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Mobile Financial Services in Kenya, Uganda and Tanzania:

Downstream Prediction for Lasting Economic Retention

Project DoPLER, Phase I Report

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# Abstract

In this pilot study, we seek to use existing data sets to better understand long-term retention of mobile financial services in Uganda, Tanzania and Kenya.

Using statistical modeling techniques we identify those parameters which might serve as predictors to labeled response variables to identify longitudinal retention and usage of services such as payments and loans on mobile devices.

The goal of the study is a directional framework to enable mobile network operators (MNOs) and non-government organizations (NGOs) to better deliver financial inclusion in these markets.

# Introduction

To date, much work has been done to understand the pathway between awareness and sign-up of digital financial services (DFS) in East Africa. This is referred to herein as “upstream” adoption.

Despite the research on the upstream process, from initial adoption to active usage, there is a dearth of understanding on longer term retention—herein referred to as “downstream”; activity beyond the initial 90 day of active usage.

In this work we seek to understand the relative effects of on- and off-phone parameters, a mixture of continuous, categorical and nominal variables.

Some examples we consdier are:

**On-phone:**

* Transaction types
* Usage overall volume
* Usage value/quality
* Regularity of transaction
* Frequency of transaction

**Off-phone:**

* Gender
* Age
* Location
* Employment Status
* Wealth
* Non-mobile Financial service usage

With the broader goal of financial inclusion of the currently unbanked populations, the study seeks to offer suggestions (though not quantified recommendations) on how to drive uptake of financial service offerings and products in these geographies.

# Background

The project lies in the broader context of the Financial Services for the Poor (FSP) group at the Gates Foundation, and more narrowly, within the broader multi-year effort of the FSP group to deliver the FSP portal—a clearing house of tools and research to better enable practitioners and researchers involved in financial services and financial inclusion projects in East Africa, including the MNOs themselves.

# Related Work

In the course of developing this pilot project, conversations were held with a broad consortium of stakeholders in the for- and non-profit space.

Specifically, the Financial Inclusion Index (FII), funded by the Gates Foundation and administered by Intermedia plays a key role in shaping the scope and background of this work.

Additionally, work by CGAP and the World Bank provide the foundational elements of our analyses. Specifically, the Financial Inclusion Index (FINDEX) study, administered by Gallup as a part of a broader, global survey on financial inclusion serves to contextualize many of the findings herein.

The DataLab at University of Washington[[1]](#footnote-1) has worked deeply to understand the impact of mobile technologies in emerging markets and this study draws from prior work including Dr. Joshua Blumenstock’s work on mobile money.[[2]](#footnote-2)

An advisor to this project, Dr. Matthew Jackson’s work at Stanford’s Department of Economics provides a basis for the understanding of networks in the community, and the effect on adoption and retention.[[3]](#footnote-3) Additional sources and prior research are cited in the appendix.

# Data Sources

The Finanical Inclusions Insights (FII)[[4]](#footnote-4) study by Intermedia (supported by The Gates Foundation) provides the most useful prior data available to assess financial inclusions within our geographies of interest.

For this study, we made contact with Intermedia and gained access to Phases one through three (2012-2014) of the annual longitudinal study.

Additionally the World Bank FINDEX study provides global, by-country measurement of key inclusion factors.

Differences were observed by geography in all basic demographic attributes, except for respondent age. As such, modeling was achieved on a per-country basis.

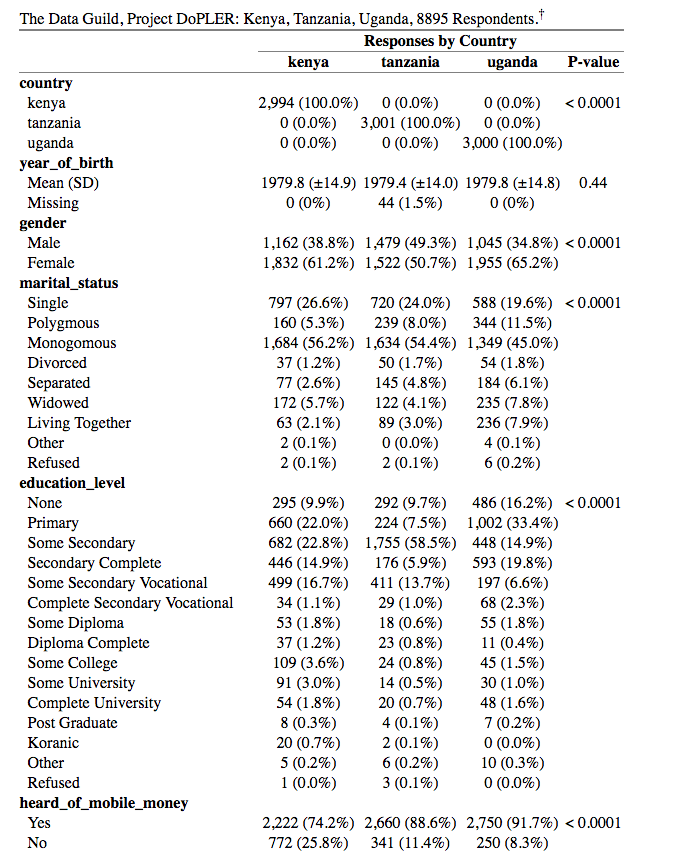


Table : FII Demographic Differences by Geography[[5]](#footnote-5)

# Methodology and Models

To achieve a traditional retention analysis, the ideal data set might include longitudinal usage data by account. With such data set, one could perform a time-series based survival analysis, a standard for clinical studies studying the effect of treatment.

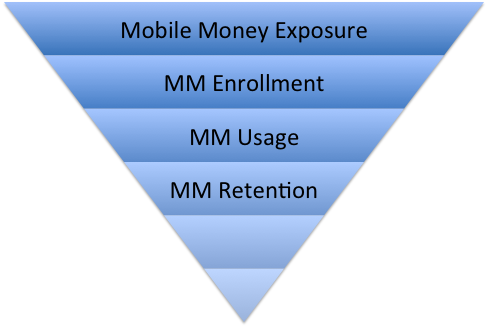
To achieve parity with this approach in our context proved challenging: not only are we seeking to identify the “treatments” (subscriber attributes/behaviors) which lead to longer retention, but also no such longitudinal/paired data set existed from which we could derive effects over time.

Further, the data at hand is based on household surveys, notoriously susceptible to self-reporting bias.

To ameliorate these deficiencies, we sought to develop a “pseudo-retention” variable. This was done using the FII questions which included a time variable. By using the questions including the phrases: “last time used…” and “how often in the last…” we constructed a backward-looking value for response; that is: were this question asked 90 days ago, which users would be retained? Here we followed Blumenstock, et al’s definition of retention as active use within 90 days.

Beyond retention we wished to model and understand penetration and retention from the standpoint of steps along a funnel.

The funnel begins with exposure/awareness, and ends in long-term, usage:



In defining retention, we wish to not only account for “a single transaction of any type” within the period of interest (90 days) but also look at the frequency and quality of the transactions.

