

Mobile Money API Industry Report

Towards seamless integrations

INCLUSIVE TECH LAB

MOBILE MONEY IN 2019



Over 1bn

REGISTERED MOBILE MONEY ACCOUNTS



$9.1bn

processed daily

by the mobile industry



INDUSTRY FIRST

57%

DIGITAL

Digital transaction values now exceeding cash-in/out values



INDUSTRY FIRST

$22bn

in circulation

More money is circulating than exiting the mobile money system

- The seamless integration of third-parties with mobile money platforms is a key catalyst to achieving wider access to critical products by the underserved. Third-parties' ability to integrate with mobile money platforms is also a first and necessary step to achieving the payments-as-a-platform (PaaP) model, which is one of the main aspects of the GSMA's vision for the future of mobile money.
- The Inclusive Tech Lab aims to provide thought leadership and technology focused research.
- It is in this context that APIs have been a key focus area for the GSMA's Mobile for Development (M4D) portfolio of programmes, including via the development of the GSMA Mobile Money API.

INCLUSIVE TECH LAB

Objectives and methodology

Based on **37 survey responses** from mobile money providers (MMPs) globally covering **over 260 million accounts**, this API report aims to:

- Understand the main industry trends in terms of third-party integration, including API design, commercial approach, documentation/ communication, testing, security and on-boarding process.
- Recommend a set of best practices based on observations from the wider financial/payment industry.



SURVEY DESIGN

- 37 responses Opco and group level
- Global response:
  25 from SSA,
  4 from SA,
  4 from SEA,
  2 from Latam,
  2 from MENA



STRUCTURE

Sections include

- Ecosystem Development
- API Specification and integration process
- Commercial models
- Integration challenges
- Best practices



INSIGHTS

- This is the first insight piece covering APIs. GSMA's **Inclusive Tech Lab** will continue providing insights and best practices on the topic and disseminate findings to the broader industry

Key Findings

- The mobile money industry is evolving towards a platform based approach where other apps and software can easily integrate with the mobile money product via plug-and-play access through APIs. By providing easily accessible APIs, providers can create almost endless opportunities to build additional services on top of mobile money as well as opportunities to monetise those services.
- In this context, ecosystem development remains a top priority for mobile network operators (MNOs) at a global level. The sustained growth that the industry has experienced was driven by providers hosting a large number of payments APIs, with e-commerce, bill payments and disbursements being the top use cases. Opportunities remain to increase payment (i.e. refunds) and non-payments use cases (i.e. reporting).
  - To facilitate the growing number of third-party integrations in the ecosystem, mobile money providers typically do not charge on-boarding fees and generate revenue through transaction fees. Offering tiered pricing could further boost growth.

Key Findings

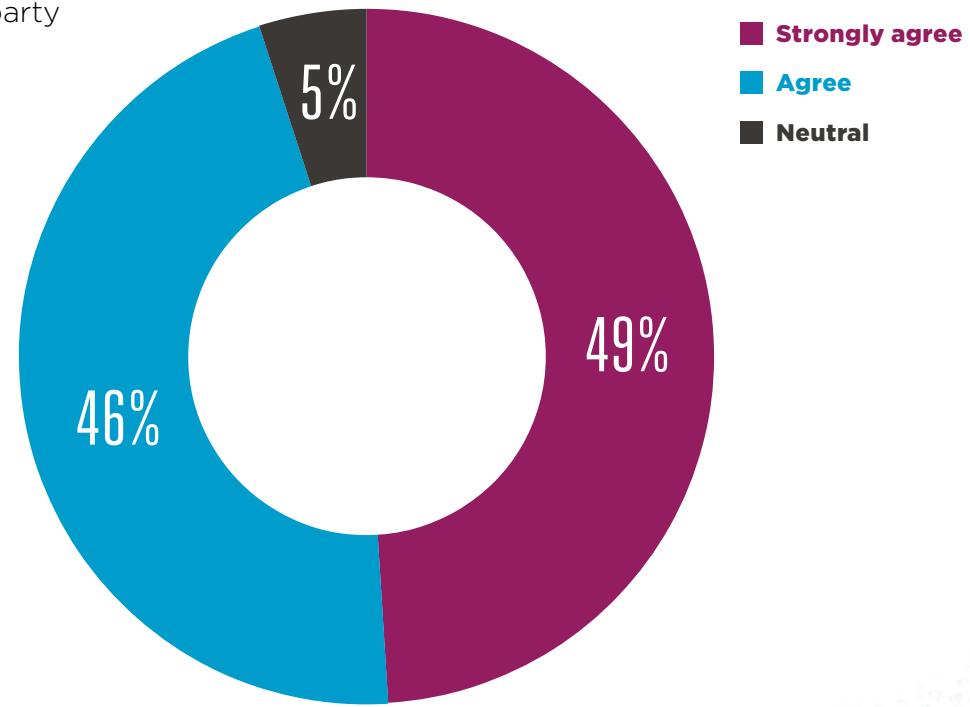
- Despite the growing ecosystem, only 32% of operators surveyed are exposing their APIs publicly and most providers adopted a proprietary API, which highlights market fragmentation and results in lengthy third-party on-boarding time.
- To accelerate their ecosystem growth and third-party integration, mobile money providers should consider offering **integration tools** such as SDKs, Open Source repositories and widgets and providing paybill accounts with no development support. In addition, providers should also review their **integration process** to ensure best practice around the following areas:
  - **Adopt existing API frameworks** to optimise the developer on-boarding and facilitate faster updates. Currently only 40% of respondents do not use an API framework.
  - Provide **clear documentation** and leverage a **developer portal** when exposing APIs to third-parties.
  - **Expose API through a single gateway** to improve security, analytic capabilities and reduce customer maintenance.
  - **Ensure key features**, including swagger UI, test functions for error codes and postman collections, **are implemented in the test environment.**
- The GSMA Mobile Money API specification can help address some of these challenges by, limiting fragmentation in the mobile money ecosystem and making it more harmonised.

Ecosystem development

- Ecosystem development remains a top priority for MNOs at a global level.
- The sustained growth that the industry has experienced is supported by providers hosting a large number of payments APIs, with e-commerce, bill payments and disbursements being the top use cases.
- Opportunities remain to increase payment (i.e. refunds) and non-payments use cases (i.e. reporting)

Ecosystem development remains a top priority for mobile money providers (MMPs)

