

# AGENTS COUNT

The True Size of Agent Networks in  
Leading Digital Finance Countries



# Executive Summary

This paper lays out a framework for measuring access to digital financial services (DFS) provided via cash-in/cash-out agent networks in an ecosystem. We clarify the distinction between an **agent till** - a provider-issued registered “line”, either a special SIM card or a POS machine, used to perform transactions for clients – and an **agent outlet** - a physical location that carries one or more agent tills and may also have other businesses or support functions. We also highlight the importance of factoring in network activity rates, since dormant outlets are not performing services. In sum, we argue that the number of active agent outlets, ideally geo-located, is more appropriate for measuring access to finance in a country than the number of agent tills, which is generally used by the regulators and the industry.

We propose a simple methodology for calculating the number of active agent outlets in five leading DFS countries. This methodology uses regulator data and nationally representative agent surveys and adjusts the total number of tills down to account for outlets that carry multiple tills and inactivity. Our calculations demonstrate that the use of agent till statistics in industry literature has led to an overestimation of global access to finance. In the five countries examined, we count a total of 635,427 agent outlets (of which only 342,087 are active) against a total of 1,336,879 agent tills. In other words, the total number of agent outlets is just under half (47.5%) of the total till count. Moreover, active outlets constitute one quarter (25.6%) of all tills.

Our methodology enables us, for the first time, to validate *FSP Maps*' agent censuses. We are able to approximate census figures fairly accurately. Our calculations give us the following active agent outlet counts: Kenya (2014) = 67,407; Tanzania (2015) = 65,123; Uganda (2015) = 33,845; Bangladesh (2015) = 117,202; and Pakistan (2014) = 58,510. We believe that the active agent outlet indicator to be so important, that the industry should have the ability to calculate it in the future. This means operational definitions of agents and activity rates need to be standardised. We propose language that can serve as the basis for standardising definitions. We also recommend adopting the 30-day active rate definition for agents globally.

To further contextualise these figures, we compare them to adult population, customers, and agency business data, in order to approximate relative levels of market penetration in these countries and propose industry benchmarks for the number of agents providers should target. We highlight three key findings:

**Finding #1** is an estimate for how many more active outlets are needed in Tanzania and Uganda respectively to offer customers the same access to finance that adults in Kenya enjoyed in 2014. Tanzania needs 10,000 more operational outlets and Uganda needs 19,000.

**Finding #2** is that the often cited ratio of 400-600 registered customers per agent, inspired by early days of M-PESA in Kenya, can be calibrated to be more exact and therefore more helpful. Contemporary, country-level data, adjusted for activity rates, shows that in Kenya the ratio is around 230 registered customers per active agent, and both Uganda and Tanzania have similar figures (200-260). Therefore, we propose 230 as a better benchmark.

**Finding #3** is that agent networks seemingly can be supported by fewer customers than was previously thought. In 2013, GSMA posited a range of 150-800 active customers per active agent; our data shows successful providers with ratios of only 80. Furthermore, none of the leading providers in the five key markets boast active customer to outlet ratios over 250. We conclude that the target for this important benchmark can be more precise, between 80-250 active customers per active agent outlet.

...the use of agent till statistics in industry literature has led to an overestimation of global access to finance.

## About the *Helix*

The *Agent Network Accelerator (ANA)* project is funded by the Bill and Melinda Gates Foundation, the United Nations Capital Development Fund (UNCDF), Financial Sector Deepening – Uganda (FSDU), Karandaaz Pakistan and managed by *MicroSave*. It was designed to distil the most salient aspects of strategic operations in agent network management for the DFS industry.

The *Helix Institute of Digital Finance* launched the project in 2013 and since then has conducted over 31,500 agent interviews in 11 countries, providing assessments to over 40 leading agent networks around the world. While our research is aimed primarily at delivering business intelligence to individual DFS providers on a confidential basis, another major objective is to provide the industry with rigorous quantitative data, which allow a more precise understanding of best practices and benchmarks for building and managing agent networks across the globe.

For each country where we conduct research, we publish a [country report](#), which contains essential information about the performance of the agents and the providers who manage them. We also maintain a [blog](#), where we provide strategic and operational insights for the industry. We contribute to thought leadership through our publications:

- » *Designing Successful Distribution Strategies for Digital Money* is designed to help providers understand their goals for building an agent network, and then think through the model of building one best fit to their needs.
- » *Successful Agent Networks* builds on the understanding that networks are the channel providers use to deliver distinct value propositions to different customer target groups. It lays out a comprehensive analytical framework for analysing agent network success along several key dimensions.
- » *OTC: A Digital Stepping Stone or a Dead End Path?* discusses the pros and cons of Over the Counter (OTC) transactions and argues that they should be seen as a stepping stone to mobile money account adoption and use.

Our research powers the curriculum for the [world-class training](#) offered by The *Helix* Institute of Digital Finance. This training covers a wide range of topics and is supported by the Bill and Melinda Gates Foundation, the United Nations Capital Development Fund (UNCDF), the International Finance Corporation (IFC) and the Financial Sector Deepening Trust (Africa). Recognising the extraordinary impact of The *Helix's* research and trainings, the MasterCard Foundation asked *MicroSave* to establish its francophone counterpart. The *Réseau Helix* was launched in late 2016.

Our courses combine classroom instruction with hands-on field visits, case studies and conversations with the practitioners who have built some of the most impressive roll-outs in the world. The courses are tailored to local markets and are offered in either English or French. Our deep industry knowledge and our close partnerships with industry practitioners have enabled us to bring fresh perspectives and creative thinking to the operational challenges most providers face in the market place.

Beyond training, *MicroSave* also provides on-site advisory and technical assistance to a diverse range of actors serving the mass market, and driving financial and social inclusion. It helps these players implement lessons learnt and overcome internal and external constraints to delivering quality services in over 40 countries.

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## Introduction

The number of agents in a country is not only a good indicator of digital financial system development, but also an important foundational statistic for measuring financial access. Policy makers and donors working to improve financial inclusion need to understand the number and distribution of financial service access points in order to set goals and measure progress. Providers (banks, telecoms and third-parties) also need to understand these figures to make strategic decisions about when to add more agents to a network, and if so, where and how many.

The number and distribution of agents in a particular country can be compared to that of adults or customers. These ratios help describe “the expansion gap” – i.e. how many more agents might be needed to serve the entire country. Compiling these indicators for several countries and/or providers is the starting point for developing industry benchmarks. Such benchmarks can inform providers’ budgets as well as policy makers’ financial access targets by helping to gauge how many more agents might be needed in a particular area, or how balanced agent versus customer growth has been for specific providers.

Since the number of agents forms the basis for any analysis of access to digital finance in a country, it is surprising that we still lack widely agreed upon country-level statistics of agent numbers. In many countries regulators periodically publish agent figures. These, however, do not match the censuses conducted by researchers on the ground. Furthermore, as we will argue in this paper, regulator statistics in their current form are not appropriate for conducting the analyses discussed above.

Admittedly, there are many different ways of estimating the number of agents in a country. While some might simply want to count the number of tills providers have put into the market, others are interested only in the number of agent outlets where the tills sit. Each statistic can be useful depending on the question to be answered. However, astute industry professionals will recognise that an agent network’s activity rate must also be taken into account in order for either of them to yield meaningful results.

Combining regulator figures with data collected by [The Helix Institute of Digital Finance](#), we can finally provide the industry with a more accurate number of active agent outlets in five key markets around the world: Kenya, Tanzania, Uganda, Pakistan and Bangladesh. The first section of this paper explains how we should define this statistic and how we calculate it. The second section of the paper compares it to existing measures of network size, namely privately-funded agent censuses and regulator statistics. The third section combines our estimates with publicly available demographic data, and data on customers, collected by the [Financial Inclusion Insights](#) project, to assess access to finance in these countries.

...we still lack widely agreed upon country-level statistics of agent numbers.

## SECTION 1

# Measuring Agent Network Size






In this section, we lay out definitions and a framework for understanding agent network size. We then present estimates on agent outlets and active agent outlets for the five key countries: Kenya, Tanzania, Uganda, Bangladesh, and Pakistan.

### 1.1 Defining an Agent

Our first task is to develop a definition of an agent as it affects which agents to include when counting the “number of agents”. As we will show, this statistic changes dramatically depending on the definition used. To define an agent, we need to be aware of two important distinctions: 1) agent till vs. agent outlet and 2) active vs. inactive agents (see Figure 1).

Figure 1. Agent Network Size Framework and Definitions

		Active	Inactive
	<b>Agent Till</b> a provider-issued registered “line”, either a special SIM card or a POS machine, used to perform enrolment, cash-in and cash-out transactions for clients.*	Till was used to conduct at least one transaction within a defined time period	Till has not been used to conduct any transactions within a defined time period
	<b>Agent Outlet</b> A physical location that carries one or more agent tills, enabling it to perform enrolment, cash-in and cash-out transactions for clients on behalf of one or more providers. Agent outlets may also have other businesses and support functions.*	Outlet has conducted at least one transaction using any of the tills it operates within a defined time period	Outlet has not used any of the tills it operates within a defined time period
	<b>A Registered Agent</b> is a term used in the industry to refer to agent tills.*		

\* These definitions have been agreed to with *International Telecommunications Unit (ITU)*, the premier global forum through which parties work towards consensus on a wide range of issues affecting the ICT industry. Other leading international organisations are also expected to align their definitions accordingly for future use across the industry to improve clarity of discussions around agent networks.

The distinction between agent tills and agent outlets is important because a single outlet will often carry multiple tills. The number of outlets that offer mobile money services is therefore much smaller than the number of registered tills in a market. For example, an outlet offering M-PESA and Airtel Money represents two registered agents, but a single agent outlet, which operates two tills. Outlets of this type are described as “non-exclusive” as they offer services of more than one provider. A single outlet can also carry multiple tills for the same provider, as illustrated in Figure 2.

Figure 2. A Non-Exclusive Agent Outlet





Photo by Vera Bersudskaya

### Text Box: A Non-Exclusive Outlet in Bangladesh

This **agent outlet** in Dhaka, Bangladesh carries multiple agent tills, enabling it to perform enrollment, cash-in and cash-out transactions for customers on behalf of DBBL, bKash, and six banks offered on the SureCash platform .

The displayed **agent till** numbers correspond to special SIM cards, which the agent uses to perform enrollment, cash-in and cash-out transactions for bKash, DBBL or SureCash banks' clients.

Where financial service providers are required to report their agent network size to the regulator, they generally report the number of **tills** they have registered/issued. Regulators add up these figures, and publish the resulting aggregate as the total number of "**registered agents**" in their respective countries. These figures are in turn submitted to the IMF. As a result, most frequently cited agent figures represent agent tills, rather than agent outlets.

This particular agent outlet would be reported to the regulator **eight times** by bKash, DBBL, and each of the six banks (First Security Islami Bank, Bangladesh Commerce Bank, National Credit and Commerce Bank, Jamuna Bank, National Bank and Rupali Bank) offered through SureCash.

**This man is running one agent outlet and eight agent tills.**

One may choose to define an "agent" as either an agent till or an agent outlet, depending on the type of analysis envisioned. For example, agent till statistics are useful for measuring overall industry growth rates. They can also provide a policymaker or industry analyst with a proxy for the level of investment in agent network expansion. Their geographic distribution can reveal areas characterised by intense competition or single provider dominance.

When it comes to measuring access to finance, however, it is largely inappropriate to use agent tills because the issuance of an additional till number does not automatically translate into the opening of an additional outlet. Given the current homogeneity of DFS product offering, adding a till to an existing agent outlet may improve the quality of access to finance (either by diversifying the DFS

offering or reducing waiting time) but cannot be said to expand it. In some cases, particularly in markets where Over-The-Counter (OTC) transactions dominate, a new till in an OTC outlet providing access to a mobile wallet with bank or microfinance institution products could broaden access to finance. As a general rule though, to accurately assess agent outreach, distribution, and density, we need to examine the number and location of *agent outlets* in a market.

Another important distinction pertains to activity rates (columns in Figure 1), which will be discussed in greater detail in Section 1.3. Every year, reports published by [GSM Association](#) (GSMA) reveal that a large proportion of agents is not *active*. So estimates of total numbers of agents will differ greatly depending on whether dormant agents are included. We argue that because inactive outlets and tills are not delivering financial

One may choose to define an "agent" as either an agent till or an agent outlet, depending on the type of analysis envisioned.



services to customers, they should not be counted in agent statistics, regardless of agent definition or reasons for inactivity.<sup>1</sup>

In conclusion, we argue that the number of *active agent outlets*, ideally geo-located, is a more appropriate statistic for measuring access to finance in a country than the number of agent tills. The discussion below and in Appendix I illustrate that until recently the industry lacked an accurate understanding of the number of agent outlets. Therefore, industry literature has been using agent till statistics, referred to as registered agents, without always realising that this leads to overestimation of access (see Appendix II).

In the following sections we will calculate the number of agent *outlets* and then the number of *active* agent outlets, for the five leading digital finance countries.

## 1.2 Agent Outlets

### Data Sources

Multiple sources publish agent numbers. However, they tend to use different operational definitions, and report the information with different levels of granularity, making comparisons difficult (see Appendix I). Many regulators regularly publish the aggregate number of agent tills in their respective countries, but few report on activity rates.<sup>2</sup> The International Monetary Fund (IMF) disseminates statistics submitted to them by regulators, but we have found discrepancies between the numbers and definitions used, which makes data appear not entirely reliable.<sup>3</sup> GSMA extrapolates global *active* registered agent<sup>4</sup> statistics based on data they gather from a subset of DFS providers, but they do not report figures at the country level.<sup>5</sup>

None of the above organisations report the number of agent outlets on any level, because to do so they would need to geo-tag agent businesses and tills<sup>6</sup> or conduct a survey of agent outlets on the ground, a costly and complex task. Apart from geo-tagging, there are two ways to collect the information required to estimate the number of outlets in the field.

