



Digital Services and Women's Rural-to-Urban Migration

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Abstract

This document is an initial scoping of the theory and evidence linking digital services to women's rural-to-urban migration. The document contains (1) a survey of the literature on digital financial services to discern how often this body of literature considers gender-disaggregated impacts on migration, (2) a detailed review of 13 hypotheses regarding the effects of digital services on women's migration to cities, and (3) an illustrative overview of rural-urban migration patterns and digital technology usage in two East African countries (Ethiopia and Tanzania).

1. Survey of the Literature on Digital Financial Services in Africa

The Partnership for Finance in a Digital Africa has conducted an up-to-date 'Digital Finance Evidence Gap Map' of studies related to the impacts of digital finance (Partnership, 2019). We reviewed all 40 studies contained therein to understand whether they consider migration as an outcome of using digital services, whether they consider the migrant population's usage of digital services, whether their results are gender-disaggregated, and whether they specifically consider women's migration in their analysis. Full results are found in *Appendix A*.

Of the 40 studies included in this review:

- Three studies consider migration as an outcome (Aker et al., 2016; Suri & Jack, 2016; Balderrama & Rocabado, 2015).
- Five studies include migration as an explanatory variable for remittances and use of digital services (Munyegera & Matsumoto, 2018; Sekabira & Qaim, 2016; Suri & Jack, 2016; Kikulwe et al., 2014; Munyegera & Matsumoto, 2014).
- 22 studies disaggregate their results by gender (Bastian et al., 2018; Jack & Habyarimana, 2018; Batista & Vicente, 2017; Breza et al., 2017; Lee et al., 2017; Munyegera & Matsumoto, 2018; Aker et al., 2016; Murendo & Wollni, 2016; Schaner, 2016; Sekabira & Qaim, 2016; Suri & Jack, 2016; Mazer et al., 2016; Balderrama & Rocabado, 2015; Sangaré & Guerin, 2015; Karim & Tyers, 2015; Ky & Rugemintwari, 2015; Bachas et al., 2014; Callen et al., 2014; Kikulwe et al., 2014; Munyegera & Matsumoto, 2014; Scharwatt & Minischetti, 2014; Wandibba et al., 2014).
- Two studies consider women's migration or migration from female-headed households in their analysis (Suri & Jack, 2016; Balderrama & Rocabado, 2015).

In our literature review for Section 2, we scanned the gray literature from leading organizations (e.g., UN International Organization for Migration (IOM), World Bank, Migrating Out of Poverty Consortium, and FAO), conducted keyword-based Scopus searches (detailed in Appendix B), and reviewed a wide set of peer-reviewed academic papers related to either digital technology in developing countries or rural-urban migration. Together with the results of our survey of the 'Digital Finance Evidence Gap Map,' we conclude that it is rare to find women's migration to cities (or the duration of migrant women's stay in cities) examined as an outcome of digital technology access and usage.