Respondents who consider third-party integration as a business priority



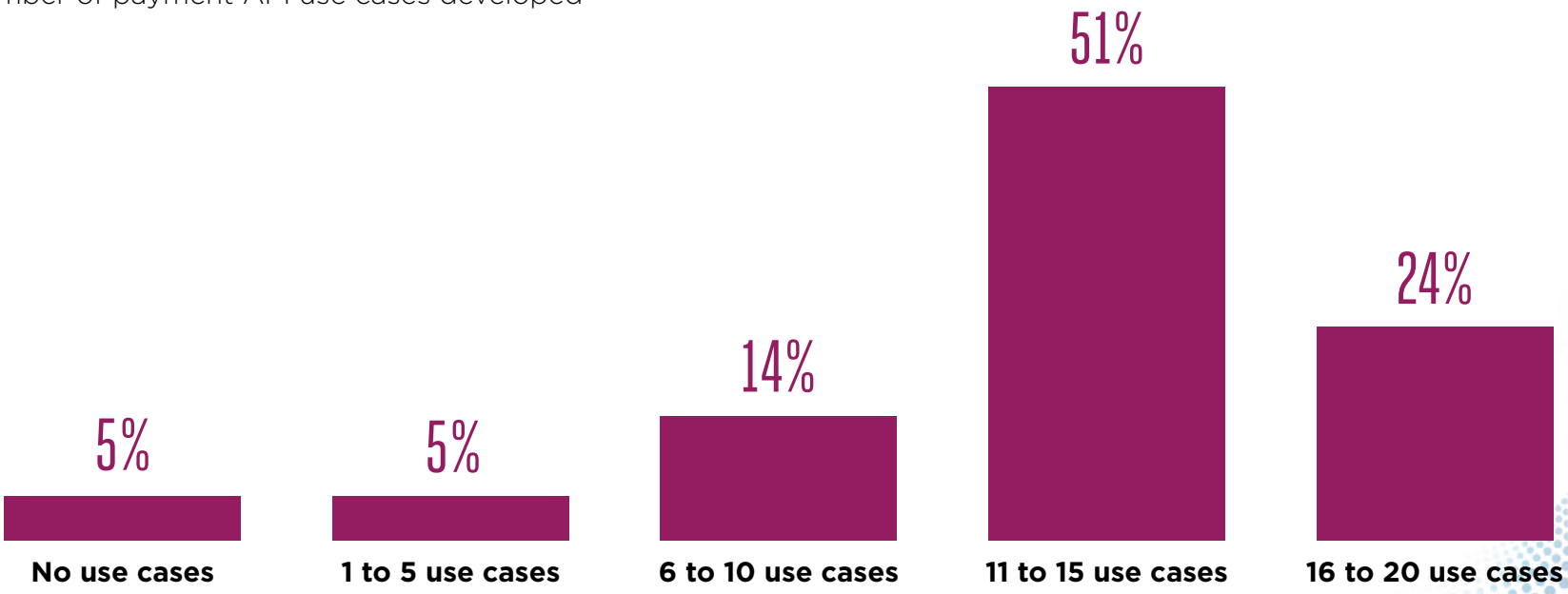
In the past years the mobile money ecosystem has continued growing but strong opportunities remain

Average number of integrations in the mobile money ecosystem **2017** vs **2018**

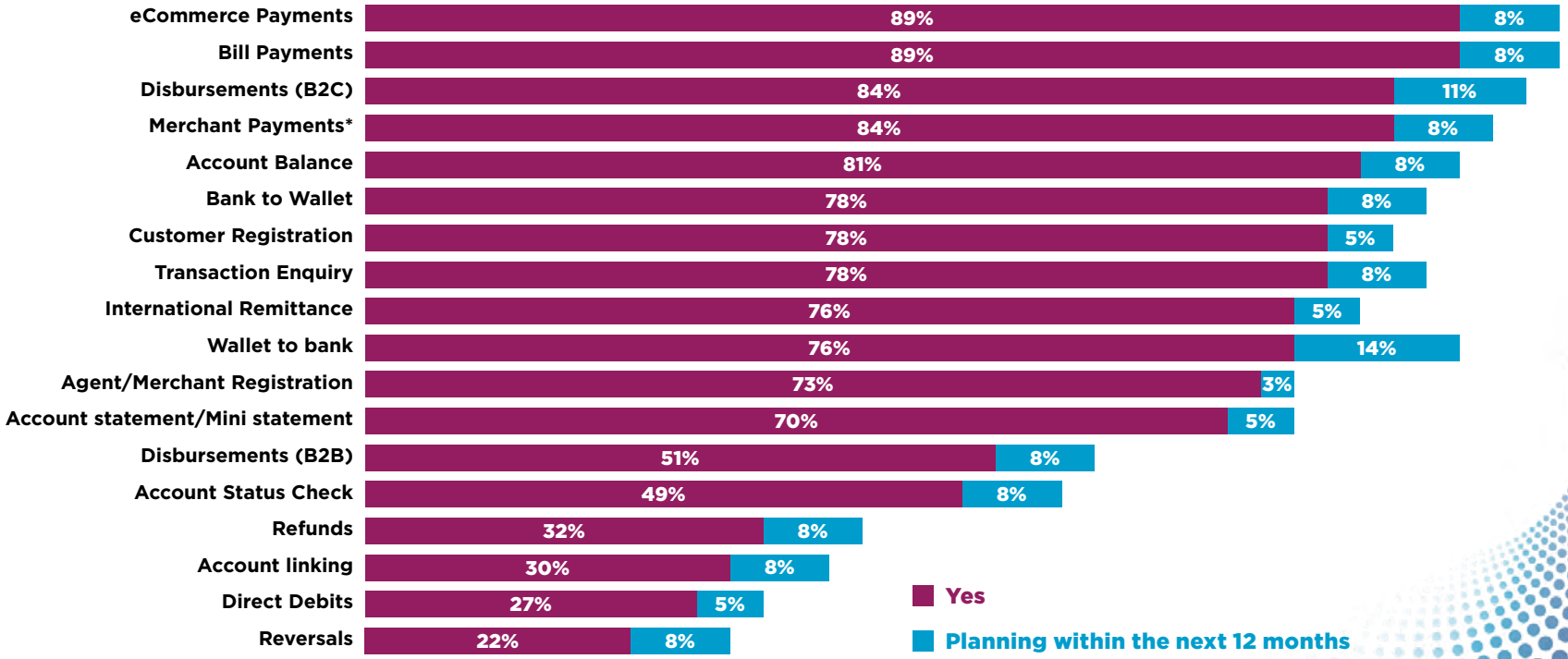


Ecosystem growth was supported by mobile money providers offering a wide range of payment API-enabled use cases...