# Working Definitions, Engineered Response Variables

To achieve the above, the following definitions are hereby employed:

**Exposure:** Does person have awareness of mobile money?

**Enrollment:** Does person have a MM account **and** has he/she used at least once.

**Basic Usage:** Has person used MM account for basic services : deposit, withdraw, pay bills, send/Receive money

**Sophisticated Usage:** Has person used MM account for sophisticated services: Insurance, long term savings, emergency funds, large transactions, regular (periodic) transactions (like loans, mortgage).

**Frequency:** How many actions in the last 30 days.

**Longevity:** Time of survey minus time of first use (days).

**Recency:** Time since last used (days).

**Retention:** Recency + Longevity + Frequency

# Findings

The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.

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# Conclusions/Recommendations

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# Proposed Next Steps

As discussed above, the objective of identifying factors leading to long term retention was challenged by the limitations of our data.

For future projects we believe the correct approach is the development of a process and instrument for primary research within these and other geographies of interest. By developing the data set specifically designed for this purpose, we will enable a true time-series/survival analysis of users on mobile money platforms. The results of such a study could develop specific, actionable recommendations for mobile network operators (MNOs) as well as other service providers, government and non-government organizations (NGOs) in this region.

In the course of this project, we held several conversations with stakeholders such as Kiva.org, Branch.co, Orange, AT&T and Flutterwave who might directly benefit from further research in these areas. We also met with service providers such as Orange Door and Voto who have a data collection capability via IVR/SMS in the geographies of interest, using online surveys.

We therefore recommend a 3-month, phase II of this project, whereby we deploy a primary research instrument via IVR/SMS and develop new analyses based on true longitudinal responses, to identify factors and critical tipping points for long-term adoption.

Another overlooked effect in this first exploratory phase is the influence of the social network in adoption and retention of mobile money usage. Prior research has shown that family-/neighbor-/village-influence is critical in gaining adoption, following Metcalfe’s law. [[6]](#footnote-6)

Embedded in this methodology would be a system whereby respondents could refer others within their mobile money “network” to identify factors not just leading to long-term retention, but also organic adoption across a social graph.[[7]](#footnote-7)

This study could be operated on a 3-month schedule, beginning immediately, including the following steps:

1. Development of the online survey/IVR/SMS instrument/package
2. Pilot deployment of instrument, by geography
3. Analysis of topline results
4. Follow-up/modification (if needed)
5. Full deployment (~3k responses by geography)
6. Survival analyses to isolate key factors, correlations between factors.
7. Recommendations, Communications to key stakeholders.

# Acknowledgements

The Data Guild wishes to acknowledge the many people who were helpful in reviewing and guiding our research. Specifically, Matthew Jackson (Stanford Department of Economics), Karen Fung (Curator, African Collection, Stanford Libraries), Joshua Blumenstock, Kartik Raghavan, Jake Kendall, Steven Tiell (Accenture), Ted McCarthy (Google Access), Charlotte Stanton (Stanford), Iyinoluwa “E” Aboyeji (Andela/Fluterwave), Jody Rank (Ram Group), Melanie Walker, et al (World Bank).