The first is to conduct a census and count each individual outlet in the country, as *FSP Maps*<sup>7</sup> and, to some extent, *FINclusionLab*<sup>8</sup> have done. While agent censuses should produce an accurate estimate of the number of *active* agent outlets in the country surveyed, they often find significantly fewer agents than

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1 Common reasons for inactivity include: a) provider did not give the agent enough training to understand the mechanics of the business, b) there was not enough transactional revenue to motivate the agent to continue offering the service, c) inefficiencies in till distribution, meaning that some are still sitting in provider or master agent offices, often deemed “tills in transit”.

2 See Appendices I and V for a detailed discussion of regulator statistics.

3 See Appendices I and V for a detailed discussion of IMF *Financial Access Survey (IMF FAS)* data and definitions.

4 GSMA defines registered agent as an outlet that carries one or more agent tills but serves a single provider.

5 See Appendix V for a more detailed discussion of GSMA activity rates.

6 Such initiatives are currently underway in Nepal and Tanzania. In Tanzania, Bank of Tanzania in partnership with FSDT are developing a mobile-based reporting application, which will be used to map all agent businesses with subsequent monthly updates submitted by providers. The application will use a unique business identifier that can be associated with multiple provider tills, enabling providers to link public compliance data to their internal systems.

7 The *FSP Maps* project is funded by the Bill and Melinda Gates Foundation, and was executed by Brand Fusion. Between 2013 and 2015, they conducted censuses of agent networks in Kenya, Uganda, Tanzania, Bangladesh, Nigeria, and parts of India (See Appendices I and V for more details).

8 *FINclusion Lab* is produced by the Microfinance Information Exchange (MIX), sponsored by UNCDF, MasterCard Foundation, CGAP, MetLife Foundation and Citi Foundation. Censuses of agent networks were attempted in Benin, Ethiopia, Ghana, Ivory Coast, Rwanda, Senegal, and Zambia (See Appendix I for more details).

providers report.<sup>9</sup> Agent censuses have been somewhat controversial, as there is no good way to tell whether researchers have missed a number of hard to find agents; whether providers have overestimated their numbers; or if some combination of the two is at play.<sup>10</sup> As a result, census figures have not been cited as prominently as those reported by regulators or other industry bodies.

The second option is to collect information on the number of providers agent outlets serve from nationally representative agent surveys. The *Helix* Institute of Digital Finance has carried out such surveys in key countries since 2013. Using this data, we can estimate the number of agent outlets by adjusting regulator figures down to account for multiple tills found in agent outlets.<sup>11</sup> We subsequently use this figure to calculate the number of active agent outlets. This enables us, for the first time, to directly compare statistics providers have been reporting to the regulators and GSMA with the figures researchers have been collecting in the field (see Section 2).

## Methodology

We take latest IMF figures, which represent latest agent till counts from the respective regulators, and adjust them down using two deflation factors to account for the following:

1. Non-exclusive agent outlets that serve more than one provider, and therefore have multiple tills. Note that this adjustment must be done carefully as the number of providers non-exclusive agent outlets serve varies within and across markets.
2. Agent outlets that hold multiple tills for the same provider. While this is less common, in some countries it is a salient factor.

Accounting for non-exclusivity and multiple till holding gives us the number of actual agent outlets in a country, which is significantly lower than the number of agent tills in each country.<sup>12</sup> Please see Text Box and Appendix III for more details on these calculations.

### TEXT BOX: DEFLATOR CALCULATIONS

We draw on the latest waves of ANA data available for Uganda (2015), Tanzania (2015), Kenya (2014), Bangladesh (2016), and Pakistan (2014) to calculate the “non-exclusivity” and “multiple till” deflators in turn.

We first determine the total number of tills corresponding to the number of providers an agent outlet reported serving in each of the ANA Surveys. We then calculate the discount percentage that gets us back to the total survey sample count of agent outlets. In other words:

$$\text{Non-exclusivity deflator} = \frac{(\text{Total sample count})}{(\text{Total till count})}$$

where

Total sample count = X+Y+Z+W...

Total till count = 1\*X + 2\*Y + 3\*Z + 4\*W..., and

X – # of outlets that reported serving 1 provider,

Y – # of outlets that reported serving 2 providers,

Z – # of outlets that reported serving 3 providers,

W – # of outlets that reported serving 4 providers...

This deflator should be highest – and produce the smallest discount – in markets that have remained largely exclusive and/or with few DFS providers. It should be lowest in countries where many agents serve many providers simultaneously.

After discounting outlets that serve multiple providers, we also adjust for agents who operate multiple tills for the same provider. The calculations are analogous to those for non-exclusivity deflator above.

<sup>9</sup> The accuracy of the estimates produced depends on providers’ willingness to share their agent locations with the researchers. The MIX acknowledges this to be a challenge. FINclusion Lab *MIX State of the Data* 2015: 25-26.

<sup>10</sup> This could actually be done if providers would share their lists of agent outlets with researchers for comparisons. However, providers have been reluctant to do this, leaving the debate unresolved.

<sup>11</sup> See Appendices I and III for more details on *Agent Network Accelerator (ANA) Survey* data and the methodology for calculating discount factors.

<sup>12</sup> One must be aware that this analysis is not perfect because the dates when regulators collect statistics on numbers of registered agents do not correspond exactly to the dates The *Helix* Institute of Digital Finance conducted its surveys. Our data shows that rates of exclusivity can change markedly in the space of a year. In spite of some discrepancies in timings of data collection (a matter of months), this analysis still represent the most reliable estimates to date.

In Pakistan and Tanzania, the number of agent outlets is one-third that of agent tills; in Uganda and Bangladesh it is one-half.

## Agent Outlets in Five Countries

In Tanzania and Pakistan, we estimate the number of agent outlets to be roughly one-third of the total number of agent tills (see Table 1). In Pakistan this is primarily driven by the large number of providers each agent outlet serves. In Tanzania outlets serve fewer providers than in Pakistan, but 19% of agents report that they operate multiple tills for the same provider, which translates into high concentrations of tills in specific outlets.

In Uganda and Bangladesh, we estimate the number of agent outlets at one-half of the number of agent tills. In Uganda the reasons for this are a combination of the two discounted factors as explained for Tanzania, whereas in Bangladesh numbers are driven down almost solely by the non-exclusivity rate. Kenya stands as a case apart: there most agents were exclusive to one provider in 2014.<sup>13</sup> Our estimates of outlets in Kenya in 2014 are just over 80% of the agent till figures reported by the Central Bank of Kenya (CBK).

Table 1. Agent Outlets

	Agent tills <sup>1</sup>	Non-exclusivity deflator <sup>2</sup>	Multiple till deflator <sup>3</sup>	Agent outlet estimate	Average number of tills per outlet <sup>4</sup>
<b>Kenya</b>	123,703	84%	98%	100,756	1.2
<b>Tanzania</b>	270,974	47%	81%	103,371	2.6
<b>Uganda</b>	109,458	61%	81%	53,722	2.0
<b>Bangladesh</b>	628,671	49%	99%	302,718	2.1
<b>Pakistan</b>	204,073	38%	95%	74,860	2.7

1 2016 IMF *Financial Access Survey (FAS)*: 2014 “registered agent” figures for Kenya and Pakistan; 2015 “registered agent” figures for Bangladesh, Tanzania and Uganda.

2 Non-exclusivity deflator is calculated based on the number of providers agents reported serving in *ANA Surveys*. For more detail see Appendix III.

3 Multiple till deflator is calculated based on the number of tills agents reported holding for a single provider in *ANA Surveys*. For more detail see Appendix III.

4 Average number of tills found in an outlet serving the same or different providers.

Looking at the relative size of the deflators in Table 1, it is clear that findings are driven primarily by the prevalence of non-exclusivity, rather than shops operating multiple tills for one provider. The higher the rates of non-exclusivity in a market, the greater the concentration of multiple tills in the same outlet, and the more difficult it is to ascertain the true size of the network and the levels of access it provides if till locations remain unknown. Consequently, as non-exclusivity intensifies, regulators and the industry might want to rethink the value of collecting and aggregating agent till numbers in the absence of data on their locations and dispersion across outlets.

13 The *ANA Kenya* survey was conducted from November to December, only a few months after the *July 2014 ruling* by the Competition Authority of Kenya (CAK). Non-exclusivity is likely to have increased since then. The difference between the statistics for registered agents and actual agent outlets in Kenya is likely to increase in the future.

## 1.3 Active Agents

In order to accurately measure access, we need to account for another very important factor – agent inactivity. Adjusting our estimates for inactivity will also enable comparisons with agent censuses, since census methodology would generally not find non-operational tills.

### Definition

While myriad definitions of “active agent” are used,<sup>14</sup> the most common ones are:

1. An agent that conducts one transaction in a 30-day period; referred to as a 30-day active rate.
2. An agent that conducts one transaction in a 90-day period; referred to as a 90-day active rate.

GSMA has been reporting 30-day activity rates since 2013. Regulators, on the other hand, tend to employ the 90-day (or 3 month) active rate. From a strategic operations standpoint, The *Helix* Institute of Digital Finance believes that even the 30-day rate is not financially viable. It is not realistic for an agent to allocate scarce capital to the mobile money business, if the return is so low.

ANA data shows that in East Africa agent tills that perform less than one transaction *per day* are unable to break even.<sup>15</sup> In South Asia, where operating costs are lower, only a small percentage of profitable agents survive on less than one transaction *per day*. Moreover, practically all of them operate in non-dedicated outlets, where digital financial services are offered in parallel to another business. Such agents tend to attribute all their expenses to the core business and frequently report close to zero marginal costs for DFS.<sup>16</sup>

We therefore recommend that providers and regulators revisit the definition of activity, taking into account agents’ operational expenses and commission structure. A meaningful definition would revolve around sustainability of the agency business, and set the minimum monthly transactions threshold necessary for the agents to cover their monthly expenses (see Appendix IV for further analyses and discussion on till-level transactions and profits).

Since agent acquisition requires significant investment in recruitment, training and the provision of marketing/business process materials, low activity rates impact providers’ operational efficiency. High dormancy rates might actually hurt providers’ reputation and undermine customers’ trust in the service, ultimately hampering adoption and use.<sup>17</sup>

...in East Africa, agent tills that perform less than one transaction per day are unable to break even.

<sup>14</sup> GSMA has noted that while 60% of respondents used a definition of, “at least one transaction in the past 30 days, there were a variety of definitions used”; and that some providers also take into account operational elements like being “able to’ perform transactions”, having “a sufficient balance to conduct transactions”, and in a few cases “sufficient branding of the agent outlet and quality of service at the point of sale.” GSMA *State of the Industry Report 2012*: 25. To the best of our knowledge, there has been no subsequent effort to align the definitions. Nonetheless, GSMA reports 30-day active rates in its subsequent State of the Industry Reports.

<sup>15</sup> No agents performing under one transaction per day for a particular provider in Kenya and Uganda are able to break even at the provider level; and only 1% of agents profitable at the provider level in Tanzania perform less than one transaction per day on that provider’s till. We define breaking even as making zero or positive profit from serving a particular provider, calculated as the difference between self-reported monthly earnings and expenses for that provider.

<sup>16</sup> Only 1.7% of agents performing under one transaction per day on a particular provider’s till are able to make a profit from that provider in Bangladesh; the same figure amounts to 6% in Pakistan.

<sup>17</sup> GSMA *State of the Industry Report 2013*: 24.

Activity rates are crucial for evaluating effective financial inclusion and accessibility of digital financial services to (potential) customers. Therefore, rather than recruiting and hoping for the best (a popular method called “spray and pray” in the industry), providers should track their agent inactivity and understand its causes and remedies.

## Data Sources & Methodology

There are two main sources of data for activity rates: regulator statistics and GSMA-processed data from their global provider survey. Since GSMA statistics are not available at the country level, we opt to use regulator figures, while bearing in mind that they represent a generous measure of agent activity rates (see Appendix V for a full discussion of data sources).

## Active Agent Outlets in Five Countries

After accounting for agent dormancy, Kenya, Tanzania, and Pakistan have a comparable number of active agent outlets, in the order of 60,000. Bangladesh boasts roughly twice as many active outlets; Uganda – roughly half as many as Kenya (see Table 2).

**Table 2. Active Agent Outlets**

	Agent tills <sup>1</sup>	Agent Outlet Estimate <sup>2</sup>	Agent Activity Rate <sup>3</sup>	Active Agent Outlet Estimate
<b>Kenya</b>	123,703	100,756	67%	67,407
<b>Tanzania</b>	270,974	103,371	63%	65,123
<b>Uganda</b>	109,458	53,722	63%	33,845
<b>Bangladesh</b>	628,671	302,718	39%	117,202
<b>Pakistan</b>	204,073	74,860	78%	58,510

1 2016 IMF *Financial Access Survey (FAS)*: 2014 “registered agent” figures for Kenya and Pakistan; 2015 “registered agent” figures for Bangladesh, Tanzania and Uganda.

2 Calculated by applying “non-exclusivity” and “multiple till” deflators (discussed in Appendix III) to the total number of agent tills.

3 Tanzania rate is the 90-day rate reported by Bank of Tanzania in 2015. Uganda is proxied by 90-day active rate, reported by Bank of Tanzania in 2015; Kenya is proxied by 90-day active rate, reported by Bank of Tanzania in 2014 (and *IMF FAS* 2014). Bangladesh rate is the 90-day activity rate, reported by Bangladesh Bank (and *IMF FAS* 2015). Pakistan rate is the 90-day activity rate reported by State Bank of Pakistan (and *IMF FAS* 2014).