Number of payment API use cases developed



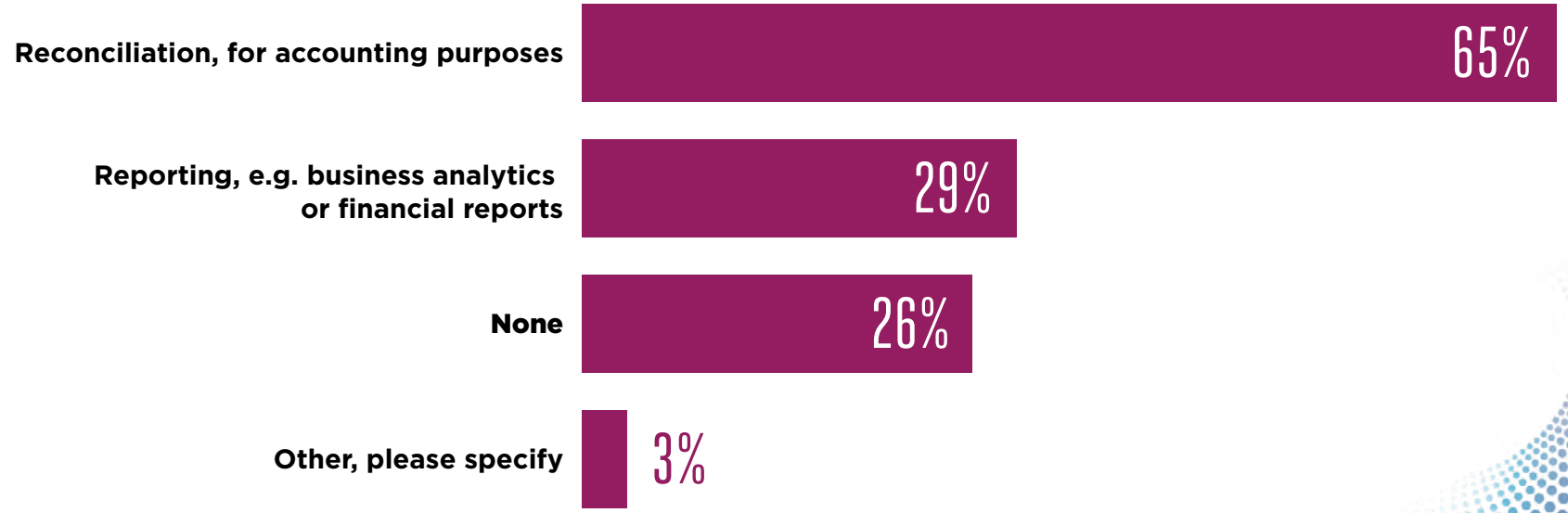
Top API use cases include eCommerce, bill payments, disbursements and merchant payments



*Close to 50% of merchant payments use USSD push for authentication

However, beyond payments, there are opportunities for operators to host APIs to enable reconciliation and reporting

For which of the following purpose/s do you host APIs that enable third parties to provide data to you?



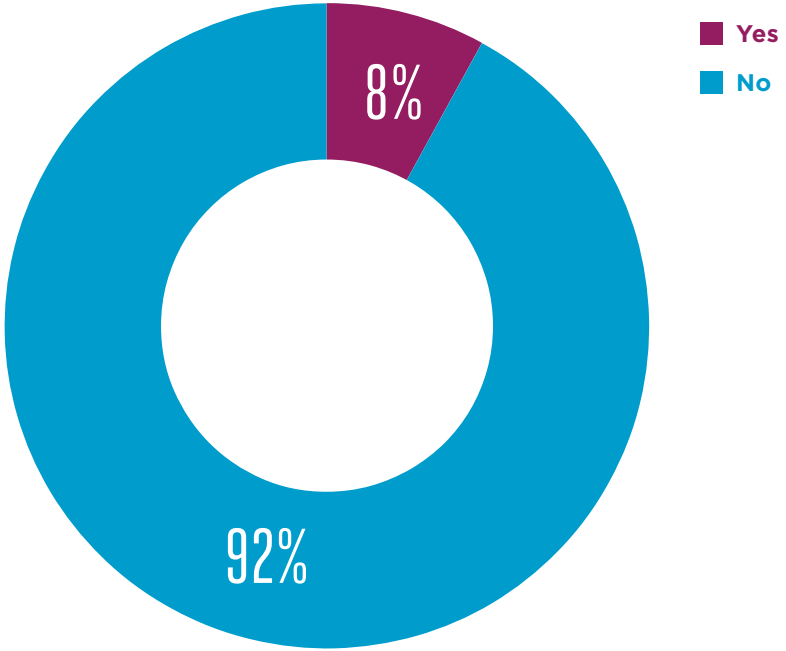


Commercial models

- To facilitate the growing number of third-parties in the ecosystem, mobile money providers typically do not charge on-boarding fees and generate revenue through transaction fees.
- Offering tiered pricing could further boost growth

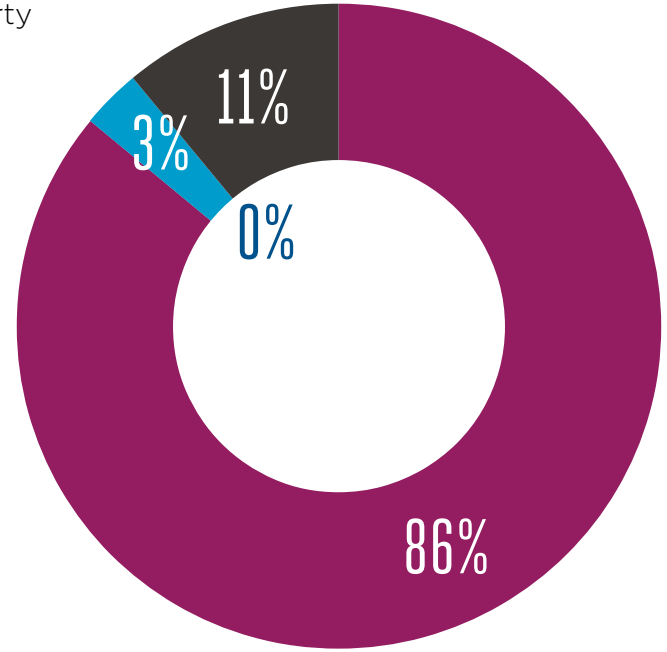
The vast majority of MMPs do not charge onboarding fees to third parties, lowering barriers to entry for third parties

Share of providers that charge on-boarding fees to third parties



The majority of mobile money providers generate revenue through transaction fees. Offering tiered pricing could further boost growth.

Respondents who consider third-party integration as a business priority



* Providers who do not charge third parties for API calls generate revenue solely from actual e-money transaction fees

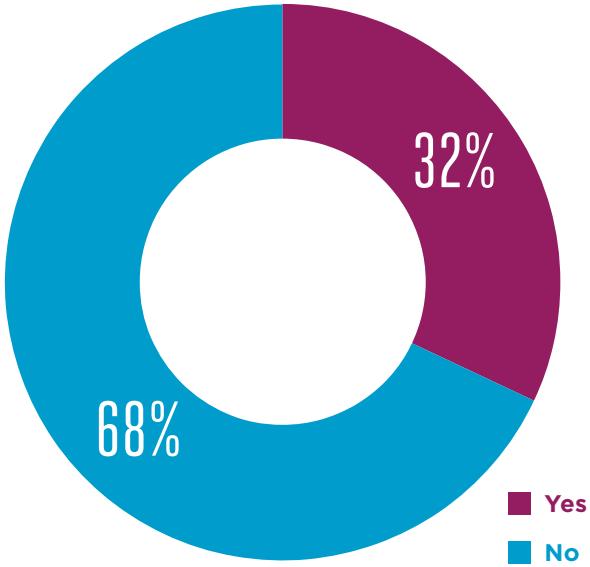
** Fixed quota of calls, pay per additional call

Integration challenges & opportunities

- Despite the growing ecosystem, only 32% of operators surveyed are exposing their APIs publicly and most providers adopted a proprietary based, which highlights market fragmentation and results in lengthy third-party on-boarding time.

Providers with open APIs are able to grow their ecosystem and ARPU, but less than a third of respondents claim to have open APIs

Share of respondents having open (publicly available) APIs



CASE STUDY

Since opening its APIs, a mature MNO from Sub-Saharan Africa experienced strong ecosystem growth.

