actions to be performed upon this data. All the while, a business can derive insight from a consumer's financial position having received the consent.

Fintechs looking to compete in an increasingly competitive market must adopt an Open Finance platform to reap the benefits beyond just Open Banking. This gives them increased visibility to consumers who are looking to engage in a highly liquid data economy. It also allows a Fintech to consume and interpret multitudinous data sets and act, or write upon, the data once it is read.

Open Finance's benefits are wide-ranging and completely redefine how consumers interact with a financial product or service. This paper explores key components that constitute an Open Finance ecosystem. It then proposes a model of a highly interconnected financial services landscape with consumer consent as the keystone of the ecosystem.

This is then gleaned through a use case within an Open Finance economy and concludes with future recommendations on exploring the future Open Finance. References to Australia are made where necessary to contextualise the proposed arguments in the paper.

SECTION 1

Open Finance Components

There are four critical components that are required to create and enable an Open Finance ecosystem:

(a) **Consent** - a unified consent framework to securely convey and manage a consumer's consent, for what data, how long for and for what purpose;
(b) **Data** - ensure the consent-sharing model is interoperable between financial organisations across multiple data sources;
(b) **Insights** - derive insights upon the data that is shared and;
(c) **Actions** - actions upon this data once it is shared.

The following section will explain these in detail, followed by a model proposing what a truly interconnected Open Finance landscape may look like.

Consent

Consumer consent is the most important element of an Open Finance ecosystem. Without consent, no data can be accessed, and therefore no insights or actions are made possible. Customer consent empowers a user to manage, control and amend who and where they have a financial relationship, including trusted third parties, and is therefore securely governed, maintained, and respected in an Open Finance environment. Consent is also critical to informing an authentication and authorisation framework - the technical layer that underpins the consent rules.

Consumer consent is defined by a 'consent framework' which dictates what must be presented to a user in order to ascertain details on their financial situation. Consent frameworks are standardised in order to ensure the uniformity of the user experience, yet may have variable configurations such as the use of data, for how long and deletion policies (if applicable).

Consent is often time-bound, therefore to further improve a consumer's experience, the possibility of a 'consent dashboard' comes to life, whereby a consumer can see to whom they have consented and revoke or renew consents from a single view. There are some real life examples of this, such as the Plaid Portal[1], as well as the myCDR dashboard in Australia[2]. This is explored later in the Identity section of the paper.
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[1] https://my.plaid.com/
[2] https://mycdrdata.regionalaustraliabank.com.au/

See below an example of a consent policy for a fictitious financial institution, which satisfies the consent policy requirements for an Australian financial institution.
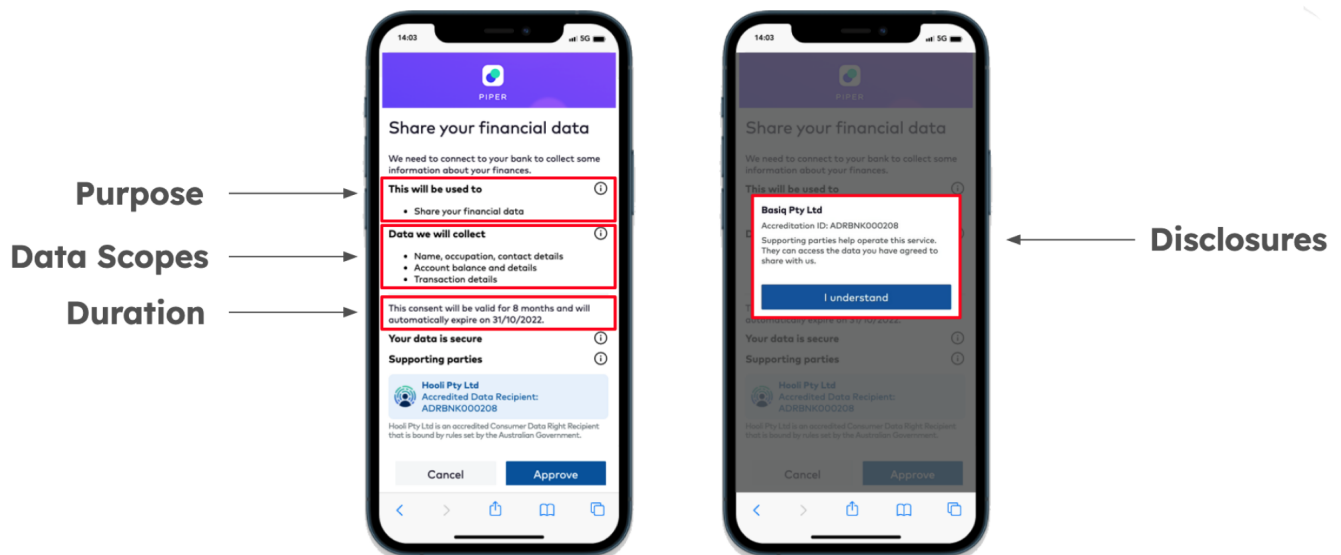

