GSMA Intelligence

Mobile Money Regulation Index

Methodology

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Introduction

About the Mobile Money Regulatory Index

The Mobile Money Regulatory Index measures regulatory enablers of mobile money adoption. It has been constructed according to the steps set out in the guidelines developed by the OECD and the European Commission's Joint Research Centre (JRC).[1] This methodology document presents the theoretical framework that underpins the Index; the process for selecting the indicators, along with how they are structured; the approach used to normalise the data; the weights used in the Index; and the approach to aggregation.

Theoretical framework

What is measured?

The Index measures the extent to which a country's regulatory framework enables widespread mobile money adoption. It is therefore an input index. An input index measures a number of indicators that lead to an important outcome, in this case mobile money adoption. An input index is distinct from an output index. In the context of mobile money adoption, an output index might seek to measure the level and intensity of mobile money usage. By contrast, an input index seeks to measure and understand why people are unable or unwilling to use mobile money.

Why is an index necessary?

There is no single barrier or enabler to mobile money adoption; rather, a number of demand- and supply-side factors determine whether or not a country has a thriving mobile money market. Some of these factors are set out in Table 1.

[1] Handbook on constructing composite indicators: methodology and user guide, OECD and JRC, 2008

Table 1: Examples of factors that influence mobile money adoption

Demand-side	Supply-side
Income and savings	Cost of provision
Customer risk profile	Agent network
Financial literacy	Service and product range
Access to information	Price
Consumer trust	Competition
Cultural and religious factors	Availability of related products (e.g. bank accounts)

A country's policy and regulatory framework will influence many of these factors. For example, prescriptive and burdensome regulation can constrain a firm's ability to enter the market and offer innovative products. An uncertain legal framework and lack of consumer protection can also deter people from using mobile money.

The focus of this Index is solely on the regulatory framework for mobile money. Given the importance of having an enabling regulatory framework[2], there is value in having a targeted Index as it can provide governments and regulators with specific and actionable policies to help enable growth in mobile money services. However, given the number of factors that affect mobile money adoption, it is important to note that some countries that score well on the Regulatory Index may still have low levels of mobile money adoption due to other demand- and/or supply-side issues (and, similarly, some countries may have high levels of mobile money adoption but relatively lower index scores).

Several other financial inclusion indices have been developed, including:

- Financial and Digital Inclusion Project (Brookings Institution)
- Global Microscope (Economist Intelligence Unit)
- Financial Inclusion Index (Alliance for Financial Inclusion)
- Financial Inclusion Indicators (World Bank, IMF and Global Partnership for Financial Inclusion)

The Mobile Money Regulatory Index has been designed to ensure it does not replicate any of these or other related indices. In this respect, the Index focuses

[2] The link between an enabling regulatory framework and mobile money adoption has been established in empirical research. See, for example, 'Success Factors for Mobile Money Services' (GSMA and Harvard Business School, 2016) and 'An Empirical Examination of Why Mobile Money schemes ignite in some developing countries but founder in most' (Evans and Pirchio, 2015)

specifically on mobile money and the regulatory enablers. There is value in focusing on mobile money given it is one of the most economically viable channels to provide financial services to financially excluded and underserved populations in low- and middle-income countries.

The GSMA already publishes data and analysis focused on mobile money outcomes (e.g. annual State of Industry reports)[3]. This input Index therefore fills an evidence gap by looking at one of the key factors that can enable mobile money adoption.

How are the enablers measured?

The regulatory enablers or 'dimensions' of mobile money adoption that inform the indicators selected for the Index are:

1) Authorisation – measuring the existence of a clear legal framework for mobile money provision, the extent of flexibility that providers face as well as the proportionality of capital requirements.

2) Consumer Protection – measuring the extent to which funds are safeguarded, and the existence of consumer protection rules.

3) Transaction Limits – measuring the level of flexibility providers have in order to meet customer needs with regards to transactions.

4) KYC – measuring the proportionality of customer identification, verification and KYC requirements.

5) Agent Network – measuring the proportionality of employing and using agents.

6) Investment and Infrastructure Environment – measuring the level of certainty and flexibility for mobile money providers to invest and innovate.

These dimensions have been defined based on the existing literature assessing what constitutes enabling mobile money regulation.[4]

[3] https://www.gsma.com/mobilefordevelopment/sotir/

[4] See, for example, 'Mobile Money: Enabling regulatory solutions' (di Castri, 2013)

Data selection

As the Mobile Money Regulatory Index is an input index, it is important that each indicator is an 'input' for mobile money adoption rather than an output or outcome (e.g. measuring the level of take-up). Furthermore, given the focus on regulation, the indicators must capture features of the regulatory framework that governments and central banks have direct control over. It is also important to develop a set of criteria against which each indicator can be considered for inclusion in the Index. The following criteria have therefore been used, based on guidance from the JRC and OECD.