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# Appendix

## Full table comparison of mobile money attributes by geography

| The Data Guild, Project DoPLER: Kenya, Tanzania, Uganda, 8895 Respondents.† | | | | |
| --- | --- | --- | --- | --- |
|  | **Responses by Country** | | | |
|  | **kenya** | **tanzania** | **uganda** | **P-value** |
| **country** | | | | |
| kenya | 2,994 (100.0%) | 0 (0.0%) | 0 (0.0%) | < 0.0001 |
| tanzania | 0 (0.0%) | 3,001 (100.0%) | 0 (0.0%) |  |
| uganda | 0 (0.0%) | 0 (0.0%) | 3,000 (100.0%) |  |
| **year\_of\_birth** | | | | |
| Mean (SD) | 1979.8 (±14.9) | 1979.4 (±14.0) | 1979.8 (±14.8) | 0.44 |
| Missing | 0 (0%) | 44 (1.5%) | 0 (0%) |  |
| **gender** | | | | |
| Male | 1,162 (38.8%) | 1,479 (49.3%) | 1,045 (34.8%) | < 0.0001 |
| Female | 1,832 (61.2%) | 1,522 (50.7%) | 1,955 (65.2%) |  |
| **marital\_status** | | | | |
| Single | 797 (26.6%) | 720 (24.0%) | 588 (19.6%) | < 0.0001 |
| Polygmous | 160 (5.3%) | 239 (8.0%) | 344 (11.5%) |  |
| Monogomous | 1,684 (56.2%) | 1,634 (54.4%) | 1,349 (45.0%) |  |
| Divorced | 37 (1.2%) | 50 (1.7%) | 54 (1.8%) |  |
| Separated | 77 (2.6%) | 145 (4.8%) | 184 (6.1%) |  |
| Widowed | 172 (5.7%) | 122 (4.1%) | 235 (7.8%) |  |
| Living Together | 63 (2.1%) | 89 (3.0%) | 236 (7.9%) |  |
| Other | 2 (0.1%) | 0 (0.0%) | 4 (0.1%) |  |
| Refused | 2 (0.1%) | 2 (0.1%) | 6 (0.2%) |  |
| **education\_level** | | | | |
| None | 295 (9.9%) | 292 (9.7%) | 486 (16.2%) | < 0.0001 |
| Primary | 660 (22.0%) | 224 (7.5%) | 1,002 (33.4%) |  |
| Some Secondary | 682 (22.8%) | 1,755 (58.5%) | 448 (14.9%) |  |
| Secondary Complete | 446 (14.9%) | 176 (5.9%) | 593 (19.8%) |  |
| Some Secondary Vocational | 499 (16.7%) | 411 (13.7%) | 197 (6.6%) |  |
| Complete Secondary Vocational | 34 (1.1%) | 29 (1.0%) | 68 (2.3%) |  |
| Some Diploma | 53 (1.8%) | 18 (0.6%) | 55 (1.8%) |  |
| Diploma Complete | 37 (1.2%) | 23 (0.8%) | 11 (0.4%) |  |
| Some College | 109 (3.6%) | 24 (0.8%) | 45 (1.5%) |  |
| Some University | 91 (3.0%) | 14 (0.5%) | 30 (1.0%) |  |
| Complete University | 54 (1.8%) | 20 (0.7%) | 48 (1.6%) |  |
| Post Graduate | 8 (0.3%) | 4 (0.1%) | 7 (0.2%) |  |
| Koranic | 20 (0.7%) | 2 (0.1%) | 0 (0.0%) |  |
| Other | 5 (0.2%) | 6 (0.2%) | 10 (0.3%) |  |
| Refused | 1 (0.0%) | 3 (0.1%) | 0 (0.0%) |  |
| **heard\_of\_mobile\_money** | | | | |
| Yes | 2,222 (74.2%) | 2,660 (88.6%) | 2,750 (91.7%) | < 0.0001 |
| No | 772 (25.8%) | 341 (11.4%) | 250 (8.3%) |  |
| **biggest\_challenge\_with\_mobile\_money** | | | | |
| Service down time | 624 (20.8%) | 848 (28.3%) | 666 (22.2%) | < 0.0001 |
| Agent down time | 352 (11.8%) | 346 (11.5%) | 145 (4.8%) |  |
| Operating phone | 79 (2.6%) | 35 (1.2%) | 36 (1.2%) |  |
| Unclear Tx fees | 78 (2.6%) | 351 (11.7%) | 176 (5.9%) |  |
| Agent float cash avail | 431 (14.4%) | 60 (2.0%) | 69 (2.3%) |  |
| Contacting customer care | 163 (5.4%) | 35 (1.2%) | 8 (0.3%) |  |
| Sending to wrong number | 310 (10.4%) | 53 (1.8%) | 55 (1.8%) |  |
| Family friends stealing money | 18 (0.6%) | 13 (0.4%) | 8 (0.3%) |  |
| Other fraud | 23 (0.8%) | 12 (0.4%) | 23 (0.8%) |  |
| Other | 263 (8.8%) | 50 (1.7%) | 127 (4.2%) |  |
| DK/Refused | 84 (2.8%) | 75 (2.5%) | 80 (2.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **reason\_never\_used\_mobile\_money** | | | | |
| Don't know what it is | 11 (0.4%) | 45 (1.5%) | 149 (5.0%) | < 0.0001 |
| Don't know how to open | 41 (1.4%) | 109 (3.6%) | 102 (3.4%) |  |
| Don't have ID | 69 (2.3%) | 5 (0.2%) | 9 (0.3%) |  |
| No POS | 17 (0.6%) | 125 (4.2%) | 59 (2.0%) |  |
| Don't need | 62 (2.1%) | 130 (4.3%) | 163 (5.4%) |  |
| Registration too complicated | 4 (0.1%) | 8 (0.3%) | 26 (0.9%) |  |
| Registration fee too high | 0 (0.0%) | 17 (0.6%) | 20 (0.7%) |  |
| Too difficult | 5 (0.2%) | 43 (1.4%) | 21 (0.7%) |  |
| Tx fee too high | 4 (0.1%) | 25 (0.8%) | 18 (0.6%) |  |
| No money | 90 (3.0%) | 237 (7.9%) | 428 (14.3%) |  |
| No friends or family using | 1 (0.0%) | 18 (0.6%) | 36 (1.2%) |  |
| Don't understand | 11 (0.4%) | 32 (1.1%) | 63 (2.1%) |  |
| No phone | 136 (4.5%) | 15 (0.5%) | 33 (1.1%) |  |
| Don't trust | 9 (0.3%) | 15 (0.5%) | 28 (0.9%) |  |
| Family don't approve | 4 (0.1%) | 3 (0.1%) | 9 (0.3%) |  |
| All agents men | 0 (0.0%) | 1 (0.0%) | 0 (0.0%) |  |
| No advantage over existing | 5 (0.2%) | 3 (0.1%) | 40 (1.3%) |  |
| Other | 59 (2.0%) | 177 (5.9%) | 403 (13.4%) |  |
| Missing | 2,466 (82.4%) | 1,993 (66.4%) | 1,393 (46.4%) |  |
| **ever\_used\_mobile\_money\_for.deposit** | | | | |
| No | 402 (13.4%) | 470 (15.7%) | 592 (19.7%) | < 0.0001 |
| Yes | 2,023 (67.6%) | 1,408 (46.9%) | 801 (26.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.paygovt** | | | | |
| No | 2,385 (79.7%) | 1,832 (61.0%) | 1,372 (45.7%) | 0.090 |
