A CLIENT NEEDS-CENTRED APPROACH TO FINANCIAL INCLUSION MEASUREMENT

CASE STUDY

CONTENTS

INTRODUCTION

Much progress has been made towards measuring the success of financial inclusion. Since the Alliance for Financial Inclusion's Financial Inclusion Data (FID) Working Group was created, it has established a core set of financial inclusion indicators to standardize how access and usage of financial services are measured.

As well as creating a common framework for measuring and using data to inform policymaking, FID also provides a forum for AFI member institutions / countries to share learnings on target-setting, survey methodology, analysis and innovative usage of data.

However, meeting financial inclusion targets has not always led to expected outcomes. For example, the 2017 World Bank Findex survey revealed that growth in account uptake has not led to regular usage, with many accounts left largely unused. Why is this the case and what can be done to ensure active usage of financial services to achieve better consumer outcomes? Understanding people's financial needs and how they meet those needs can help to inform these questions.

To better understand how and why customers use different types of financial services, a pilot study was launched by FID in partnership with insight2impact (i2i) to test a financial inclusion measurement framework based on consumers' financial needs (or FinNeeds). The pilot incorporated both demand-side surveys on financial needs in AFI member institutions / countries and transactional data from financial institutions. It also leveraged a new financial inclusion measurement approach whereby it linked demand-side data and transaction data for a sub-set of consumers to provide new insights on individuals' financial lives inside and outside the formal financial sector.

The resultant indicators on financial needs are intended to complement existing financial inclusion measurement on access and uptake. The findings and insights highlight important policy and market imperatives on what is needed for the formal financial sector to better serve people's financial needs. As such, this report aims to contribute to AFI's goal of "bringing smart policies to life".

This report outlines the key findings from the pilot studies in five AFI member institutions in five countries including Nigeria and Mexico, as well as highlights from smaller or partial pilots in Zimbabwe, Kenya and the Philippines. The next section outlines the customer-centric approach to financial needs. The third section details the methodology used in each AFI member institution / country, while the fourth section outlines the main insights and indicators that emerged from the pilot study, followed by some final conclusions and learning points.

WHAT ARE FINANCIAL NEEDS?

The first phase of the study was dedicated to developing a measurement framework for financial needs that takes a customer centric perspective. It is based on the understanding that people use financial services because these services can help them to meet an underlying need. It is a means to an end, and not the end itself.

Most uses of money or financial services typically fall into four categories, and these can be regarded as four universal financial needs[1]:

1 **Transfer of value** - to make or receive a payment or transfer

2 **Liquidity** - to be able to meet expenses within an income cycle

3 **Resilience** - to be able to meet large expenses that have resulted from an unexpected financial shock

4 **Meeting goals** - to provide for larger life or work goals that cannot be funded from a single income cycle

The reasons for spending/using money are referred to as use cases. All use cases can be categorized into one of the financial needs, and so the financial needs are a way to summarize and classify all the different use cases for analysis purposes.

For example, saving for retirement or your children's education or buying a house are all use cases that can be classified under the "meeting goals" need. If a person expresses a use case in a need category, they are counted under that need. This enables us to draw broader conclusions at the needs level[2].

Everybody meets their financial needs in some way, be it through relying on cash, through support from family and friends, by adjusting their consumption or work patterns, or by relying on state support. We call these different strategies used to meet each use case's financial devices[3]. A financial device is defined as any physical, social or electronic mechanism that stores, accumulates, distributes or transfers value and can be used to meet a financial need. Cash at home or physical assets would be a "personal" mechanism, while assistance from family and friends would be a "social" mechanism.

Thus, while a financial device includes any financial service, it is a broader concept than formal financial services provided by financial institutions. Simply put: a financial device is what one makes use of to meet a financial use case.

In deciding how to meet a use case, people not only consider formal financial products such as credit, payments, savings or insurance, but also the other options available to them, such as their social or family network, cash at home or liquid assets. They may use a combination of these devices, depending on the use case.

Figure 2 illustrates how people may use different types of devices to respond to a single use case of paying for the treatment of a sick child, while Box 1 explains the different device categories applied in the analysis.

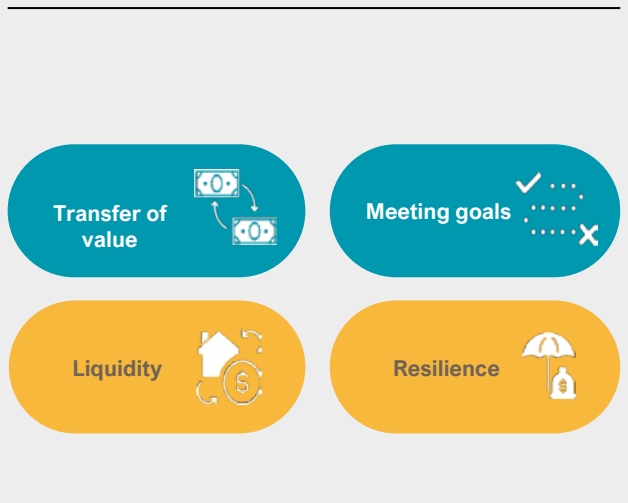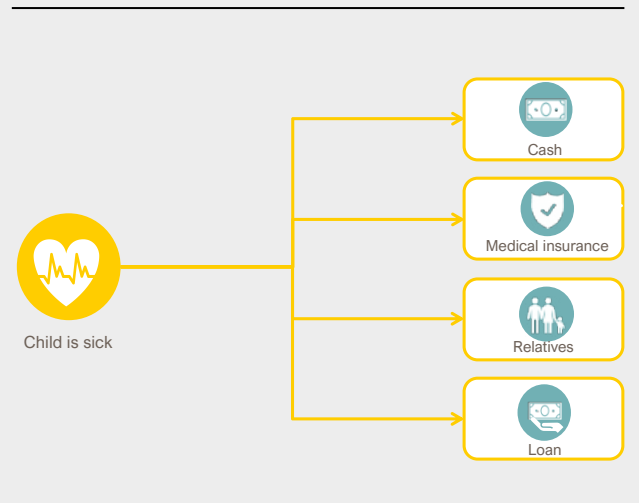
FIGURE 1: UNIVERSAL FINANCIAL NEEDS

FIGURE 2: EXAMPLE DEVICES USED TO MEET SPECIFIC USE CASES

The needs measurement framework[4] explores the financial needs of a population and considers the uptake of different types of financial devices to respond to use cases linked to each need. By building a picture of the portfolio of types of financial devices that people use for each need, insights can be drawn on how different types of financial services serve as complements to, or substitutes for, meeting each financial need.

Understanding customers' device portfolio can highlight gaps in financial service offerings that leave population segments vulnerable to risk[5] or undermine their financial progress. As such, tracking device use over time has strong policy relevance[6]. For financial service providers, such insights highlight untapped market opportunities and can be used in financial product or channel design. From a policymaker perspective, the needs lens helps to inform policy or regulatory strategy to close market gaps and build positive consumer outcomes.

BOX 1: FINANCIAL NEEDS TERMINOLOGY EXPLAINED

Use case
The purpose for which people use a financial device or service. Examples for each financial need category include:

> **Transfer of value:** buying groceries, paying for transport, bill payments, receiving a salary, remittances

> **Liquidity:** not being able to meet all expenses in an income cycle (does not have any sub-use cases)

> **Resilience:** managing the financial impact of a loss of income, death in the family or a big sickness

> **Meeting goals:** putting money aside to buy an asset, start a business or save for retirement

Financial device
What one makes use of to meet a financial use case. Financial devices can be classified in terms of provision or products[7]:

> Provision dimension:
   - **Personal devices** include cash at home and liquid assets
   - **Social devices** include borrowing or assistance from friends and family
   - **Formal devices** are services provided by a registered financial institution
   - **Informal devices** are provided by unlicensed, third party providers

> Product dimension includes:
   - **Savings**
   - **Credit**
   - **Insurance**
   - **Payments**
   - **Assistance** or donations from friends or family

Formal or not?
One strength of the financial needs framework is the ability to quantify the relative contribution of the formal financial sector in serving various use cases. Such an analysis contrasts the use of formal devices, namely those provided by registered financial institutions, to all other types of devices – informal, social and personal devices, including cash.

Outcomes of use
The extent to which people are able to meet their financial needs. Are they resilient? Are they able to maintain liquidity or make progress towards or achieve their goals? Are they able to effectively transfer value as needed? Moreover, did the chosen device, or portfolio of devices, lead to the intended outcome? By analysing the outcomes of usage, we can better understand how financial inclusion affects people's ability to meet their financial needs and draw corresponding policy conclusions.

METHODOLOGY

The financial needs measurement framework was piloted in two ways:

> a full pilot study, including a specific financial needs face-to-face survey and analysis of transaction data (Mexico, Nigeria, Zimbabwe) or

> by incorporating a module on financial needs or adapting questions in an existing demand-side survey to take financial needs into account (Kenya, as well as more light-touch engagements in the Philippines, Malaysia and Sao Tome & Principe). Some financial needs questions were also incorporated in selected FinScope national financial inclusion surveys[8].

The questionnaire for each pilot was tailored to the country context and the duration of the survey that was acceptable to the in-country partner. The option implemented depended on the country context and the partner institutions in each country[9]. Each dedicated questionnaire included questions on financial needs, which devices they choose to meet those needs and, where relevant, questions around how recently it was used, and extent of the use cases experienced. This was followed by a usage module to track metrics for payments, savings, credit and insurance devices, as well as a module to ask self-reported reasons for device choices to understand the drivers of usage.

Although the same conceptual framework was used as the basis for the questions in each pilot and the same needs were covered, the questions differed from country to country and, hence, the results are not always directly comparable. Below is an overview of the methodology for each of the pilots.

MEXICO: SURVEY AND BANK DATA

Mexico was chosen as pilot country as it is a demonstration country in the global community on financial inclusion initiatives and an active member of the FIDWG. In 2011, the country hosted the Global Policy Forum for Financial Inclusion (GPF) that gave rise to the Maya Declaration. Mexico already implements a nationally representative financial inclusion survey[10] and tracks regular process on key financial indicators towards its National Policy on Financial Inclusion.

The pilot was launched in partnership with the banking regulator and financial inclusion lead, Comisión Nacional Bancaria y de Valores (CNBV). The pilot focused on customer choices within and outside the banking system, the outcomes of those device choices and the policy implications. It followed a three-pronged approach:

> A demand-side survey was administered to 1154 adults in Puebla State[11] in December 2017.

> A large retail bank provided a representative data set incorporating de-personalized account data of approximately 616,867 clients to analyse dynamic usage patterns of clients (transactions from deposit accounts, credit cards, insurance and loans over a 12 month period).

> The demand-side survey was administered to an additional 400 targeted respondents, drawn from the bank sample database, to create a linked dataset that combines demand-side and bank transaction data for the same customers[12].

This merged dataset is able to show detailed bank account usage patterns, as well as give a window into the broader financial life and needs of those respondents outside of their banking products. insight2impact designed the instrument in consultation with the CNBV and sub-contracted a Mexican research house to administer the survey and produce the dataset, based on a sound sampling frame.

NIGERIA: SURVEY AND PAYMENT SWITCH DATA

Nigeria is the most populous country in Africa. Its population of approximately 200 million accounts for 15% of the entire African population. Recognizing the role of financial inclusion in development outcomes, Nigeria has adopted a national strategy on financial inclusion, which has already shown signs of success: the financial exclusion rate has decreased from 53% in 2008 to 36.8% in 2018 (EFInA, 2018). The latest EFInA survey reflects significant changes to measure usage of bank accounts beyond access and uptake.

The Nigeria pilot commenced in mid-2018 and was implemented in collaboration with the Nigeria Interbank Settlement System (NIBSS) and the Central Bank of Nigeria, based on the transaction histories of one million NIBSS users[13]. To best leverage the NIBSS data, the pilot study placed particular emphasis on the usage of digital financial services used to meet financial needs[14]. The study clustered users based on their usage profiles and explored the factors associated with different usage patterns. The pilot was done in three-phases:

> analysis of transactional records

> implementation of a demand-side survey on a sample of 1339 adults in urban centres in Lagos state and 1058 in Kano state, plus a further 611 respondents selected from the NIBSS sample, and

> merged dataset analysis to match demand-side and transactional data for the 611 users covered in the first and second points.[15]

Further, nationally representative indicators were populated by drawing on the national financial inclusion survey, the 2018 EFInA Access to Finance survey.

ZIMBABWE: SURVEY AND CREDIT BUREAU DATA

In 2012, the Reserve Bank of Zimbabwe became the 86th member of the Alliance for Financial Inclusion to make a public pledge under the Maya Declaration. Zimbabwe was chosen as a pilot country largely due to the interest expressed by a private sector partner – a commercial credit bureau – as well as the Reserve Bank of Zimbabwe, to better understand credit repayment behaviour based on an appreciation of people's financial needs.

The focus of the Zimbabwean pilot, which was kickstarted in 2017, was to test what insights the measurement frameworks render specifically in relation to repayment behaviour in the formal credit market. A demand-side survey was conducted in five of the country's 10 provinces. The survey data was supplemented by loan repayment data from the credit bureau. Select survey participants were linked to their transaction profile from the credit bureau database using unique identifiers. The intention was to create a nuanced understanding of repayment behavior by including variables which are not available in transactional data. The sample covered 1006 respondents, of which 306 were from the credit bureau database and the remaining 700 randomly selected. Given the nuanced focus of the Zimbabwe study on credit usage behavior and determinants of credit repayment, please refer to the Zimbabwe findings report for a dedicated discussion of the findings.

KENYA: MINI-PILOT AND NATIONAL SURVEY INCORPORATION

Kenya is well known for the rapid rise of the M-Pesa mobile-money product. M-Pesa pushed formal financial inclusion in the country from about 27% to over 75% in a decade (2006-2016). This makes Kenya an interesting pilot country to explore digital financial service use cases alongside other financial needs.

insight2impact partnered with the Financial Sector Development Trust in Kenya (FSDK), the country's market facilitator for financial inclusion. The Kenya pilot started in January 2018 with the implementation of a standalone financial needs survey on 140 respondents in Nairobi to test whether the questions and structure were compatible with the national survey approach. After successful testing, the financial needs modules were integrated into the country's national financial inclusion survey (FinAccess) for 2018. As

transfer of value was already sufficiently covered by FinAccess, the changes focused on incorporating the remaining three financial needs modules: liquidity, resilience and meeting goals. The FinAccess 2018 results were released at the end of March 2019.

THE PHILIPPINES, MALAYSIA AND SAO TOME & PRINCIPE: INTEGRATING MODULES

In consultation with Bank Negara Malaysia and Bangko Sentral ng Pilipinas, respectively, a short-module was collaboratively developed on financial needs, which was then integrated into Malaysia's Financial Inclusion Demand-Side Survey and the Philippines' National Survey on Financial Inclusion. The Philippines module incorporated three needs (meeting goals, liquidity and resilience) and the fourth, transfer of value, can be inferred from the rest of the survey. Both surveys' latest waves were implemented in 2018. To date, only the Philippines survey results have been analysed for financial needs. Thus, the Malaysia results are not included in this report.

By utilizing the Financial Inclusion Questionnaire Design Tool and Demand-Side Survey Implementation Guide developed by insigth2impact, the Banco Central de São Tomé e Príncipe designed and implemented their own demand-side survey encompassing the needs-based measurement frameworks. However, the results are not included in this report.