- Relevance: the indicator should measure a regulatory barrier or an enabler in the take-up of mobile money services.
- Accuracy: the indicator should correctly estimate or describe the quantities or characteristics they are designed to measure.
- Coverage: the data should cover as many countries as possible, as the Index is intended to be a global index and cover most countries where mobile money is live.
- Timeliness: the data should be collected consistently (or a framework should be in place that allows for consistent data collection) over time.

A key consideration in the assessment of accuracy is to include, to the greatest extent possible, 'hard' indicators that are objective and can be quantified. These are distinct from 'soft' indicators that are usually based on a degree of judgement and are often subjective. While soft indicators have value and are often necessary when benchmarking regulation and policy, these are not used in the Mobile Money Regulatory Index, which instead is composed of objective indicators that are comparable across countries and can be verified based on mobile money regulations. Although there may be some aspect of regulation that may not be captured in the Index (for example, how effective regulators are in implementing the rules and ensuring compliance), this objective approach is adopted for two reasons:

1. Avoid duplication with other indices and financial inclusion initiatives;
2. Provide governments with specific measures and actions to develop more enabling regulation.

To build an objective set of indicators, we used three types of indicator:

1. Continuous. A numerical value that is not restricted to particular values (e.g. maximum allowed transaction values or account balances).
2. Binary. A value that can only take two responses, usually "Yes" or "No" which gives scores of 1 or 0 respectively (e.g. do mobile money regulations impose no geographic restrictions on mobile money agents?) Some indicators can be constructed using multiple binary indicators (e.g. 5 binary indicators could be combined such that a country would receive a score out of 5).
3. Ordinal. A ranking based on a pre-defined scale. A higher rank/score is associated with 'better' performance or more enabling regulation.

Table 2 presents the indicators that make up the Index. The Index comprises six key dimensions, which are constructed by aggregating one or more indicators.

Table 2: Mobile Money Regulatory Index Indicators

Dimension	Indicator	Scoring	
Authorisation	Eligibility	0	Non-banks including MNOs are not eligible to issue e-money/offer mobile money services at all.
		1	Non-banks are eligible to issue e-money/offer mobile money services, but MNOs are prohibited from doing so. Alternatively MNOs are eligible to provide mobile money services, but no other non-bank is.
		2	Non-banks (including MNOs) are not eligible to issue e-money/offer mobile money services except by acquiring or establishing a lower-tiered prudentially regulated institution that is authorised to issue e-money/offer mobile money/branchless banking directly. The test here is whether the non-bank owns the customer relationship with the mobile money account holders. If not, then this indicator applies.
		3	Non-banks (including MNOs) are not eligible to issue e-money directly or obtain regulatory authorisation to offer mobile money services except in partnership/in conjunction with a prudentially regulated institution whose role extends beyond providing funds custodial services (e.g. regulatory authorisation, regulatory engagement, etc.) but does not have a customer relationship with mobile money account holders. The test here is whether the non-bank owns the customer relationship with the mobile money account holders. If it does, then this indicator applies.

		4	Non-banks (including MNOs) are eligible to issue e-money/offer mobile money services directly or through a subsidiary (which is not prudentially regulated) with the involvement of a prudentially regulated institution as custodian of customer funds.
	Authorisation Instruments	0	There exists no regulatory framework to provide authorisation for the provision of mobile money services.
		1	There exists no regulatory framework to provide authorisation for the provision of mobile money services, but letters of no objection are released.
		2	There exists a formal authorisation to provide mobile money services, which is based on a regulatory framework. However, no licences have yet been issued.
		3	There exists a formal authorisation to provide mobile money services, which is based on a regulatory framework, and licences have been issued.
	Initial capital requirements	Continuous	Ratio of the initial capital requirements for mobile money providers to the initial capital required to become a bank in that country.
	International remittances	1 point if	Regulation allows mobile money providers to send international money transfers.
		1 point if	Regulation allows mobile money providers to receive international money transfers.
		1 point if	There is no separate licensing regime for international remittance services.

Consumer Protection	Safeguarding of funds	1 point if	Non-banks providing mobile money have to keep 100% of their e-money liabilities in liquid assets. If only banks are allowed to provide mobile money, the point is awarded if the bank is prudentially regulated.
		1 point if	Non-banks, as service providers, cannot intermediate customer funds. If only banks are allowed to provide mobile money, the point is awarded if the bank is prudentially regulated.
	Consumer protection rules	1 point if	There are consumer protection rules in the mobile money regulatory framework.
		1 point if	The customer protection rules in the mobile money regulatory framework require that customers are granted access to recourse and complaint procedures in order to resolve disputes.
		1 point if	The customer protection rules in the mobile money regulatory framework require price disclosures for mobile money transactions.
		1 point if	The customer protection rules in the mobile money regulatory framework provide a general disclosure requirement to make the terms of the service available to customers.
	Deposit insurance	1 point if	The mobile money regulation provides deposit insurance protection for each mobile money account.