| Yes | 40 (1.3%) | 46 (1.5%) | 21 (0.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.sendmoneyindiv** | | | | |
| No | 479 (16.0%) | 786 (26.2%) | 531 (17.7%) | < 0.0001 |
| Yes | 1,946 (65.0%) | 1,092 (36.4%) | 862 (28.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.getmoneyindiv** | | | | |
| No | 128 (4.3%) | 490 (16.3%) | 331 (11.0%) | < 0.0001 |
| Yes | 2,297 (76.7%) | 1,388 (46.3%) | 1,062 (35.4%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.getmoneygovt** | | | | |
| No | 2,401 (80.2%) | 1,850 (61.6%) | 1,366 (45.5%) | 0.047 |
| Yes | 24 (0.8%) | 28 (0.9%) | 27 (0.9%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.getwages** | | | | |
| No | 2,178 (72.7%) | 1,826 (60.8%) | 1,352 (45.1%) | < 0.0001 |
| Yes | 247 (8.2%) | 52 (1.7%) | 41 (1.4%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.paylarge** | | | | |
| No | 2,404 (80.3%) | 1,866 (62.2%) | 1,387 (46.2%) | 0.31 |
| Yes | 21 (0.7%) | 12 (0.4%) | 6 (0.2%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.payinsurance** | | | | |
| No | 2,390 (79.8%) | 1,868 (62.2%) | 1,387 (46.2%) | 0.001 |
| Yes | 35 (1.2%) | 10 (0.3%) | 6 (0.2%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.payloan** | | | | |
| No | 2,182 (72.9%) | 1,861 (62.0%) | 1,383 (46.1%) | < 0.0001 |
| Yes | 243 (8.1%) | 17 (0.6%) | 10 (0.3%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.savemoney** | | | | |
| No | 1,739 (58.1%) | 1,699 (56.6%) | 1,230 (41.0%) | < 0.0001 |
| Yes | 686 (22.9%) | 179 (6.0%) | 163 (5.4%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.setasidepension** | | | | |
| No | 2,384 (79.6%) | 1,853 (61.7%) | 1,371 (45.7%) | 0.64 |
| Yes | 41 (1.4%) | 25 (0.8%) | 22 (0.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.withdraw** | | | | |
| No | 38 (1.3%) | 64 (2.1%) | 119 (4.0%) | < 0.0001 |
| Yes | 2,387 (79.7%) | 1,814 (60.4%) | 1,274 (42.5%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.setasideother** | | | | |
| No | 1,957 (65.4%) | 1,721 (57.3%) | 1,282 (42.7%) | < 0.0001 |
| Yes | 468 (15.6%) | 157 (5.2%) | 111 (3.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.makeinvestment** | | | | |
| No | 2,412 (80.6%) | 1,866 (62.2%) | 1,381 (46.0%) | 0.47 |
| Yes | 13 (0.4%) | 12 (0.4%) | 12 (0.4%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.payatstore** | | | | |
| No | 2,249 (75.1%) | 1,859 (61.9%) | 1,373 (45.8%) | < 0.0001 |
| Yes | 176 (5.9%) | 19 (0.6%) | 20 (0.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.transfermobile** | | | | |
| No | 2,111 (70.5%) | 1,786 (59.5%) | 1,371 (45.7%) | < 0.0001 |
| Yes | 314 (10.5%) | 92 (3.1%) | 22 (0.7%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.transferbank** | | | | |
| No | 2,253 (75.3%) | 1,841 (61.3%) | 1,380 (46.0%) | < 0.0001 |
| Yes | 172 (5.7%) | 37 (1.2%) | 13 (0.4%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.transfermobiletoother** | | | | |
| No | 2,386 (79.7%) | 1,853 (61.7%) | 1,384 (46.1%) | 0.030 |
| Yes | 39 (1.3%) | 25 (0.8%) | 9 (0.3%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.lendinggroup** | | | | |
| No | 2,384 (79.6%) | 1,866 (62.2%) | 1,377 (45.9%) | 0.006 |
| Yes | 41 (1.4%) | 12 (0.4%) | 16 (0.5%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.payrent** | | | | |
| No | 2,359 (78.8%) | 1,856 (61.8%) | 1,381 (46.0%) | < 0.0001 |
| Yes | 66 (2.2%) | 22 (0.7%) | 12 (0.4%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.accountmaint** | | | | |
| No | 1,593 (53.2%) | 1,559 (51.9%) | 1,229 (41.0%) | < 0.0001 |
| Yes | 832 (27.8%) | 319 (10.6%) | 164 (5.5%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.other** | | | | |
| No | 2,416 (80.7%) | 1,872 (62.4%) | 1,391 (46.4%) | 0.50 |
| Yes | 9 (0.3%) | 6 (0.2%) | 2 (0.1%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.paymobilebill** | | | | |
| No | 644 (21.5%) | 684 (22.8%) | 794 (26.5%) | < 0.0001 |
| Yes | 1,781 (59.5%) | 1,194 (39.8%) | 599 (20.0%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.payschoolfee** | | | | |
| No | 2,188 (73.1%) | 1,814 (60.4%) | 1,306 (43.5%) | < 0.0001 |
| Yes | 237 (7.9%) | 64 (2.1%) | 87 (2.9%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.paymedical** | | | | |
| No | 2,339 (78.1%) | 1,853 (61.7%) | 1,361 (45.4%) | < 0.0001 |
| Yes | 86 (2.9%) | 25 (0.8%) | 32 (1.1%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.payelectrical** | | | | |
| No | 2,180 (72.8%) | 1,701 (56.7%) | 1,327 (44.2%) | < 0.0001 |
| Yes | 245 (8.2%) | 177 (5.9%) | 66 (2.2%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.paywater** | | | | |
| No | 2,360 (78.8%) | 1,846 (61.5%) | 1,361 (45.4%) | 0.097 |
| Yes | 65 (2.2%) | 32 (1.1%) | 32 (1.1%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.paysolar** | | | | |
| No | 2,400 (80.2%) | 1,860 (62.0%) | 1,385 (46.2%) | 0.33 |