INSIGHTS AND INDICATORS

This section showcases the insights and indicators that emerged from the pilots and the policy and market implications thereof. For each need, it provides a high-level view of the key findings and indicators on use cases, devices used towards each need and outcomes for that need (see Box 1 for an overview of core financial needs framework indicators). This is followed by insights from the pilots on what determines or drives device choice and, finally, a cross-cutting conclusion on insights rendered through the pilot studies.

The discussion draws largely on the two full pilots conducted in Mexico (Puebla state) and Nigeria (Lagos and Kano states), adding illustrative data from the other pilots as relevant. It is important to note the differences in focus between the pilots and their contexts. These differences are the result of the partner priorities, but there are also differences in methodologies and contexts. As such, the results are not directly comparable. Nevertheless, relevant insights can still be drawn across the pilots.

TRANSFER OF VALUE

USE CASES
Transfer of value use cases can be for making or receiving payments.

> Day to day living expenses main transfer of value use case.

Making payments: as would be expected, paying for day-to-day expenses is the main payment use case expressed across the study countries. In the Mexican study, 91% of the sample expressed use cases for daily expenses and 90% for regular payments such as rent, utilities and school fees. In Nigeria, the daily needs use cases were separated out for more detailed analysis on device choices (see next section). Almost all adults purchase airtime or data bundles (98% Lagos and 94% Kano), food (97% Lagos and 71% Kano), transport (93% Lagos and 75% Kano) and clothing (89% Lagos and 81% Kano). Interestingly, in Kano more respondents had a use case for hair care / visiting a salon (78%), more than for food or transport. This highlights the importance of contextualizing use cases in each country.

BOX 2: FINANCIAL NEED INDICATORS

Seven key indicators were identified from the piloting process. These cover three core dimensions: use cases, devices used towards needs and outcomes of usage. The indicators can be tailored to respond to specific policy questions or by financial service providers to better understand usage financial devices to meet liquidity needs or of specific products such as insurance or credit to meet a need.

Each of the seven indicators is listed here and then again drawn on in the analysis to follow. For a full overview of the details regarding each indicator and the rationale for its inclusion, see [indicators note]:

Use case

1. Proportion of adults who [experienced a specific use case]
   e.g. 67% of adults paid for school fees

Device portfolio[16]

2. Proportion of adults using [a specific financial device category] to meet [specific need]
   e.g. 12% of adults are using formal credit to meet a liquidity need

3. Proportion of adults using at least one formal financial device to meet their needs
   e.g. 35% of adults are using a formal financial device to transfer value

Outcomes[17]

4. Proportion of adults who use digital financial device to transfer value on a weekly, monthly or infrequent basis
   e.g. 27% adults are using digital financial services on a weekly basis

5. Proportion of adults who experienced liquidity distress in the last year
   e.g. 43% of adults experienced liquidity distress in the last year

6. Proportion of adults who experienced a shock in the last year and have not yet recovered
   e.g. 17% of adults experienced a shock in the last year and have not yet recovered

7. Proportion of adults who are using a formal savings device towards meeting a goal
   e.g. 21% of adults are using a savings account (bank, mobile wallet etc) to meet a goal

Receiving payments: the largest use cases were receiving payments from a wage or salary and payment for goods or services. In Mexico's Puebla province, these represented 37% and 23% respectively. In Lagos and Kano, over half of all income receipts were from the respondent's "own business". Government support payments also featured in Puebla (21%) as well as remittances (11% domestic and 8% international). In Nigeria, money from friends and family and formal remittances were bundled together (17% Lagos and 10% Kano).

DEVICE PORTFOLIO

> Strong cash reliance for all transfer of value use cases across countries.

Strong cash reliance. In both Mexico and Nigeria, cash was the most commonly used device for transferring value. With the exception of remittances, it was the main way in which people received payments. In Lagos and Kano, cash accounted for more than 80% of merchant income receipts, and as much as 97% for service providers in Lagos. In Puebla, of those receiving income from products and services, 91% were paid in cash and 76% of people received their salary in cash.

Payments were also made predominantly in cash. In Puebla, 94% of adults paid for daily expenses in cash and 90% paid for regular expenses such as rent and bills in cash. Results from Nigeria were similar. Survey respondents noted that over half of the merchants in their area did not accept digital payments, necessitating cash payments.

Cash preference even for the banked. Interestingly, in Puebla, those with bank accounts were almost equally as likely to use cash as those who were excluded from formal financial services, as Figure 3 illustrates.

The Puebla survey furthermore shows that, when payments or income receipts are counted as "digital", there is often still a cash link, with the most frequent usage of debit cards being ATM cash withdrawals. Similarly, a large proportion of formal remittances are made via money transfer operators where cash is deposited by the sender and again withdrawn by the recipient. This confirms that people live most of their day-to-day financial lives in cash, even if they have a bank account.
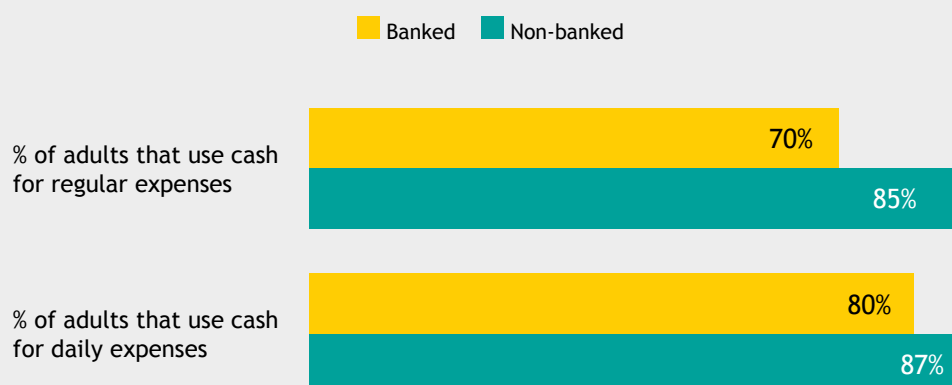
More effectively competing with cash. From a policy perspective, strengthening the enabling environment for further digitizing payment options and income receipts would provide a pathway to digitizing the overall economy. Supporting policies would need to incentivize regular payment providers as well as small and medium-sized merchants to offer digital-payment solutions for customers. In future, instant payment options may begin to mimic and compete with cash by providing the same convenience and cost. Digital app-based or USSD payment solutions are growing rapidly in Nigeria, are already prevalent in Kenya, and have been introduced or are in the pipeline in the other pilot countries.

TWO INSIGHTS ON DIGITAL PAYMENTS
A closer look at the pilot data helps to inform the question of what it takes to achieve digitization.

Although still low, usage of digital payments channels is increasing. The case of M-Pesa in Kenya is well known and thus not detailed here. The pilot study in Nigeria put a spotlight on the unique NIBSS instant payment system, NIP, that can be used via app, online or using USSD[19]. The growing usage of this instant payment is outlined next. Secondly, the data gives some insights into digital income receipts as a potential proxy indicator for digitization.

FIGURE 3: PAYMENTS IN CASH BY ADULTS WHO HAVE A BANK ACCOUNT AND THOSE WHO DO NOT[18]

Legend: Banked (yellow) — Non-banked (teal)

% of adults that use cash for regular expenses
- Banked: 70%
- Non-banked: 85%

% of adults that use cash for daily expenses
- Banked: 80%
- Non-banked: 87%

Source: Puebla Financial Needs survey (2017), Mexico pilot study

Instant payments that mimic cash are leading the way: In Nigeria, overwhelmingly, digital payments are being made using NIP as opposed to point-of-sale (POS) or ATMs. This platform was introduced in 2011 and is currently the only solution of its kind on the continent. Its impact is clearly relative to other digital channels, notably POS. While there has been a noticeable increase in the number and value of POS transactions, as well as the deployment of POS terminals, this is dwarfed by the growth in customers using NIP, as illustrated in Figure 4.

This growth highlights the importance of an instant payment solution that mimics the seamless and low-cost convenience of cash to drive digitization. While the analysis of transaction volumes and values is impressive, the analysis at a customer level demonstrates just how transformative NIP has been. Within the sample of customers analyzed as part of this project, there are roughly three times as many NIP transactions as POS transactions, but there are over 10 times as many customers who transact over NIP.

Interestingly, the median values of NIP transactions are declining. Recent customers have lower average transaction values than customers who are visible earlier on – an observation that is consistent with increased inclusion. This data shows that the NIP platform is able to serve lower-income customers – a challenge that most other platforms are struggling to overcome.

Income receipts as predictor of digital payments:
The analysis of digital payments also suggests that receiving money digitally has a strong correlation with making digital payments. Although income levels, gender and other factors help to explain the tendency to make digital payments, none were as significant as receiving income into an account.

Figure 5 shows data for Lagos, but the results were mirrored in Kano, as well as the results of the national financial inclusion survey in Nigeria[20] and in the pilot study in Mexico. The graph is read from left to right. The first row shows those who did not receive income digitally, whether those customers have an account and whether they made a digital payment (with "yes" responses in yellow). The middle row is of most interest: of those who received an income digitally (451), over half made a digital payment (290). It is clear from the diagram that the conversion rate to making digital payments is higher, proportionately, for those who receive their main income source into their accounts than for those who do not.

The intuitive conclusion from the analysis would be to argue that the digitization of government payment such as government grants or pensions (G2P), as well as salary payment digitization would be an effective digitization tool for the economy more broadly. However, the Nigerian national financial inclusion survey shows that only a minority of adults receive income from salaries or formal wages. Rather, the vast majority earn their main income either in informal trading and micro businesses, or in farming.

FIGURE 4: GROWTH IN INSTANT PAYMENT VS. POS, NIGERIA
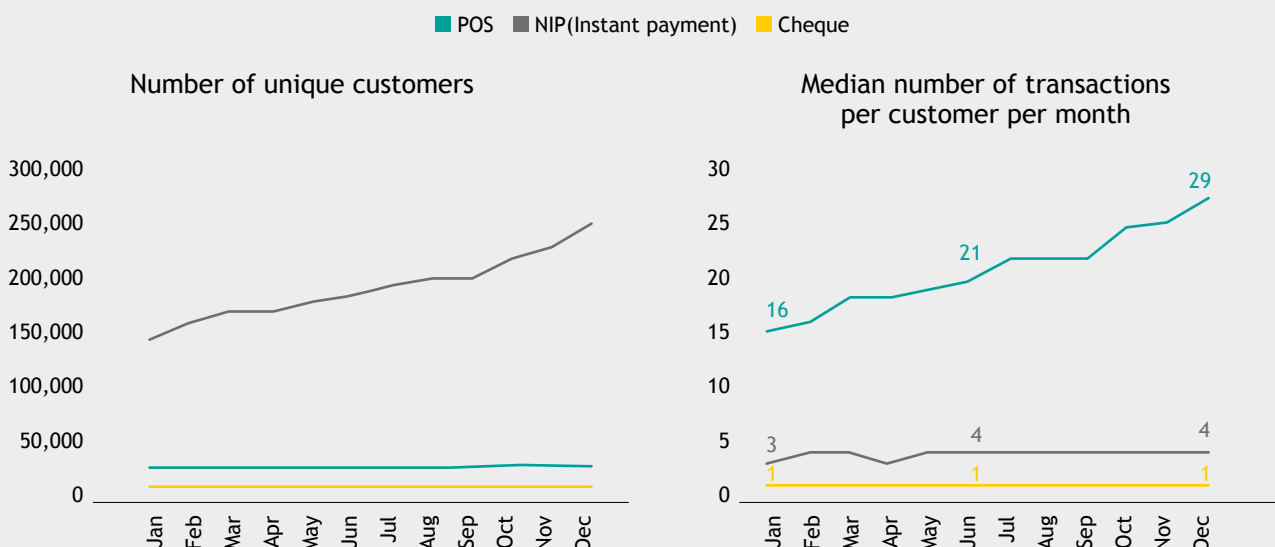
Source: NIBSS data, Nigeria pilot study

Thus, where policymakers are striving to digitize the economy in countries where the majority of the population are self-employed or work in the informal sector, creating systems to transfer value digitally (payments and receipts) for small- and medium-sized merchants to receive their income digitally could create a tipping point.
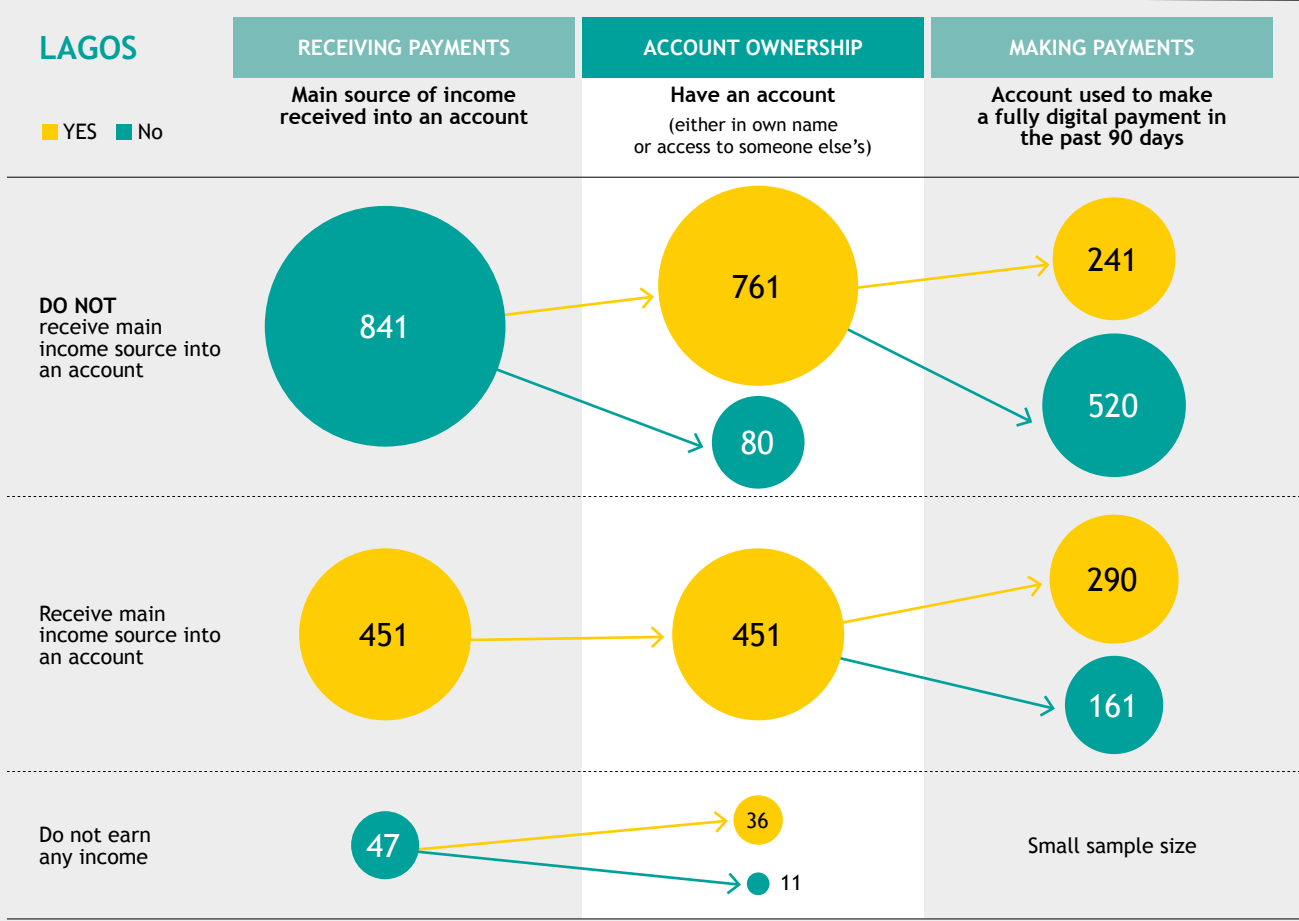
OUTCOMES

> Relatively frequent digital transactions where features mimic the convenience of cash

Measuring how frequently a population actually uses digital financial services provides a strong indication of the functionality and usefulness of the system from a customer perspective. If people are transacting frequently, this is an indication that the system is useful to consumers. Conversely, if they prefer to transact outside of the formal system, this signals that it is not meeting their needs. This indicator also tracks the growth in digitization of the economy. While digital financial usage is not the only dimension of usage, digitisation is a front-of-mind policy consideration and hence the transfer of value outcome indicator is phrased in terms of digital usage.