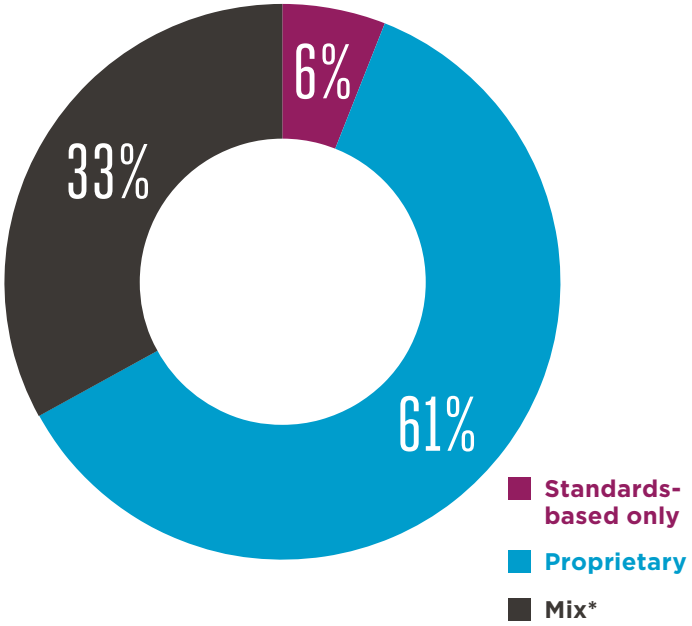
3000+ ecosystem partners
This included banks, companies that received a pay-bill number and companies that enabled bulk disbursements

31% growth in ecosystem transactions
Including merchants payments (online and proximity); international remittances; bill payments and bulk disbursements

9% ARPU growth

The majority of APIs are proprietary, signalling high fragmentation between players

API model adopted per respondent



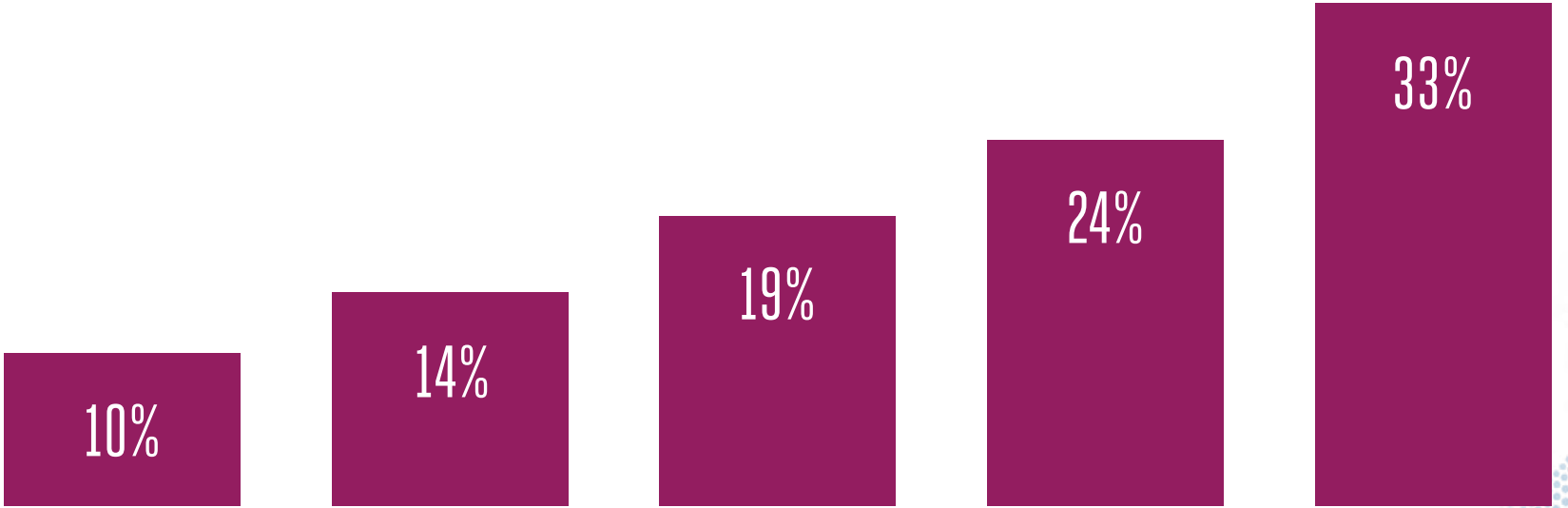
Standardising APIs unlocks multiple benefits:

- **Leads to eco-system growth** as more third-party solutions become compatible
- **Decreases cost and time** needed to integrate third parties, through developer familiarity
- **Significantly eases documentation,** leading to improved developer experience
- **Simplifies versioning and API updates**

* Refers to cases where providers use standards-based APIs for some use cases, and proprietary ones for others

This may be causing longer integration times: a third of MNOs on-boarding length of over one month

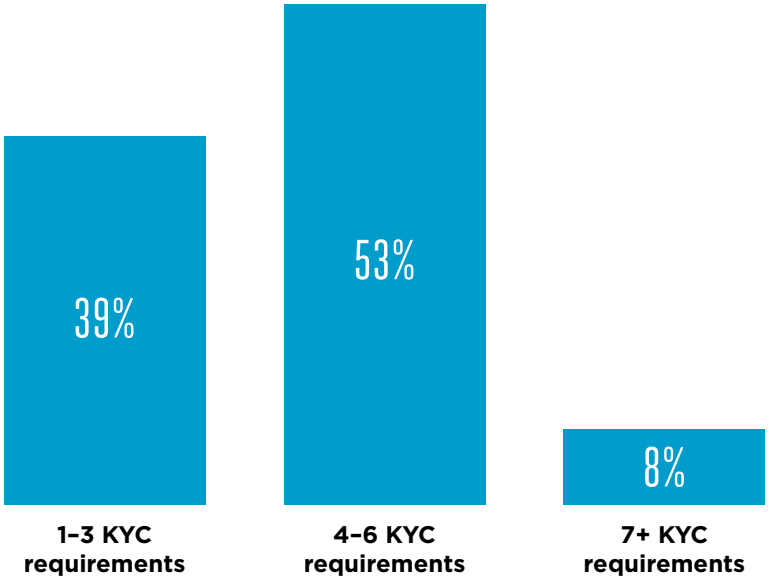
Third-party on-boarding length for typical use cases supported by a third-party*