| Yes | 25 (0.8%) | 18 (0.6%) | 8 (0.3%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **ever\_used\_mobile\_money\_for.paytv** | | | | |
| No | 2,238 (74.7%) | 1,802 (60.0%) | 1,352 (45.1%) | < 0.0001 |
| Yes | 187 (6.2%) | 76 (2.5%) | 41 (1.4%) |  |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **how\_often\_use\_mobile\_money\_for.deposit** | | | | |
| Daily | 76 (2.5%) | 53 (1.8%) | 29 (1.0%) | < 0.0001 |
| Weekly | 495 (16.5%) | 240 (8.0%) | 123 (4.1%) |  |
| 15 days | 309 (10.3%) | 333 (11.1%) | 174 (5.8%) |  |
| Monthly | 658 (22.0%) | 397 (13.2%) | 223 (7.4%) |  |
| 3 Months | 291 (9.7%) | 269 (9.0%) | 140 (4.7%) |  |
| 6 Months | 111 (3.7%) | 76 (2.5%) | 60 (2.0%) |  |
| Annually | 33 (1.1%) | 29 (1.0%) | 31 (1.0%) |  |
| Almost Never | 50 (1.7%) | 11 (0.4%) | 21 (0.7%) |  |
| Missing | 971 (32.4%) | 1,593 (53.1%) | 2,199 (73.3%) |  |
| **how\_often\_use\_mobile\_money\_for.paygovt** | | | | |
| Daily | 0 (0.0%) | 0 (0.0%) | 1 (0.0%) | 0.56 |
| Weekly | 2 (0.1%) | 4 (0.1%) | 2 (0.1%) |  |
| 15 days | 4 (0.1%) | 10 (0.3%) | 3 (0.1%) |  |
| Monthly | 17 (0.6%) | 10 (0.3%) | 10 (0.3%) |  |
| 3 Months | 5 (0.2%) | 9 (0.3%) | 2 (0.1%) |  |
| 6 Months | 3 (0.1%) | 4 (0.1%) | 1 (0.0%) |  |
| Annually | 3 (0.1%) | 3 (0.1%) | 0 (0.0%) |  |
| Almost Never | 6 (0.2%) | 6 (0.2%) | 2 (0.1%) |  |
| Missing | 2,954 (98.7%) | 2,955 (98.5%) | 2,979 (99.3%) |  |
| **how\_often\_use\_mobile\_money\_for.sendmoneyindiv** | | | | |
| Daily | 18 (0.6%) | 17 (0.6%) | 10 (0.3%) | < 0.0001 |
| Weekly | 150 (5.0%) | 86 (2.9%) | 63 (2.1%) |  |
| 15 days | 251 (8.4%) | 180 (6.0%) | 124 (4.1%) |  |
| Monthly | 800 (26.7%) | 368 (12.3%) | 258 (8.6%) |  |
| 3 Months | 408 (13.6%) | 302 (10.1%) | 219 (7.3%) |  |
| 6 Months | 197 (6.6%) | 63 (2.1%) | 94 (3.1%) |  |
| Annually | 71 (2.4%) | 51 (1.7%) | 65 (2.2%) |  |
| Almost Never | 51 (1.7%) | 25 (0.8%) | 29 (1.0%) |  |
| Missing | 1,048 (35.0%) | 1,909 (63.6%) | 2,138 (71.3%) |  |
| **how\_often\_use\_mobile\_money\_for.getmoneyindiv** | | | | |
| Daily | 22 (0.7%) | 28 (0.9%) | 12 (0.4%) | < 0.0001 |
| Weekly | 233 (7.8%) | 120 (4.0%) | 108 (3.6%) |  |
| 15 days | 293 (9.8%) | 219 (7.3%) | 163 (5.4%) |  |
| Monthly | 938 (31.3%) | 466 (15.5%) | 326 (10.9%) |  |
| 3 Months | 472 (15.8%) | 350 (11.7%) | 263 (8.8%) |  |
| 6 Months | 185 (6.2%) | 120 (4.0%) | 113 (3.8%) |  |
| Annually | 88 (2.9%) | 49 (1.6%) | 48 (1.6%) |  |
| Almost Never | 66 (2.2%) | 36 (1.2%) | 29 (1.0%) |  |
| Missing | 697 (23.3%) | 1,613 (53.7%) | 1,938 (64.6%) |  |
| **how\_often\_use\_mobile\_money\_for.getwages** | | | | |
| Daily | 5 (0.2%) | 3 (0.1%) | 0 (0.0%) | 0.42 |
| Weekly | 26 (0.9%) | 6 (0.2%) | 3 (0.1%) |  |
| 15 days | 23 (0.8%) | 5 (0.2%) | 3 (0.1%) |  |
| Monthly | 118 (3.9%) | 16 (0.5%) | 25 (0.8%) |  |
| 3 Months | 40 (1.3%) | 9 (0.3%) | 4 (0.1%) |  |
| 6 Months | 18 (0.6%) | 8 (0.3%) | 4 (0.1%) |  |
| Annually | 7 (0.2%) | 2 (0.1%) | 1 (0.0%) |  |
| Almost Never | 10 (0.3%) | 3 (0.1%) | 1 (0.0%) |  |
| Missing | 2,747 (91.8%) | 2,949 (98.3%) | 2,959 (98.6%) |  |
| **how\_often\_use\_mobile\_money\_for.payloan** | | | | |
| Daily | 13 (0.4%) | 2 (0.1%) | 1 (0.0%) | 0.074 |
| Weekly | 12 (0.4%) | 2 (0.1%) | 0 (0.0%) |  |
| 15 days | 113 (3.8%) | 5 (0.2%) | 6 (0.2%) |  |
| Monthly | 48 (1.6%) | 2 (0.1%) | 2 (0.1%) |  |
| 3 Months | 29 (1.0%) | 0 (0.0%) | 1 (0.0%) |  |
| 6 Months | 18 (0.6%) | 2 (0.1%) | 0 (0.0%) |  |
| Annually | 10 (0.3%) | 4 (0.1%) | 0 (0.0%) |  |
| Almost Never | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Missing | 2,751 (91.9%) | 2,984 (99.4%) | 2,990 (99.7%) |  |
| **how\_often\_use\_mobile\_money\_for.savemoney** | | | | |
| Daily | 10 (0.3%) | 6 (0.2%) | 5 (0.2%) | 0.0005 |
| Weekly | 91 (3.0%) | 22 (0.7%) | 14 (0.5%) |  |
| 15 days | 72 (2.4%) | 27 (0.9%) | 34 (1.1%) |  |
| Monthly | 346 (11.6%) | 76 (2.5%) | 59 (2.0%) |  |
| 3 Months | 109 (3.6%) | 26 (0.9%) | 23 (0.8%) |  |
| 6 Months | 27 (0.9%) | 13 (0.4%) | 11 (0.4%) |  |
| Annually | 15 (0.5%) | 5 (0.2%) | 9 (0.3%) |  |
| Almost Never | 16 (0.5%) | 4 (0.1%) | 8 (0.3%) |  |
| Missing | 2,308 (77.1%) | 2,822 (94.0%) | 2,837 (94.6%) |  |
| **how\_often\_use\_mobile\_money\_for.withdraw** | | | | |
| Daily | 53 (1.8%) | 67 (2.2%) | 26 (0.9%) | < 0.0001 |
| Weekly | 564 (18.8%) | 329 (11.0%) | 211 (7.0%) |  |
| 15 days | 410 (13.7%) | 382 (12.7%) | 253 (8.4%) |  |
| Monthly | 812 (27.1%) | 472 (15.7%) | 350 (11.7%) |  |
| 3 Months | 347 (11.6%) | 384 (12.8%) | 244 (8.1%) |  |
| 6 Months | 105 (3.5%) | 113 (3.8%) | 104 (3.5%) |  |
| Annually | 50 (1.7%) | 49 (1.6%) | 53 (1.8%) |  |
| Almost Never | 46 (1.5%) | 18 (0.6%) | 33 (1.1%) |  |
| Missing | 607 (20.3%) | 1,187 (39.6%) | 1,726 (57.5%) |  |
| **how\_often\_use\_mobile\_money\_for.setasideother** | | | | |