Fig 1.1 - CDR consent policy

Data

Access to data within an Open Finance ecosystem is a network effect - the more data that is shared, the more utility that is provided to consumers. Increasing the liquidity of data between financial institutions, predicated on consent, provides the foundational layer of an Open Banking ecosystem. The more data that is shared, the richer the sea of products and services to consumers - while also deriving more intelligent insights and more data to 'write' upon.

The data component represents the many and varied data sources available to be accessed, or 'read', by participants within the ecosystem. Banking data is an important section of this component, however does not reveal the full picture. There are multitudinous data sets outside of Banking data that are imperative to create a truly open financial ecosystem, including, but not limited to:

- Superannuation*
- Insurance*
- Non-bank Lending*
- Merchant acquiring*
- Buy Now, Pay Later (BNPL)
- Wealth
- Trading and Investment platforms)
- Crypto exchanges
- Other fintech services (e.g. FX accounts, cards, wallets)

denotes scope for future CDR policy

Visualising Data Sources in Australia under the CDR

We can visualise the data sources that are and will be, available in Australia under the CDR, and those that fall outside of the CDR, seen in Fig 1.2 below. (adapted from Forrester[3])
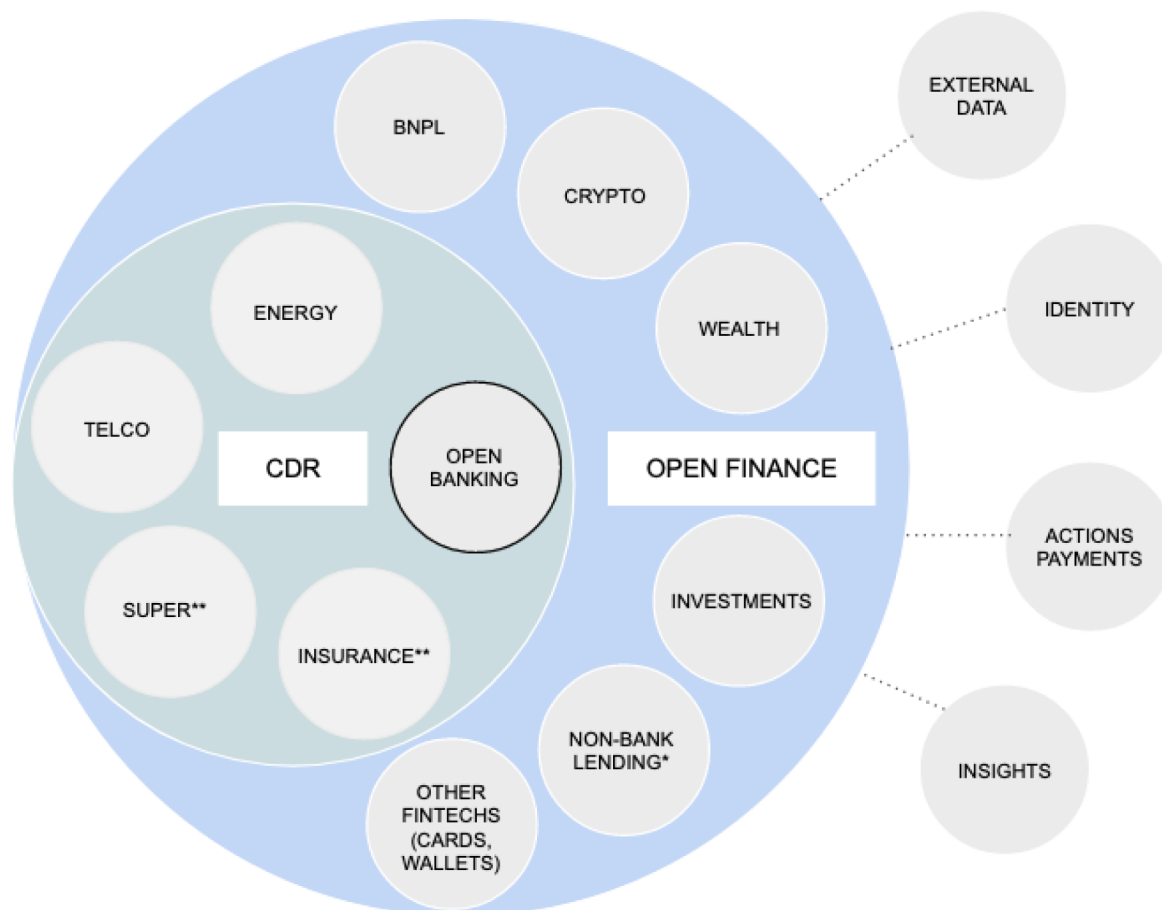
Fig 1.2 - Open Finance Data Sources