The Philippines survey tracks how often people transacted in their accounts over the past six months and on average[23]. The data shows that most adults in the Philippines transact no more than two to three times per month on their bank accounts, e-money accounts and with non-stock savings and loan organisations. In fact, a sizable proportion of them transact at most once a month on each of these instruments[24]. On the other hand, 22% transact weekly with cooperatives, 49% transact weekly with microfinance NGOs and 10% transact two to six times per week with microfinance NGOs. Lending investors and finance companies also see more frequent activity, with 53% of those with accounts interacting more than two to three times per month. This suggests that some types of formal products, particularly finance or credit-related institutions, consistently elicit more active engagement.

In the dedicated pilot studies, frequency of usage was gauged using transactional data, as this provides an objective indication of usage patterns[25].

FIGURE 5: DIGITAL RECEIPTS AS A PREDICTOR OF DIGITAL PAYMENTS[21]

LAGOS	RECEIVING PAYMENTS	ACCOUNT OWNERSHIP	MAKING PAYMENTS
YES / No	Main source of income received into an account	Have an account (either in own name or access to someone else's)	Account used to make a fully digital payment in the past 90 days
DO NOT receive main income source into an account	841	761 / 80	241 / 520
Receive main income source into an account	451	451	290 / 161
Do not earn any income	47	36 / 11	Small sample size

Source: Demand-side survey data for Lagos, Nigeria pilot study[22]

Usage of digital financial services is usually measured in 90-day intervals to denote active versus inactive accounts. However, the pilot studies disaggregated usage into more frequent bands of weekly, monthly, infrequent and dormant users to provide a more nuanced understanding of active usage as an outcome[26], and thus progress towards digitization for different use cases. For this measure, it was also necessary to differentiate between card usage for payments (POS or online) and card usage for ATM cash withdrawals (considered not "fully" digital as per the definition quoted above).

In Nigeria, the usage of platforms on the interbank settlement system was analysed by active month. We see that 26% of customers are active weekly users of NIP instant payment services. The majority of customers are monthly users (42%), combining those who transact 1-3 times a month (Figure 6).

In Mexico, using the bank data, transactions from credit-card and debit-card accounts were analyzed by frequency, see Figure 7. Here we see a high number of weekly debit-card users (78%), and note that almost half of all credit-card holders use their card on a monthly basis (49%) whereas weekly usage is lower. However, when the payment channel was further analyzed, it highlighted that 60% of the debit-card usage was for ATM cash withdrawals. Conversely, credit cards were predominantly used at a POS machine (87%), but usage on online platforms is starting to show significance (13%).
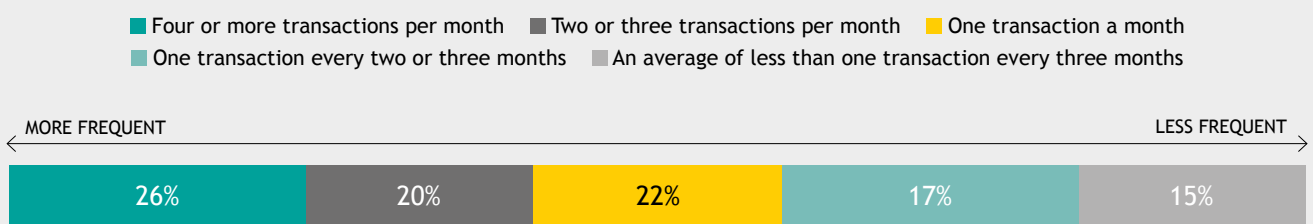
CONCLUSION: TRANSFER OF VALUE

> Tracking frequency of use of digital versus non-digital payments and receipts is an indication of the progress of digitization in the economy.
> Where digital channels can mimic cash for convenience, cost and ubiquity, digital payments are increasing.
> Receiving an income digitally is a likely predictor of making digital payments.
> For greater digitization in the economy, more merchants would need to accept digital payments. Encouraging merchant digitization requires a better understanding of underlying incentives and drivers of behaviour.

LIQUIDITY

We classify a person as expressing a liquidity need if they had experienced liquidity distress at least once over the past twelve months. Liquidity distress is defined as a person or household being unable to meet their regular expenses from their regular income and thus having to draw on other devices to meet their expenses – or else fail to meet their expenses. This can be further classified into "severe distress", which we define as two or more months of liquidity distress in the past year, and "some distress" as one month.

Measuring the incidence of liquidity distress provides policy insights on the vulnerability of the population, as the financial choices people make to balance income

FIGURE 6: PERCENTAGE OF UNIQUE CUSTOMERS IN NIBSS DATA SAMPLE CONDUCTING DIFFERENT AVERAGE NUMBER OF TRANSACTIONS PER ACTIVE MONTHS[27]

Legend: ■ Four or more transactions per month ■ Two or three transactions per month ■ One transaction a month ■ One transaction every two or three months ■ An average of less than one transaction every three months

MORE FREQUENT → ← LESS FREQUENT

| 26% | 20% | 22% | 17% | 15% |

Source: NIBSS data sample

FIGURE 7: COMPARING DEBIT- AND CREDIT-CARD USERS BY FREQUENCY OF USE

Legend: ■ Weekly ■ Monthly ■ Infrequently ■ Dormant

	Weekly	Monthly	Infrequently	Dormant
Debit card	78%	18%	1%	2%
Credit card	31%	49%	7%	14%
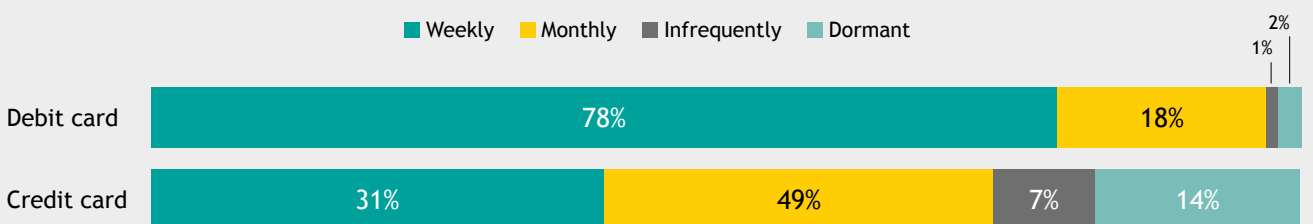
Source: Participating bank data, Mexico pilot study

and expenses can have long-lasting consequences for the attainment of other financial needs. Liquidity is only measured at the need level, there are no sub-use cases.

What devices people use when their expenses exceed their income can highlight the success or failure of the financial sector to assist with liquidity distress.

DEVICES

Social and personal devices dominate in response to liquidity distress.

We see some common patterns across the pilot studies that suggest that, in times of liquidity distress, consumers tend to turn to social devices first, as well as personal devices – rather than to formal financial services. In Mexico, of those who experienced liquidity distress, most turned to friends and family either for assistance (25%) or for a loan (19%). A fifth also used personal devices such as savings at home, taking on more work or cutting back on consumption. Formal products did feature, but for a smaller group, with 5% using credit and 1% using savings. Similarly, in Kenya, those who experienced liquidity distress mostly sought assistance or a donation from friends or family (27%), or took on additional work (13%), but 11% "did nothing".

In Zimbabwe, the largest proportion of survey respondents (42%) reported having done nothing, followed by borrowing (36%) and use of savings (15%).

OUTCOMES

High incidence of liquidity distress suggests limited current role of financial inclusion in building liquidity.

By mapping liquidity distress incidence against the device portfolio of respondents, we can leverage the pilot demand-side survey data to draw insights on the link between financial service usage and liquidity outcomes.
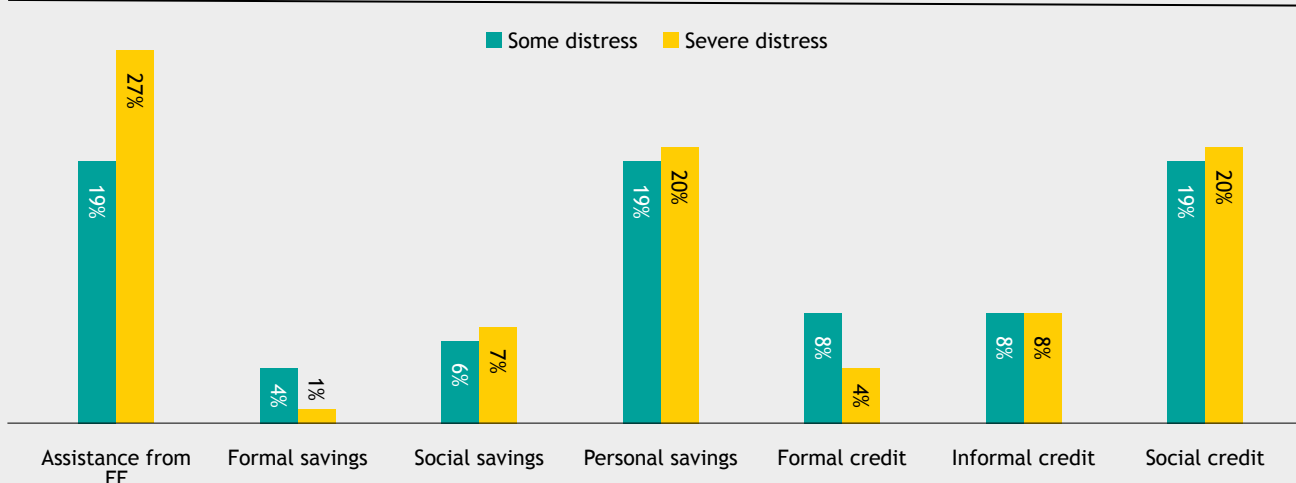
For instance: are people who use formal credit or formal savings devices less likely to experience liquidity distress than those who do not? If not, what is the message for financial inclusion policymakers and financial service providers regarding the value provided by the financial sector in ensuring liquidity?

The high proportion of consumers who have "done nothing" in Kenya and Zimbabwe is a strong indication of financial stress among consumers. This was further illustrated by the use of credit, which was very pronounced for managing day-to-day or monthly expenses, more than towards the meeting of life goals.

From the results of the Puebla survey in Mexico, we see that close to half of the population experienced severe distress in the last year and a further 14% experienced some distress. Only 39% of adults in Puebla were able to balance their income and expenses on an ongoing basis without having to rely on contingency strategies. Figure 8 shows the financial devices people used to meet their liquidity needs when they ran out of money. These results are similar to those obtained in the 2018 national financial inclusion survey (ENIF), in which 42% of the population were not able to cover their monthly expenses in the last year.

The bars in Figure 8 represent the financial devices used as coping mechanisms by people experiencing some or severe distress. The results show that when adults in Puebla run out of money they tend to turn to their friends and family for assistance. We see that

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FIGURE 8: DEVICE CHOICES FOR LIQUIDITY NEEDS[28]

Legend: ■ Some distress ■ Severe distress

Device	Some distress	Severe distress
Assistance from FF	19%	27%
Formal savings	4%	1%
Social savings	6%	7%
Personal savings	19%	20%
Formal credit	8%	4%
Informal credit	8%	8%
Social credit	19%	20%

Source: Puebla Financial Needs survey (2017), Mexico pilot study

across both categories of distress there is a strong reliance on the social network and personal devices (e.g. money at home, selling an asset or cutting back on consumption) for managing day-to-day expenses. The level of reliance on social and personal mechanisms also increases as individuals experience higher levels of liquidity distress. However, we also found that those who do not experience any liquidity distress also do not seem to have a systematic skew towards formal devices. While further analysis would be needed to establish correlations, this would seem to suggest that formal uptake does not really make a difference to liquidity outcomes.

CONCLUSION: LIQUIDITY

> The pilot studies suggest a reliance on social and personal devices to meet liquidity needs[29]

> This presents an untapped market opportunity for financial service providers, should formal services be able to provide users the ease of access to money and flexibility of terms that social mechanisms offer.

RESILIENCE

USE CASES

Unexpected shocks can result in significant expenses. In the pilot study demand-side surveys, individuals were asked whether they had experienced a financial shock in the last year and, if so, what it was. In Puebla, 53% of the population reported experiencing a financial shock. The most commonly mentioned use cases were health problems/sickness (27%), natural disaster (16%) and loss of income (14%). In Nigeria and Kenya, major sickness (41% and 22% respectively) and the death of a family member (24% and 11% respectively)

featured highest, though in Kenya the loss or damage of business/livestock or crops (10%) was also an important use case. Death of a close family member (56%) and a big sickness or health problem with financial implications (44%) were also by far the largest use cases reported in the Zimbabwe demand-side survey. Again, although there were commonalities, allowing for contextualization reveals important aspects. For example, the survey in Puebla was conducted three months after a major earthquake.
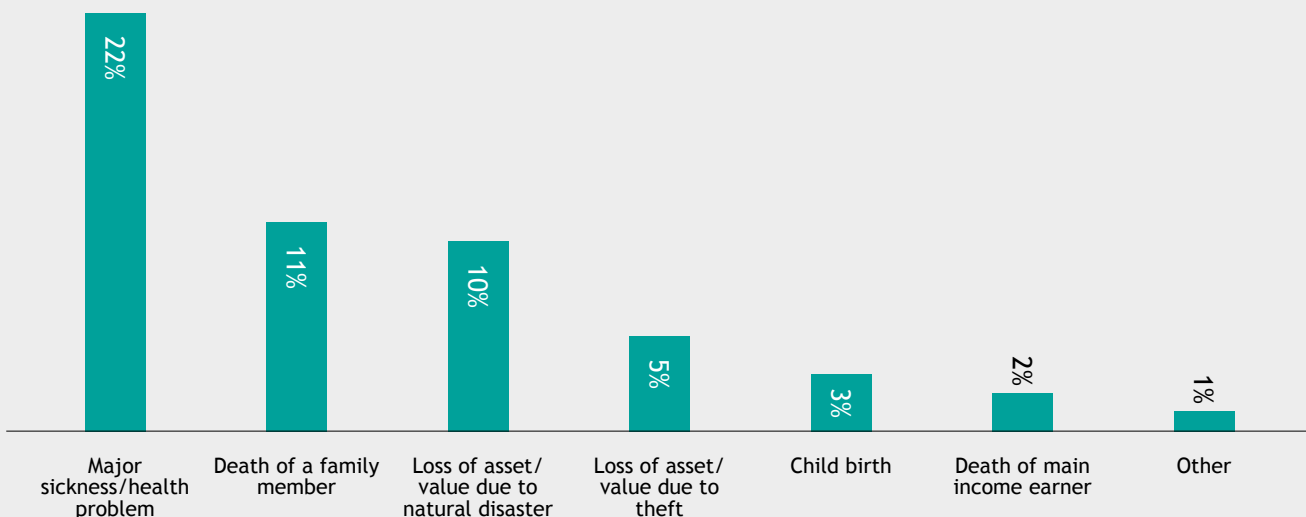
DEVICES

Limited use of insurance as resilience device.