| Daily | 5 (0.2%) | 9 (0.3%) | 6 (0.2%) | < 0.0001 |
| Weekly | 49 (1.6%) | 14 (0.5%) | 15 (0.5%) |  |
| 15 days | 43 (1.4%) | 27 (0.9%) | 11 (0.4%) |  |
| Monthly | 251 (8.4%) | 64 (2.1%) | 38 (1.3%) |  |
| 3 Months | 75 (2.5%) | 20 (0.7%) | 21 (0.7%) |  |
| 6 Months | 30 (1.0%) | 11 (0.4%) | 13 (0.4%) |  |
| Annually | 6 (0.2%) | 4 (0.1%) | 6 (0.2%) |  |
| Almost Never | 9 (0.3%) | 8 (0.3%) | 1 (0.0%) |  |
| Missing | 2,526 (84.4%) | 2,844 (94.8%) | 2,889 (96.3%) |  |
| **how\_often\_use\_mobile\_money\_for.payatstore** | | | | |
| Daily | 2 (0.1%) | 0 (0.0%) | 2 (0.1%) | 0.23 |
| Weekly | 30 (1.0%) | 3 (0.1%) | 4 (0.1%) |  |
| 15 days | 27 (0.9%) | 1 (0.0%) | 1 (0.0%) |  |
| Monthly | 49 (1.6%) | 10 (0.3%) | 6 (0.2%) |  |
| 3 Months | 37 (1.2%) | 2 (0.1%) | 3 (0.1%) |  |
| 6 Months | 14 (0.5%) | 2 (0.1%) | 3 (0.1%) |  |
| Annually | 3 (0.1%) | 1 (0.0%) | 0 (0.0%) |  |
| Almost Never | 14 (0.5%) | 0 (0.0%) | 1 (0.0%) |  |
| Missing | 2,818 (94.1%) | 2,982 (99.4%) | 2,980 (99.3%) |  |
| **how\_often\_use\_mobile\_money\_for.transfermobile** | | | | |
| Daily | 3 (0.1%) | 3 (0.1%) | 0 (0.0%) | 0.083 |
| Weekly | 28 (0.9%) | 12 (0.4%) | 6 (0.2%) |  |
| 15 days | 39 (1.3%) | 16 (0.5%) | 1 (0.0%) |  |
| Monthly | 132 (4.4%) | 28 (0.9%) | 6 (0.2%) |  |
| 3 Months | 65 (2.2%) | 18 (0.6%) | 4 (0.1%) |  |
| 6 Months | 27 (0.9%) | 6 (0.2%) | 2 (0.1%) |  |
| Annually | 8 (0.3%) | 4 (0.1%) | 0 (0.0%) |  |
| Almost Never | 12 (0.4%) | 5 (0.2%) | 3 (0.1%) |  |
| Missing | 2,680 (89.5%) | 2,909 (96.9%) | 2,978 (99.3%) |  |
| **how\_often\_use\_mobile\_money\_for.transferbank** | | | | |
| Daily | 0 (0.0%) | 1 (0.0%) | 0 (0.0%) | 0.025 |
| Weekly | 16 (0.5%) | 4 (0.1%) | 5 (0.2%) |  |
| 15 days | 22 (0.7%) | 4 (0.1%) | 0 (0.0%) |  |
| Monthly | 85 (2.8%) | 18 (0.6%) | 3 (0.1%) |  |
| 3 Months | 22 (0.7%) | 2 (0.1%) | 3 (0.1%) |  |
| 6 Months | 8 (0.3%) | 5 (0.2%) | 1 (0.0%) |  |
| Annually | 9 (0.3%) | 0 (0.0%) | 0 (0.0%) |  |
| Almost Never | 10 (0.3%) | 3 (0.1%) | 1 (0.0%) |  |
| Missing | 2,822 (94.3%) | 2,964 (98.8%) | 2,987 (99.6%) |  |
| **how\_often\_use\_mobile\_money\_for.payrent** | | | | |
| Daily | 1 (0.0%) | 1 (0.0%) | 0 (0.0%) | 0.20 |
| Weekly | 4 (0.1%) | 3 (0.1%) | 1 (0.0%) |  |
| 15 days | 3 (0.1%) | 1 (0.0%) | 0 (0.0%) |  |
| Monthly | 45 (1.5%) | 8 (0.3%) | 7 (0.2%) |  |
| 3 Months | 8 (0.3%) | 3 (0.1%) | 2 (0.1%) |  |
| 6 Months | 2 (0.1%) | 1 (0.0%) | 1 (0.0%) |  |
| Annually | 2 (0.1%) | 3 (0.1%) | 0 (0.0%) |  |
| Almost Never | 1 (0.0%) | 2 (0.1%) | 1 (0.0%) |  |
| Missing | 2,928 (97.8%) | 2,979 (99.3%) | 2,988 (99.6%) |  |
| **how\_often\_use\_mobile\_money\_for.accountmaint** | | | | |
| Daily | 54 (1.8%) | 43 (1.4%) | 20 (0.7%) | 0.0006 |
| Weekly | 202 (6.7%) | 77 (2.6%) | 49 (1.6%) |  |
| 15 days | 112 (3.7%) | 57 (1.9%) | 24 (0.8%) |  |
| Monthly | 271 (9.1%) | 69 (2.3%) | 31 (1.0%) |  |
| 3 Months | 93 (3.1%) | 38 (1.3%) | 19 (0.6%) |  |
| 6 Months | 38 (1.3%) | 15 (0.5%) | 7 (0.2%) |  |
| Annually | 24 (0.8%) | 7 (0.2%) | 6 (0.2%) |  |
| Almost Never | 38 (1.3%) | 13 (0.4%) | 8 (0.3%) |  |
| Missing | 2,162 (72.2%) | 2,682 (89.4%) | 2,836 (94.5%) |  |
| **how\_often\_use\_mobile\_money\_for.paymobilebill** | | | | |
| Daily | 229 (7.6%) | 258 (8.6%) | 93 (3.1%) | < 0.0001 |
| Weekly | 678 (22.6%) | 387 (12.9%) | 187 (6.2%) |  |
| 15 days | 298 (10.0%) | 225 (7.5%) | 102 (3.4%) |  |
| Monthly | 311 (10.4%) | 137 (4.6%) | 100 (3.3%) |  |
| 3 Months | 146 (4.9%) | 121 (4.0%) | 59 (2.0%) |  |
| 6 Months | 52 (1.7%) | 38 (1.3%) | 28 (0.9%) |  |
| Annually | 24 (0.8%) | 13 (0.4%) | 16 (0.5%) |  |
| Almost Never | 43 (1.4%) | 15 (0.5%) | 14 (0.5%) |  |
| Missing | 1,213 (40.5%) | 1,807 (60.2%) | 2,401 (80.0%) |  |
| **how\_often\_use\_mobile\_money\_for.payschoolfee** | | | | |
| Daily | 3 (0.1%) | 1 (0.0%) | 0 (0.0%) | < 0.0001 |
| Weekly | 13 (0.4%) | 2 (0.1%) | 4 (0.1%) |  |
| 15 days | 7 (0.2%) | 1 (0.0%) | 7 (0.2%) |  |
| Monthly | 60 (2.0%) | 10 (0.3%) | 18 (0.6%) |  |
| 3 Months | 102 (3.4%) | 15 (0.5%) | 42 (1.4%) |  |
| 6 Months | 24 (0.8%) | 16 (0.5%) | 7 (0.2%) |  |
| Annually | 14 (0.5%) | 13 (0.4%) | 9 (0.3%) |  |
| Almost Never | 14 (0.5%) | 6 (0.2%) | 0 (0.0%) |  |
| Missing | 2,757 (92.1%) | 2,937 (97.9%) | 2,913 (97.1%) |  |
| **how\_often\_use\_mobile\_money\_for.paymedical** | | | | |
| Daily | 2 (0.1%) | 0 (0.0%) | 0 (0.0%) | 0.18 |
| Weekly | 4 (0.1%) | 0 (0.0%) | 1 (0.0%) |  |
| 15 days | 2 (0.1%) | 0 (0.0%) | 4 (0.1%) |  |
| Monthly | 23 (0.8%) | 9 (0.3%) | 5 (0.2%) |  |
| 3 Months | 13 (0.4%) | 9 (0.3%) | 8 (0.3%) |  |
| 6 Months | 16 (0.5%) | 2 (0.1%) | 4 (0.1%) |  |
| Annually | 17 (0.6%) | 5 (0.2%) | 7 (0.2%) |  |
| Almost Never | 9 (0.3%) | 0 (0.0%) | 3 (0.1%) |  |
| Missing | 2,908 (97.1%) | 2,976 (99.2%) | 2,968 (98.9%) |  |