## SECTION 2

## Comparing Agent Network Size with Existing Statistics



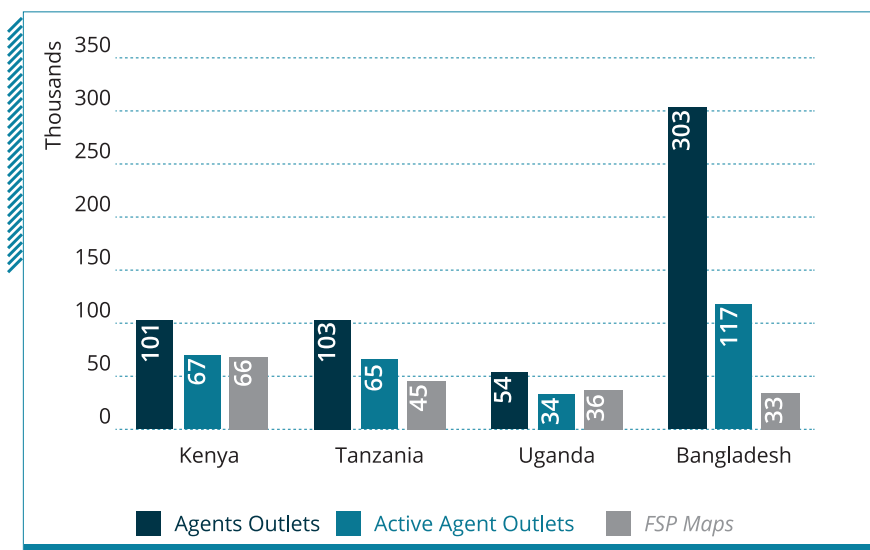
Having painstakingly estimated the number of active agent outlets in five leading digital finance countries, we are now in a position to compare them to the regulator figures obtained from providers to the existing agent censuses – *FSP Maps* – collected by Brand Fusion (see Appendix I).

### 2.1 Active Agent Outlets vs. Existing Censuses

Figure 3 displays our outlet and active outlet figures next to *FSP Maps* data.<sup>18</sup> We should not expect our figures to match the censuses exactly for three reasons. First, because we have had to use 90-day activity rates as the best proxies we could find for country-specific activity rates, our estimates will not be perfect. Secondly, *FSP Maps* was not able to obtain complete lists of agents from all the providers in each country. So they had to search for agents themselves, but not all are well branded or easy to find so inevitably some would have been missed. Thirdly, there is a time difference between when providers reported their agent till totals to regulators; when The *Helix* Institute of Digital Finance collected statistics on exclusivity; and when *FSP Maps* collected their data (see Appendix VI). All the while, numbers of agent outlets were growing, as were levels of non-exclusivity in every country, except Bangladesh.

<sup>18</sup> Note that *FSP Maps* did not collect data in Pakistan, so it is not included in this analysis.

Figure 3. Active Agent Outlets vs. *FSP Maps* Censuses



The level of inaccuracy is difficult to gauge. However, the *FSP Maps* agent census corresponds extremely well to our adjusted agent till statistics in Kenya and Uganda. In Uganda, agent activity rate could be a little higher than our proxy, accounting for the slight difference in figures. In Kenya it is likely that not all agents were found during the census; or it could be that the proxy we used for agent activity in Kenya was slightly too high. Either way, our calculations largely validate the *FSP Maps* censuses in these two countries.

However, in both Tanzania and Bangladesh the discrepancies are striking. Both countries are subject to the same issues as Kenya and Uganda but we believe that a third factor can largely explain these disparities. While the timing of census versus regulator data collection for both Kenya and Uganda was reasonably close, in Tanzania and Bangladesh it was not. In Tanzania, the *FSP Maps* study was conducted in the first half of 2014 - some 19 months before the regulator data used in our calculations.<sup>19</sup> When we perform the same calculations using the first wave of the *ANA Survey* and the end of the 2013 regulator data, we end up with 46,300 active agent outlets, which is again remarkably close to *FSP Maps*' figure of 45,400.

Similarly, the Bangladesh census data was collected a full 26 months before the regulator data used here. When we used historical data from the *ANA Survey* and the regulator from 2013/2014 as we did with Tanzania, our estimates are closer, though in this case, still widely divergent: 63,700 active agent outlets versus 32,700 found in *FSP Maps*. This is a big difference, but it is not entirely surprising to us.

*FSP Maps*' numbers are especially low for Bangladesh, largely because at the time of data collection, two of the biggest Bangladesh DFS players were less than two years old. The census was conducted before MobiCash and other banks aggressively pushed to increase their numbers. Incidentally, data collection in Dhaka was completed right before a large investment into agent network expansion concentrated in the capital.

<sup>19</sup> We use regulator figures that best match the year when the latest *ANA Survey* was conducted to ensure that we have the most up-to-date understanding of exclusivity rates, as they tend to evolve over time.

Many agents might have been missed in this census because finding agents in Bangladesh is more difficult than in other countries. Some 96% of agents in Bangladesh operate parallel businesses; and when agent branding is present, it is often hidden amongst a multitude of other advertisements. Furthermore, many agents in Bangladesh are branded by banks, which unlike telecoms, do not use eye-catching colours and often place their posters poorly somewhere inside the agent outlet so that their advertising is difficult to spot.

Overall, the ability of our methodology to replicate active agent outlet numbers for Kenya, Tanzania and Uganda not only lends more credence to the *FSP Maps* figures, it also provides a more cost-effective methodology for arriving at active agent outlet counts.<sup>20</sup> Because our estimates for East Africa are so similar, and the calculations for Bangladesh use the same methodology and more current regulator data, we use them for subsequent analyses.

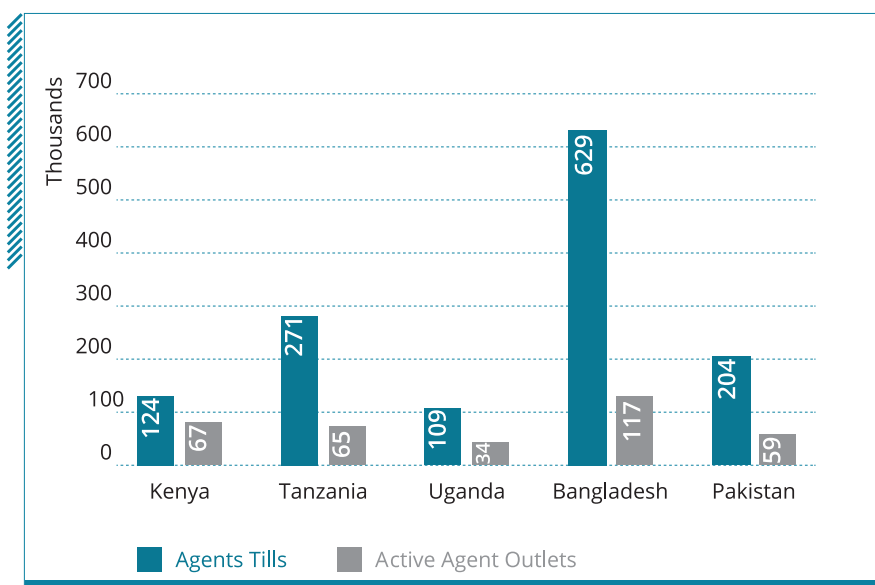
...our ability to replicate active agent outlet numbers for Kenya, Tanzania and Uganda...lends more credence to the *FSP Maps* figures.

## 2.2 Active Agent Outlets vs. Regulator Figures

Let us now compare our understanding of the number of active agent outlets to regulator statistics, which are usually used to describe access to digital finance across the world (see Appendix II).

Our figures are strikingly different from the respective regulator country statistics (Figure 4). In Bangladesh, active outlets constitute one fifth of the regulator agent till total. In Tanzania, they amount to one quarter of regulator figures. In Pakistan and Uganda, active outlets are just under a third of regulators report. In Kenya, active outlets are roughly half of total agent till count. This can be attributed to the fact that we only count non-exclusive outlets once and exclude dormant agents.

Figure 4. Agent Tills vs. Active Agent Outlets



<sup>20</sup> Of course *FSP Maps* add value to their data by not only counting agent outlets but also geo-locating them, which is not possible using our methodology.



Most regulators are well aware of the challenges arising from this multiple counting of agents. However, they have yet to devise strategies or modify their data collection approaches to address this issue. Non-exclusivity has been the norm in many countries as they have developed, and is becoming the *modus operandi* even in East Africa where markets like [Kenya](#) have previously been known for high levels of exclusivity. This means that to understand the number of agent outlets in a country, it is now imperative to account for non-exclusivity.

Furthermore, activity rates must be accounted for when reporting on either agent tills or agent outlets. Inactive agents do not contribute to greater access to finance, and certainly do not increase revenue for providers – instead, they increase costs. GSMA understands this, and regularly includes agent activity rates in their *State of the Industry Reports*. However, many regulators have yet to collect these statistics at a country level.

Our research reveals – and regulators, providers and other DFS stakeholders will surely agree – that conceptual clarity on the differences between agent tills, often referred to as registered agents, and agent outlets is increasingly vital as DFS markets burgeon around the world. Active agent outlet statistics, ideally geo-located, are more appropriate for measuring physical access to finance, than the widely-cited aggregated till totals, unadjusted for dormancy (see Appendix II).

...conceptual clarity on the differences between agent tills, often referred to as registered agents, and agent outlets is increasingly vital as DFS markets burgeon around the world.

To enhance measures of financial access, regulators could champion efforts to geo-tag agent locations. In fact, [Bank of Tanzania](#), [Bank of Ghana](#), and [Central Bank of Myanmar](#) are already pioneering this by requiring the regulated financial institutions to report the geospatial coordinates of their mobile money agents. Central Bank of Kenya [Guideline on Agent Banking](#) also includes fields for reporting of GPS coordinates. While compliance to such regulations remains a challenge for providers,<sup>21</sup> a recent report [Building Sustainable Geospatial Data Resources for Financial Inclusion](#) argues that agent registries, like the one under development in Tanzania, could catalyse spatial data collection.

In the absence of data on agent till locations, regulators could improve their understanding of financial access by using active agent outlet numbers. This section has laid out a simple methodology for calculating these numbers from the aggregate agent tills and nationally representative agent surveys. Regulators could commission such studies to update non-exclusivity figures.

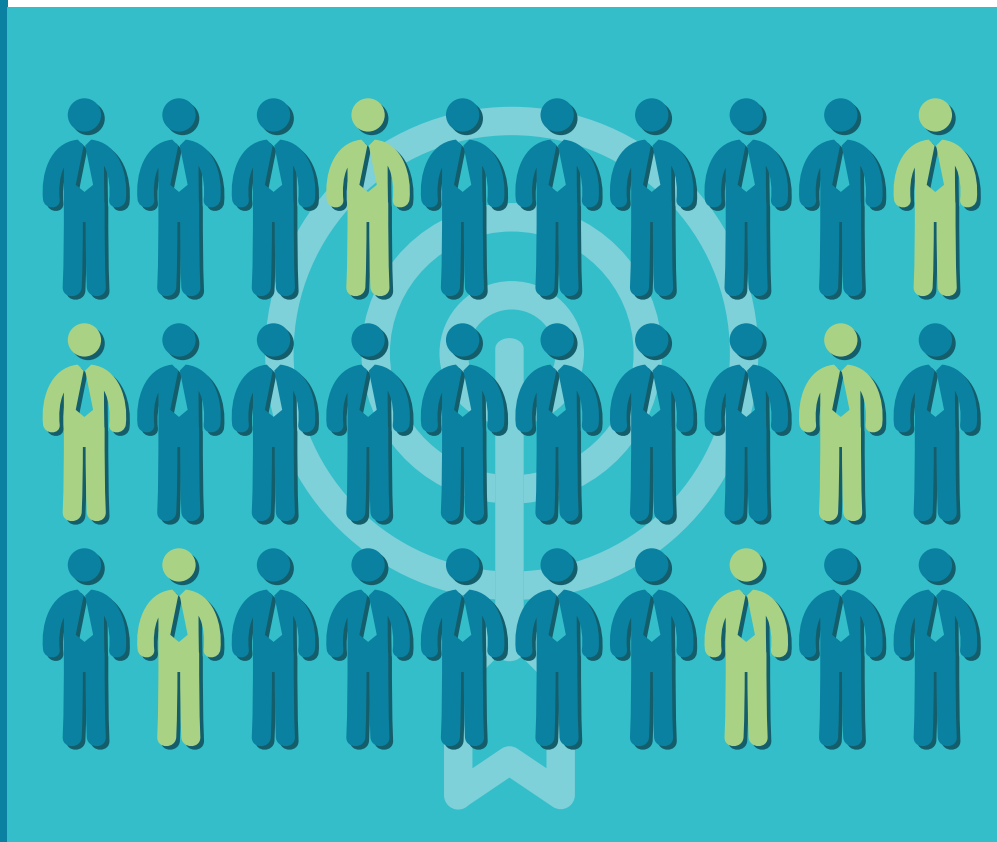
More importantly, we urge regulators to require providers to systematically report activity rates that conform to appropriate definitions. Whether geo-tagged or not, dormant tills and outlets are not serving clients and cannot be said to provide access to financial services.

The data should be aggregated to the country level available publicly and reported to the international institutions that track financial access.

<sup>21</sup> Some providers like *Equitel* have already made their *agent locations* available publicly.