As with liquidity needs, when customers face a financial shock, the pilot findings suggest that they tend to turn to social and personal devices to meet their need. Personal devices include cash reserves, liquid assets or cutting back on expenses, whereas the two main social devices used are turning to friends or family for assistance (a donation) or a loan. Very little use of insurance was noted in the pilots and formal credit use was low. People often make use of multiple devices to meet needs, so multiple mentions were allowed in the survey (results do not add up to 100%).

In Kenya, almost half turned to friends and family for assistance (48%) and just over a quarter used their own savings (26%). In Lagos and Kano, however, personal devices were relied on, with 33% using savings/money set aside and 27% using cash at home. Borrowing from friends and family was lower, at 16%, and use of insurance and formal credit were both a mere 1%. In Puebla, a third of adults turned to their social network for credit, while a similar proportion (30%) relied on

FIGURE 9: PERCENTAGE OF ADULTS INDICATING DIFFERENT RESILIENCE USE CASES, KENYA

| | 22% | 11% | 10% | 5% | 3% | 2% | 1% |
| Major sickness/health problem | Death of a family member | Loss of asset/value due to natural disaster | Loss of asset/value due to theft | Child birth | Death of main income earner | Other |

Source: Kenya FinAccess survey, 2018

assistance. Self-reliance also features strongly with 32% using their own savings or other means, such as selling an asset or cutting back on expense. The formal sector plays a small role in addressing resilience needs: almost no-one used insurance[30], and only 10% turned to formal credit providers. These findings are mirrored in the Philippines where friends and family are the dominant mechanism used to address a financial shock.

The only anomaly is Zimbabwe, where the survey findings suggest that drawing on one's own savings and income are the main ways of coping with shocks. Due to a strong funeral insurance culture, this is also the only pilot study that reported significant levels of drawing on insurance in response to a resilience use case (16% of respondents).

OUTCOMES

> High vulnerability to shocks.

Social devices may be preferred for their flexibility, ease of access and the underlying relationships on which they are based, but the pilot results suggest that they are not necessarily strengthening financial resilience and stability – many people remain vulnerable despite reliance on social devices. Likewise, personal devices may be welfare-reducing, such as when an asset has to be sold or hard-won savings drawn down to respond to a shock, thereby compromising the meeting of a goal.

In Figure 10, from Puebla, we see that by far the largest proportion (63%) of adults who experienced a shock more than three months ago but within the last year, have not yet recovered. Together with those that

took more than three months to recover, this represents 80% of the sample in Puebla[31].

This points to high levels of vulnerability despite reliance on social and personal devices. However, the results suggest that vulnerability also remains high for those who do use formal devices toward resilience use cases. This creates a policy imperative to ensure that the financial sector works to build people's resilience. A complementary relationship between the formal and informal sector could deliver better outcomes and reduce the time it takes to recover from a financial shock. Could the formal financial sector improve the design of its offerings to be more attractive and valuable to consumers?

CONCLUSION: RESILIENCE

> A reliance on social and personal devices to address resilience needs is not necessarily leading to positive resilience outcomes.

> The findings highlight an untapped opportunity for formal financial services to play a larger role in providing valuable products with tangible benefits that help people address their resilience needs.

FIGURE 10: PROPORTION OF PEOPLE WHO EXPERIENCED A SHOCK MORE THAN THREE MONTHS AGO, BY RECOVERY STATUS[32]

■ Have not recovered   ■ Took longer than 3 months to recover   ■ recovered within 3 months

% of those who experienced a risk >3 months ago:

63%	17%	20%

Source: Puebla Financial Needs survey (2017), Mexico pilot study

MEETING GOALS

USE CASES

Most adults are working towards achieving a life or business goal of some kind, or have achieved one, whether it is to buy their own home or save for old age. This goal can be met through formal or informal financial services, assistance from friends or family, social or personal devices" – it is listing the range of financial devices people use to meet a goal. The pilot studies probed what goals people are pursuing or have met, and what devices or strategies they are applying to achieve those goals. Multiple responses were allowed, thus the results do not add up to 100%.

Though use case prevalence is highly context-dependent, education featured in the top three use cases across the pilot surveys in Kenya, Mexico and Nigeria. In Mexico, buying land or a house and paying off debts were also high. Saving to start a business was an important use case in Nigeria and Kenya, expressed by 44% and 29% of respondents respectively. Interestingly, in Nigeria saving for a family celebration (35%) was more important than land or buying a house to live in (22%).

In the Zimbabwe pilot, household goods/appliances were emphasized as goals, alongside buying a house or property (illustrated in Figure 11).
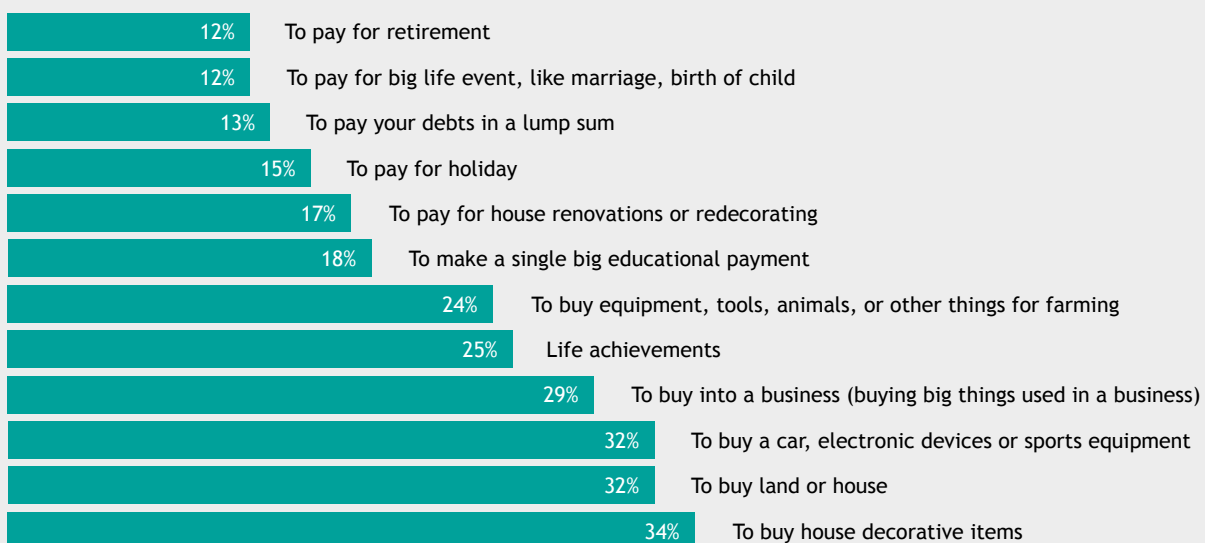
DEVICES

> Savings devices most popular to meet goals.

The Kenya study rendered interesting findings regarding devices used towards meeting a goal. A third of adults sought additional income by working more or getting another job and 13% are using formal savings at a bank or post bank. In total, 42% of Kenyan adults use some sort of saving (formal or other) towards meeting a goal; this includes 11% using savings stored with a digital bank or mobile-money account. This shows savings to be the most relied upon device for meeting goals. This tendency towards saving is confirmed in the Zimbabwe pilot survey, where almost half of respondents indicated that they pursue their goals through some savings device (46%). Borrowing played a comparatively minor role towards the meeting of goals (8% of respondents). In Puebla, personal savings was also the preferred device to meet a goal (35%). However, social networks also play a role, with 15% of people seeking assistance from family and friends, 14% using money saved within their network and 10% borrowing from their social circles.

Interestingly, in the Philippines, when it comes to meeting a business-related goal the main source of borrowing was microfinance, just ahead of friends and family. This highlights an opportunity for promoting financial products that mimic the qualities of informal mechanisms, with microfinance, microinsurance and basic deposit accounts.

FIGURE 11: PERCENTAGE OF SURVEYED ADULTS EXPRESSING DIFFERENT GOAL USE CASES

Percentage	Use case
12%	To pay for retirement
12%	To pay for big life event, like marriage, birth of child
13%	To pay your debts in a lump sum
15%	To pay for holiday
17%	To pay for house renovations or redecorating
18%	To make a single big educational payment
24%	To buy equipment, tools, animals, or other things for farming
25%	Life achievements
29%	To buy into a business (buying big things used in a business)
32%	To buy a car, electronic devices or sports equipment
32%	To buy land or house
34%	To buy house decorative items

Source: Zimbabwe financial needs survey (2017), Zimbabwe pilot study

OUTCOMES

Larger role for formal sector than for other needs.

The formal sector plays a larger role in meeting goals than for the other financial needs. In the Mexico study, 6% of adults are using a formal savings device towards meeting a goal. In Kenya, by aggregating formal savings and loans, including mobile banking and microfinance, a third of adults use a formal financial device towards meeting a goal.

Understanding consumer preferences for using savings, in whatever form, over credit – and what that means for the outcome of meeting a goal – would require further research. Is the tendency to save rather than borrow for goals due to the perceived or actual experience of not being able to access formal credit at sufficient scale, or due to a genuine preference for savings? Are those who draw on certain types or savings or credit for certain types of loans likely to reach their goals faster than others? How do these findings compare across other countries?

CONCLUSION: MEETING GOALS

> Meeting goals is the need where the formal sector, particularly savings, currently plays the strongest role.

> The findings highlight an opportunity for targeted formal products to help people attain their goal, for example, savings products earmarked for housing or specifically for education, or credit and savings products for starting or investing in a business. Leveraging digital or mobile products to meet these needs could offer greater value and convenience to consumers.

DRIVERS OF USAGE

Understanding why people use certain financial devices is key to developing formal financial services that align with people's needs.

Supply-side data highlights demographic and socioeconomic drivers. Usage determinants can be modelled statistically using transaction data. Appendix 1 provides case studies on the usage modelling and clustering exercises conducted on the Mexico and Nigeria data, respectively. In the Mexican pilot, for example, the bank data suggested that income is by far the biggest driver of usage, followed by other demographics such as education.

Demand-side data indicate underlying preferences and perceptions. Transactional data shows only part of the picture. There may be a number of other reasons for device-choice that are not picked up in transactional data and that may be best tracked through demand-side data. The Puebla demand-side survey found that people tend to use formal devices such as a credit card, bank loan or insurance for functional reasons (gauged in terms of the value provided, costs incurred or convenience of using the service), whereas those with informal, social devices such as borrowing from family and friends or group savings choose such services for the relational benefits that they offer (trust and a sense of belonging). When survey respondents were asked what factors were most important in determining their choice of financial devices, relational factors (trust and a sense of belonging) were found to be more important than fees and benefits.

When the same exercise was repeated for specific population sub-groups, it was found that all socioeconomic classes skew towards relational benefits, except for the wealthiest class, which emphasized functional benefits. Interestingly, the reasons for use did not differ significantly between those who are banked and those who are unbanked: for both groups, considerations that the financial service should be trustworthy and make you feel comfortable trump functional considerations such as being cost-effective or convenient.

The Zimbabwe pilot survey highlighted the role of country context and societal norms/culture in determining device choice. Funeral parlours were most likely to be trusted, given the prevailing funeral culture, and the ubiquity of mobile money in a hyperinflationary, cash-constrained environment, meant that mobile-money operators also enjoy high trust. Females placed greater importance and trust in relationship-based financial service providers than males.

Blending supply- and demand-side data for policy insights. Tracking the relative importance of different types of usage drivers – across transactional as well as demand-side data sources – can provide policymakers with insights on how to improve trust in formal services or the sense of belonging that people experience when dealing with formal service providers. Alternatively, depending on the local context and priorities, it can indicate the need to leverage and strengthen community-based service provision. This, in turn, can allow policymakers and regulators to identify which aspects of the formal financial service offering to adjust to attract and sustain more consumers.

CONCLUSION

This report has illustrated that the Financial Needs measurement framework can be used to provide a granular view on use cases and devices to inform specific market strategies and measure the success of financial inclusion beyond uptake.

FORMAL SECTOR NOT MEETING NEEDS.

Across financial needs, the pilot study results suggest that the formal sector is not the first port of call for serving financial use cases. Rather, informal financial devices and cash are preferred by customers, even if they already have formal financial services. This puts the substantial progress in financial inclusion in recent years in perspective and is a call to action for policymakers, regulators and market players alike: what can be done to ensure that financial inclusion generates positive outcomes by helping people to meet their underlying financial needs?

HOW NEEDS ARE MET MATTER FOR PUBLIC POLICY OUTCOMES

The outcomes analysis has shown that understanding use cases and how they are met matters from a policy perspective. If the formal sector can play a bigger role in meeting financial needs, the upside in terms of consumer welfare outcomes could be substantial. Moreover, for financial service providers, crowding in the extensive resources currently dedicated to informal, social and personal devices presents a large untapped market opportunity.

UNDERSTANDING USAGE DRIVERS IN CONTEXT TO DETERMINE WHAT IT WILL TAKE

Some of the preference for informal, social and personal devices may be related to access (thus, access, as well as uptake continue to be important metrics to track). Income levels and other demographic and socioeconomic factors are also likely to remain key drivers of usage behaviour. However, the pilot findings suggest that in assessing how the formal sector could compete with alternative devices, it is also important to take into account the context and social norms, as well as the relational and trust benefits that social and personal devices offer. Can formal financial products mimic some of the aspects of cash such as convenience? Can they be instant, low-cost and ubiquitous? Can formal products be more fungible to allow customers to move their money around easily to meet different use cases? What is the role of financial inclusion policy and regulation to achieve such outcomes?

The findings suggest specific insights and imperatives to unlock policy outcomes and market potential for each need:

> **Transfer of value:** competing with cash. In the quest for digitization, more is needed to understand the sticky preference for cash. The findings suggest that formal payment options need to effectively mimic cash – they need to be seamless, quick, convenient and ubiquitous – to become a daily reality in people's financial lives. Particular attention may be warranted to understand how the majority of the population earn their income, as a potential pathway to digitization of transactions.

> **Liquidity:** ease of access and flexibility. Liquidity constraints are a frequent reality for many – as the pilot studies consistently illustrate. How can formal financial services provide users with a trusted, flexible way to manage such shortfalls?

> **Resilience:** use case-earmarked offerings: The general level of vulnerability, regardless of device choice, witnessed among respondents in the pilot studies suggests that socioeconomic circumstances may be the biggest driver of resilience. This reinforces the policy imperative to better leverage the market mechanism to build resilience. The limited role, by and large, of insurance as a resilience device raises questions regarding the value and appropriateness of formal options for meeting specific resilience use cases. Social networks remain a key mechanism for resilience.

> **Meeting goals:** formal sector making inroads. The pilot study findings suggest that meeting goals is the one need that people tend to prioritize applying their formal financial services towards, especially savings. Further research is needed to understand the linkage between different types of formal devices and the ability to meet different goals within a specific context.