Transaction Limits	Entry account transaction limits	Continuous	Entry-level account single transaction limit across the mobile money product offering in the country (converted into PPP dollars).
	Entry account monthly limits	Continuous	Entry-level account monthly transaction limit across the mobile money product offering in the country (converted into PPP dollars). If there are no monthly limits but daily, weekly or annual limits are in place, we convert these into monthly limits.
	Entry account balance limits	Continuous	Entry-level account balance limit across the mobile money product offering in the country (converted into PPP dollars).
	Top account transaction limits	Continuous	Highest account single transaction limit across the mobile money product offering in the country (converted into PPP dollars).
	Top account monthly limits	Continuous	Highest account monthly transaction limit across the mobile money product offering in the country (converted into PPP dollars). If there are no monthly limits but daily, weekly or annual limits are in place, we convert these into monthly limits.
	Top account balance limits	Continuous	Highest account balance limit across the mobile money product offering in the country (converted into PPP dollars).
KYC	Permitted identifications	0	No national ID scheme and only government-issued identity documents can be used as ID to access mobile money.
		1	The country has a national ID scheme and this can be used to access mobile money. Note that if at least 99% of a country's adult population has a national ID (based on World Bank Findex survey data), a score of 3 is awarded.
		2	Documents beyond

			government-issued IDs can be used as minimum requirements to access mobile money.
		3	Regulation allows a provider discretion in verifying identity for the purposes of accessing mobile money services, subject to some regulatory review or approval.
	KYC requirements	0	Customer registration requirements extend beyond a form of identification and a mobile number.
		1	Anonymous accounts are allowed.
		2	Customer registration requires an ID and/or mobile number.
		3	The regulation allows operators flexibility in setting the minimum KYC requirements, subject to some regulatory review or approval
	AML/CFT obligations	1 point if	AML and CFT reporting obligations are required.
	Regulation on ID requirements	1 point if	Regulators provide requirements on the level of identification required for mobile money users.
Agent Network	Agent eligibility	0	The regulation contains a prescriptive list on the identity of agents, and non-bank agents are not allowed.
		1	The regulation contains a prescriptive list on the identity of agents, and it allows for non-bank agents.
		2	The regulation does not contain a prescriptive list on the identity of agents.
	Agent authorisation	1 point if	Notification regimes are allowed, and the mobile money provider need not obtain formal authorisation to operate an agent's network.
		1 point if	There are no authorisation requirements to appoint individual agents.
	Permitted agent services	1	Regulation on the agents' permitted activities is prescriptive, and agents are

			allowed to perform only one of the following activities: cash in, cash out, customer enrolment.
		2	Regulation on the agent's permitted activities is prescriptive, and agents are allowed to perform only two of the following activities: cash in, cash out, customer enrolment.
		3	Regulation on the agent's permitted activities is prescriptive, and agents are allowed to perform the following activities: cash in, cash out, customer enrolment.
		4	Regulation is not prescriptive on the permitted agent's activities.
	Agent network condition	1 point if	There are no geographical restrictions imposed on agents.
		1 point if	Limited liability provision is in place for agents.
		1 point if	Different tiers of agents are allowed.
Infrastructure and Investment Environment	Sector-specific taxes	1 point if	No discriminatory taxation (mobile specific taxes) is imposed on mobile money services.
	ID verification infrastructure	1 point if	Government provides KYC verification for mobile money providers (verifying authenticity of ID via access to government database).
		1 point if	Government provides automated KYC verification for the providers.
	Interoperability	1 point if	The regulation does not prescribe the technical standards, commercials, operating rules or governance for interoperability.
	Payments and settlement infrastructure	1 point if	Non-banks providing mobile money have access to a national payments and settlement systems infrastructure such as national switches and/or settlement accounts at the central bank. If only banks are allowed to provide mobile money, the

			point is awarded if they have access to the mobile money scheme infrastructure.
	Interest payments	1 point if	Mobile money trust accounts can earn interest
		1 point if	Interest that is paid on mobile money trust accounts can be used and/or distributed.
	Financial inclusion policy	1 point if	The country has (or has had in place) a written national financial inclusion policy/strategy.
		1 point if	The national financial inclusion policy has (or has had) a specific mobile element.
		1 point if	The national financial inclusion policy has (or has had) targets to address the gender gap.
		1 point if	The government regularly (at least every 5 years) collects customer-level data to track progress and report on financial inclusion.