## SECTION 3

## Contextualising Agent Network Size



The aim of this paper is to develop a better understanding of the extent to which agent networks in five key countries provide access to finance. The first two sections determined the true size of the five countries' agent networks in terms of active agent outlets, showing how different these figures are from popularly quoted statistics. Now that we have an understanding of the number of active agent outlets in these five countries, we can conduct more sophisticated analyses of financial access.

While there is no definitive methodology for doing this, we draw inspiration from our [recent publication](#) on agent network success to compare active agent outlet numbers to potential and actual customer bases. We then show the relationship between active customer to agent outlet ratios and agents' daily transactions and monthly revenue.

### 3.1 Customer to Agent Ratios

There are several ways to calculate the average number of customers per agent. We can juxtapose agent numbers to the total number of *potential customers*, in other words the entire adult population;<sup>22</sup> or the total number of adults who have *registered* to use digital financial services; or the total number of *active users* of the services offered in a particular country. This section calculates all three of these ratios, drawing on the active agent outlet estimates derived in the preceding sections. Each of these calculations is

<sup>22</sup> Or a subset of the adult population, say those who own a mobile phone, deemed as the potential customer base.

revealing for different reasons, which we discuss. Conducting all of them will not only show us how accessible services are for existing customers, but also how much more expansion might be needed to serve the entire population.

Note that although spatial analysis falls outside the scope of this paper, we are cognizant that relative distributions of population and existing agent outlets are crucial for analysing financial access and agent network expansion needs. Ongoing work by [Flowminder](#), funded by Consultative Group to Assist the Poor (CGAP), will provide insights into rural frontiers of DFS in Tanzania based on spatial analyses.<sup>23</sup>

### Adult Population to Active Outlet Ratio

The easiest way to compare the size of an agent network to the potential customer base is to calculate the ratio of adults<sup>24</sup> to the total number of active agent outlets within a particular market<sup>25</sup> (Table 3).

**Table 3. Adult to Active Outlet Ratio**

	Adult Population <sup>1</sup> (Millions)	Active Agent Outlets (Thousands)	Ratio: Adults to Active Outlets
Kenya	24.7	67.4	367
Tanzania	27.6	65.1	424
Uganda	19.3	33.8	570
Bangladesh	105.6	117.2	901
Pakistan	111.6	58.5	1,908

<sup>1</sup> Adult population figures are calculated using SP.POP.TOTL and SP.POP.1564.TO.ZS indicators from the World Bank World Development Indicators Database. Data for Kenya and Pakistan is from 2014; for Bangladesh, Tanzania and Uganda it is from 2015.

Adult to active outlet ratios in East Africa decrease as a function of DFS market maturity.<sup>26</sup> The ratio is lowest in Kenya with less than 400 adults per active outlet, whereas in Uganda, there are nearly 600 adults for each active outlet. Data suggests that thanks to rapid market development in Bangladesh, it has already leapfrogged Pakistan when it comes to digital finance access points per adult.<sup>27</sup> This is not surprising given the large number of providers in the Bangladesh market, and their aggressive investment in agent networks. In comparison, Pakistani providers focused their expansion strategies on placing new tills in existing agent outlets rather than recruiting new ones. This is best illustrated by the statistic that in Pakistan the average agent outlet serves 2.6 providers, while in Bangladesh it is only 2.1 (19% lower).

Adult to active outlet ratios in East Africa decrease as a function of DFS market maturity.

<sup>23</sup> This project combines a variety of data sources on mobile money agents, financial access points, DFS users and demographic data to identify the factors that limit the uptake and delivery of DFS in rural areas and define the frontiers of the DFS landscape. It will offer insights to DFS stakeholders, such as optimal mobile money agent density maps, optimal rebalancing locations or financial literacy maps for targeting financial literacy education campaigns.

<sup>24</sup> Defined by the UN and the World Bank as individuals between 15 and 64 years of age. We calculate adult population figures using the World Bank's World Development Indicators.

<sup>25</sup> We recognise that this approach assumes that all adults are equally likely to use DFS, which is not true and depends on many factors in markets where registration is required; such as literacy levels, awareness, preferences, financial intermediation tools already available to them, poverty rates, phone ownership, etc. Therefore, these statistics should be interpreted as being at the upper level, and it should be noted that even banking penetration in OECD countries is below 100%. After nearly ten years of DFS market development in Kenya, just over two-thirds (69%) of adults have formal financial accounts (including banks (27%), non-bank financial institutions (11%) and mobile money wallets (67%)); FINclusion Lab (2016) *Kenya Wave 3 Report FII Tracker Survey Conducted September 2015*.

<sup>26</sup> Market maturity is defined as the percentage of adults who have ever used mobile money, which amounts to 73% in Kenya, 63% in Tanzania, and 47% in Uganda. This was calculated by the authors using *Financial Inclusion Insights* data.

<sup>27</sup> While 2015 Bangladesh data and 2014 Pakistan data are presented in the table, we are comfortable making this claim, having performed a similar analysis for 2014 Bangladesh data.

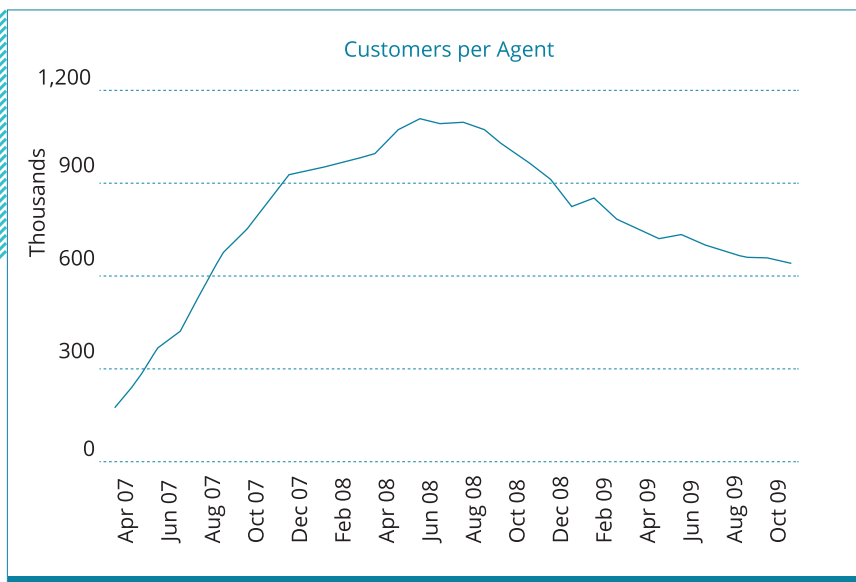
While the adult to active agent outlet ratio may be a good indicator of the level of development of the DFS sector in a country, we feel that more research is needed before we recommend a global benchmark. It may be fair to say that Tanzania and Uganda might target Kenya's number as their digital ecosystems are similar. Working on this assumption, Tanzania would need about 10,100 more active agent outlets; Uganda – about 18,700. These estimates are based on current adult population figures and assume that Uganda and Tanzania will achieve similar population penetration rates as Kenya (63% in 2014 and 67% in 2015). Another important caveat is that agent outlet needs also depend on the spatial distribution of population and existing outlets. So providers could fail to meet this target, or conversely require even more agents than predicted.

We are even less certain about Pakistan and Bangladesh. Because population densities are so much higher in these countries, they may actually need fewer agent outlets to effectively serve all potential customers. Comparing South Asian numbers to East African numbers might therefore lead to an erroneous conclusion that South Asian countries are further behind East Africa than is actually the case.

## Registered Customer to Agent Ratio

Providers across the globe struggle to strike the right customer to agent balance. Literature on agent network deployment and management continues to recreate what has become a classic graph, depicting the evolution of M-PESA customer to agent ratio in the early years after its launch in Kenya (Figure 5).<sup>28</sup>

Figure 5. M-PESA Customer to Agent Ratio (2007-2009)



Even though this figure and the resulting ratios have been cited widely by industry professionals, it is actually hard to translate into advice for other providers, much less a benchmark for the industry. That is because the graph is missing a key piece of information, namely the activity rates of M-PESA agents.

<sup>28</sup> CGAP (2011) *Agent Management Toolkit: Building a Viable Network of Branchless Banking Agents*, GSMA (2012) *Building a Network of Mobile Money Agents*, McKinsey & Company (May 2012) *Mobile Money: Getting to Scale in Emerging Markets*, The Helix Institute of Digital Finance (July 2014) *Agent Network Accelerator Survey: Nigeria Country Report 2014*

...230 is the best benchmark we have for now... though this ratio will and should fluctuate during periods of expansion as providers shift focus between on-boarding new customers and new agents.

Given the wide variation in agent activity rates, particularly in the early days of the deployment, it is impossible to translate the M-PESA ratio into a target for another provider without understanding their agent activity rates.

In this section, we use our active outlet estimates, coupled with registered customer figures from East Africa MNO wallet markets, to propose new benchmarks for the registered customer to active outlet ratio. This keeps the analysis comparable to M-PESA figures (by using registered customer rates), while also making it translatable to other networks (by accounting for activity rates). Registered customers are defined as those with at least one mobile money account registered in their own name (see Appendix VII for data sources and methodology).

Table 4 reveals that our ratios are very similar to each other, but they amount to a fraction of the popular M-PESA inspired benchmark of 400-600 customers per agent.<sup>29</sup> The significant revision of the ratio is likely attributable to increasing ecosystem maturity, and in retrospect, M-PESA probably had insufficient agents for their customers. The high customer to agent ratio in the early days of the rollout could also have been required to sustain agents when customers were just starting to use mobile money and usage rates as well as intensity of use were lower than they are today.

**Table 4. Registered Customer to Active Outlet Ratio**

	Registered Customers <sup>1</sup> (Millions)	Active Agent Outlets (Thousands)	Ratio: Registered Customers to Active Outlets
Kenya	15.7	67.4	233
Tanzania	16.9	65.1	259
Uganda	6.8	33.8	201

<sup>1</sup> Calculated using *Financial Inclusion Insights'* registration rates from Kenya (2014), Tanzania (2015), and Uganda (2015) multiplied by total adult population, calculated using SP.POP.TOTL and SP.POP.1564.TO.ZS indicators from the World Bank World Development Indicators Database for corresponding countries and years.

Kenya has the most mature digital financial ecosystem in the world and is therefore probably the closest to achieving a steady-state ratio of registered customers to agents. As such, its ratio of roughly 230 is the best benchmark we have for now. Relative to Kenya, Uganda may have too many agent outlets for its registered customer base, whereas Tanzania may need to expand its agent base for its registered customers. Admittedly, the ratios across all three countries are so close that making such recommendations could be stretching the analysis too far. Furthermore, this analysis should really be based not on registered numbers but on active customer numbers, which we will present next. Incorporating spatial data would further enhance the analysis. Lastly, we should note that this ratio will and should fluctuate during periods of expansion, as providers shift focus between on-boarding new customers and new agents. Nevertheless, it is helpful to have a benchmark to evaluate whether growth is becoming too imbalanced in one way or the other during the process.

<sup>29</sup> CGAP (2011) *Agent Management Toolkit: Building a Viable Network of Branchless Banking Agents*, McKinsey & Company (May 2012) *Mobile Money: Getting to Scale in Emerging Markets*, IFC (2015) *The Mobile Banking Customer that Isn't: Drivers of Digital Financial Services Inactivity in Côte d'Ivoire*, CGAP (2016) *The Role of Funders in Digital Finance: Peer Experiences*

## Active Customer to Active Agent Ratio

Conscious of the fact that a) not all registered customers are active and b) not all active users are registered, particularly in markets where **OTC transactions** are prevalent, we now focus on active customer to active agent ratios. This is the most meaningful indicator of how well an agent network is serving those who are actually using the system.

As with agent activity, customer activity rates can be defined over various time periods. Both **GSMA** and regulators report customer activity rates on a 90-day basis,<sup>30</sup> probably in order to accommodate the use of mobile money for transactions performed on a bi-monthly or quarterly basis, such as paying for school fees or other bills. While this is a valid argument, at The *Helix* Institute of Digital Finance we believe that if digital finance is to replace cash, even monthly use is a low threshold for activity.

In this paper, we define active customer as an adult who has conducted any financial activity using any DFS provider within the past 30 days, regardless of whether he or she was registered for the service. We use *Financial Inclusion Insights* data to calculate these activity rates and apply them to our adult population figures to determine the number of active customers in each country we examine (see Appendix VIII for both 90- and 30-day usage rates and corresponding active customer to outlet ratios).

Table 5 presents active customer to active outlet ratios resulting from our calculations. We are not the first organisation to look at these ratios, as GSMA did so in their *State of the Industry 2013 report*.<sup>31</sup> We perform a similar analysis for countries and therefore use active agent outlet numbers, thus offering a new perspective as well as updated figures. While GSMA recommended a ratio of between 150 to 800 active customers per active agent, our analysis can actually offer a much more precise range.

**Table 5. Active Customer to Active Outlet Ratio**

	Active Customers <sup>1</sup> (Millions)	Active Agent Outlets (Thousands)	Ratio: Active Customers to Active Outlets
Kenya	14.8	67.4	219
Tanzania	12.9	65.1	198
Uganda	5.2	33.8	152
Bangladesh	20.9	117.2	178
Pakistan	4.7	58.5	80

<sup>1</sup> Calculated using *Financial Inclusion Insights'* 30-day active rates for Kenya (2014), Tanzania (2015), Uganda (2015), Bangladesh (2015), and Pakistan (2014) multiplied by total adult population, calculated using SP.POP.TOTL and SP.POP.1564.TO.ZS indicators from the World Bank World Development Indicators Database for corresponding countries and years.