GLOSSARY

AFI	Alliance for Financial Inclusion
ATM	Automated Teller Machines
CENFRI	Centre for Financial Regulation and Inclusion
CFSI	Center for Financial Services Innovation
CNBV	Comisión Nacional Bancaria y de Valores Mexico
EFInA	Enhancing Financial Innovation and Access Nigeria
ENIF	National Financial Inclusion Survey Mexico
FIDWG	AFI Financial Inclusion Data Working Group
FinAccess	Kenya National Financial Inclusion Survey
FinNeeds	Measurement framework based on consumers' financial needs
FSDK	Financial Sector Development Trust Kenya
FSD Kenya	Financial Sector Development Kenya
G2P	Government grants or pensions to persons
GPF	AFI Global Policy Forum for Financial Inclusion
i2i	Insights2Impact
INEGI	National Institute of Statistics Mexico
NIBSS	Nigeria Interbank Settlement System
NIP	NIBSS Instant Payments – Nigeria
NGO	Non-Governmental Organizations
POS	Point of Sale
USSD	Unstructured Supplementary Service Data

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APPENDIX I:
BLENDING SUPPLY- AND DEMAND-SIDE DATA TO BETTER UNDERSTAND USAGE

This appendix showcases findings from two of the AFI member institution / country pilot studies where transactional data obtained from a bank (in the case of Mexico) and a payments switch (in the case of Nigeria) was used to better understand patterns and drivers of usage. Such data was merged with demand-side survey data to generate insights on usage behaviour in the context of users' broader financial lives.

MEXICO CASE STUDY

WHAT DRIVES HIGHER USAGE?

To determine what drives usage, statistical modelling[33] approaches were applied to determine a usage intensity score[34], which combined how recently a client had transacted, how frequently, the average monetary value of the transaction and for how long they had been a client. Usage intensity was then modelled against demographic variables in the dataset to determine statistically significant determinants of higher usage. This revealed that:

> Income is the most important driver of usage, by a factor of several times the other determinants.

> Education is strongly associated with higher usage.

> Being in a relationship is also associated with higher usage, though less so than education and much less so than income.

> Gender and age have small but statistically significant effects.

However, this analysis does not provide a complete picture, as it only reveals the usage of formal financial services, and here only credit-card and debit-card usage. It also cannot draw on determinants other than the demographics included in the dataset to explain usage. For example, when asked about their reasons for device choice, the Puebla demand-side survey respondents indicated that trust, a sense of belonging and convenience all play into these choices – a finding that held true across most socioeconomic classes. The transaction database usage model cannot account for such variables.

FIGURE 12: CUSTOMER SEGMENTS[37]

K-means clustering method on debit card transaction database renders 6 statistically different clusters of users:

With the exception of the digital elite, all transact more using ATM than POS
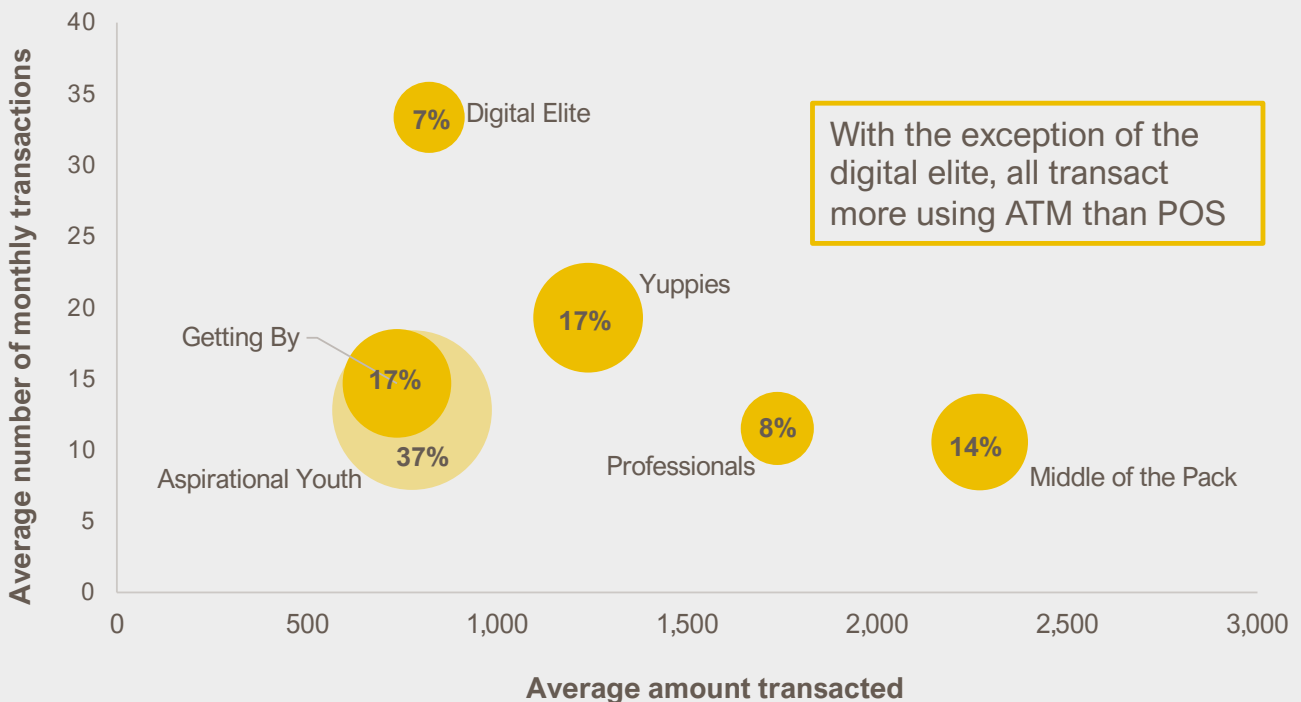
Source: Mexico bank transactional data

Transactional data moreover cannot elaborate how usage interplays with people's underlying financial use cases. Adding an understanding of the consumer perspective on device choices in response to financial needs reveals new insights on usage patterns and why customers choose certain device mixes.

In the following section, we use transactional data to create clusters based on usage patterns and demographics. Then, linking the demand-side survey data for the same customers, we develop customer usage profiles and compare formal versus other device uptake towards underlying financial needs.

USING TRANSACTIONAL DATA TO CREATE USAGE SEGMENTS[35]

Creating usage profiles reveals insights into customer behaviour and the size of those customer groupings. By separating out the clusters, we can see the differences and identify ways to deliver better value to customers.

Using statistical clustering techniques[36] applied to the debit-card transaction database, we were able to identify customers who have similar usage profiles. Based on the average value of a client's transactions and the number of monthly transactions, we identified six statistically distinct segments. Each segment was assigned a pseudonym to describe their characteristics.
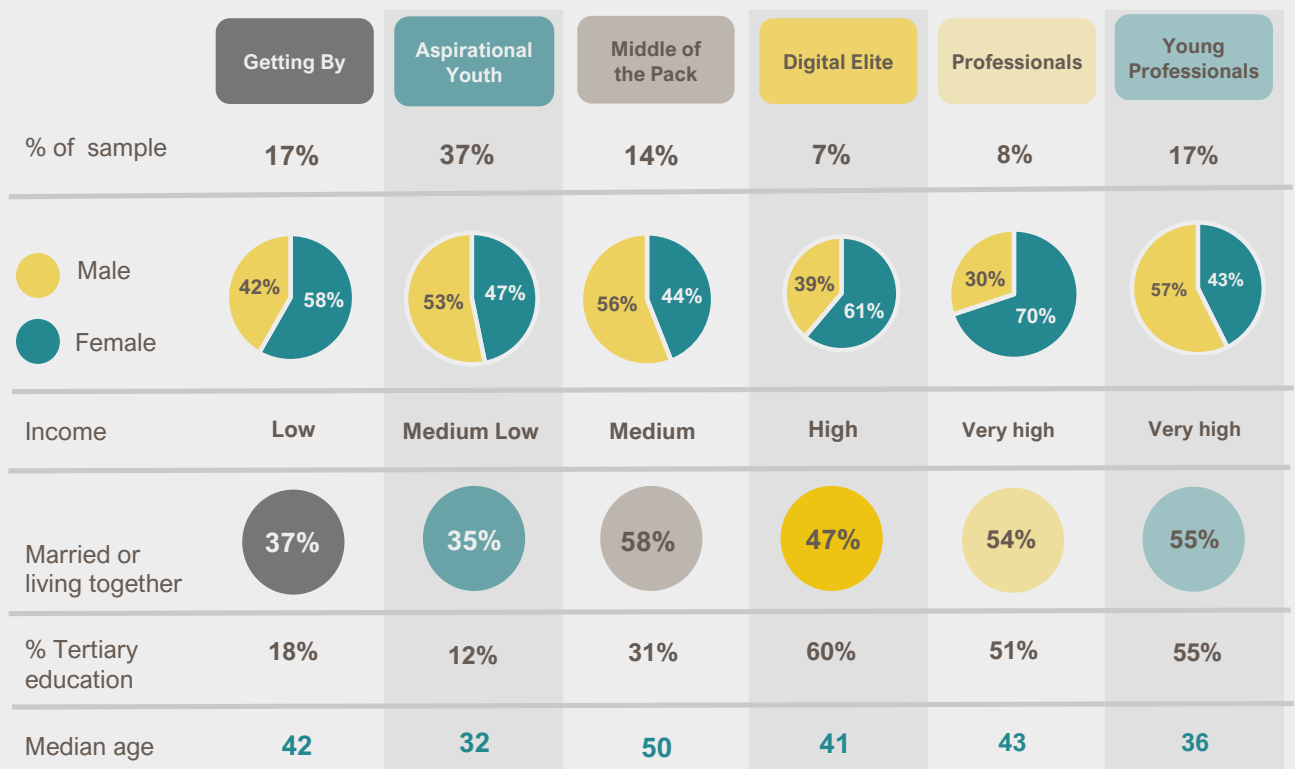
These segments are laid out in Figure 12. The higher up the bubbles, the more frequently the group transacts. Each segment transacts relatively frequently, ranging from 11 to 33 transactions per month. The bubbles to the right transact with higher values than those to the left.

The largest cluster of clients is the Aspirational Youth. These are typically young, lower-value and lower-frequency transactors. A large proportion of clients are grouped into the relatively high-frequency transactor segments of Young Professionals or the high-value transaction Middle of the Pack. All customer segments, with the exception of the small Digital Elite, transact predominantly using ATMs rather than POS or online sales.

Figure 13 provides a more detailed profile of each group, including their income, marital status and education, which the regression analysis indicated to be the biggest drivers of usage.

The Getting By group, along with Aspirational Youth, was the lowest-usage group. It also has the lowest income and level of education and is largely female. The Middle of the Pack transact in high amounts, but this may represent large ATM withdrawals to meet their needs and those of their families, given their higher median age and likelihood of being married.

FIGURE 13: CUSTOMER SEGMENT PROFILES[38]

	Getting By	Aspirational Youth	Middle of the Pack	Digital Elite	Professionals	Young Professionals
% of sample	17%	37%	14%	7%	8%	17%
Male / Female	42% / 58%	53% / 47%	56% / 44%	39% / 61%	30% / 70%	57% / 43%
Income	Low	Medium Low	Medium	High	Very high	Very high
Married or living together	37%	35%	58%	47%	54%	55%
% Tertiary education	18%	12%	31%	60%	51%	55%
Median age	42	32	50	41	43	36

Source: Mexico bank transactional data

Interestingly, both the Digital Elite and the Professionals are predominantly women in their early 40s, with good levels of education and high income. Young professionals, who transact more frequently than the Professionals cluster, have a lower median age and are more likely to be male. Although the Digital Elite transact in smaller amounts, their average number of transactions is significantly higher than others, suggesting that they may be more likely to use their cards for smaller day-to-day payments.

NEW INSIGHTS FROM COMBINING THE TRANSACTIONAL AND DEMAND-SIDE DATA

The bank data shows customers with reasonably high levels of usage of formal financial services: all six clusters transact relatively frequently on their bank accounts, with significant average values, depending on income levels. However, adding demand-side data for the same customers reveals that formal accounts are only part of the picture. It shows that across all clusters, customers meet their needs largely outside of the formal financial services sector. Only for the Digital Elite did a larger proportion report using formal financial services than informal devices to meet all their needs.

Note that the challenges with linking bank customers in the sample database with demand-side surveys, as outlined in Section 3.1 resulted in a small sample size for the merged survey and transactional database. Thus, the findings here are indicative of patterns and trends in how bank customers transact both formally and informally, but they are not representative.

Drawing on the merged dataset, three of the six profiles are outlined in Figures 14, 15 and 16. The profiles combine the transaction data insights (left) and the demand-side survey data (table on the right), which reveals the percentage of the cluster reporting formal versus informal[39] device uptake towards each need. It is important to note in the profiles that most customers use both digital and cash to meet needs, hence the percentages indicated add up to more than 100%.

Aspirational Youth is the largest cluster, and customers in this cluster make the fewest transactions per month. Although their ATM usage is high, their use of POS is higher than some higher-income clusters, such as the Young Professionals. Adding the demand-side data shows us that, in meeting their needs, Aspirational Youth use a mix of formal and informal devices. Although 57% make some payments using digital means, they almost all use cash as well. The choice of informal devices dominates for liquidity, resilience and meeting goals.

Young Professionals have a higher income and a corresponding higher monthly spend, but they make fewer POS transactions than the Aspirational Youth. Although 74% report making digital payments, cash is used as well by almost all. The majority of customers

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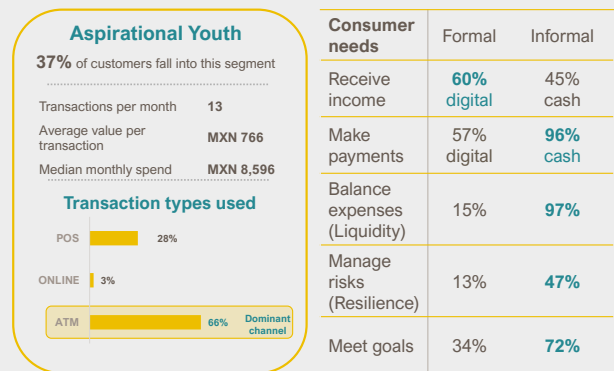FIGURE 14: ASPIRATIONAL YOUTH PROFILE[40]

Aspirational Youth

37% of customers fall into this segment

Transactions per month	13
Average value per transaction	MXN 766
Median monthly spend	MXN 8,596

Transaction types used

POS — 28%
ONLINE — 3%
ATM — 66% **Dominant channel**

Consumer needs	Formal	Informal
Receive income	**60%** digital	45% cash
Make payments	57% digital	**96%** cash
Balance expenses (Liquidity)	15%	**97%**
Manage risks (Resilience)	13%	**47%**
Meet goals	34%	**72%**

FIGURE 15: YOUNG PROFESSIONALS[41]

Young professionals

17% of customers fall into this segment

Transactions per month	19
Average value per transaction	MXN 1,162
Median monthly spend	MXN 19,250

Transaction types used

POS — 17%
ONLINE — 1%
ATM — 68% **Dominant channel**

Consumer needs	Formal	Informal
Receive income	**71%** digital	49% cash
Make payments	74% digital	**91%** cash
Balance expenses (Liquidity)	30%	**87%**
Manage risks (Resilience)	22%	**31%**
Meet goals	**54%**	46%

FIGURE 16: DIGITAL ELITE[42]

Digital Elite

7% of customers fall into this segment

Transactions per month	33
Average value per transaction	MXN 821
Median monthly spend	MXN 23,427

Transaction types used

POS — 50% **Dominant channel**
ONLINE — 9%
ATM — 38%

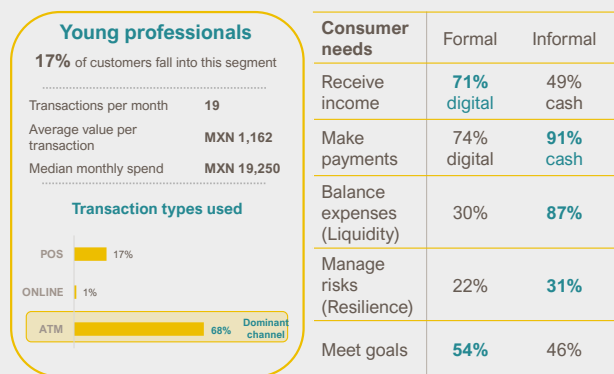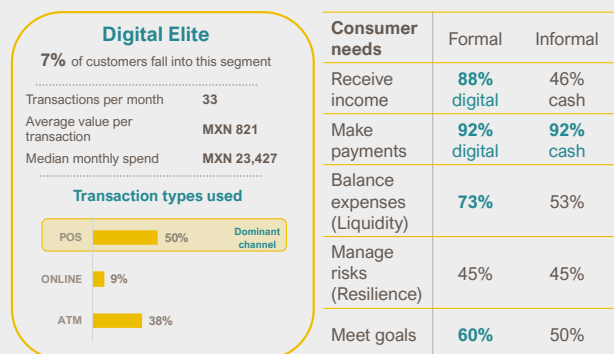| Consumer needs	Formal	Informal
Receive income	**88%** digital	46% cash
Make payments	**92%** digital	**92%** cash
Balance expenses (Liquidity)	**73%**	53%
Manage risks (Resilience)	45%	45%
Meet goals	**60%**	50%

Source: Merged dataset (debit-card transactional data overlaid with demand-side survey responses for the same respondents)

use informal means to meet liquidity needs, but interestingly a higher number of customers use formal (as opposed to informal) means to meet goals.