Data treatment

Having obtained data and carried out the necessary calculations for the all the above indicators, we apply logarithmic transformations to the following indicators:

- Entry-level account single transaction limits
- Entry-level account monthly transaction limits
- Entry-level account balance limits
- Top-tier account single transaction limits
- Top-tier account monthly transaction limits
- Top-tier account balance limits

Logarithmic transformation has a conceptual benefit in that it results in improvements in the lower end of the indicator distribution being more 'beneficial' to a country than improvements at the high end of the distribution. An example of this in relation to monthly transaction limits is that an increase from $500 to $600 is likely to have a bigger impact on mobile money adoption than increasing the number from $50,000 to $50,100 so – from the perspective of the Index – should be rewarded with a higher increase.

Normalisation

Normalisation is required in an index to adjust for different units of measurement and different ranges of variation across the indicators. For the Mobile Money Regulatory Index the min-max method is used, which transforms all indicators so they lie within a range between 0 and 100 using the following formula:

$$I_{q,c} = \frac{x_{q,c} - min_c(x_q)}{max_c(x_q) - min_c(x_q)}$$

Where 'I' is the normalised min-max value, 'x' represents the actual value and the subscripts 'q' and 'c' represent the indicator and country respectively.

For binary and ordinal indicators, the minimum and maximum used for normalisation are based on the theoretical minimum and maximum for those indicators, whereas for some continuous indicators these have been amended to reflect the actual minimum and maximum values.

According to this method, a country gets a score between 0 and 100. As an example for the indicator on eligibility:

- Minimum value = 0. Non-banks are not eligible to offer mobile money services
- Maximum value = 4. Non-banks (including MNOs) are eligible to issue e-money/offer mobile money services
- Normalised score for a country scoring 2 = (2-0) / (4-0) *100 = 50

As part of the normalisation process, all indicators are transformed such that they have the same orientation – i.e. a higher score always represents a 'better' score. This is necessary for indicators that are negatively correlated with mobile money adoption.

In the case of indicators measuring transaction limits, while a higher limit is generally associated with a higher score, countries that have no transaction or balance limits and where there is no specific regulatory framework to provide authorisation for the provision of mobile money services have been uniformly scored zero.

In the case of the initial capital requirement indicator, countries with very low mobile money initial capital requirements as compared to banks have been awarded a score of zero, as well as countries where only banks are allowed to provide mobile money services or issue e-money. For the rest of the countries, a proportionally lower capital requirement with respect to banks has been scored higher.

Weighting and aggregation

To construct the weights at the dimension and overall index level, a number of considerations have been taken into account, including the following:

- Statistical relationship between indicators and dimensions with mobile money adoption.
- Research carried out by the GSMA and other organisations on financial inclusion and barriers to mobile money adoption.
- Qualitative evidence and expert opinion within the GSMA and from external stakeholders.

Based on this, the following weights have been used for the indicators (Table 3) and dimensions (Table 4).

Table 3: Indicator weights

Dimension	Indicator	Weight
Authorisation	Eligibility	40%
	Authorisation instruments	30%
	Initial capital requirement	20%
	International remittances	10%
Consumer Protection	Safeguarding of funds	50%
	Consumer protection rules	30%
	Deposit Insurance	20%
Transaction Limits	Entry account transaction limits	16.7%
	Entry account monthly limits	16.7%
	Entry account balance limits	16.7%
	Top account transaction limits	16.7%
	Top account monthly limits	16.7%
	Top account balance limits	16.7%
KYC	Permitted identifications	30%
	KYC requirements	30%
	AML/CFT obligations	30%
	Regulation on ID requirements	10%
Agent Network	Agent eligibility	35%
	Agent authorisation	35%
	Permitted agent services	20%
	Agent network conditions	10%
Infrastructure and Investment Environment	Sector-specific taxes	30%
	ID verification infrastructure	20%
	Interoperability	20%
	Payments and settlement infrastructure	10%
	Interest payments	10%
	Financial inclusion policy	10%

Table 4: Dimension weights

Dimension	Dimension weight
Authorisation	30%
Consumer Protection	15%
Transaction Limits	15%
KYC	15%
Agent Network	15%
Infrastructure and Investment environment	10%

In order to aggregate the indicators into dimensions and the dimensions into an index score, we apply arithmetic aggregation across the Index.

Table 5 illustrates the weighting and aggregation method at the dimension level. Dimensions are then weighted and aggregated into the Index in a similar way.

Table 5: Weighting and aggregation example

Dimension	Indicator	Indicator scores	Weights	Weighted dimension scores	Dimension score
Authorisation	Eligibility	100	40%	0.4 * 100 = 40	40 + 19.8 + 10 + 3.3 = 73.1
	Authorisation instruments	66	30%	0.3 * 66 = 19.8	
	Initial capital requirement	50	20%	0.2 * 50 = 10	
	International remittances	33	10%	0.1 * 33 = 3.3	