Figure 1.2 above shows the areas under Federal policy where data is mandated to be shared under the CDR. At present, only Banking data is available. Adjacent sectors are planned to reap the benefits of CDR, such as Telco and Utilities as both the policy develops and so too organisations make the data available. Insurance, non-Bank lending, merchant acquiring and Super are also in the crosshairs for the CDR's rollout, albeit likely implemented in late 2022 or early 2023[4] [5].

As evident in the figure, a number of areas of the financial services sector are not yet covered by policy, creating a gap in the availability of data and weakening its network effects. Notwithstanding policy, the many and varied Fintech products available to consumers can be described by the phenomenon of 'unbundling', which is leading to more disparate data sources outside of Banking.

[4] https://www.zdnet.com/article/telecommunications-sector-officially-designated-for-cdr-and-open-finance-is-underway/
[5] https://www.cdr.gov.au/sites/default/files/2022-02/cdr-framework-horizon.pdf

Insights

A number of insights can be derived upon data sets within the data layer. This can occur by running additional services once the data is read, such as income detection patterns, affordability calculations, expense classifications (both disclosed and undisclosed) and more.

Assuming a populated data layer, a wealth of insights can be derived on the back of the data that is being shared. The raw data that is shared is valuable, but it likely needs to be transformed or manipulated to bear significant interest, such as normalising the inputs of a transaction description across different Banks, each of which is presenting a different transaction descriptor. The insights layer within an Open Finance ecosystem represents where data is cleaned, manipulated and analysed in order to provide a deeper understanding of a user's financials and spend behaviour.

(1) Income Verification

Manual income verification is a time-consuming process that requires assessors to view copies of payslips and bank statements from 3+ months. The poor user experience resulting from this can lead to abandoned applications, incur labour costs and overheads while being susceptible to data entry errors. When a user consents to data sharing, a platform could identify all forms of income instantly in real time both regular, and a gig economy income source, for example. The insights also give an overview of their employment history and how their income has been growing over time. Other attributes (some specific to each income type) could also be used to check if, for example, there have been any gaps in regular income payments during the period.

(2) Automating HEM

Another example lies in the process of automating the oft-used 'Household Expenditure Measure' (HEM), used to understand the amount of money a household spends each year. HEM is used almost everywhere within the lending space to calculate the ability to service a loan - such as a personal, auto, mortgage etc. Insights represent a critical step in understanding more about source data. In accessing a consumer's consented data, one could derive a position such as the HEM within a few seconds in order to make a lending decision.

Further, the index could be weighted to better align with the risk appetite of the lender, such as enriching a credit score with additional data, to either increase a funnel or, in certain cases, become stricter about accepting new credit inquiries.

There are two addenda to these examples: (1) Ongoing consent within a HEM model can provide an even clearer picture of a user at a point-in-time, such as a pay rise or a change in employment leading to increased income or (2) Eradicating the need for HEM altogether with a lender deciding their own risk appetite based on a number of inputs (e.g. strictly not lending to those with multiple BNPL debts, for example).

Listed below are some common Insights scenarios that could be gleaned from multiple data sources:

- Enriched transactions
- Income
- Net position
- Liabilities
- Bill tracking and schedules
- Crypto wallet balances
- Financial product consumption behaviour
- Investment positions
- Sustainability scoring

Understanding more about a customer's financial position can then inform a number of actions that can be performed upon that data.