The Digital Elite is a small group that has the highest frequency of transactions, often in smaller average amounts. This is the only cluster that uses POS as a dominant channel (rather than ATMs) and that uses formal devices more than, or as much as, informal devices, towards each need. Interestingly, cash, or cash as well as digital, is still used by 91%. As with the broader findings from the demand-side survey on how people meet use cases to transfer value, cash continues to be a dominant mode of payment, albeit alongside digital modes here.

NIGERIA CASE STUDY

USING TRANSACTIONAL DATA TO CREATE USAGE SEGMENTS

Transactional data was used to segment NIBSS customers along two primary dimensions; volume and value of transactions across all platforms. The segmentation clearly identifies a large segment of users who transact infrequently. While this is of course a partial picture that misses many intrabank transactions – notably airtime purchases – it does reflect the very limited usage of digital payments across use cases as per the demand-side survey.

BLENDING TRANSACTION AND SURVEY DATA TO UNDERSTAND USAGE PATTERNS IN CONTEXT

As noted, the NIBSS data provides limited demographic data. In order to understand the customer more holistically, and to generate a more complete understanding of their interaction with digital payments, a demand-side survey was conducted with 661 respondents that could be linked to the NIBSS. Thus, both transaction data and survey data were available for these respondents.

FIGURE 17: USAGE CLUSTERS IN THE NIGERIAN PAYMENT SWITCH DATA
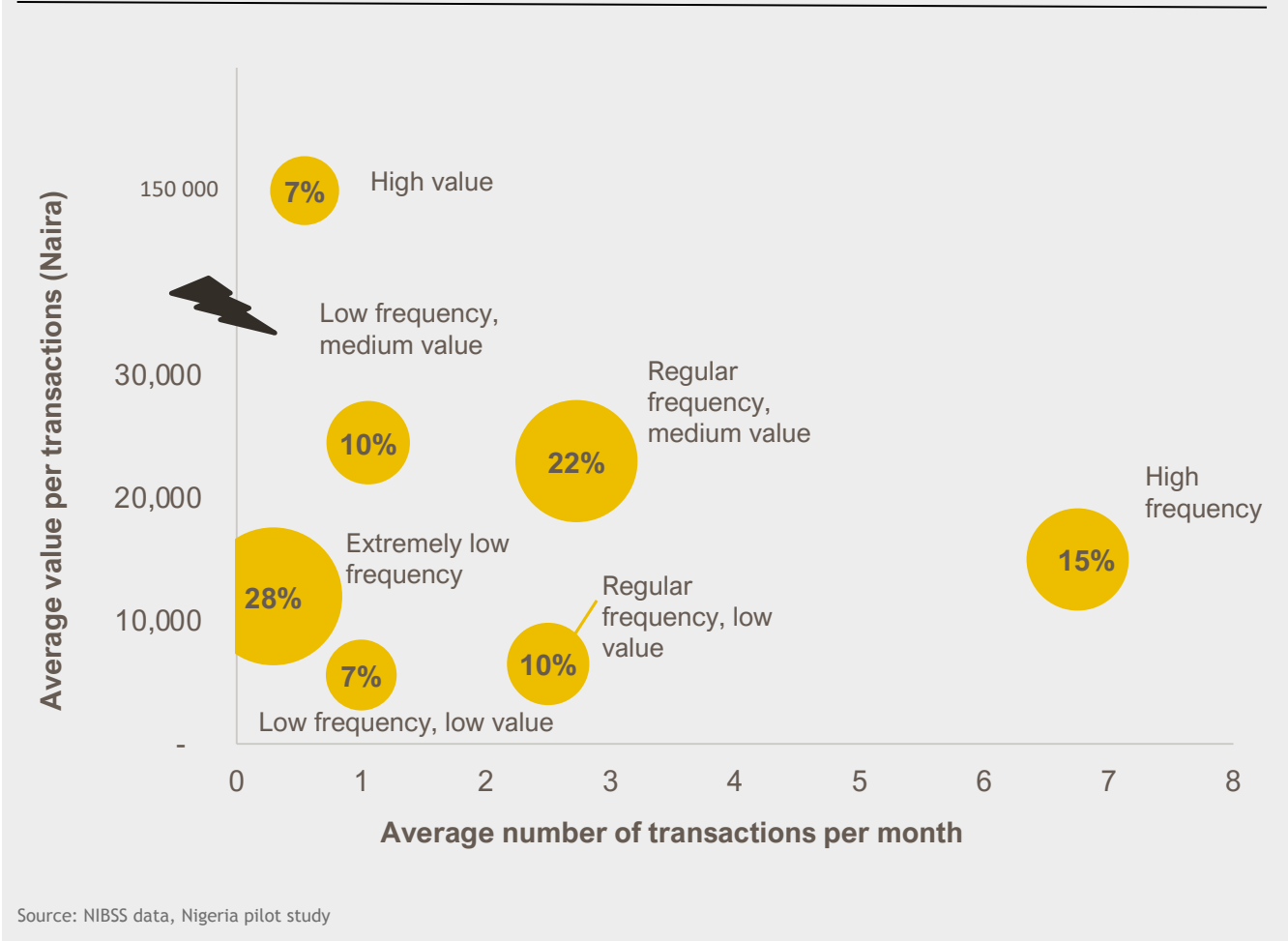
Source: NIBSS data, Nigeria pilot study

While one of the original objectives of this research was to compare usage data recalled by survey respondents with actual transactions, this comparison did not yield conclusive findings. Nevertheless, the matched sample is a useful addition, helping to reveal customer personas for each segment and explore their experiences of, and attitudes to, the transaction platforms and channels that NIBSS enables. This is in itself a valuable exercise to showcase how data sources can be combined to generate a more customer-centric lens for financial service providers. Figure 18 is one example of the personas developed for one of NIBSS's high frequency transactors, to put the usage patterns observed in the NIBSS data in perspective.

FIGURE 18: USAGE PATTERNS AND USER PROFILE FOR HIGH FREQUENCY TRANSACTORS IN THE NIGERIA PILOT STUDY

15% of customers fall into this segment

# Transactions per month	**6.8**
Avrg value per transaction	**N 15,000**
Median monthly spend	**N 130,000**

 # transaction types used

One	**79%**
Two	**19%**
Three	**1%**
Four plus	**0%**

Transaction types used

NIP	**77%**
POS	**31%**
Cheque	**10%**
NEFT	**3%**
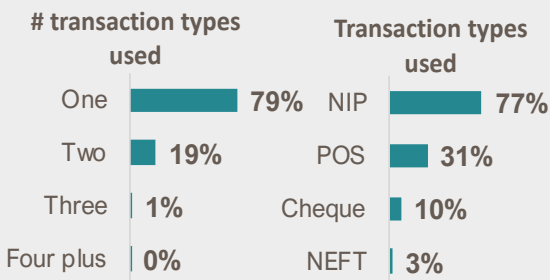
Dominant NIP channel: **Mobile/ internet**

30%
70%
■ Female
■ Male
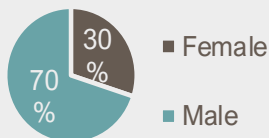
Average age
37

- 1/3 are formally employed with a monthly salary
- 37% are business owners
- Transactions are for: airtime, clothing, fuel and food
- Use NIP to pay business suppliers and employees

Profile: Mrs Damilola

49 years old, married, financially comfortable and lives in Lagos.

University educated and currently receives income from her own business, paid in cash and deposits into her bank account.

She uses her phone app to make instant transfers for airtime and utility bills, as well as larger payments for rent, her children's education, and sending money transfers to family members living in other areas.

She usually carries cash with her because she prefers to hold some cash and finds that non-cash methods of payment don't always work.

Source: NIBSS and demand-side survey data, Nigeria pilot study

APPENDIX II: KEY INDICATORS FOR MEASURING FINANCIAL NEEDS

BACKGROUND AND PURPOSE

Much progress has been made towards measuring the successes of financial inclusion. AFI's 2013 Core Set of Financial Inclusion Indicators played a key role in facilitating better standardization for measuring access and usage of financial services. This indicator note adds to the body of knowledge on financial inclusion measurement by taking a customer-centric approach and focusing specifically on how consumers meet their financial needs and what the outcome of this usage is.

The key Financial Needs Indicators can provide relevant data for policymakers and financial service providers to track the usage of financial services beyond traditional metrics, to gain a deeper understanding of how consumers are using formal financial products to meet their needs and to identify market gaps and opportunities. New insights can be generated on the progress towards impact in financial inclusion from a customer-centric perspective: how are formal financial services meeting consumers' needs and what does that tell us about the effect formal inclusion is having on people's financial lives[43]?

This note provides a set of seven indicators on financial needs from a customer-centric perspective. It is part of a comprehensive online toolkit[44] for guiding policymakers and practitioners through the measurement process.

SCOPE AND INDICATOR SELECTION

The key indicators for measuring financial needs were developed by insight2impact[45] in collaboration with the Financial Inclusion Data Working Group (FIDWG). The pilot study tested several emerging indicators from the Financial Needs Measurement Framework in Kenya, Mexico, Nigeria, Philippines and Zimbabwe.

A limited set of seven quantitative indicators were selected from the pilot study results, using the AFI FIDWG criteria of usefulness and relevance, pragmatism, consistency, flexibility, balance and aspiration[46]. These indicators capture evidence of how people use financial services to meet their needs and to what extent these are formalized. The set also includes indicators to measure the outcomes of financial service usage, such as building resilience and meeting liquidity needs, which are relevant to the broader measurement of customers' financial health.

USING THE INDICATORS

Data to populate the indicators can be gathered as part of an existing financial inclusion survey or built into the design of a new survey instrument. These can be adapted to the national context and to answer a specific policy question. Certain indicators can be measured using financial transaction data. Countries are encouraged to use the FinNeeds online toolkit, which guides users through the process of measuring Financial Needs, including the selection of appropriate methods, survey modules and analysis. It is recommended that data collection captures key demographic information for disaggregation and further analysis as relevant for the context, such as gender, socioeconomic status, urban/rural or geographic location.

WHAT INSIGHTS CAN BE GENERATED?

The analysis of these indicators enables decision-makers to understand what mechanisms people use ("financial devices") to meet specific purposes ("use cases"). By aggregating the many use cases into a financial need, along with the financial devices used, we can understand the portfolio of financial devices used for each overall need. Building such a picture allows insights to be drawn on how different types of financial services are utilized as complements to, or substitutes for, one another in meeting each financial need, and whether this differs by gender. For financial service providers, this highlights untapped market opportunities and can be used to improve existing financial products or offer new, more relevant products for consumers.

From a policymaking perspective, the financial needs lens helps to identify market gaps where the formal financial sector is not serving the needs of the population and so can inform policy or regulatory strategy. Gathering this data over time could provide an evidence base for policy makers to set meaningful financial inclusion targets from a customer-centric perspective and track this progress over time.

EXAMPLES

> What proportion of people use a digital payment channel for bill payments (transfer of value)?

> What choices do people make to meet their needs when they run out of money within a month (liquidity)?

> What proportion of people make use of insurance when they are faced with a financial shock such as theft or an unexpected health condition (resilience)?

> What financial devices do people use to save for retirement (meeting goals)?

In deciding how to meet a use case, such as paying for medical costs when their child is sick, people take a full range of financial devices into consideration. This goes beyond formal credit, savings or insurance, to other options available to them, such as their social or family network, cash at home or liquid assets. They may use a combination of these devices, depending on the use case. Figure 18 illustrates how people may use different types of devices to respond to the single use case of a child being sick.

FIGURE 18: EXAMPLE DEVICES USED TO MEET SPECIFIC USE CASES
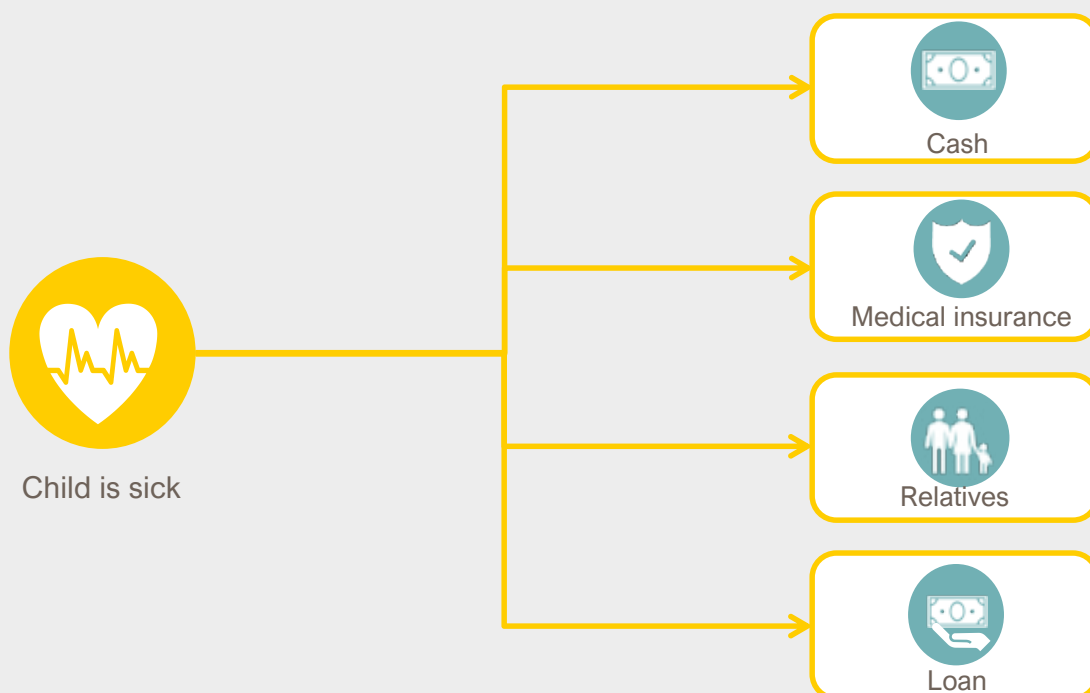
THE FINANCIAL NEEDS INDICATORS

The seven Financial Needs Indicators cover three dimensions: the use cases, device portfolio and outcomes of usage. The examples given for each indicator are for illustrative purposes only.