The first issue of note is that the GSMA lower level of 150 does not seem to apply to active agent outlets, as Pakistan is far below it, and Uganda is about equal to it, and they are both global leaders in DFS. While it is unclear as to why Pakistan is able to sustain such a low ratio compared to other leading countries, two major factors certainly play a role: 1) it has been noted in our previous research,

<sup>30</sup> *State Bank of Pakistan* is the exception, with its 180-day active account definition.

<sup>31</sup> CGAP, IFC, and McKinsey & Company have focused on registered customers to registered agent ratios discussed in the preceding section. See footnotes 28 and 29.

that their combination of OTC and non-exclusivity has led to **commission wars** which benefited the agents; 2) in comparison to East Africa, Pakistani agents have very low operating costs mainly thanks to the liquidity management support from providers, which might allow them to serve fewer customers profitably.

The other four leading countries are closely aligned with ratios of between 152 and 219. These ratios will be affected by combinations of various market and agent network characteristics in a particular country. DFS take-up and usage rates would increase the ratio. Higher levels of dedication would translate into the ability and need to accommodate greater numbers of customers because dedicated outlets focus exclusively on serving mobile money clients. Higher levels of non-exclusivity should also contribute to greater footfall at the outlet. High agent churn could lower the ratio as less experienced agents tend to serve fewer customers, or increase it if outlets going out of business are not immediately replaced.

Proposing benchmarks amidst this complexity is a tricky affair. Nevertheless, we find the 150-220 range in the four leading markets surprisingly tight. We therefore feel it is more useful than the range proposed up to now for guiding agent networks to reach a healthy balance between active customers and active agents. Further efforts to refine the benchmark could add value by incorporating spatial analysis to determine, for example, the number of active customers within a certain radius around an active outlet.

In four leading markets, the ratios of active customers to active outlets range from 150 to 220.

### 3.2 Customer to Agent Ratios vs. Agent Business and Earnings

A major reason why digital financial services stakeholders are interested in active customer to active outlet ratios is the relationship between these ratios and agent business volumes. Below, we plot this ratio against agents' daily transactions and monthly earnings for 16 major providers from our five countries. They include bank and telecoms and third party providers (See Appendix IX for details on methodology).

Some 16 data points only indicate a trend however this data shows a fairly clean and strong one. Interestingly, providers with a ratio of 84 or higher all have median daily transaction rates of ten or higher (Figure 6). Furthermore, we do not see any of the leading providers with ratios above 250. Therefore, we can make a tentative conclusion that to keep median daily transactions above ten, the ratio of active customers to active agent outlets should fall in the 80-250 range, depending on commission rates, agent density and other variables like transactions per active customer.

Figure 6. Provider-Specific Business Volume vs. Active Customer-Outlet Ratio\*

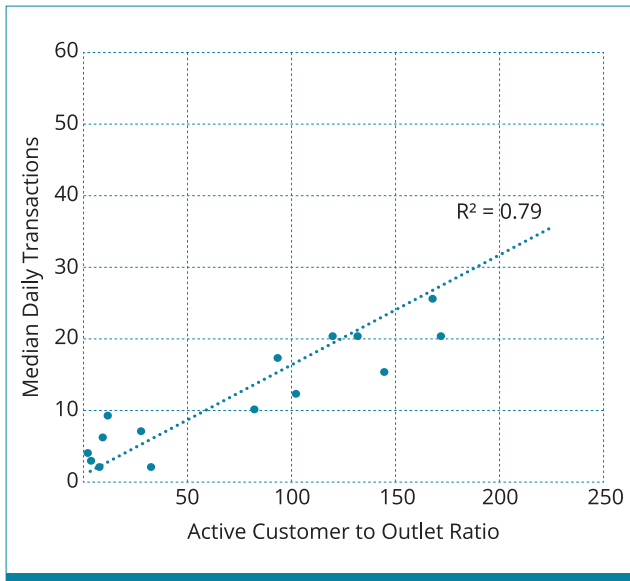
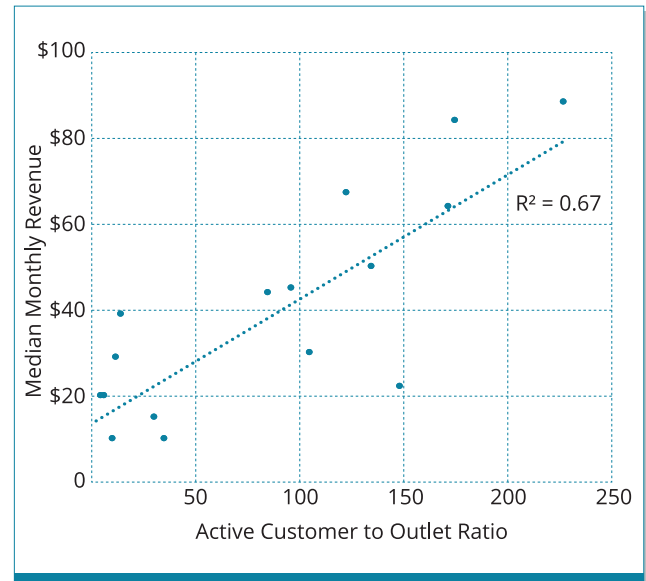


Figure 7. Provider-Specific Monthly Revenue vs. Active Customer-Outlet Ratio\*



\* One provider's data is included in the analysis but not shown as its unique values would have allowed for its identification. For this reason Figure 6 and Figure 7 only display 15 data points.

Analysing Figure 7 leads us to similar conclusions. While the data shows the same general trend, there is more diversity in it, as comparing this ratio to revenue incorporates differences in commission rates by provider. Focusing on the group of providers in the bottom left of the chart, we see there are four that have a ratio below 50, yet their agents generate over \$20 in revenue per month. There could be two potential explanations. The first is that customers of these providers conduct many more transactions than customers of other providers. Therefore, while they do not have more active customers, their agents conduct enough transactions to make decent revenues. However, when we look at transaction rates for these providers, this theory is disproved, as agents serving these four providers actually have very low daily transaction volumes.

A more likely explanation is that these four providers offer agents much higher commissions than their counterparts, and that is why the agents make relatively high revenues in spite of low demand. The strategy of offering high commissions might seem relevant for late comers that build their agent networks on top of incumbents (as all these four have), and are therefore competing at the outlet level to encourage agents to transact using their till. However, this should be taken as a special case, which is unlikely to be a tenable long term strategy. Therefore, revenue levels are artificially high for those providers, and do not represent alternative viable models with lower active customer to agent ratios.

In conclusion, we believe these two figures show that a healthy active customer to active agent outlet ratio can range from 80 to 250, depending on the provider. This builds on the much wider range previously proposed by GSMA and clearly fine-tunes its lower figure, thus positing that agent networks can be designed to function on lower amounts of active customers per agent than previously thought. We hope industry professionals will continue to calibrate this further.



## CONCLUSION

Our calculations of the number of active agent outlets in five leading digital finance countries demonstrate that the use of agent till figures in industry literature has led to an overestimation of global access to finance. We count a total of 635,427 agent outlets (of which only 342,087 active outlets) against a total of 1,336,879 agent tills. In other words, the total number of agent outlets in these five countries is just under half (47.5%) of the total till counts the industry has been using. What is more, active outlets constitute one quarter (25.6%) of all tills.

We believe that the active agent outlet indicator to be so important, that the industry should have the ability to calculate it in the future. This means operational definitions of agents and activity rates need to be standardised. When measuring financial access, we recommend using active agent outlets as the definition of “an agent” along with the 30-day active rate.

Our methodology enables us, for the first time, to validate *FSP Maps*' agent censuses. We are able to approximate census figures with a high degree of accuracy by using agent till (registered agent) figures from regulators and nationally representative agent surveys. Our calculations give us the following active agent outlet counts: Kenya (2014) - 67,407; Tanzania (2015) - 65,123; Uganda (2015) - 33,845; Bangladesh (2015) - 117,202; and Pakistan (2014) - 58,510.

We also contextualise the number of active agent outlets by comparing it to data for adult population, customers, and agency businesses. This analysis gauges relative levels of market penetration across countries and proposes new industry benchmarks for the number of agents providers should target. We highlight three key findings:

**Finding #1** is an estimate for how many more active outlets are needed in Tanzania and Uganda respectively to offer customers in those places the same access to finance that adults in Kenya enjoyed in 2014. Tanzania needs 10,000 operational outlets and Uganda needs 19,000.

**Finding #2** is that the often cited ratio of 400-600 registered customers per agent, inspired by early days of M-PESA, can be calibrated to be more exact and therefore more helpful. We re-calculated this number with more contemporary country-level data, and control for activity rates, which allows other providers to compare their ratios to our findings. In Kenya the ratio now stands at around 230 registered customers per active agent outlet, and both Uganda and Tanzania have similar figures (200-260). Therefore, we suggest 230 is a better benchmark.

**Finding #3** is that agent networks seemingly can be supported by fewer customers than was previously thought. In 2013, GSMA posited a range of 150-800 active customers per active agent; our data shows successful providers with ratios of only 80. Furthermore, none of the leading providers in the five key markets boast active customer to outlet ratios of above 250. We conclude that the target for this important benchmark can be more precise, between 80-250 active customers per active agent outlet.

## Recommendations

### For Regulators, Policy Makers and Donors

Operational definitions for agents matter greatly when measuring access to finance. This paper argues that going forward, active agent outlets rather than agent tills should be the indicator employed for this purpose, ideally along with data on their spatial distribution.

This paper has shown that figures for active agent outlets can be obtained without commissioning expensive, labour- and time-intensive agent censuses in each country. Regulators could require providers to report agent locations<sup>32</sup> and help providers to comply,<sup>33</sup> or carry out nationally representative agent surveys to update non-exclusivity rates. Such surveys could be appended to FinAccess/ Finscope surveys and incorporate additional [indicators of interest](#).

Furthermore, providers have information on agent activity. As an industry we need to elevate the importance of understanding these rates, and standardise how we define them. At present, many regulators do not even ask providers to report these rates, and those that do, often use a 90-day activity rate. Some collect the information but do not publish it on their websites. We urge all regulators to make it a requirement that providers report 30-day activity rates, and publish them on an aggregated country level for policy-makers and industry analysts to use.

It is clear that when policymakers report on and set targets for access to finance, they should take the appropriate steps to ensure they are using the “best fit” statistics. Donors interested in promoting access to finance should work more closely with regulators to ensure that the fundamental information needed to accurately assess it is available.

### For Providers

Measuring the number of agent tills in a network and *combining* it with activity rates can help providers understand how much money is being lost in the acquisition of inactive agents, and enable providers to compare their performance with competitors in leading countries.

We recommend internally defining activity based on an understanding of how many daily transactions it would take for your agents to cover their operational costs. The data in Appendix IV suggests that this will be at least five to ten transactions per day.

In Section 3, we have presented a number of benchmarks that can serve as guidelines for setting goals for agent network expansion. Comparing active agent numbers to the number of adults in the country can give providers a general idea of how many agents they would need overall in order to serve their country. Providers may also look at how many active agents they have per active customer to gauge how balanced their growth has been and whether their strategies can be adjusted to improve network performance. Integrating [spatial data](#) into such analyses could lead to deeper insights.

<sup>32</sup> *Bank of Tanzania, Bank of Ghana, and Central Bank of Myanmar.*

<sup>33</sup> For example, Bank of Tanzania is developing a mobile-based data collection application to create a mobile money agent registry.

# APPENDICES



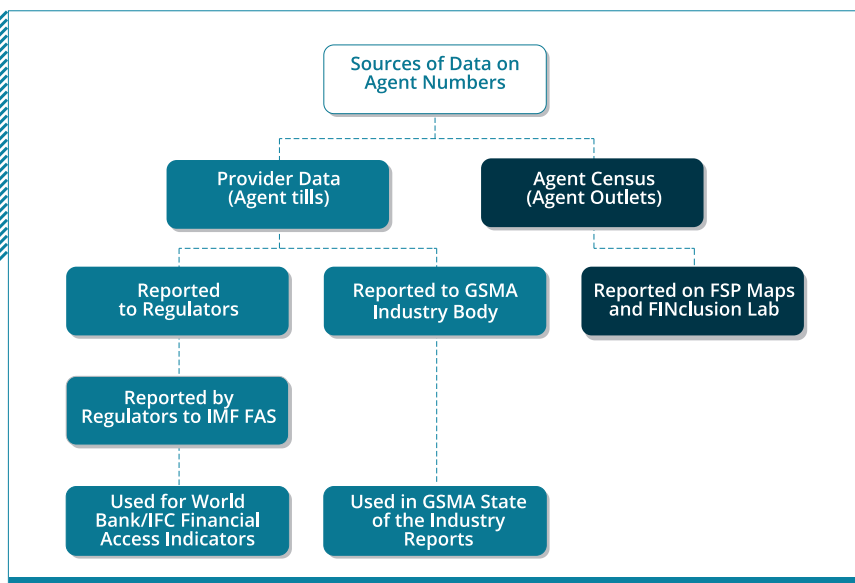
# APPENDIX I

## Registered Agents & Outlets Data

When discussing the number of agents in an ecosystem (at the country, regional or global level), we must first understand where the data comes from. There are two primary sources: 1) DFS provider data on the number of agent tills they have issued and 2) agent censuses conducted by private research firms. Provider data is regularly updated and systematically reported to the regulators and other industry bodies. Censuses, on the other hand, are conducted “on demand” and are only available in a limited number of countries.