Actions

Performing an action upon data, once it is shared, is the most powerful layer of an Open Finance ecosystem. Often referred to as 'write' access, the most common use of an action would be to make a payment once a condition is satisfied - such as transferring money into a savings account once a monthly salary has arrived. Actions could take multiple forms (a) a payment 'action' that is performed by a trusted third party[6] (b) providing a pre-existing set of rules and events by which a consumer may consent to (c) allowing a consumer to configure their own actions within an if-this-then-that style model or (d) orchestrating actions via an engine.

In Australia, CDR's next iteration - Action Initiation - will allow Accredited Data Recipients to be Accredited 'Action Initiators'[7], allowing for ADRs to provide actions to their respective platforms[8]. However, similar to the Data component, actions can also occur outside of CDR. Being able to 'do something with data once it is shared' is absolutely essential in creating an interconnected financial services ecosystem and truly represents the pinnacle of Open Finance.

Payments

Payments are the most common form of actions that can be performed once data is shared. In many cases, the consent provided is also provided to a 'trusted third party' (TTP) who execute the payment - push or pull - on the consumer's behalf. A simple example of this is authorising a third party to pull money from your Bank account each month for an energy bill, for example. Although this is commonly known as a direct debit, you can extend this example to "only pull the money when there are sufficient funds in the account" - requiring a balance check before the payment is initiated. There are countless use cases for payments as actions in an Open Finance ecosystem - ranging from smart transfers and bill smoothing.

There are currently two models for Open Banking payments in Australia. The first is under the New Payments Platform (NPP's) 'PayTo'[9], whereby a consumer can authorise a mandate to be created against their PayID which can execute a one-off or recurring payment. The payment is then pulled over the NPPs 24/7 instant payment infrastructure.

The other form is Open Banking Payments under the CDR's Action Initiation, which allows a consumer to consent to a payment being performed by any third party over any form of payment infrastructure (e.g. not just the NPP). This is currently being developed and although payment-infrastructure agnostic, the rollout of actions requires a strict framework and again is contingent upon federal policy.

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[6] This is proposed under the NPP's PayTo
[7] https://basiq.io/blog/demystifying-action-initiation/
[8] https://consumerdatastandards.gov.au/2021/05/minutes-14-apr-2021
[9] https://nppa.com.au/payto/

Enhanced Actions

A number of additional actions can be considered outside of payments alone. Take switching for example - a use case that is repeated often in the Open Banking world. If a user consents to data sharing and switching, they could seamlessly create new accounts that have the highest savings yield, for example, and then automatically transfer their savings to that newly-established account, without having to manually input much data at all (if any). Event-driven models may be developed as part of a pre-defined user experience, or potentially even customisable by users themselves (e.g. if X event happens, then do Y).

Further, an orchestration layer could integrate multiple systems and payment processors, such as aggregating a set of payment options at a checkout - ranging from paying via Bank, BNPL, cards or a payment method (e.g. Apple / Google Pay). Orchestration can help boost conversion rates when executing a payment, and assists with merchants who are looking to offer a multitude of payment options via one integration, as opposed to integrating many individually.