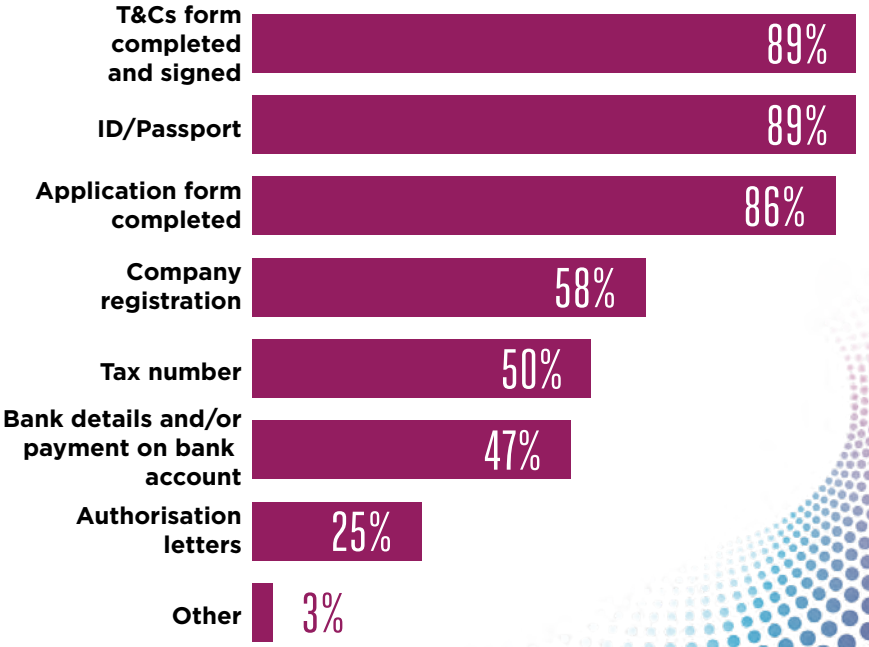
* Could vary per use case

With 4.5 KYC documents required on average, higher KYC does not seem to impact onboarding time

Distribution of respondents per number of KYC requirements



Share of providers requiring each type of KYC requirement



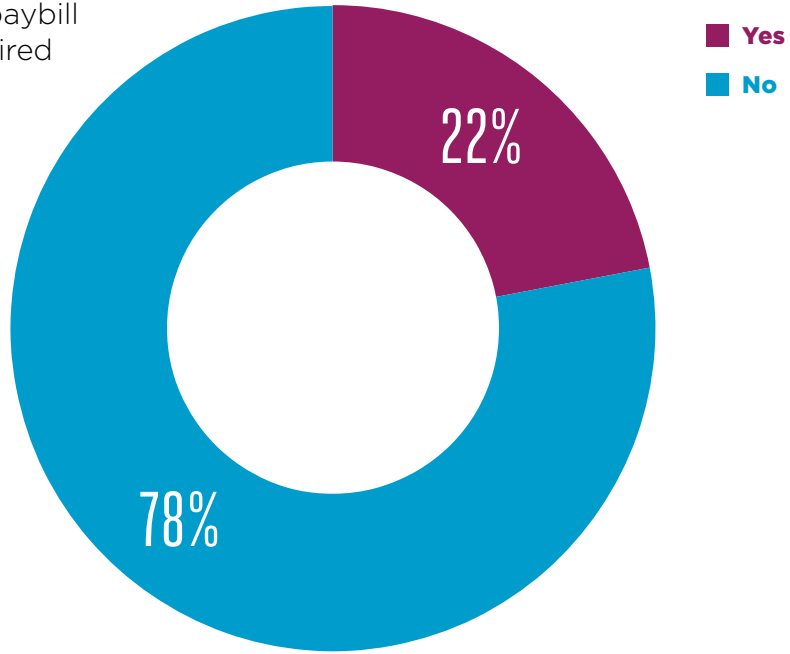
Accelerating third-party integrations

To accelerate their ecosystem growth and third-party integration, mobile money providers should consider offering integration tools such as SDKs, Open Source repositories and widgets and providing paybill accounts with no development support. In addition, providers should also review their integration process to ensure best practice around the following areas:

- Adopt existing framework when developing APIs to optimise the developer on-boarding and facilitate faster updates. Currently 40% of respondents do not use an API framework.
- Provide clear documentation and leverage a developer portal when exposing APIs to third-parties.
- Expose API through a single gateway to improve security, analytic capabilities and reduce customer maintenance.
- Ensure key features, including Swagger UI, test functions for error codes and postman collections, are implemented in the test environment.

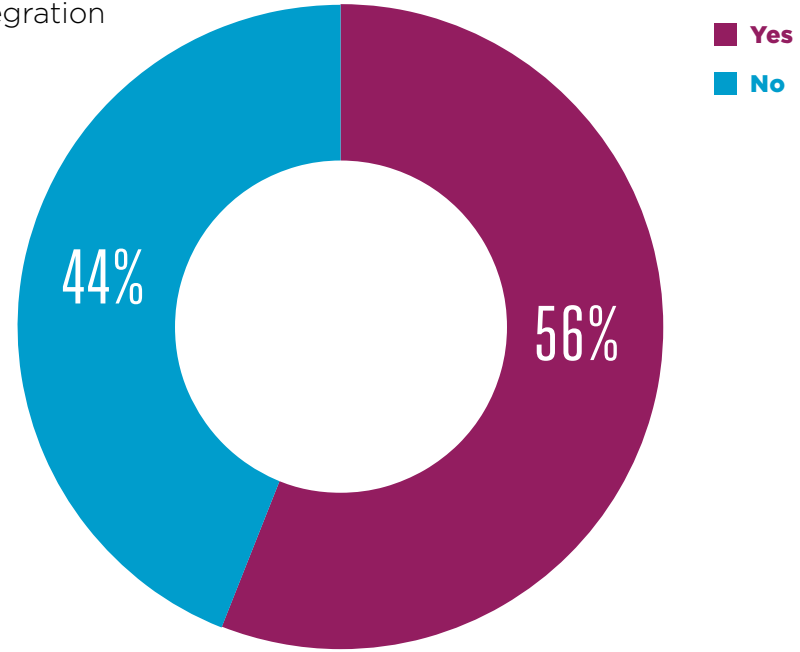
Paybill accounts are a first step in revenue diversification and higher ARPU, offering them without development can drive strong growth

Share of providers directly offering paybill accounts, without development required



Offering integration tools such as SDKs, Open Source repositories and widgets can substantially ease and accelerate third-party integration

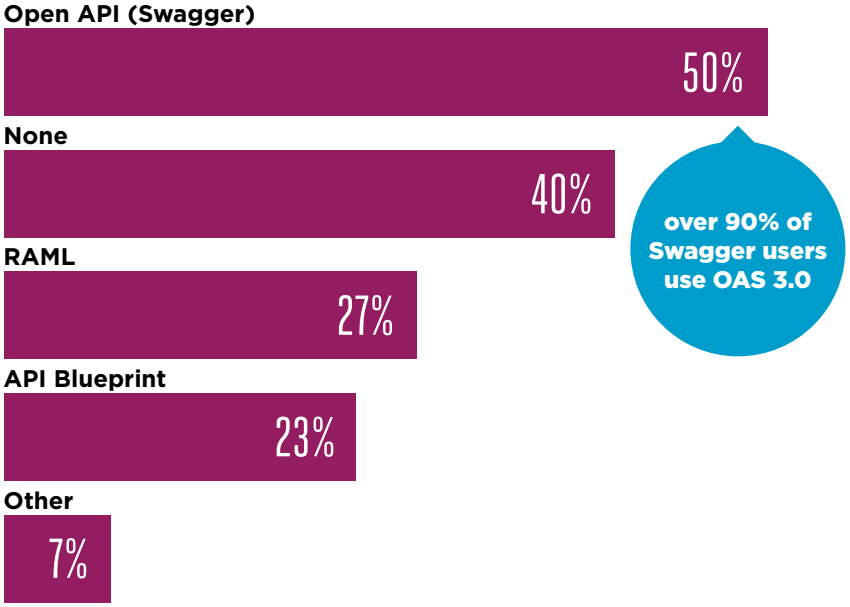
Respondents offering additional integration tools and resources to developers*