To elaborate on provider data: banks, telecoms and third parties that operate agent networks are usually required by regulatory authorities to periodically report on the number of agents they use. Regulators often publish aggregated provider figures, and also submit those numbers to the International Monetary Fund to be included in the annual *Financial Access Survey (FAS)*. Many DFS providers also report their agent numbers as part of the *Global Adoption Survey of Mobile Financial Services*. GSMA disseminates global agent figures every year in their *State of the Industry Reports*.<sup>34</sup>

Figure A1. Sources of Data on Agent Numbers



The figures reported by regulators and the IMF represent the sum of the tills each provider has registered in an ecosystem, and not the number of physical agent outlets in that ecosystem. Because a physical agent outlet may serve multiple providers, using multiple tills, and/or may sometimes use multiple tills to serve a single provider, there are significantly fewer agent outlets in almost all ecosystems than regulators, IMF and GSMA report.

In order to understand how many agent outlets there are in a country, agent tills must be reported in geo-tagged agent registries; alternatively a census or field research on the number agent tills in individual agent outlets is required. Providers generally do not geo-tag their agent tills and therefore cannot provide

<sup>34</sup> According to GSMA, agent numbers providers report in their survey represent unique provider access points.

this information to the regulators. As for the alternatives: the Bill and Melinda Gates Foundation and the Financial Sector Deepening Trust (FSDT) funded Brand Fusion to conduct agent censuses for several countries as part of the *FSP Maps project*. The MIX *FINclusion Lab* also appears to be doing this for some selected markets. The Bill and Melinda Gates Foundation and the UNCDF have also funded the nationally representative *Agent Network Accelerator (ANA) Surveys* in eight countries, which contain information on the number of agent tills at single agent outlets.

**Table A1. Summary of Data Sources on Agent Numbers**

Source	Collection Method	Ecosystem Level	Agent Tills or Agent Outlets?
Regulator Statistics	Aggregated from provider-reported figures	Country	Agent Tills
IMF <i>Financial Access Survey (FAS)</i>	Reported by regulators	Country	Agent Tills
GSMA <i>Global Adoption Survey of Mobile Financial Services</i>	Reported by providers	Global, and sometimes regional	Provider-Specific Outlets (Agent Tills)
Brand Fusion <i>FSP Maps</i>	Agent Census	Country level for six countries	Agent Outlets and Agent Tills (if non-exclusive)
MIX <i>FINclusion Lab</i>	Agent Census	Country level for seven countries.	Agent Outlets
The <i>Helix</i> Institute of Digital Finance <i>Agent Network Accelerator (ANA) Surveys</i>	Nationally representative agent survey	Country level for eight countries	Agent Outlets and Agent Tills

NOTE: All other sources of agent numbers found in the industry literature are based on one of these figures.

Table A1 provides a summary of the common data sources for agent numbers. The following is a more detailed description of each data source presented in the table:

a) **Regulator Statistics** - usually collected by the Central Banks (though sometimes Communications Authorities also contribute to reporting).<sup>35</sup> This data is aggregated from individual reports submitted by the licensed DFS providers (e.g. banks, telecoms, and third party providers) to the regulator. These submissions usually use regulator-mandated reporting templates and are generally done on a monthly or quarterly basis. When regulators sum up the numbers reported by providers, they calculate the total number of agent tills, rather than total number of agent outlets. Many regulators are aware of this issue.

The complexity and comprehensiveness of regulator templates varies across countries; however, we are not aware of any reporting templates that require providers to estimate the number agent outlets, or provide the information necessary for regulators to calculate this figure.<sup>36</sup> Regulators in the five countries that we studied gather information on the number of registered agents (equivalent to agent tills), registered accounts, transaction volume, and total transaction value. Some also collect agent and customer activity rates (see Appendix V for further discussion).

<sup>35</sup> Data is publically available from *Central Bank of Kenya, Bank of Tanzania, Uganda Communications Commission (UCC) Quarterly Reports* (sourced from Bank of Uganda), *Bangladesh Bank*, and *State Bank of Pakistan*.

<sup>36</sup> Some banks like *Bank of Tanzania, Bank of Ghana*, and *Central Bank of Myanmar* require providers to report agent locations, however, these recent regulations have yet to be fully operationalised.

b) **Financial Access Survey (FAS)** - collected annually by the IMF from regulators around the globe. It is a useful resource, as it represents an annual compilation of supply-side data on access to and usage of financial services by firms and households in different countries. However, as this data is compiled directly from the regulators, it does not contain the information necessary to calculate the number of agent outlets in their countries.

While it is the most easily accessible and complete source of regulator data, the way *IMF FAS* reports data could lead to misinterpretation by users. To elaborate: the reported data element is entitled “number of registered agent outlets”, which *IMF FAS Definitions and Instructions* define as, “a location where one or several mobile money agents are contracted to facilitate transactions for users”. Considering that the data is reported to the IMF by the regulators, we must understand these figures to actually represent the total number of agent tills, not the number of agent outlets. The IMF recognises this shortcoming and, when requesting the data, encourages regulators to record any deviations from the desired definitions in the metadata documents that accompany submissions.

c) **State of the Industry Reports (SOTIR)** – compiled annually by GSMA using a mix of bottom-up (service level) and top-down (country level) modelling approaches. They incorporate provider-reported figures from the *Global Adoption Survey of Mobile Financial Services, the GSMA Mobile Money Deployment*

*Tracker*, central bank reports, and *IMF FAS*. The glossaries appended to every *SOTIR* define an agent outlet as “a location where one or several mobile money agents are contracted to facilitate transactions for users.” This definition could lead to misinterpretation since the figures reported by GSMA are actually the figures for provider-specific locations, which would imply that their aggregated figures are counting non-exclusive outlets multiple times.

As recently as the *2014 SOTIR*, GSMA was loosely referring to their figures as “agent outlets”, while acknowledging the important distinction in footnote 11: “At the end of 2014, there were 2.3 million mobile money agent outlets. However, this is not the number of unique mobile money outlets but rather the sum of the outlets providing cash-in and cash-out services for each of the 255 mobile money services that are available globally. Indeed, in many markets, individual outlets may serve several mobile money service providers. This practice is more pronounced in mature mobile money markets, particularly where competition amongst service providers is high. For that reason, the number of mobile money agent outlets published in this report must be interpreted with care as it does not reflect the number of unique mobile money cash-in and cash-out locations.” In the *2015 SOTIR*, GSMA stopped referring to “agent outlets” in favor of “registered agents” in the body of the report, though the glossary still contained the same definition of what constitutes an agent outlet. Note that according to consultations with GSMA, their understanding of registered agents as provider-specific access points, which can carry one or more tills for a single provider, differs from the industry-wide understanding of registered agents as the total number of registered agent tills.

- d) ***FSP Maps*** – collected by Brand Fusion initially in Tanzania with funding from **FSD Trust**, later expanded to five other countries with funding from the Bill and Melinda Gates Foundation. *FSP Maps* is a Geo Spatial survey, designed as a census, of all the financial services access points in Bangladesh (2013), Kenya (2013, 2015), Tanzania (2012, 2014), and Uganda (2013, 2014-2015). The methodology involves obtaining databases of access point locations from financial service providers and then “sweeping each country”; recording every visible outlet, and interviewing the person found on site. The reliability of this data is largely dependent on providers’ collaboration in sharing accurate lists of agent locations as well as the visibility of outlets.
- e) ***FINclusion Lab*** - maintained by the MIX enables geospatial visualisation of financial access. The MIX compiles data on the locations of access points from financial service providers and collates it with customer demographics. As with *FSP Maps*, the reliability of the data depends on providers’ collaboration, **which the MIX acknowledges to be a challenge**.
- f) ***Agent Network Accelerator (ANA)*** – collected by The *Helix* Institute of Digital Finance with funding from the Bill and Melinda Gates Foundation. *ANA* is a nationally representative survey of mobile money agents in Bangladesh (2014, 2016), India (2014), Pakistan (2014), Kenya (2013, 2014), Tanzania (2013, 2015) and Uganda (2013, 2015). In this survey, agents working in a particular outlet report the number of providers they serve. In the first wave of research, agents also reported the number of tills (or agent registration numbers) they operated for the randomly selected provider being researched.

Because *IMF FAS* does not report figures for India, we have focused on five *ANA* research countries. We wrote to regulators in each of these countries to confirm their data collection methodologies, verify the completeness and accuracy of information available on their websites, and request the most recent data where it was not available. We then compared information received from the regulators against the latest *IMF FAS* figures. After matching *IMF FAS* figures to respective regulator figures, we decided to use *IMF FAS* figures with the understanding that they are obtained directly from regulators, and reflect regulators’ methodology that simply aggregates data reported by providers.

We use the most recent 2016 *IMF FAS* release, sourcing total agent till (registered agent) figures from the years that most closely match the latest waves of *ANA* data collection. Therefore, 2014 figures are used for Kenya and Pakistan; 2015 figures are used for Bangladesh, Tanzania, and Uganda.

## APPENDIX II



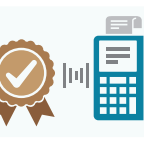
# Using Agent Numbers to Measure Access to Finance

We reviewed the industry literature discussing the number of agents in different ecosystems. Our research revealed that:

1. Most references to the number of agents on a country/regional/global level do not offer a definition of “agents”, so it is unclear if they are discussing agent tills or agent outlets.
2. Even when “agents” are defined, there might be misrepresentations of the figure being given and/or the way it is being applied (see Appendix I on *IMF FAS* and GSMA definitions).

We believe that it would be helpful to have standard terminology for such fundamental concepts in the digital finance industry, and that the agent definition actually being used should be clearly indicated in the literature. Some publications we reviewed referred to both “registered agent” numbers and “agent outlet” figures without distinguishing between the two.<sup>37, 38, 39</sup> This could lead to inaccurate inferences.

**We propose the following definition for the industry to adopt or amend as needed:**

	<p><b>Agent till</b></p> <p>is a provider-issued registered “line”, either a special SIM card or a POS machine, used to perform enrolment, cash-in and cash-out transactions for clients.</p>
	<p><b>Agent outlet</b></p> <p>is a physical location that carries one or more agent tills, enabling it to perform enrollment, cash-in and cash-out transactions for customers on behalf of one or more providers. Agent outlets may have other businesses and support functions.</p>
	<p><b>Registered agent</b></p> <p>is a term used in the industry to refer to agent tills. This term should be avoided as it has been confusing in the past.</p>

Even past literature that has diligently offered operational definitions when discussing numbers of agents might have caused confusion (see Appendix I on *IMF FAS* and GSMA definitions). The *IMF FAS* report defines an “agent” as an “agent outlet”;<sup>40</sup> however, we clearly understand them to be reporting agent till numbers. The IMF is aware of this fact, however it has not yet revised its definitions to avoid confusion. Furthermore, while GSMA carefully uses the term “registered agent” in their 2015 *SOTIR report*,<sup>41</sup> in the Glossary there is no definition of “registered agent”, only one for “agent outlet”, which is not used in

<sup>37</sup> FSDT (May 2016) *Our Work 2013-2014*: 2; 5. “Registered agent” figures are used on page 2, and then “agent outlet” figures are presented on page 5.

<sup>38</sup> Tanzania National Council for Financial Inclusion 2014-2016 *National Financial Inclusion Framework*: 10. Figures denoting locations of “agent outlets” are presented on page 10, and then it is stated that “agents” outnumber all other financial access points 30:1, which must be referring to unstated “registered agent” numbers.

<sup>39</sup> Center for Technology Innovation at Brookings (2016) *The 2015 Brookings Financial and Digital Inclusion Project Report*: 71. *FAS* figures on “agent outlets” are provided on page 71 and then *FSP Maps* figures on total “agent outlets” are used, without noting that they are vastly different numbers.

<sup>40</sup> International Monetary Fund IMF DATA Access to Macroeconomic and Financial Data (2016) *FAS Definitions and Instructions*

<sup>41</sup> GSMA (April 2016) *2015 SOTIR*

the report.<sup>42</sup> Moreover, their understanding of “registered agent” is distinct from regulator and IMF understanding of the same term, as discussed in Appendix I.

This means that many organisations have misinterpreted the definitions of “agents” in both the *FAS* and *SOTIR* reports as “agent outlets”, rather than agent tills.<sup>43, 44, 45, 46, 47, 48, 49, 50</sup>

Bearing in mind the distinction between agent tills and agent outlets, we argue that the former is a useful measure of industry growth while the latter is more appropriate for measuring access to finance. This is because an additional agent till does not expand access to finance if it is being added to an agent outlet that already has a till serving the same provider. This would be akin to opening another teller in a bank branch.

Even if the till added within an existing outlet is serving a new provider, we still believe that it is unlikely to extend access to finance. An analog for this might be adding a new flavor of ice-cream in an ice-cream shop; however, as all customers are also basically using the same three services (airtime top-up, bill payments and P2P), it is probably most like adding a different brand of a flavor the shop already carries.<sup>51</sup> While we agree this could increase the quality of access, it does not extend access itself. An exception might be a wallet with sophisticated product suite by a DFS provider or an MFI being added to an OTC agent outlet.

More generally, supply side metrics for access to finance refer to the physical presence of an access point, and therefore when referencing agents, need to use agent

outlets (or locations) rather than agent tills (or registered agents). Hence, it could be misleading to compare the figure for registered agents to other measures of physical access points, as has been done by even the most respected organisations in the industry. The most commonly cited example is that of comparing the number of registered agents to bank branches in an ecosystem,<sup>52, 53, 54, 55, 56, 57, 58</sup> and these figures are then cited repeatedly in the industry echo chamber.<sup>59, 60, 61, 62, 63, 64, 65, 66, 67</sup> Furthermore, the number of registered agents has also been inappropriately used to measure access by comparing it to population statistics, square kilometers,<sup>68</sup> or employment figures by inferring registered agents are people;<sup>69</sup> of course this is understandable given the reputable sources that are being quoted.