SECTION 2

Proposed Model for an Open Finance Ecosystem

The below model visualises what a truly interconnected and Open Finance ecosystem would look like. It interweaves the three core layers of Data Insights and Actions, within the bounds of a rigorous consent framework, while outlining the inputs and outputs to the broader ecosystem. The result is a symbiotic and consumer-led data sharing ecosystem that completely redefines the future of financial services.
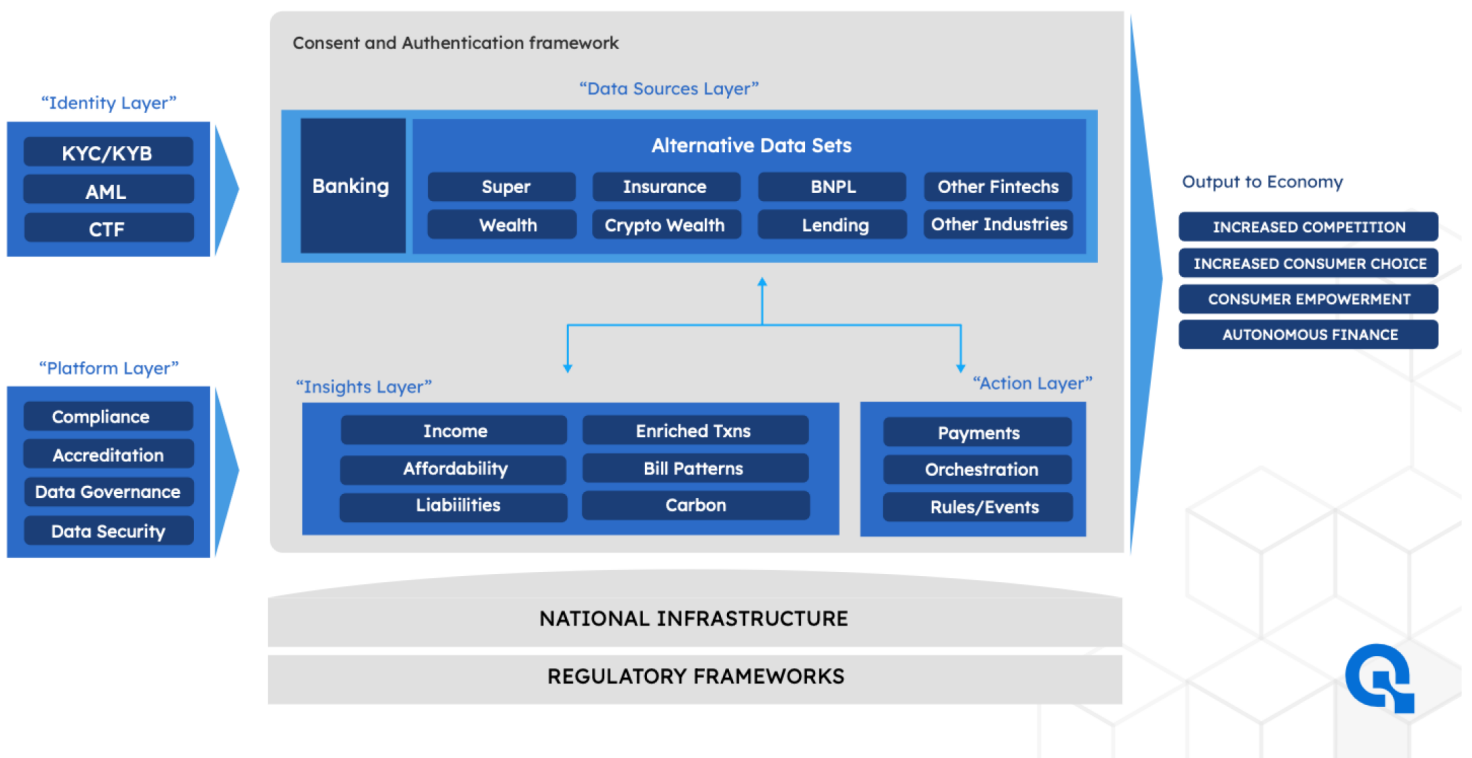

Fig 2.1 - Open Finance Ecosytem Model

Inputs and Outputs to the Model

Consent, data, insights and actions are all critical components of an Open Finance ecosystem, however a number of inputs and outputs need to be considered within the ecosystem. The following section outlines the inputs and outputs to each layer and explains its role in the Open Finance ecosystem, gleaned through an Australian landscape where necessary.

Identity

Contingent upon the use case, digital identity is an important factor to consider when discussing Open Finance. Any financial product or service that requires ID verification often comes as an input before data is being shared. Identity providers conduct Know Your Customer (KYC), Anti-money laundering (AML), and counter-terrorism financing (CTF) within their services for both businesses and consumers. At present, identity is not within scope of the broader finance ecosystem, with initiatives such as Digital ID and eftpos ID in Australia still being developed. Elements of digital identity can be achieved in Open Finance via Account Verification (e.g. relying on a Data Holder's KYC process to confirm that a user does in fact have access to an account), however this is not a complete check to satisfy KYC/AML and CTF requirements.

Digital Identity is a complex undertaking from a technological and regulatory standpoint, however when fully integrated into an Open Finance ecosystem it will alleviate significant headwinds for account opening use cases, lending, crypto trading and more.

Platform

Platforms to get access to the Open Finance ecosystem will need their own internal processes and systems to reach the required level of data security, accuracy, governance and more. Some of the platform inputs to participate in the Open Finance ecosystem are as follows:

- Compliance
- Accreditation
- Data Governance
- Data Security
- Customisation
- Developer tooling
- Partner dashboards
- Coverage

There are a number of regulatory considerations for platforms too, outlined in the external contributor section.