* Software Development Kits (SDKs), widgets, open source repositories

Using specification framework reduces third-party integration time thanks to developer familiarity, and ensures best practices are followed

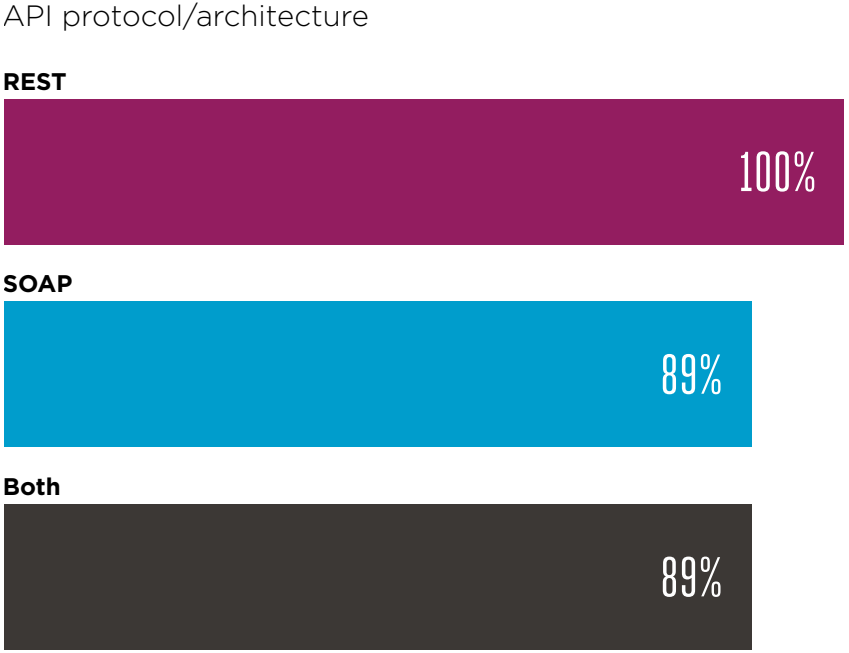
API frameworks adopted by respondents*



Basing APIs on an existing framework optimises the developer onboarding process through to multiple benefits:

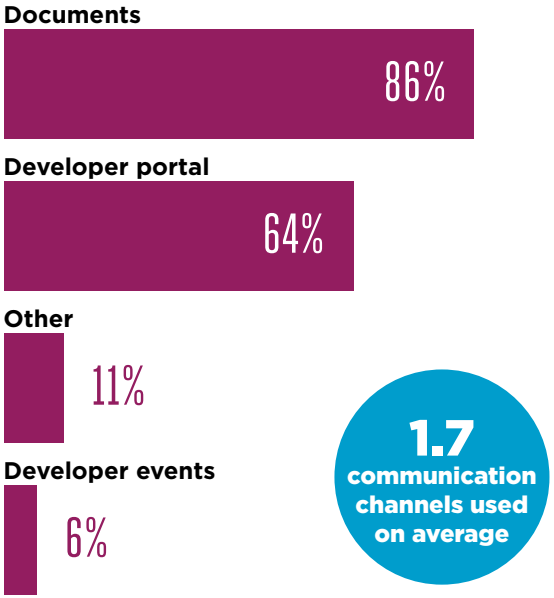
- **Developers may be more familiar with them,** making integration faster and more intuitive, reducing troubleshooting
- **They adopt best specification practices** and facilitate constant improvement as new versions are released
- **They can facilitate the documentation process**, notably through additional tools and resources that may be associated with them (e.g. SwaggerUI)

The developer-friendly REST APIs and JSON format are almost universally used, but SOAP and XML are still supported



Well-designed developer portals improve third parties' self-service capacity and autonomy, simplifying the integration process

API communication channels



1.7 communication channels used on average

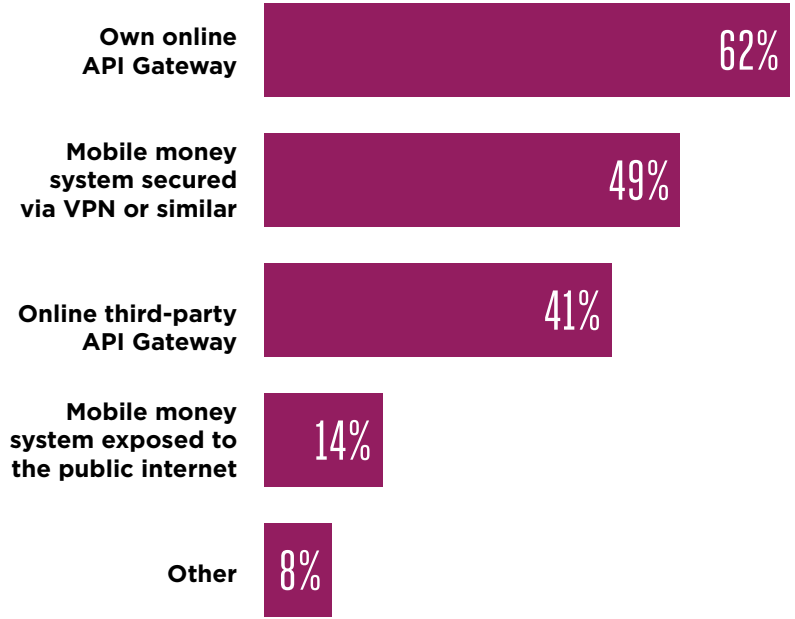
Beyond MMPs, multiple players have grown their industries through developer portals that feature key components such as:

- **A "Getting started guide"** outlining and explaining each step of the developer journey (HSBC, PayPal)
- **The API reference/documentation,** detailing endpoints, error codes, definitions and examples, authorisation/authentication, rate limits, and so on (Stripe, PayPal)
- **A testing environment/API explorer,** helping developers to simulate usage and debug their applications (HSBC, PayPal)
- **Additional resources,** including SDKs, widgets, developer forums and/or open source repositories (Stripe, PayPal)
- **Communication channels,** helping to maintain developer relations (All of the above)

Developer events such as hackathons help grow the ecosystem and improve 3rd party integration process

Exposing APIs through a single gateway directly leads to more efficient, simpler and faster systems

API exposure channels

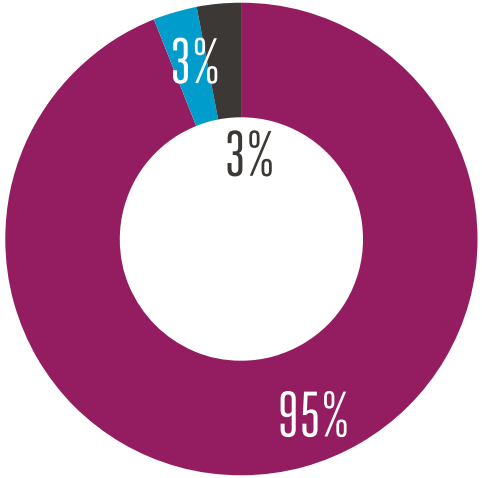


As single central interfaces, API gateways offer a number of advantages over direct exposure:

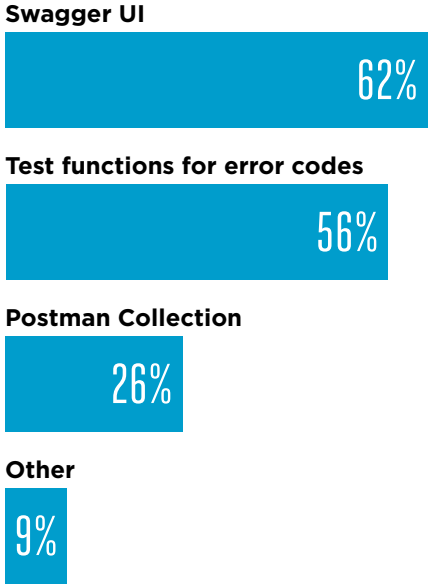
- **Easier and quicker to integrate with,** notably achieved by avoiding duplication of work
- **More sustainable,** reducing the clients' maintenance needs when APIs are evolving
- **More secure,** as they avoid the direct exposure of multiple API endpoints
- **Faster,** as they reduce/remove latencies caused by multiple API call round trips and authentications associated with directly exposed endpoints
- **Improved analytics,** since all API requests are routed through a single interface.

Over 90% of MMPs offer testing environments or simulators, but added features can make them more powerful and developer-friendly

Share of respondents providing a test environment or a simulator



Test environment/simulator features

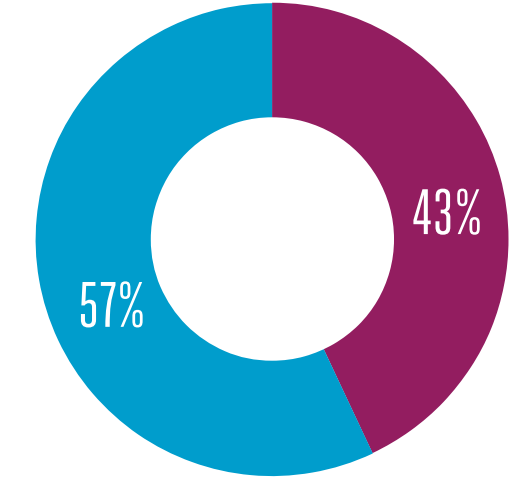


API testing, through sandboxes or other means, can be optimised through key features such as:

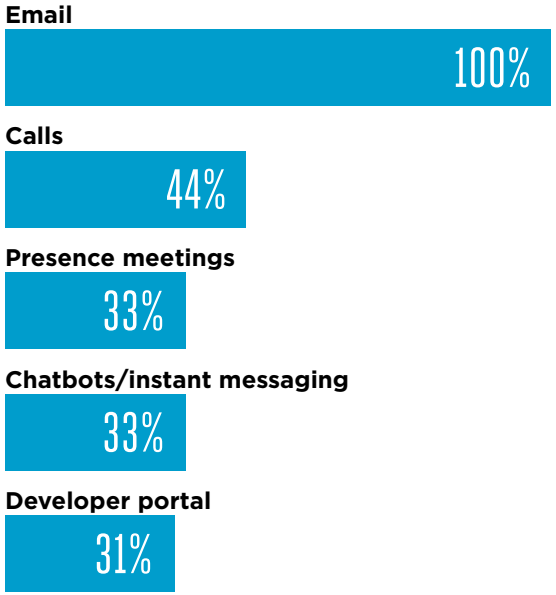
- A clear and well-organised user interface
- An appropriate handling and display of error messages
- Tools that help test APIs and facilitate monitoring, such as Postman Collections

Increasing the communication channels used for developer support can significantly improve ux and speed of integration

Is the testing environment/simulator available on a developer portal?



Communication channels used for developer support



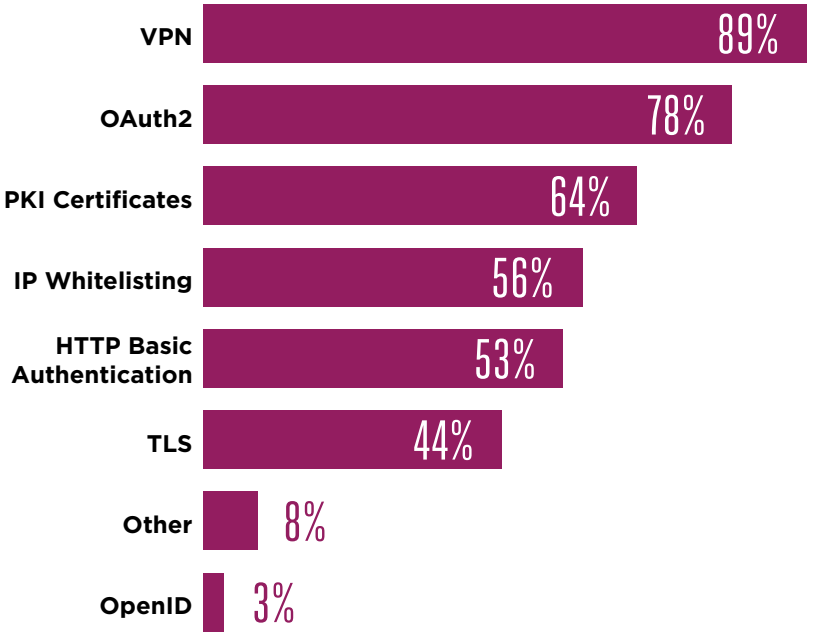
Capitalising in tools such as chatbots, developer portals, documentation and additional resources, and ensuring that API testing is easily accessible online allows for:

- Lower costs associated with human-operated support channels
- Optimised turnaround time and integration speed

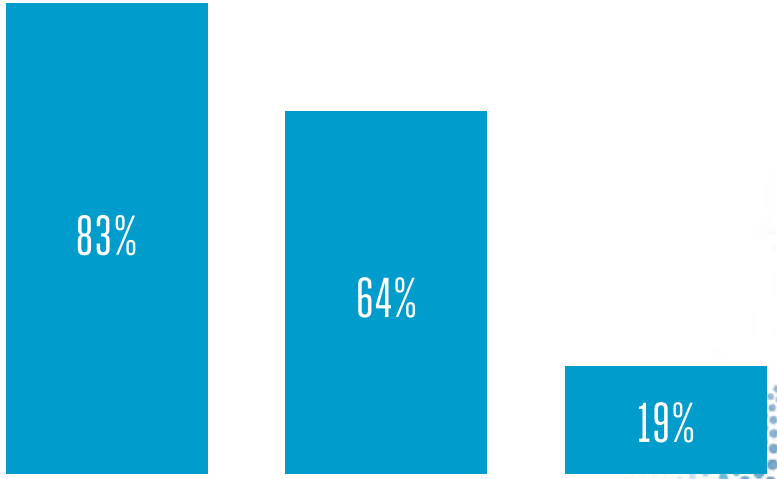
* When not available on a developer portal, simulators could be shared via a private link

Using authentication/authorisation mechanisms beyond HTTP basic authentication

Security standards/approaches used



Encrypted data on APIs



* Other responses include user credentials/ID and reverse proxy



The GSMA Mobile Money API

The GSMA Mobile Money API helps address some of these challenges. A harmonised API across providers benefits ecosystem growth.