The objective of this exercise is not to accuse anyone of inaccuracy, but instead to help the industry realise that we need to use more accurate guidelines and definitions when measuring foundational statistics like the physical outreach of digital finance. We suggest clear further steps in this paper and hope the above illustration of the great level of confusion in the industry over agent statistics will help us all to work together to agree on, collect and report the most relevant statistics on access to digital finance.

42 GSMA used the generic term “agent” in the first *SOTIR* published in 2011, however, in the 2012 and 2013 *SOTIRs* they switched to the term “agent outlet”. In the 2014 *SOTIR* they continued using the term “agent outlet”, but did include footnote 11 on page 20 noting that, “the number does not reflect the unique number of mobile money cash-in and cash-out (CICO) locations”. In the 2015 *SOTIR* they switched to using the term “registered agent” in the text, but did not change the definition in the glossary. We like their current term of “registered agent”, and would recommend adding a definition of it in the Glossary in the 2016 *SOTIR*.

43 Center for Technology Innovation at Brookings (2016) *The 2015 Brookings Financial and Digital Inclusion Project Report* provides statistics for “agent outlets” per square kilometer and per adult for the countries of South Africa, Zambia, Uganda, Rwanda, Philippines, Nigeria, Malawi, Kenya, Bangladesh, Afghanistan, although it is actually citing *IMF FAS* “registered agent” numbers for these analyses.

44 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (2015) *Responsible Mobile Insurance*: 11.

45 Pénicaut Scharwatt, Claire (March 2014) *The State of Mobile Money Access* GSMA

46 Frydrych, Jennifer (March 2015) *Accessibility of Mobile Money* GSMA

47 United Nations Economic and Social Commission for Asia and the Pacific (ESCAP Ffd) (2015) *Inclusive Finance in the Asia-Pacific Region: Trends and Approaches*: 25.

48 United States Agency for International Development (USAID) (2011) *Better Than Cash: Kenya Mobile Money Market Assessment*: 9.

49 Bank of Uganda (March 2014) *Status of Financial Inclusion in Uganda*: 18

50 The Consultative Group to Assist the Poor (CGAP) (2014) *Infographic: Tanzania's Mobile Money Revolution*: The second to last figure states 52% and 4% of agents in Tanzania and Kenya respectively serve multiple providers, and while this is true at the “agent outlet” level, “registered agent” numbers are presented instead.

51 One could argue that if there was a customer of provider “A” located near an agent outlet only serving provider “B”, and then that outlet opened another registered agent for provider “A”, that person’s access to finance would have increased. While technically we agree, practically this argument is very weak because SIM cards are so cheap that people seem to just get multiple SIM cards.

52 GSMA (2014) 2013 *SOTIR*: 1.

53 GSMA (2014) 2013 *SOTIR*: 24.

54 GSMA (2015) 2014 *SOTIR*: 20.

55 World Bank Group (October 2016) *Global Payment Systems Survey 2015*: 11.

56 Center for Financial Inclusion (June 2015) *By the Numbers*: 26.

57 GSMA (September 2014) *Infographic: The Kenyan Journey to Digital Financial Inclusion*

58 Suri, S. and Jack, W. (2016). *The Long-Run Poverty and Gender Impacts of Mobile Money*: 1288.

59 IMF/International Growth Centre (IGC) (March 2016) *Macroeconomic Impact of Mobile Payment Services*: 6.

60 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (2015) *Responsible Mobile Insurance*: 1

61 Payments.Com (March 2015) *The Global State of Financial Inclusion*

62 USAID Health Finance & Governance (HFG) Project Resources *Mobile Money Expands Financial Access to Health Services*

63 The MasterCard Foundation (March 2015) *Report: Mobile Money for the Unbanked*

64 Banking Beyond Branches *Industry News from March 16th, 2015*: 6.

65 Center for Technology Innovation at Brookings (2016) *The 2015 Brookings Financial and Digital Inclusion Project Report*: 24.

66 United Nations Specialized Agency for Information and Communication Technologies (ITU) (2016) *Digital Financial Services: Regulating for Financial Inclusion*: 14.

67 GIZ GmbH cites GSMA (2014) *Mobile Money for the Unbanked*: Slide 15.

68 Karandaaz Pakistan cites *IMF FAS* 2014 figures for three countries (Undated) *Source List, Definitions and Notes*: Slide 31.

69 Ministry of ICT, Government of Kenya (2015) *Mobile Money: The Kenyan Experience*: Slide 8.



## APPENDIX III

### Non-Exclusivity & Multiple Till Deflators

We draw on the latest waves of ANA data available for [Uganda \(2015\)](#), [Tanzania \(2015\)](#)<sup>70</sup>, [Kenya \(2014\)](#), [Bangladesh \(2016\)](#), and [Pakistan \(2014\)](#) to determine the levels of non-exclusivity in these five key markets. This information is used to calculate the “non-exclusivity deflator”, which we apply to agent till figures to discount the fact that a single outlet may serve multiple providers.

The methodology is as follows: we first determine the total number of tills corresponding to the number of providers an agent outlet reported serving in each of the ANA Surveys. We then calculate the discount percentage that gets us back to the total survey sample count of agent outlets. In other words:

$$\text{Non-exclusivity deflator} = \frac{(\text{Total sample count})}{(\text{Total till count})}$$

where

Total sample count = X+Y+Z+W

Total till count = 1\*X + 2\*Y + 3\*Z + 4\*W, and

X – # of outlets that reported serving 1 provider,

Y – # of outlets that reported serving 2 providers,

Z – # of outlets that reported serving 3 providers,

W – # of outlets that reported serving 4 providers...

This deflator should be highest – and produce the smallest discount - in countries that have remained largely exclusive and/or where few providers are offering their services. It should be lowest in countries where many agents serve many providers simultaneously.

Table A2 demonstrates that in Kenya (2014), the deflator was as high as 84% - in other words, adjusting for non-exclusivity in Kenya only reduces the Central Bank’s agent till count by 16%. This discount factor is likely to have decreased by now as 2014 was the year of [Kenya Competition Authority’s ruling on the issue of exclusivity](#). This means that as non-exclusivity in any country increases, regulator figures on the number of agents in that country become less indicative of the number of agent outlets there.

In Tanzania, Bangladesh and Pakistan, by contrast, the official agent till figures are discounted by over 50%. This is no surprise to anyone familiar with the Tanzanian market where 37% of outlets concurrently offer services from the three main providers. Likewise, Pakistan is renowned for its competitive digital finance market, where 43% of Pakistani agent outlets serve 3 or more providers. Some 18% of Bangladeshi outlets serve 3 or more providers.

<sup>70</sup> In 2015, The Helix Institute of Digital Finance conducted representative market assessments for all major providers in Tanzania. The design of the sample was based on Brand Fusion’s latest agent census data. While we did not publish a country report for Tanzania, we feel the data from the assessments is representative of the country’s agent network and can be used to calculate factors to be discounted.

Table A2. Agent Outlets

	Agent tills <sup>1</sup>	Non-exclusivity deflator <sup>2</sup>	Multiple till deflator <sup>3</sup>	Agent Outlet Estimate	Ratio: Outlets to Tills
Kenya	123,703	84%	98%	100,756	0.81
Tanzania	270,974	47%	81%	103,371	0.38
Uganda	109,458	61%	81%	53,722	0.49
Bangladesh	628,671	49%	99%	302,718	0.48
Pakistan	204,073	38%	95%	74,860	0.37

1 2016 IMF *Financial Access Survey (FAS)*: 2014 registered agent figures for Kenya and Pakistan; 2015 registered agent figures for Bangladesh, Tanzania and Uganda.

2 Non-exclusivity deflator is calculated based on the number of providers agents reported serving in *Agent Network Accelerator (ANA) Surveys*. Kenya and Pakistan surveys were conducted in 2014. Tanzania and Uganda surveys were conducted in 2015. Bangladesh survey was conducted in 2016.

3 Multiple till deflator is calculated using *Agent Network Accelerator (ANA) Survey* findings. Tanzania and Uganda rates are based on 2013 data from Uganda as 2015 waves were revised to exclude the question on tills. Because till levels remained largely the same in Kenya (3.7% duplicate tills in 2013 vs. 2.5% in 2014), we feel comfortable using previous wave data to estimate the duplicate till deflator. We opt to use Uganda multiple till deflator in Tanzania, because data collected in 2013 showed a very high rate of duplicate tills (33%), which upon presentation providers had flagged as a priority issue to be addressed. We presume that they have since resolved this problem and that the duplicate rates have reduced to the levels comparable to Uganda.

In addition to discounting outlets that serve multiple providers, we also need to adjust for agents who operate multiple tills for the same provider. Furthermore, in some countries there are limits on the value of transactions that can be done by one till, so agents will have more than one to maximise their business.

For example, imagine that an owner of a shop located on a busy intersection near a market uses three employees to run the core business along with offering cash-in and cash-out (CICO) services for MTN. To avoid long lines and lost business, the owner may register two, or even three, MTN tills enabling each of his employees to serve MTN customers. Adjustment for multiple tills is important because for both MTN and the regulator, tills count as “registered agents”. However, a shop that hosts 3 MTN tills, while potentially improving the customer experience, is not expanding geographic access to finance for potential customers *per se*.

In Table A2, we present our estimates of the “multiple till deflator”, calculated using a combination of first and second round *ANA Surveys*.<sup>71</sup> The methodology is the same as for the “non-exclusivity deflator”, described above. Comparing both deflators, we note that downward adjustment for multiple tills is not as dramatic as the one for multiple providers served.

71 We collected information on the number of tills an agent held for a single provider during the first round of *ANA Surveys* and in the two rounds conducted in Kenya. In Kenya, we saw that the rate of duplicate tills remained largely the same between 2013 and 2014. We also noted that that over 90% of agents in all countries, except Tanzania, only used one till per provider. Based on this information the question was deleted as part of a larger effort to shorten and streamline the survey.

## APPENDIX IV

### Active Agent Definition

We conducted a series of analyses to better understand till profitability relative to average daily transactions performed on that till. These are based on the information reported by business owners who chose to answer the question about both their revenues and expenses. As such, these should be taken as indicative and provide a starting point for discussions around re-conceptualising agent activity rate definitions. Providers have more accurate data on transactions and commissions that are paid out to agents and are in a better position to conduct these analyses.

Table A3 summarises the proportion of profitable tills by average daily transaction volumes. First, we note that half of the table is blank because of low sample counts – this is a visual representation of how few agents are able to make a profit conducting fewer than 2-5 transactions per day. Making a profit from providers' tills is more difficult in East Africa than in South Asia: only 9% of profitable tills in Uganda (14% in Tanzania) conduct less than 10 transactions per day. In Bangladesh, greater profitability associated with low daily transactions can probably be explained by lower operating expenses (in part thanks to [doorstep liquidity delivery](#)). In Pakistan, it is probably thanks to [high commissions resulting from competition](#).

**Table A3. % of Profitable Tills Falling Within Specified Transaction Band**

	Reported Average Daily Transactions					
	< 1	< 2	< 3	< 5	< 10	< 20
Kenya	-	-	-	-	-	10%
Tanzania	-	-	-	-	14%	53%
Uganda	-	-	-	-	9%	49%
Bangladesh	-	-	3%	7%	18%	44%
Pakistan	6%	12%	20%	33%	50%	70%

Source: calculated using agent-reported average daily transactions from *ANA Surveys*.  
- means the figures were suppressed due to low sample count (N<30).

We also examined the proportion of tills that are profitable within a given transaction band, using all agents operating within that band as the denominator. This information is summarised in Table A4. While the counts are too low to show data for Uganda and Kenya, in Tanzania the majority of tills conducting fewer than 10 transactions per day on average are operating at a loss. Moreover, only two-thirds of tills conducting 10 to 20 daily transactions are making a profit. This begs the question of agent business viability: how long will agents invest in operating a till that gives negative returns? The story is somewhat different in Bangladesh and Pakistan, where a large majority of tills performing fewer than five transactions per day on average are profitable.

**Table A4. % of Tills Profitable by Average Daily Transaction Level**

	Tanzania	Uganda	Kenya	Bangladesh	Pakistan
<5 daily transactions	38%	-	-	83%	73%
5 to 10 daily transactions	45%	-	-	84%	73%
10 to 20 daily transactions	62%	67%	-	93%	82%
20 to 30 daily transactions	68%	80%	80%	93%	86%
30+ daily transactions	77%	85%	85%	95%	74%

Source: calculated using agent-reported average daily transactions from *ANA Surveys*.  
- means the figures were suppressed due to low sample count (N<30).