Note that the indicators build on one another. For example, if Indicator 1 reveals that 67% of adults pay for school fees, the immediate policy question is how the individuals fund these payments and whether the formal financial sector is used. Indicators 2 and 3 answer this question. If a low fraction of the adults who pay school fees do so using formal sector payment devices, it suggests that the formal financial sector is not meeting this need in a manner that supports families to meet their obligations.

This may result in liquidity distress as measured by Indicator 5. For the policymaker, it will then be necessary to watch the liquidity indicator and monitor whether improvements in financial-sector product provision changes this key outcome for the economy and household welfare.

BOX 5: FINANCIAL NEEDS INDICATORS

Use case

1. Proportion of adults who [experienced a specific use case]

e.g. 67% of adults paid for school fees

Device portfolio

2. Proportion of adults using [a specific financial device category] to meet [specific need]
e.g. 12% of adults are using formal credit to meet a liquidity need

3. Proportion of adults using at least one formal financial device to meet their needs
e.g. 35% of adults are using a formal financial device to transfer value

Outcomes

4. Proportion of adults who use digital financial devices to transfer value on a weekly, monthly or infrequent basis (transfer of value)
e.g. 27% adults are using digital financial device on a weekly basis

5. Proportion of adults who experienced liquidity distress in the last year (liquidity)
e.g. 43% of adults experienced liquidity distress in the last year

6. Proportion of adults who experienced a shock in the last year and have not yet recovered (resilience)
e.g. 17% of adults experienced a shock in the last year and have not yet recovered

7. Proportion of adults who are using a formal financial service towards meeting a goal (meeting goals)
e.g. 21% of adults are using a formal financial service to meet a goal

USE CASE DIMENSION

The use case dimension shows what people spend their money on and what they use financial devices for. As with all the indicators, the use case results can be disaggregated by gender for deeper analysis. Each use case can be aggregated into a financial need to draw out meaningful insights. Use cases are the basis for calculating all the Financial Needs Indicators. Therefore, the first Indicator identifies the most relevant use cases for each need.

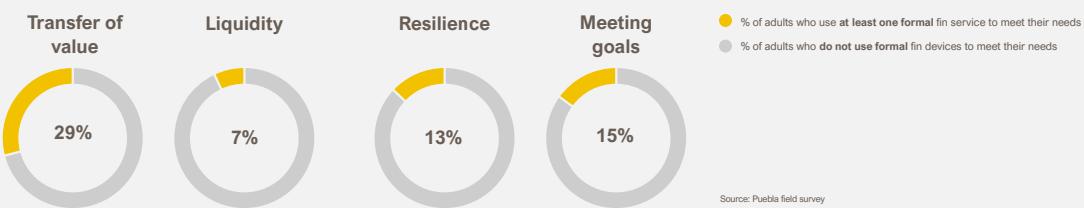| INDICATOR 1	PROPORTION OF ADULTS WHO [EXPERIENCED A SPECIFIC USE CASE]
Relevance	Understanding a given population's most common use cases for each of the financial needs provides insights into key drivers of financial services uptake. Establishing use case incidence forms the basis for deeper analysis of usage from a customer perspective, such as whether use cases across the different need categories are met or unmet by formal financial service providers or people's preferred usage channels for a particular payment use case (i.e. cash, instant payments, card payment, etc.).
How to calculate	Number of adults who [experienced a specific use case] in the last 12 months $$\frac{\_\_\_\_\_}{\text{Total number of adults}} \text{ as \% of } \_\_\_\_\_$$ Use cases outlined in current demand-side surveys can be reviewed to ensure they capture any important gender specific aspects. Calculate the use cases by need: transfer of value, resilience and meeting goals. Highlight the three most commonly reported used cases for each need. Note that liquidity is a single use case (experiencing liquidity distress). For the adult population denominator use the national age definition as the range, or as collected in the specific data source. The suggested use cases in the questions below will need to be contextualized by country. The timeframe for the survey question differs by need, but the overall indicator remains the same. Some examples are: > **Transfer of value:** In the last month, did you pay for public transport? > **Liquidity**[47]**:** Have you been able to balance your income and expenditure over the last month?[48] (Did you run out of money?) > **Resilience:** In the last year did you experience a financial shock? What was the shock? Examples of shocks include loss of income, death of a family member, a serious illness or accident, natural disaster and theft/loss of an asset. > **Meeting goals:** In the last year have you put money aside for a long-term goal? Have you borrowed money or taken a loan to meet a long-term goal? Have you had assistance from friends of family to meet a long-term goal? If yes, what was the goal? Examples of long-term goals include buying land/a house, paying for children's education, saving for retirement, investing in self-owned businesses and paying for a wedding. Tracking changes in annual resilience use case incidence over 3-5 years will provide useful trends on shocks[49].
Frequency	Annual survey
Data source	Demand-side survey. Transactional data can be used for measuring formal transfer of value use cases.
Example	
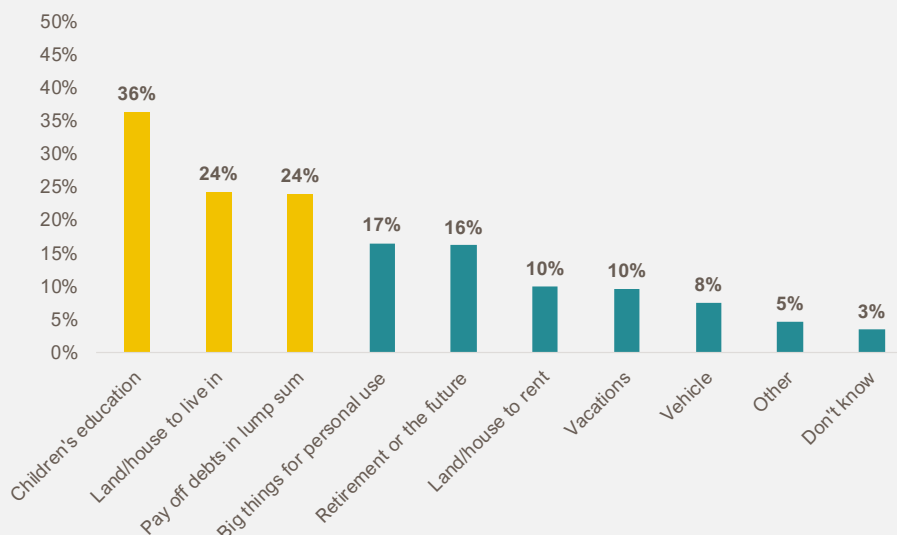
Source: Puebla DSS

DEVICE PORTFOLIO DIMENSION

By aggregating use cases, and the devices people use to meet those use cases, into the four financial needs, broader analysis can be done to identify the ways in which people meet their financial needs. This shows whether people use formal or informal devices for a specific need and what kinds of financial products – savings, loans etc. – they choose.

INDICATOR 2	PROPORTION OF ADULTS USING [A SPECIFIC FINANCIAL DEVICE] TO MEET [SPECIFIC NEED]
Relevance	Understanding which financial device(s) people turn to for which need provides key insights into customer preferences and behaviors in their financial lives. It also highlights key gaps in formal financial service offerings that leave population segments vulnerable to risk[50] or undermine their financial progress[51]. As such, tracking this indicator over time has strong policy relevance. In some countries, tracking remittances and whether these are made via formal or informal channels, is especially important. Note that this indicator can also be calculated at an individual use case level, for example for health expenditure, if this information is required for policymaking.

How to calculate	Number of adults using [a specific financial device category] to meet [specific need category]
	_____ as % of ___
	Total number of adults with [same need category]
	
	Categorize all use cases and the devices used to dovetail those use cases into the four financial needs.
	For each financial need, categorize the devices used into the groupings below.
	This aggregates the device categories used for each need to draw insights on the average number and types of devices used towards each need.
	
	Suggested disaggregation of results for analysis:
	> For transfer of value:
	  - Digital/electronic vs cash
	  - Remittance: formal vs informal (including cash)
	> For resilience:
	  - Product categorization: credit, insurance, savings or assistance from friends or family
	  - Provision categorization: formal, informal institutions, personal, social
	> For liquidity[52] or meeting goals:
	  - Product categorization: credit, savings[53] or assistance from friends or family
	  - Provision categorization: formal, informal institutions, personal, social

Frequency	Annual survey
Data source	Demand-side survey.

INDICATOR 3	PROPORTION OF ADULTS USING AT LEAST ONE FORMAL FINANCIAL SERVICE TO MEET THEIR NEEDS
Relevance	This indicator provides an important insight into people's financial lives and the effectiveness of the formal financial sector to meet the financial needs of the population. As it is calculated across the four financial needs for usage of formal and informal devices, it highlights unmet needs and opportunities for improving formal offerings. This information can be used by financial institutions to design more competitive offerings that better meet consumers' needs.
How to calculate	Number of adults using at least one formal financial service to meet any use case classified under [need category] **_____ as % of _____** **Total number of adults with [same need category]** Categorize devices used to meet a financial need into formal or informal. Calculate for each need or by use case where this is important for policy guidance. Use the broad definition of informal (i.e. combine informal financial services, social and personal devices). For transfer of value, the distinction will be between digital/electronic and cash.
Frequency	Annual survey
Data source	Demand-side survey.
Example	

Source: Puebla field survey

OUTCOME DIMENSION

The outcome of financial usage refers to the success, or failure, of financial devices to meet the financial needs of a population. They are a barometer for measuring whether the financial sector is fit for purpose. There is one outcome indicator recommended for each of the financial needs.

In order to measure outcomes for the whole population, demand side survey data should be used, as transaction data may not reach low-income or excluded population groups. However, for one outcome indicator (transfer of value) transactional data is recommended to generate more robust results for this segment of the (financially included) population.
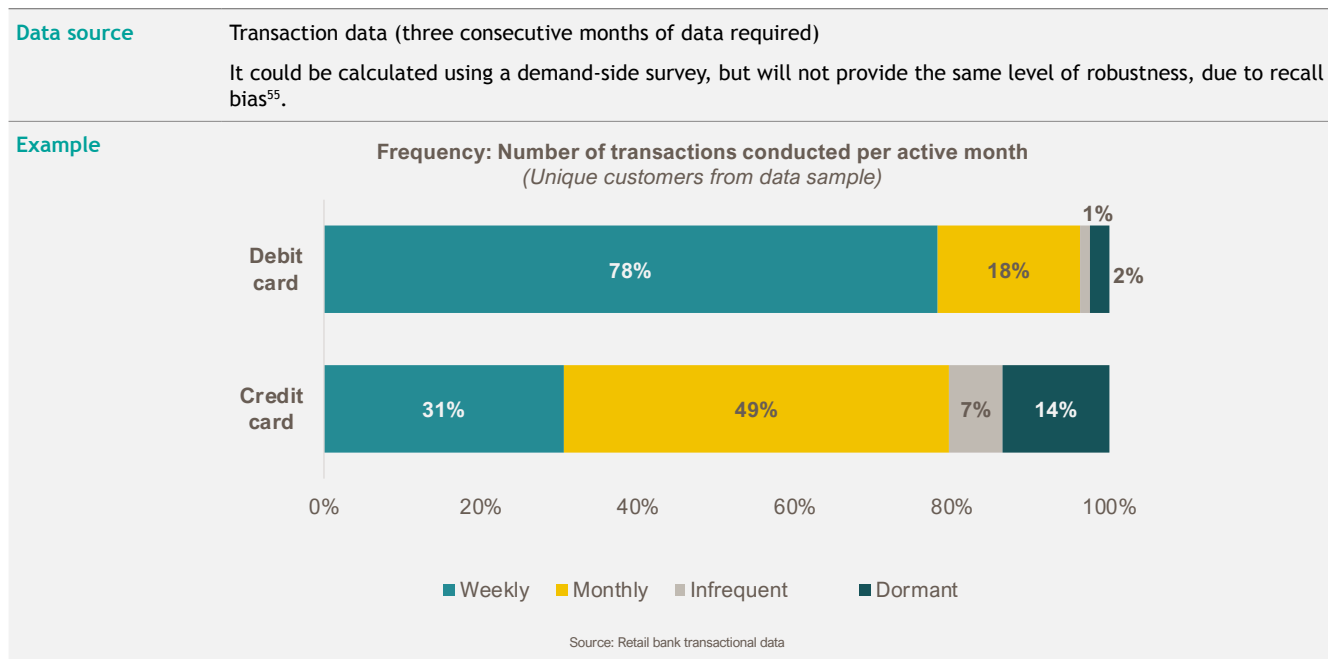
An important factor in measuring outcomes here is the linkage to financial device portfolio choices and whether these are formal or informal (as measured in Indicator 2 and 3). What insights can we infer from the correlation between device choices and outcomes of usage? For example, are those consumers using formal financial devices better able to recover from a financial shock? If there is no clear correlation, then what does that tell us about the "success" of financial inclusion policy measures or market strategies in promoting positive consumer outcomes? Alternatively, if people remain vulnerable despite reliance on informal, personal or social devices, what financial inclusion imperative does that imply for policymakers? This evidence helps us understand whether financial services are meeting people's needs.

TRANSFER OF VALUE OUTCOME

INDICATOR 4	PROPORTION OF ADULTS WHO USE DIGITAL FINANCIAL SERVICES TO TRANSFER VALUE ON A WEEKLY, MONTHLY INFREQUENT BASIS
Relevance	Measuring how frequently a population transacts using digital financial services tracks the growth in digitization of the economy. While digital financial usage is not the only dimension of usage, digitization is a front-of-mind policy consideration and hence the indicator is phrased in terms of digital usage. The emphasis is on fully digital transactions, namely non-cash transactions where both the store of value and the (outbound) channel is digital. Thus, this "fully digital" definition excludes over-the-counter transactions with an agent or cash-in/cash-out transactions[54].
	Commonly, digital financial service usage is measured in 90-day intervals to denote active versus inactive accounts. Disaggregating usage into more frequent bands of weekly, monthly, infrequent and dormant users provides a more nuanced understanding of active usage as an outcome, and thus progress towards digitization for different use cases.
	It is noted that some digital transactions that are made infrequently will be excluded, such as annual insurance premiums or annual rental payments. However, it is assumed that digital payments behavior for frequent users would extend beyond one use case.
How to calculate	**Weekly users:** Number of adults with an account who made one or more fully-digital transactions in the last week _____ as % of_____ **Total number of adults with an account** **Monthly users:** Number of adults with an account who made between one and three fully-digital transactions in the last month _____ as % of _____ **Total number of adults with an account** **Infrequent users:** Number of adults with an account who made one or two fully-digital transactions in the last three months _____ as % of _____ **Total number of adults with an account** **Dormant users:** Number of adults with an account who made no fully-digital transactions in the last three months _____ as % of _____ **Total number of adults with an account** **Note:** "account" here refers to any digital store of value against which the holder can transact. The frequency bands may not align with usage patterns for credit, pensions or savings. Where a specific policy or market question exists, this indicator can be tailored and further analyzed by type of financial service or use case.
Frequency	Annually. For each cycle, track usage over a three-month period.