External Data
External data can be used to enrich existing elements of both the data and insights layer. A notable example is using data from Google to enrich transaction information. A transaction description may not reveal the location or merchant where a transaction occurred.

Oftentimes this data can be available by searching the web and then marrying up the transaction data with the location (the insight).

External data could also be used to enrich a customer experience. For example, if a continuous variable such as rainfall occurs in a user's area, one could trigger an action to transfer money into a 'rainy day' account (the action). This opens up a number of intriguing use cases that have yet to be fully realised in the Australian market.

Infrastructure and Regulatory Frameworks
There are two key external contributors to the Open Finance ecosystem. Infrastructure and Regulatory Frameworks are categorised as inputs to the model, however serve purposes in a non-collectively exhaustive manner. (a) National Infrastructure - such as payments infrastructure (the NPP and BECS in Australia) are critical inputs to allowing for payment actions, for example. However, they serve purposes outside of solely open finance alone. Similarly, (b) Regulatory Frameworks - including those outside of CDR, such as the National Credit Code (NCCP), Privacy Act - essentially anything dictated by Australia's financial regulatory bodies of ASIC, APRA, and the ACCC comes as an input to those operating within the Open Finance world.

Benefits of Open Finance

Open Finance's complexity is complemented by four simple and elegant outputs to the broader economy and society. They are as follows:

(1) Increased consumer empowerment - consumers are fully in control of who they interact with, and where, with an increasing ability to manage their finances from the palm of their hand. They are also provided a number of products and services outside of their primary Banking relationship - allowing them to control their finances from personal finance management, neolending and investments.

(2) Increased competition - the many and varied Fintech products and services available to consumers has led to a rise in the competitiveness of the market. Some key differentiators are price (especially in lending with the rise of risk-based pricing), user experience (notably for those using alternative credit products or personal finance managers) and community (those who are joining a service to identify with that brand, exhibited by some neobanks in Australia)

(3) Increased financial literacy - making finance easy allows for consumers to open themselves up to an array of new experiences, products and services that they may previously have avoided, given the ramparts to accessing them. A notable example is the rise of trading platforms, spurred by the pandemic, that allows people to 'learn and earn' by participating in equity markets, bond markets, crypto exchanges and more. This is a stark difference from the set-and-forget experience that Banks offer for the everyday Australian

(4) Increased consumer choice - in Finance becoming an almost modular experience, where many relationships with many providers can be strung together (e.g. salary with Bank, spending with neobank, wealth with a micro-investing tool, BNPL with favourite fashion label, super with a Fintech), consumers now have the ability to choose which experience is best for them, influencing point (2) above. Allowing consumer-led innovation to be the cornerstone of progress in the financial services sector is a radical societal change that would have been unthinkable one decade ago. Modularity also lends itself to the Super App concept to integrate all services available to a consumer, with automated actions to be performed on top of this information (a phenomenon known as autonomous finance).

Open Finance v.s. Open Banking

Australia will soon realise the full potential of Open Finance, with important policy movements such as the Consumer Data Right (CDR) providing a critical regulatory framework to accelerate the 'Consent' and 'Data' components of the ecosytem. Open Banking, as part of Treasury's CDR, has done a goodjob at promoting access to Banking data, however, a number of financial institutions - ranging from Insurance providers to Fintechs - still have consumer data in an illiquid and non-shareable manner.

Further, Treasury has laid the framework for 'Actions' to be implemented under 'Action Initiation' or 'Write Access' under the CDR (see Actions), yet given the data foundation is not all-encompassing across the financial services sector, it, by definition, will be limited in extensibility.

Much has been discussed about Open Banking's rollout in Australia under the Treasury's CDR. As the CDR evolves, many use cases for the sharing of data between Banks (data holders) and Fintechs (data recipients) have come to life. However, a number of these developments are still heavily contingent upon the evolution and uptake of Open Banking APIs - which depend on decisions and agreements at a Federal policy level.

Banks are just one data source in a plethora of financial services companies, ranging from Insurance providers, Superannuation, Wealth, non-bank lending (and not to mention the booming Fintech sectors such as a BNPLs, personal finance management, crypto - the list goes on as the industry grows).

It's important to note that the Treasury announced in late 2021 there would be an extension of the CDR to Superannuation, general insurance, merchant acquiring, and lending sectors. However, this policy is expected to enter its first phase in late 2022. There are also a number of other sections of financial services that will not see the benefits of this policy, namely in the Fintech and Broker spaces (and increasingly, crypto exchange platforms).