## APPENDIX V

### Active Agents Data

The following data sources are available for estimating agent activity rates:

- a) **Regulators' 90-day active agent statistics** – collected by Bank of Tanzania (67% in 2014; 63% in 2015); the State Bank of Pakistan (78% in 2014; 77% in 2015); and Bangladesh Bank (45% in 2014; 39% in 2015).<sup>72</sup> Knowing that regulators aggregate their data from provider submissions and that providers often do not analyse activity rates in a standard way,<sup>73</sup> these regulator figures may not be fully accurate or may not necessarily correspond to their purported definitions. Nevertheless, Tanzanian and Pakistani regulator efforts are commendable, given that [Kenyan](#)<sup>74</sup> and [Ugandan](#)<sup>75</sup> regulators' reporting templates do not contain slots for active agent numbers.
- b) **Financial Access Survey (FAS)** - collected annually by the IMF from regulators around the globe. As mentioned in Appendix (I), the way *IMF FAS* reports regulator data can lead to misinterpretation by users. Our exchanges with the regulators confirm that the figures reported to the IMF are 90-day active rates they compile using “registered agent” figures, i.e. tills. Meanwhile, in the *FAS* dataset the regulator “active agent” figures are erroneously referred to as “active agent outlets”, *officially defined* as those having “facilitated at least one transaction over the past 30 days”.
- c) **GSMA sub-regional 30-day active rates** – derived by GSMA using a proprietary mathematical model that incorporates data from GSMA's *State of the Industry Reports*. GSMA published sub-regional rates<sup>76</sup> in 2012. However, GSMA could not share corresponding rates for 2014 or 2015 due to providers' concerns about confidentiality.
- d) **FSP Maps** – collected by Brand Fusion. These censuses in and of themselves are good measures of the number of active agents in a country because, as discussed in Appendix I, many dormant agents are not visible. In Uganda and Bangladesh, however, Brand Fusion also classified agents into active and dormant, according to whether the outlet had ever conducted a transaction. These rates were 96% in Bangladesh and 87% in Uganda. We use *FSP Maps* active figures for Bangladesh and Uganda; totals for Kenya and Tanzania.

Because it is the only available country-level data source, we use the 90-day regulator activity rates<sup>77</sup> in our calculations of number of active agent outlets.

<sup>72</sup> The rates here are calculated based on regulator-reported statistics (90-day active registered agents)/(total registered agents).

<sup>73</sup> GSMA (2013) *State of the Industry: Results from the 2012 Global Mobile Money Adoption Survey*: 25. Here it is noted that while 60% of respondents used a definition of, “at least one transaction in the past 30 days, there were a variety of definitions used”. In the same report, GSMA noted that some providers also take into account operational elements like being “able to” perform transactions”; having “a sufficient balance to conduct transactions”; and “in a few [...] cases [...] sufficient branding of the agent outlet and quality of service at the point of sale”.

<sup>74</sup> *National Payments Act of Kenya* (2014): 740; Question B1.

<sup>75</sup> *Mobile Money Guidelines* (2013): Appendix A; 20.

<sup>76</sup> GSMA (2013) *State of the Industry: Results from the 2012 Global Mobile Money Adoption Survey*: geographical breakdown; East Africa includes Burundi, Kenya, Madagascar, Malawi, Rwanda, Somalia, Tanzania, Uganda, Zambia and Zimbabwe. South Asia includes Afghanistan, Bangladesh, India, Pakistan and Sri Lanka.

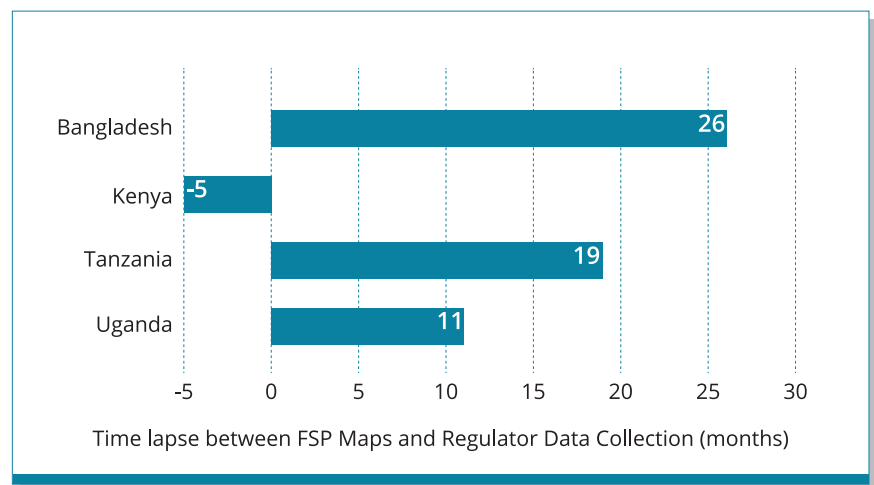
<sup>77</sup> Reported in *IMF FAS 2015* and *IMF FAS 2016*.

## APPENDIX VI

### Regulator vs. *FSP Maps* Data Collection Timing

The key explanation for the discrepancy between the agent census (*FSP Maps*) and The *Helix* Institute of Digital Finance’s estimate of active agent outlets are differences in the timing of data collection. *FSP Maps* were funded on a one-off basis while the *IMF FAS* compiles end-of-year data from regulators on an annual basis. Figure A2 offers a visual representation of the number of months that elapsed between the time *FSP Maps* data was collected (represented by the Y-axis at zero) and the regulator data used to estimate the number of outlets.

Figure A2. Data Collection Timing



For example, in Bangladesh, *FSP Maps* data was collected in October 2013 while regulator data from December 2015 were used in our calculations. This represents a 26-month time lag. In Kenya, on the other hand, the *FSP Maps* research was completed five months after end 2014 regulator data submission – the reason why the time lag is shown as negative.

## APPENDIX VII

### Registered Customers Data

The following data sources are available for estimating the number of registered customers:

- a) **Regulator Data** – registered accounts data aggregated by regulators from provider reports. When we examine these figures in relationship to the number of adults in each of the respective countries, we find that there are twice as many accounts in Tanzania as there are adults. The number of registered accounts in Uganda also exceeds the number of adults. In Kenya, there are as many registered accounts as there are adults. In Bangladesh the figure is lower with registered accounts representing 32% of the adult population. The State Bank of Pakistan lumps registered account figures for customers and agents together in its reports, which is not helpful for constructing customer-agent ratios.
- b) **Financial Access Survey (FAS)** - collected annually by the IMF from regulators around the globe. For the most part, this data replicates regulator data and thus raises similar issues of registered accounts in East Africa exceeding adult population figures.
- c) **Financial Inclusion Insights (FII)** – collected by Intermedia with funding from the Bill and Melinda Gates Foundation. These are nationally representative surveys of adults aimed to provide demand-side insights into consumer financial behaviour.<sup>78</sup> FII collects data on consumer awareness about mobile financial services, providers they use, providers they have registered accounts with, and their mobile money transactions.

The fact that regulator information on registered accounts exceeds adult population figures is not necessarily a problem. In countries with multiple providers, mobile money users can hold multiple accounts, especially if the services are not interoperable. However, *FII* estimates of mobile money account registrations by adults are significantly lower in 2015: 61% in Tanzania; 35% in Uganda; and 63% in Kenya. There are a few reasons why regulator registration figures might not match the registration rates that household surveys reveal, including:

- » *FII* interviews local households and would not capture registered accounts held by businesses and foreigners, which would show in provider and regulator statistics;
- » providers might be reporting on all the accounts that have ever been registered even if some have long since been discarded;
- » providers might have mobile money automatically enabled on their GSM SIM cards and therefore report all GSM subscribers as mobile money subscribers, whereas if these individuals are not aware of mobile money and have never tried to use it, they would not say they are registered users in a household survey.

In light of the above discussion, we opt to use a combination of adult population data (calculated using SP.POP.TOTL<sup>79</sup> and SP.POP.1564.TO.ZS<sup>80</sup> indicators from the [World Bank's World Development Indicators](#) database) and registration rates contained in the *FII surveys* to determine registered customer numbers.

<sup>78</sup> Intermedia (2016) *Financial Inclusion Insights (FII)*

<sup>79</sup> Total population indicator compiled annually by World Bank from the following sources: (1) United Nations Population Division. World Population Prospects, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

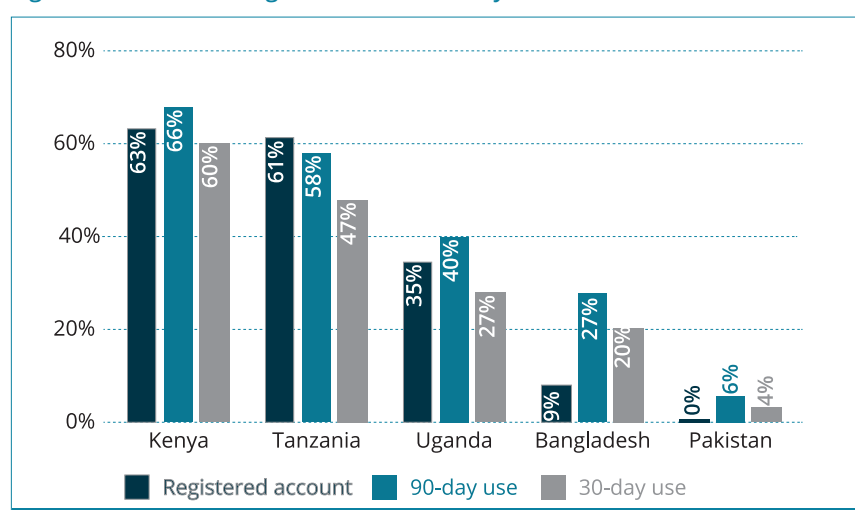
<sup>80</sup> Population ages 15-64 (% of total) indicator estimated annually by World Bank staff based on age distributions of United Nations Population Division's World Population Prospects.

## APPENDIX VIII

### Customer Registration & Usage Rates

*Financial Inclusion Insights (FII)* data allows us to calculate mobile money registration and usage rates for our five key countries (See Figure A3). The percentage of adults with registered accounts includes those who reported having at least one mobile money account registered in their name. The percentage of 90-day and 30-day users includes respondents who reported having performed any financial activity with any mobile money service provider in the last 90 or 30 days, respectively, regardless of whether they had a registered account.

Figure A3. Customer Registration and Activity Rates



As expected, 90-day activity rates are higher than 30-day rates. However, the differences are not dramatic, with the largest in Uganda (13%) and Tanzania (11%). We have opted to use 30-day activity rates when discussing active customer numbers because we believe that if digital money is to replace cash, it needs to be accessed much more frequently than once a quarter. These are discussed in the text. Table A5 presents a comparative summary of active customer-outlet ratios for 30- and 90-day activity rates, for readers' reference.

Table A5. 30-Day and 90-Day Active Customer to Active Outlet Ratio

	Reported Average Daily Transactions				
	30-Day Active Customers <sup>1</sup> (Millions)	90-Day Active Customers <sup>2</sup> (Millions)	Active Agent Outlets (Thousands)	Ratio: 30-Day Active Customers to Active Outlets	Ratio: 90-Day Active Customers to Active Outlets
Kenya	14.8	16.2	67.4	219	241
Tanzania	12.9	15.9	65.1	198	244
Uganda	5.2	7.8	33.8	152	230
Bangladesh	20.9	28.2	117.2	178	241
Pakistan	4.7	6.5	58.5	80	111

<sup>1</sup> Calculated using *Financial Inclusion Insights'* 30-day active rates for Kenya (2014), Tanzania (2015), Uganda (2015), Bangladesh (2015), and Pakistan (2014) multiplied by total adult population, calculated using SP.POP.TOTL and SP.POP.1564.TO.ZS indicators from the World Bank World Development Indicators Database for corresponding countries and years.

<sup>2</sup> Calculated using *Financial Inclusion Insights'* 90-day active rates for Kenya (2014), Tanzania (2015), Uganda (2015), Bangladesh (2015), and Pakistan (2014) multiplied by total adult population, calculated using SP.POP.TOTL and SP.POP.1564.TO.ZS indicators from the World Bank World Development Indicators Database for corresponding countries and years.

## APPENDIX IX

### Provider Customer to Agent Ratios, Business Volume, and Revenue

Provider specific active outlet figures were calculated by multiplying providers' share of market presence from the latest waves of *ANA* data available<sup>81</sup> and country-level agent till figures, discounted for country-level regulator reported inactivity rates (discussed in Appendix V) and for multiple tills (discussed in Appendix III).

Provider specific active customer figures were calculated by multiplying the percentage of adults who have used the services of a particular provider within the last 30 days, as reported in *Financial Inclusion Insights* data<sup>82</sup> and the country-level adult population, which was calculated using SP.POP.TOTL<sup>83</sup> and SP.POP.1564.TO.ZS<sup>84</sup> indicators from the *World Bank's World Development Indicators* database, for corresponding years.

Median daily transactions were calculated based on the information agents reported in *ANA Surveys*. In 2014, total transactions included average enrolment, cash-in and cash-out, bill payments, and "other" transactions agents reported performing for a particular provider. In 2015 transactions included average enrolment, cash-in and cash-out, money transfer, bill payments, remittances, social payments, salary, credit, insurance payments and "other" transactions agents reported conducting for a particular provider. In 2016, transactions included average enrolment, cash-in and cash-out, money transfer, bill payment, merchant payment, and "other" transactions agents reported conducting for a particular provider. Values of zero were excluded from analysis.

Median monthly earnings were calculated based on the information agents reported in *ANA Surveys* and reported in current US dollars using historical exchange rates at the time of data collection. In 2014 agents were asked "How much revenue (sum of fees/commission other incomes) are you earning from the agency business per month (on average and only from the principal provider)?" In 2015 and 2016, agents were asked: "On average, how much do you earn per month from all the providers you serve, combined?" Monthly earnings were calculated as the product of total earnings from all providers combined and the proportions of those earnings that agents reported making from specific providers. Only owners were asked the question about earnings. Values of zero were excluded from this analysis.

81 The Helix Institute of Digital Finance *ANA Surveys: Uganda Country Report 2015*, Tanzania Country Report 2015 (Unpublished), *Kenya Country Report 2014*, *Bangladesh Report 2016*, and *Pakistan Country Report 2014*.

82 2014 data was used for Kenya and Pakistan. 2015 data was used for Bangladesh, Tanzania and Uganda.

83 Total population indicator compiled annually by World Bank from the following sources: (1) United Nations Population Division. World Population Prospects, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

84 Population ages 15-64 (% of total) indicator estimated annually by World Bank staff based on age distributions of United Nations Population Division's World Population Prospects.



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