| **how\_often\_use\_mobile\_money\_for.payelectrical** | | | | |
| Daily | 0 (0.0%) | 3 (0.1%) | 0 (0.0%) | < 0.0001 |
| Weekly | 8 (0.3%) | 18 (0.6%) | 5 (0.2%) |  |
| 15 days | 5 (0.2%) | 25 (0.8%) | 5 (0.2%) |  |
| Monthly | 196 (6.5%) | 100 (3.3%) | 44 (1.5%) |  |
| 3 Months | 18 (0.6%) | 14 (0.5%) | 9 (0.3%) |  |
| 6 Months | 6 (0.2%) | 7 (0.2%) | 2 (0.1%) |  |
| Annually | 4 (0.1%) | 3 (0.1%) | 0 (0.0%) |  |
| Almost Never | 8 (0.3%) | 7 (0.2%) | 1 (0.0%) |  |
| Missing | 2,749 (91.8%) | 2,824 (94.1%) | 2,934 (97.8%) |  |
| **how\_often\_use\_mobile\_money\_for.paywater** | | | | |
| Daily | 1 (0.0%) | 1 (0.0%) | 0 (0.0%) | 0.003 |
| Weekly | 3 (0.1%) | 1 (0.0%) | 3 (0.1%) |  |
| 15 days | 2 (0.1%) | 3 (0.1%) | 1 (0.0%) |  |
| Monthly | 54 (1.8%) | 18 (0.6%) | 18 (0.6%) |  |
| 3 Months | 1 (0.0%) | 6 (0.2%) | 8 (0.3%) |  |
| 6 Months | 1 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Annually | 2 (0.1%) | 2 (0.1%) | 0 (0.0%) |  |
| Almost Never | 1 (0.0%) | 1 (0.0%) | 2 (0.1%) |  |
| Missing | 2,929 (97.8%) | 2,969 (98.9%) | 2,968 (98.9%) |  |
| **how\_often\_use\_mobile\_money\_for.paytv** | | | | |
| Daily | 1 (0.0%) | 1 (0.0%) | 0 (0.0%) | 0.006 |
| Weekly | 4 (0.1%) | 6 (0.2%) | 0 (0.0%) |  |
| 15 days | 3 (0.1%) | 7 (0.2%) | 3 (0.1%) |  |
| Monthly | 154 (5.1%) | 46 (1.5%) | 31 (1.0%) |  |
| 3 Months | 12 (0.4%) | 8 (0.3%) | 4 (0.1%) |  |
| 6 Months | 5 (0.2%) | 1 (0.0%) | 1 (0.0%) |  |
| Annually | 3 (0.1%) | 0 (0.0%) | 0 (0.0%) |  |
| Almost Never | 5 (0.2%) | 7 (0.2%) | 2 (0.1%) |  |
| Missing | 2,807 (93.8%) | 2,925 (97.5%) | 2,959 (98.6%) |  |
| **ever\_used\_any\_mobile\_money\_service.MPesa** | | | | |
| No | 567 (18.9%) | 1,584 (52.8%) | 1,466 (48.9%) | < 0.0001 |
| Yes | 2,381 (79.5%) | 1,183 (39.4%) | 1,180 (39.3%) |  |
| Missing | 46 (1.5%) | 234 (7.8%) | 354 (11.8%) |  |
| **ever\_used\_any\_mobile\_money\_service.AirtelMoney** | | | | |
| No | 1,929 (64.4%) | 1,873 (62.4%) | 1,709 (57.0%) | < 0.0001 |
| Yes | 153 (5.1%) | 677 (22.6%) | 520 (17.3%) |  |
| Missing | 912 (30.5%) | 451 (15.0%) | 771 (25.7%) |  |
| **ever\_used\_any\_mobile\_money\_service.YUCash** | | | | |
| No | 1,241 (41.4%) | 1,998 (66.6%) | 896 (29.9%) | < 0.0001 |
| Yes | 23 (0.8%) | 573 (19.1%) | 15 (0.5%) |  |
| Missing | 1,730 (57.8%) | 430 (14.3%) | 2,089 (69.6%) |  |
| **ever\_used\_any\_mobile\_money\_service.OrangeMoney** | | | | |
| No | 1,280 (42.8%) | 776 (25.9%) | 455 (15.2%) | < 0.0001 |
| Yes | 12 (0.4%) | 30 (1.0%) | 1 (0.0%) |  |
| Missing | 1,702 (56.8%) | 2,195 (73.1%) | 2,544 (84.8%) |  |
| **ever\_used\_any\_mobile\_money\_service.Tangaza** | | | | |
| No | 534 (17.8%) | 197 (6.6%) | 252 (8.4%) | 1.00 |
| Yes | 2 (0.1%) | 1 (0.0%) | 1 (0.0%) |  |
| Missing | 2,458 (82.1%) | 2,803 (93.4%) | 2,747 (91.6%) |  |
| **ever\_used\_any\_mobile\_money\_service.MobiCash** | | | | |
| No | 756 (25.3%) | 13 (0.4%) | 458 (15.3%) | 0.055 |
| Yes | 8 (0.3%) | 1 (0.0%) | 10 (0.3%) |  |
| Missing | 2,230 (74.5%) | 2,987 (99.5%) | 2,532 (84.4%) |  |
| **ever\_used\_any\_mobile\_money\_service.Equitel** | | | | |
| No | 1,097 (36.6%) | 0 (0.0%) | 239 (8.0%) | 0.39 |
| Yes | 75 (2.5%) | 0 (0.0%) | 12 (0.4%) |  |
| Missing | 1,822 (60.9%) | 3,001 (100.0%) | 2,749 (91.6%) |  |
| **last\_time\_fin\_activity\_w\_mobile\_money.MPesa** | | | | |
| Yesterday | 213 (7.1%) | 146 (4.9%) | 174 (5.8%) | < 0.0001 |
| 7 days | 683 (22.8%) | 434 (14.5%) | 402 (13.4%) |  |
| 30 days | 857 (28.6%) | 352 (11.7%) | 294 (9.8%) |  |
| 90 days | 189 (6.3%) | 126 (4.2%) | 173 (5.8%) |  |
| >90 days | 439 (14.7%) | 125 (4.2%) | 137 (4.6%) |  |
| Never | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Missing | 613 (20.5%) | 1,818 (60.6%) | 1,820 (60.7%) |  |
| **last\_time\_fin\_activity\_w\_mobile\_money.AirtelMoney** | | | | |
| Yesterday | 49 (1.6%) | 86 (2.9%) | 102 (3.4%) | < 0.0001 |
| 7 days | 47 (1.6%) | 265 (8.8%) | 159 (5.3%) |  |
| 30 days | 33 (1.1%) | 179 (6.0%) | 114 (3.8%) |  |
| 90 days | 17 (0.6%) | 72 (2.4%) | 86 (2.9%) |  |
| >90 days | 7 (0.2%) | 75 (2.5%) | 59 (2.0%) |  |
| Never | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Missing | 2,841 (94.9%) | 2,324 (77.4%) | 2,480 (82.7%) |  |
| **last\_time\_fin\_activity\_w\_mobile\_money.YUCash** | | | | |
| Yesterday | 10 (0.3%) | 81 (2.7%) | 7 (0.2%) | 0.001 |
| 7 days | 7 (0.2%) | 211 (7.0%) | 3 (0.1%) |  |
| 30 days | 2 (0.1%) | 128 (4.3%) | 1 (0.0%) |  |
| 90 days | 2 (0.1%) | 114 (3.8%) | 4 (0.1%) |  |
| >90 days | 2 (0.1%) | 39 (1.3%) | 0 (0.0%) |  |
| Never | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| Missing | 2,971 (99.2%) | 2,428 (80.9%) | 2,985 (99.5%) |  |
| **have\_account\_with\_any\_mobile\_money\_service.MPesa** | | | | |
| No | 856 (28.6%) | 1,583 (52.7%) | 1,796 (59.9%) | < 0.0001 |