Use Case

We can glean the Open Finance model through a use case in order to show the multiple touchpoints where cross-economy data can be provided while providing a scintillating user experience. Let's look at how the process of booking a holiday overseas (something many of us are dreaming of currently) can be improved by Open Finance data - including within the financial services sector as well as economy-wide data.

Typically, booking a holiday would involve a number of different websites and apps, whether it's to book flights, make sure your travel insurance is valid or if you have the right vaccinations to travel. With Open Finance data this could all be combined into one experience, making the whole process seamless and reducing the likelihood of forgetting something important.

Specifically, the purchase of accommodation in a certain location could trigger any number of the below, touching on each component of Open Finance:

- A check to see if you've already booked flights and if not a search for the best flights
- A check that your travel insurance is valid
- A check you have the relevant vaccinations to travel
- A check your passport is up to date
- A check that any visas are in place
- A check to let you know your mobile phone cost at the destination and any better options
- A recommendation of which of your bank cards and services will be lowest cost to use at your destination
- All your banks will also know you're away and could for instance alert any card-present purchases in your home location to prevent fraud
- A prompt to set an event on your Fintech app to automatically transfer $200 once your salary is deposited, to a 'Holiday' saving bucket
- A prompt to set savings goals in the lead up to the departure date including the option to visualise how much extra to save to make the holiday 'extra' enjoyable

Note that in the above there are upsell items, benefiting the merchants and lifestyle assistance to the consumer. This merging of data from various industries and therefore consumer concerns moves further towards banking and finance as part of our lifestyle. There is also a focus in the evolution of CDR on Consumer Data Journeys, essentially personalisation for a consumer based on life events.

Future Recommendations

Open Finance heralds a seismic shift in innovation for the global economy. The following recommendations are suggested to extend understanding of the space:

1. Test the Open Finance model in new geographies, to see if the core components scale in a global manner - such as the UK where payments and data sharing occurred sequentially via PSD2 and then via Open Banking regime in the UK
2. Explore how cryptocurrency infrastructure such as distributed ledgers / blockchain could solve for cross border data sharing to allow the data layer to be global in nature, as opposed to supporting solely cross-broder payments
3. Examine how the rise of the decentralised web and decentralised finance (DeFi), web3, can solve for self-sovereign identity and decentralised data sharing, such as those proposed by the Ocean Protocol[14]
4. Continue Australia's CDR policy adoption throughout the financial services sector in tandem with adjacent sectors (e.g. telco) to increase the availability of data within an Open Finance ecosystem
5. Encourage Fintech sectors in Australia and globally to innovate and create completely new financial user experiences to drive consumer-led innovation and accelerate the uptake of new products and services

The above recommendations will help further research into the space and add to the fertile ground for the opportunities that Open Finance can provide.

Summary

The following paper proposed a model for a highly interconnected Open Finance ecosystem that will transform the way consumers interact with their finances. The core components of Open Finance - consent, data, insights, and actions were examined in detail, referencing examples in Australia to provide additional context.

The inputs and outputs to the data model were then explained to show the economy-wide benefits. The paper then contextualised the model within a use case, finishing by proposing a set of future recommendations to test the model and further understanding in the space.

Basiq is an API platform that provides the building blocks of financial services

At Basiq, our vision is Making Finance Easy. Finance is complex and it can be hard for consumers to make informed financial decisions. We see a world where consumers are empowered to make smarter financial decisions and to engage with their finances in new and unique ways.

Basiq enables this by providing an Open Finance API platform for businesses to build innovative financial solutions. The platform facilitates the relationship between financial fintechs and consumers by enabling access to consented financial data and providing payments services.

CONSUMER   YOUR PRODUCT   BASIQ API   FINANCIAL INSITUTIONS

Why partner with us

Knowledge & Expertise

Years of experience in accessing and driving insights from financial data through RESTFUL and fully documented APIs.

Scalability & Reliability

Helped over 2.5m consumers share their data on the platform with over 1m data requests per day.

Open Banking provider

Recognised as a provider of Open Banking services by the ACCC as an Accredited Data Recipient under the CDR.

Developer Tooling

Accelerate development with Basiq's developer starter kits, best practice quick start guides and API documentation.

Single Platform

A single integration to plug in to the Basiq platform to access data, insights and payments services.

Local Support

A dedicated local support team that ensures smooth implementation, continuous support and fast response times.

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