INDICATOR 4 *CONTINUED*

Data source	Transaction data (three consecutive months of data required) It could be calculated using a demand-side survey, but will not provide the same level of robustness, due to recall bias[55].
Example	**Frequency: Number of transactions conducted per active month** *(Unique customers from data sample)* Debit card: Weekly 78%, Monthly 18%, Infrequent 1%, Dormant 2% Credit card: Weekly 31%, Monthly 49%, Infrequent 7%, Dormant 14% 0% 20% 40% 60% 80% 100% ■ Weekly ■ Monthly ■ Infrequent ■ Dormant Source: Retail bank transactional data

LIQUIDITY OUTCOME

INDICATOR 5   **PROPORTION OF ADULTS WHO EXPERIENCED LIQUIDITY DISTRESS IN THE LAST YEAR**

Relevance	This indicator is based on the frequency of liquidity distress, which refers to a person or household being unable to meet their regular expenses from their regular income and thus having to draw on other devices to meet their expenses or fail to meet their expenses. Where people use other devices to make ends meet, this can highlight the success or failure of the financial sector to assist with liquidity distress. Measuring the incidence of liquidity distress provides policy insights on the vulnerability of the population, as the financial choices people make to balance income and expenses can have long-lasting consequences for the attainment of other financial needs. Insights on the link between financial service usage and liquidity outcomes can be gained by mapping liquidity distress incidence against the results of Indicators 2 and 3 on the device portfolio[56].
How to calculate	Severe distress: number of adults who experienced more than one month of liquidity distress in the last year $$\frac{_____ \text{ as \% of } _____}{\text{Total number of adults}}$$ Some distress: number of adults who experienced one month of liquidity distress in the last year $$\frac{_____ \text{ as \% of } _____}{\text{Total number of adults}}$$ No distress: number of adults who experienced no months of liquidity distress in the last year $$\frac{_____ \text{ as \% of } _____}{\text{Total number of adults}}$$ In reporting this indicator, aggregate those experiencing some and severe distress. However, for deeper insights, disaggregate the findings into those with no liquidity distress, those with some liquidity distress and those with severe distress. Map results against responses to device portfolio choices for liquidity (Indicator 2) for those with no distress, and data on how liquidity shortfalls were met for those with some or severe distress, to infer insights on links between financial device portfolio and liquidity outcomes. An alternative measure is the proportion of adults who experienced liquidity distress in the last three months. This provides a more recent measure, but in contexts where income is seasonal, this may introduce a bias. Thus, we chose to phrase the indicator "in the last year".
Frequency	Annual survey
Data source	Demand-side survey

RESILIENCE OUTCOME

INDICATOR 6	PROPORTION OF ADULTS WHO EXPERIENCED A SHOCK IN THE LAST YEAR AND HAVE NOT YET RECOVERED
Relevance	This indicator measures resilience and vulnerability, which are central to financial health. Tracking this helps policymakers understand the proportion of adults who are financially resilient, and whether financial inclusion policies and approaches have been successful in building resilience.
	To understand how financial usage relates to resilience outcomes, results for this indicator should be mapped against device portfolio choices in Indicators 2 and 3.
How to calculate	Number of adults who experienced a financial shock more than three months ago but have not yet recovered
	_____as % of_____ **Total number of adults who experienced a financial shock within the last 12 months, but more than three months ago**
	It is useful for analysis to disaggregate between those who recovered within three months, those who recovered but took more than three months to do so, and those who have still not recovered.
	As with Indicator 5, map results against device portfolio for resilience in Indicator 2 and formal/informal devices used to meet resilience needs in Indicator 3.
Definitions	**Shock:** this is an unforeseen or unexpected risk event that causes financial loss. This could include a loss of income, significant medical costs due to a sickness or accident, the death of a family member, or a natural disaster in which assets or livelihood were lost. The shock should have been experienced within the last 12 months, but more than 3 months ago[57].
	Recovered: to be recovered means that the person regains a similar financial position to what they had prior to the shock, i.e. that they can once again sufficiently cover their financial needs and obligations as they did prior to the shock. It is a subjective, self-assessed measure[58].
Frequency	Annual survey
Data source	Demand-side survey
Example	

63%	17%	20%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

■ Have not recovered ■ Took longer than 3 months to recover ■ Recovered within 3 months

Source: Puebla DSS

MEETING GOALS OUTCOME

INDICATOR 7	PROPORTION OF ADULTS USING A FORMAL FINANCIAL DEVICE TOWARDS ACHIEVING A LONG-TERM GOAL
Relevance	Most long-term goals are not achieved within a year, thus measuring the achievement of a long-term goal within a year is not possible. Instead, this indicator focuses on the uptake of formal financial services towards achieving long-term goals, such as savings or credit. The use of these services for long-term goals is a proxy measure of the ability of the formal financial system to enable customers to meet their need for "meeting goals". Where customers prefer using informal financial devices this raises policy questions around the existing financial system. For financial service providers it can highlight the opportunity to design products specifically earmarked for the most common use cases, such as land/housing, saving for school fees or pensions.
How to calculate	Number of adults who have used a formal financial device towards achieving a long-term goal in the last 12 months _____as % of_____ **Total number of adults with a meeting goals need** This indicator aggregates formal device usage towards meeting a goal, specifically formal savings and formal credit. Below is an example with device choices disaggregated for deeper analysis.
Definitions	**Formal financial devices:** services from registered financial institutions, typically savings or credit **Long-term goal:** both personal and/or business use cases for meeting goals, as identified in Indicator 1
Frequency	Annual survey
Data source	Demand-side survey

For detailed guidance on applying the Financial Needs indicators, please see the FinNeeds online toolkit.

REFERENCES

1   This categorization corresponds largely to that identified by others. FSD Kenya, for example, through the financial diaries and other research, refers to "bridges" (liquidity), "safety nets" (resilience) and "ladders" (meeting goals) as three core functions of financial services towards financial health. CFSI (2016), also as part of a measurement framework for financial health, classifies the need to (i) spend, (ii) plan, (iii) save and (iv) borrow. Spend spans the ability to spend less than current income and pay bills on time and in full (what we term "the liquidity need"). Save has a liquidity and resilience component (the ability to have sufficient liquid savings to meet day-to-day needs), as well as "meeting goals" and 'longer-term' resilience components (what they term as having "sufficient long-term savings or assets"). Under borrow is listed having a sustainable debt load and having a prime credit score (which contributes to meeting goals and resilience). Lastly, under plan is having appropriate insurance (our resilience need) and the ability to plan ahead for expenses (meeting goals). Follow-up research was conducted to apply the CFSI framework globally, via a dedicated demand-side survey of more than 1,000 respondents in Kenya and in India as well as 89 qualitative interviews. Dalberg (2016) lists key needs as meeting day-to-day needs plus shaping and smoothing volatile income (corresponding to our liquidity and transfer of value categories), pursuing opportunities and building financial reserves (meeting goals) and building resilience. Likewise, CGAP (Peachey & Arora 2016) classify functional value rendered by financial services as supporting customers to deal with health and other shocks (what we term "resilience"), to balance cash flows between income and expenditure cycles (liquidity) and to seize opportunities to enhance income and assets (what we term "meeting goals").

2   Use cases can be further broken down by population segments such as gender, age groups, rural/urban and socioeconomic class to understand how use cases can differ between men and women or low versus high-income individuals.

3   We draw this term from the financial diaries methodology (see, for example, Collins et al., 2009, and Zollman, 2014), which maps all financial tools or instruments people used under the term "financial devices".

4   i2i, Catering to every need: A measurement framework for functional financial service needs. Available at: https://cenfri.org/wp-content/uploads/2017/05/Measurement-framework-note-4_Catering-to-every-need_i2i_2017_WEB.pdf

5   For example, are there cases where people mostly turn to friends and family? Over time, what are the trends in uptake of insurance products?

6   For example, where "personal" devices such as cutting back on consumption or selling assets are the dominant choice to meet a resilience use case, this may indicate high levels of vulnerability. It may indicate where public policy is needed to develop more suitable formal savings options or to promote insurance.

7   These classifications allow for more granular analysis into where the gaps in formal financial reach are and, hence, can inform the choice of policy or regulatory interventions to implement to bridge the gap. It can also give an indication of whether financial services are being used optimally or for their intended purposes – for example by showing that people draw on savings or credit devices rather than insurance for resilience needs.

8   The FinScope survey, rolled by insight2impact host FinMark Trust, has been conducted in more than 20 countries, with the main objective to measure and profile the levels of access to and uptake of financial products/services (both formal and informal) in a particular country, across income ranges and other demographics. The piloting of components of the needs-based approach in FinScope surveys presents an opportunity to test the framework in different country settings. In partnership with Finmark Trust, insight2impact has so far tested the needs measurement frameworks in FinScope surveys in Benin, Cameroon and Myanmar.

9   For detailed considerations in choosing an appropriate approach for a specific country context, see the "Get Started" section in the FinNeeds online toolkit.

10 CNBV, INEGI, National Survey of Financial Inclusion. 2018. Available at http://en.www.inegi.org.mx/programas/enif/2018/

11 Puebla was chosen because it approximates national demographics.

12 The sample of bank customers provided was 12,000 but of these, only 400 individuals were interviewed due to contact details being out of date, clients no longer using their accounts or being unwilling to be interviewed and other challenges.

13 The analysis of transactional data generated by NIBSS leverages Nigeria's Bank Verification Number (BVN), a unique customer identifier reported together with bank account details for every transaction processed by NIBSS. Because NIBSS processes several billion transactions for over 36.5 million BVNs each year, the analysis was conducted on a randomly drawn sample of one million BVNs. A full transaction history covering various payment platforms supported by NIBSS and ending in December 2017 was extracted for each of the BVNs in the sample. These transaction histories include POS, NIBSS electronic funds transfers, cheque payments and instant payments.

14 Note that, because NIBSS is a switch, only inter-bank transactions are processed through its platforms and no balances, data on cash withdrawals or transactions between clients of the same bank are visible.

15 Note that the data is not contemporaneous; transactional data terminates at the end of 2017 while the survey data was collected at the end of 2018.

16 The denominator for device indicators is adults expressing the financial need being measured (not all adults)

17 As above, the denominator is adults expressing the financial need being measured (not all adults)

18 regular expenses n = 1054; daily expenses n = 1042; banked n = 293; non-banked n = 859. Note that this does not denote exclusive cash usage. Is the abbreviation "n" widely known in the AFI readership community? If not, we may need to explain it in the first reference. If it is, we can leave it as is.

19 This does not require a smartphone, but can be accessed by any simple feature phone.

20 Access to Finance in Nigeria (2018), rolled out by EFInA

21 Note that a fully digital transaction is defined here as a non-cash transaction, where both the store of value is digital and the (outbound) channel is digital. This fully digital definition excludes over the counter agent transactions or cash-in/cash-out services.

22 n=1,339

23 There are also questions about the frequency of sending or receiving of remittances, or of making payments to the government or businesses.

24 41% transact two to three times per month on bank accounts, 56% on e-money accounts and nobody transacts this frequently with non-stock savings and loans organizations. Thirty-seven percent, 38% and 25% respectively, transact with these organizations only once a month. A further 75% only transact with their non-stock savings and loan organization once every three to four months.

25 It is possible to use demand-side survey data for usage, but this can be prone to recall bias unless respondents are using financial diaries to record transactions.

26 Some digital transactions that are made infrequently will be excluded, such as annual insurance premiums. However, it is assumed that digital payments behavior for frequent users would extend beyond one use case.

27 Active months refer to the period over which the customer is visible in the NIBSS data. The frequency measure here covers customer usage of all NIBSS platforms (NIP, POS, cheque, NEFT and mCash).

28 n = 700

29 The one exception is Zimbabwe, where a high mobile money penetration means that formal devices are more prevalent across all the financial needs than in the other countries.

30 Note that the ENIF 2018 survey, which is nationally representative, detected higher levels of insurance penetration overall.

31 It is noted that the survey was undertaken three months after an earthquake, which may have a bearing on the respondents.

32 n = 408

33 To model usage, an ordered logit model was used to investigate which demographic variables are associated with increases in so-called intensity of use.

34 Each of the input variables was standardized, capped and floored and divided into quintiles. Individuals were then assigned a usage score equal to the aggregate of their values (1-5) for each of the quintiles. The inverse of recency was used, to account for its inverse relationship with the other input variables.

35 A clustering exercise is a mathematical technique to identify clusters of observations that are most similar along a specified set of dimensions. This technique does not establish causality but is a descriptive tool that should be complemented with a thorough understanding of the context.

36 K-means clustering on debit-card data using the following as input variables: average number of transactions, average amount transacted, gender, age, income and education.

37 n = 350,674

38 n = 350,674

39 Applying the broad definition of informal, namely any device provided by an informal institution, or any social or personal device.

40 Merged sample n = 68; transaction sample n = 129,433

41 Merged sample n = 38; transaction sample n = 59,895

42 Merged sample n = 72; transaction sample n = 25,669

43 In countries where the level of financial inclusion is tracked over time, measuring the Financial Needs Indicators is especially relevant.

44 Please refer to: http://access.i2ifacility.org/Measurement_framework/

45 insight2impact is a non-profit think-tank. See https://i2ifacility.org/ for more detail.

46 AFI (FIDWG). 2013. Measuring Financial Inclusion: Core Set of Financial Indicators. Available at https://www.afi-global.org/sites/default/files/publications/fidwg-core-set-measuring-fi.pdf

47 Expressing a liquidity need means that a person or household could not meet their running expenses from their running income and had to draw on other devices to meet their expense or fail to meet their expenses. If other devices were used to meet regular expenses (not income) this is defined as a liquidity need (distress).

48 Although income cycles differ by types of work and country contexts, there are many payments that are made monthly, thus being able to balance income and expenditures over a month is an important metric.

49 For example, are there cyclical natural disasters or climate change related shocks?

50 For example, are there cases where people mostly turn to friends and family? Over time, what are the trends in uptake of insurance products?

51 For example, where "personal" devices such as cutting back on consumption or selling assets are the dominant choice to meet a resilience need, this may indicate high levels of vulnerability. It may also indicate the areas in which public policy is needed to develop more suitable formal savings options or to promote insurance.

52 For liquidity, this relates to device choices during times of liquidity distress.

53 Including pensions in the case of meeting goals.

54 This definition of digital financial services is taken from the Digital Frontiers Institute. It is narrower than other definitions which would see any transaction with a digital link as digital. We argue that excluding transactions where money is merely cashed in or cashed out provides a truer indication of the policy imperative for digitization.

55 It is difficult to remember how one paid for a service or goods beyond a short period of time. Thus, asking this question will not produce reliable data.

56 For example: are people who use formal credit or formal savings devices less likely to experience liquidity distress than those who do not? If not, what is the message for financial inclusion policymakers and financial service providers regarding the value provided by the financial sector in creating liquidity?

57 The 12-month period is imposed to mitigate against recall bias in surveys. The three-month threshold is included to allow a feasible period for recovery.

58 Underlying survey questions ask respondents (i) whether they experienced a shock in the past 12 months and, if so, (ii) when it was experienced and (iii) whether they have recovered. This then allows the calculation of the indicator as set out here.