| Yes | 2,092 (69.9%) | 1,184 (39.5%) | 850 (28.3%) |  |
| Missing | 46 (1.5%) | 234 (7.8%) | 354 (11.8%) |  |
| **have\_account\_with\_any\_mobile\_money\_service.AirtelMoney** | | | | |
| No | 1,932 (64.5%) | 1,942 (64.7%) | 1,864 (62.1%) | < 0.0001 |
| Yes | 150 (5.0%) | 608 (20.3%) | 365 (12.2%) |  |
| Missing | 912 (30.5%) | 451 (15.0%) | 771 (25.7%) |  |
| **have\_account\_with\_any\_mobile\_money\_service.YUCash** | | | | |
| No | 1,240 (41.4%) | 2,063 (68.7%) | 899 (30.0%) | < 0.0001 |
| Yes | 24 (0.8%) | 508 (16.9%) | 12 (0.4%) |  |
| Missing | 1,730 (57.8%) | 430 (14.3%) | 2,089 (69.6%) |  |
| **have\_account\_with\_any\_mobile\_money\_service.OrangeMoney** | | | | |
| No | 1,280 (42.8%) | 773 (25.8%) | 455 (15.2%) | < 0.0001 |
| Yes | 12 (0.4%) | 33 (1.1%) | 1 (0.0%) |  |
| Missing | 1,702 (56.8%) | 2,195 (73.1%) | 2,544 (84.8%) |  |
| **have\_account\_with\_any\_mobile\_money\_service.Tangaza** | | | | |
| No | 531 (17.7%) | 197 (6.6%) | 252 (8.4%) | 0.88 |
| Yes | 5 (0.2%) | 1 (0.0%) | 1 (0.0%) |  |
| Missing | 2,458 (82.1%) | 2,803 (93.4%) | 2,747 (91.6%) |  |
| **have\_account\_with\_any\_mobile\_money\_service.MobiCash** | | | | |
| No | 754 (25.2%) | 13 (0.4%) | 464 (15.5%) | 0.15 |
| Yes | 10 (0.3%) | 1 (0.0%) | 4 (0.1%) |  |
| Missing | 2,230 (74.5%) | 2,987 (99.5%) | 2,532 (84.4%) |  |
| **have\_account\_with\_any\_mobile\_money\_service.Equitel** | | | | |
| No | 1,091 (36.4%) | 0 (0.0%) | 242 (8.1%) | 0.062 |
| Yes | 81 (2.7%) | 0 (0.0%) | 9 (0.3%) |  |
| Missing | 1,822 (60.9%) | 3,001 (100.0%) | 2,749 (91.6%) |  |
| **last\_time\_financial\_activity\_using\_account.MPesa** | | | | |
| Yesterday | 150 (5.0%) | 119 (4.0%) | 85 (2.8%) | < 0.0001 |
| 7 days | 578 (19.3%) | 408 (13.6%) | 271 (9.0%) |  |
| 30 days | 720 (24.0%) | 360 (12.0%) | 261 (8.7%) |  |
| 90 days | 153 (5.1%) | 117 (3.9%) | 99 (3.3%) |  |
| >90 days | 41 (1.4%) | 51 (1.7%) | 18 (0.6%) |  |
| Never | 450 (15.0%) | 129 (4.3%) | 116 (3.9%) |  |
| Missing | 902 (30.1%) | 1,817 (60.5%) | 2,150 (71.7%) |  |
| **last\_time\_financial\_activity\_using\_account.AirtelMoney** | | | | |
| Yesterday | 32 (1.1%) | 60 (2.0%) | 45 (1.5%) | < 0.0001 |
| 7 days | 38 (1.3%) | 218 (7.3%) | 109 (3.6%) |  |
| 30 days | 23 (0.8%) | 156 (5.2%) | 94 (3.1%) |  |
| 90 days | 11 (0.4%) | 72 (2.4%) | 61 (2.0%) |  |
| >90 days | 39 (1.3%) | 22 (0.7%) | 13 (0.4%) |  |
| Never | 7 (0.2%) | 80 (2.7%) | 43 (1.4%) |  |
| Missing | 2,844 (95.0%) | 2,393 (79.7%) | 2,635 (87.8%) |  |
| **last\_time\_financial\_activity\_using\_account.YUCash** | | | | |
| Yesterday | 7 (0.2%) | 60 (2.0%) | 3 (0.1%) | < 0.0001 |
| 7 days | 2 (0.1%) | 162 (5.4%) | 1 (0.0%) |  |
| 30 days | 3 (0.1%) | 111 (3.7%) | 1 (0.0%) |  |
| 90 days | 1 (0.0%) | 77 (2.6%) | 4 (0.1%) |  |
| >90 days | 8 (0.3%) | 52 (1.7%) | 3 (0.1%) |  |
| Never | 3 (0.1%) | 46 (1.5%) | 0 (0.0%) |  |
| Missing | 2,970 (99.2%) | 2,493 (83.1%) | 2,988 (99.6%) |  |
| **last\_time\_financial\_activity\_using\_account.Equitel** | | | | |
| Yesterday | 7 (0.2%) | 0 (0.0%) | 2 (0.1%) | 0.087 |
| 7 days | 26 (0.9%) | 0 (0.0%) | 2 (0.1%) |  |
| 30 days | 20 (0.7%) | 0 (0.0%) | 0 (0.0%) |  |
| 90 days | 7 (0.2%) | 0 (0.0%) | 2 (0.1%) |  |
| >90 days | 9 (0.3%) | 0 (0.0%) | 0 (0.0%) |  |
| Never | 12 (0.4%) | 0 (0.0%) | 3 (0.1%) |  |
| Missing | 2,913 (97.3%) | 3,001 (100.0%) | 2,991 (99.7%) |  |
| **how\_long\_using\_mobile\_money** | | | | |
| Mean (SD) | 4.8 (±0.7) | 4.3 (±1.1) | 4.5 (±1.0) | < 0.0001 |
| Missing | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| **source\_filename** | | | | |
| fsp\_final\_kenya\_w3\_(public).csv | 2,994 (100.0%) | 0 (0.0%) | 0 (0.0%) | < 0.0001 |
| fsp\_final\_nigeria\_w3\_(public).csv | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |  |
| fsp\_final\_tanzania\_w3\_(public).csv | 0 (0.0%) | 3,001 (100.0%) | 0 (0.0%) |  |
| fsp\_final\_uganda\_w3\_(public).csv | 0 (0.0%) | 0 (0.0%) | 3,000 (100.0%) |  |
| **minFS** | | | | |
| 1 day | 452 (15.1%) | 219 (7.3%) | 188 (6.3%) | < 0.0001 |
| 7 days | 870 (29.1%) | 571 (19.0%) | 364 (12.1%) |  |
| 30 days | 700 (23.4%) | 700 (23.3%) | 462 (15.4%) |  |
| 90 days | 188 (6.3%) | 200 (6.7%) | 195 (6.5%) |  |
| >90 days | 215 (7.2%) | 188 (6.3%) | 184 (6.1%) |  |
| Never | 569 (19.0%) | 1,123 (37.4%) | 1,607 (53.6%) |  |
| † n=8955 observations, FII | | | | |

1. http://datalab.ischool.uw.edu/ [↑](#footnote-ref-1)
2. http://www.jblumenstock.com/ [↑](#footnote-ref-2)
3. https://web.stanford.edu/~jacksonm/ [↑](#footnote-ref-3)
4. http://finclusion.org/ [↑](#footnote-ref-4)
5. See appendix for full table [↑](#footnote-ref-5)
6. https://en.wikipedia.org/wiki/Metcalfe%27s\_law [↑](#footnote-ref-6)
7. See Dr. Jackson’s prior work, referenced above. [↑](#footnote-ref-7)