Enables parties to interact seamlessly with mobile money accounts.

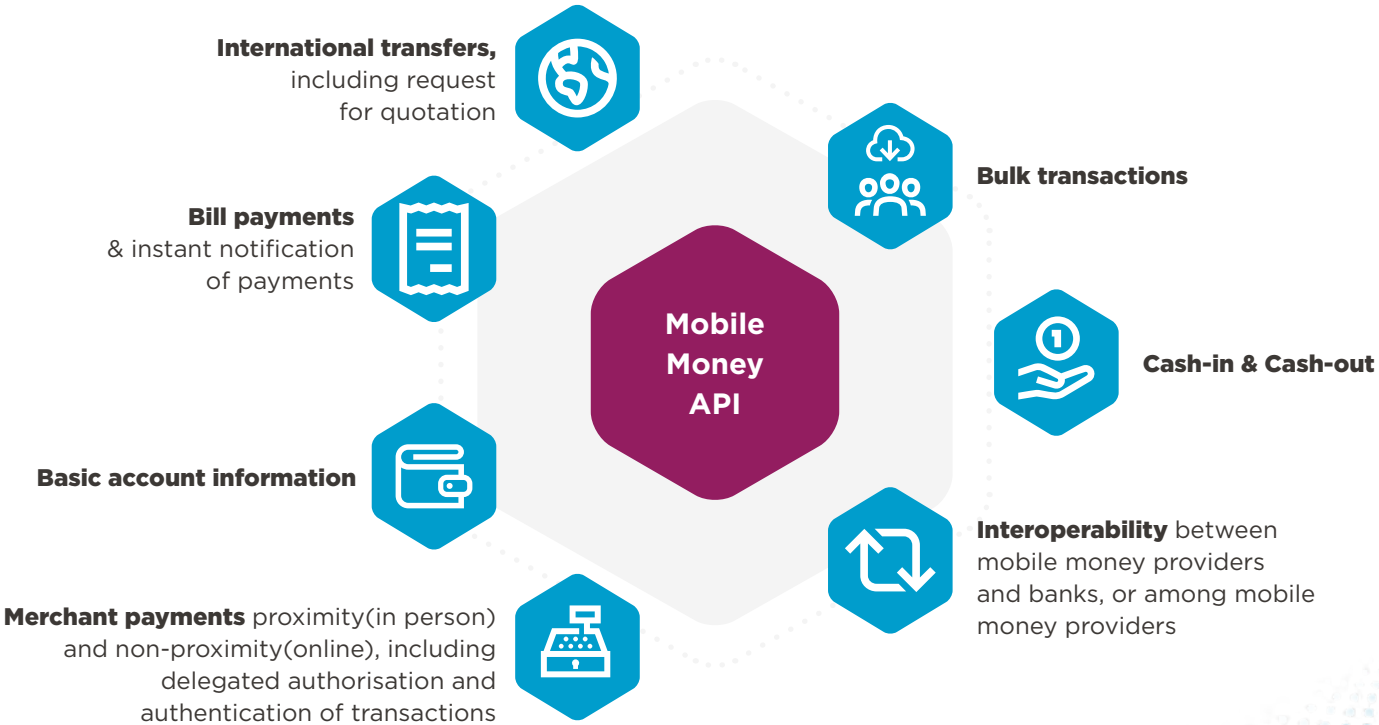


Jointly designed by key stakeholders: mobile money providers, platform vendors, third-party service providers and industry partners.



Aims to reduce complexity within the mobile money industry.

Core set of use cases



A large number of organisations have adopted the API but further roll-out is needed

Live providers

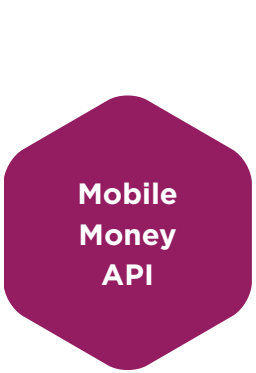
antel
tigo
Digicel
TERRA PAY
orange
IN Switch



API adopters not live

ERICSSON
comviva
telenor
JazzCash
MTN
IPN HUB
Telepin SOFTWARE
Mifos

A harmonised API enables faster time to market and reduces total cost of ownership



Rapid partner on-boarding
Partners will have a single API reference set leading to a turnkey approach when connecting to providers.

Ease of support and maintenance
Harmonised API for common Mobile Money operations will significantly reduce complexity for third parties integrating with Mobile Money providers.

Raising the capability of the industry as a whole
By providing support for advanced functionality such as multi-wallets and high-volume batch payments. Providers will instantly be able to benefit from these APIs.



Conclusions and best practices

API integration best practices

1/2

Design efficient and developer-friendly APIs

- Following certain conventions such as existing frameworks or standards can significantly improve the integration experience and drive usage by making APIs easily understandable and usable by a large range of developers.
- Examples for REST APIs include using nouns and letting the HTTP verb to define action, using plurals, versioning, clear error handling/messaging.

Flexible commercials enabling scale

- Whether charging API calls or monetary transactions, using a tiered pricing strategy can help accommodate players of all sizes, while driving scale.
- A free testing period or a free tier can boost third-party on-boarding and drive multiple use cases.
- Ultimately, this can help transitioning away from revenue models relying on customer fees, and move towards government and business fees.

Document and communicate APIs and integration process

- Good documentation and communication improves third parties' experience and autonomy in integrating with mobile money platforms and can ultimately lead to wider adoption
- This includes providing examples, avoiding jargon, defining all available API calls and responses, error messages, and so on
- Software Development Kits (SDKs) and libraries available in multiple languages can significantly improve the integration process.

API integration best practices

Secure APIs and ensure data protection

- Avoid malicious usage by managing permissions, avoiding exposing sensitive information in URLs and using authentication/authorisation mechanisms beyond basic HTTP authentication such as OAuth2 and OpenID.
- Protecting sensitive data throughout the API usage process is crucial.

Facilitate the testing of APIs before going live

- A fully-featured testing environment, such as Swagger UI, test functions for error codes and postman collections, can help guarantee a bug-free solution and smoother end-customer experience.
- Making testing available to developers on a developer portal increases likelihood of uptake and decreases pressure on human-operated communication channels.



The GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators with nearly 400 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces the industry-leading MWC events held annually in Barcelona, Los Angeles and Shanghai, as well as the Mobile 360 Series of regional conferences.

For more information, please visit the GSMA corporate website at www.gsma.com

Follow the GSMA on Twitter: @GSMA

GSMA Mobile Money

The GSMA's Mobile Money programme works to accelerate the development of the mobile money ecosystem for the underserved.
For more information, please contact us:

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