2. Exploration of Hypotheses Related to Digital Services and Women’s Rural-to-Urban Migration

Digital services can play a role in migration (not gender-differentiated)	
1. Digital credit may relieve liquidity constraints to finance a move.	<ul style="list-style-type: none"> • There is evidence that rural people face cash-in-advance constraints that inhibit them from migrating elsewhere (with a focus on migration as an investment, not a response to distress). • Migration increases after a positive weather / income shock in rural Tanzania (Hirvonen, 2016), Indonesia (Bazzi et al., 2016), and Mexico (Angelucci, 2015). • Evidence is more mixed in rural Bangladesh, where the easing of liquidity constraints seemed to drive seasonal migration in a small-scale randomized experiment (Bryan et al., 2014), though this pattern was not evident in a larger experiment with more general equilibrium effects (Bryan et al., 2018). • We haven’t found any studies that link digital credit (rather than mobile money) to migration.
2. Digital savings tools may facilitate saving to finance a move.	<ul style="list-style-type: none"> • There’s some evidence that mobile money encourages adoption of a bank account, and that mobile bank accounts encourage saving for larger expenditures (Suri & Jack 2016; Ky et al. 2016). • However, in Kenya, Van Hove & Dubus (2019) find that mobile money accounts are not used to build savings. The authors suggest that because M-PESA accounts have a <i>negative</i> real interest rate, people invest their money as soon as they’ve accumulated just enough. • We haven’t found any studies that link digital savings tools (rather than mobile money) to migration.
3. Mobile money may facilitate migration by making it easier to receive remittances that are used to finance migration.	<ul style="list-style-type: none"> • There’s some evidence that receipt of remittances in the form of mobile money can facilitate migration. • In Niger, a randomized mobile money cash transfer program increased the probability and intensity of seasonal migration (Aker et al., 2016). • However, in Kenya, expanded M-PESA access is not found to significantly increase migration (Suri & Jack, 2016).
4. Mobile money may encourage migration by making it easier to send home remittances.	<ul style="list-style-type: none"> • There’s evidence that access to mobile money increases the rate at which urban migrants send remittances (Jack & Suri, 2014 (Kenya); Lee et al., 2017 (Bangladesh); Munyegera & Matsumoto, 2016 (Uganda); Morawczynski & Pickens, 2009 (Kenya)). • To the extent that migrants are motivated by the prospect of sending home remittances, we might expect mobile money access to increase the rate at which people migrate to cities. • Nevertheless, easing remittances may not work in migrants’ favor if, by drawing down migrants’ own incomes, it reduces the welfare of urban migrants (Lee et al., 2017; Alampay & Moshi,

	<p>2018). By making it easier to transfer money, mobile money can render people more vulnerable to social pressure to share their resources (Batista & Vicente, 2017). Thus, to the extent that migrants are motivated to migrate in order to advance their own welfare, mobile money could even slow migration to cities.</p> <ul style="list-style-type: none"> • In Ghana, migrant women are less likely to send remittances to their husbands out of concern that they'll allocate the money to other wives/girlfriends or because they feel it violates gender norms of husbands as breadwinners (Teye et al., 2017). In some settings, mobile money may therefore be less likely to encourage women to migrate (as compared to men).
<p>5. Digital ID may facilitate inter-state migration by making it easier to transfer government benefits across states.</p>	<ul style="list-style-type: none"> • In India, Kone et al. (2016) find that new state borders inhibit interstate migration, driving migrants to instead choose home-state destinations. Inadequate portability of social welfare benefits may partially explain this pattern. • Ration cards, which are issued by state governments, enable access to subsidized food through the Public Distribution System (PDS). They serve as proof of identity to access other social protection schemes and public services, to register as workers and access formal worker protections (Srivastava, 2012), or to open a bank account (Zelazny, 2012). • These ration cards are not portable across states primarily because states with their own subsidies built into the PDS system do not want to extend these PDS benefits to migrants (Nayyar & Kim, 2018). • Digital IDs could make it easier for state governments to recognize ration cards. Srivastava (2012, p. 227) recommends a national roaming (mobile) ration card, and it seems that Maharashtra and Andhra Pradesh have started such an initiative. Particularly if there is a concern about fraud, digital IDs and related technologies could address that. • Ethiopia also has regional ID cards, and an ID is required to apply for mobile money accounts (Biallas & Ngahu, 2016). It's not clear whether IDs play a direct role in migrant experiences, though they may indirectly make it easier to access resources used in migration. • We haven't come across any studies linking digital IDs to interstate migration.
<p>6. Access to services enabled by digital ID may improve the urban experience and encourage migrants to remain in cities longer.</p>	<ul style="list-style-type: none"> • Aajeevika Bureau (2019) provides photo IDs to migrant workers in Rajasthan, India. They serve as a proof of identity and provide access to social security schemes and other services. It follows that digital IDs would similarly (and more seamlessly) benefit migrants. • In Vietnam, rural-urban migrants who face shocks in the city are more likely to state an intention to return home (Nguyen et al., 2017). It follows that government services (possibly accessed via digital ID) that help insure against shocks could lead migrants to extend their urban stay. • However, we have not come across anything that <i>directly</i> ties digital IDs and access to financial/government services to the duration of migration.

<p>7. Digital tools may ease access to information regarding jobs and housing in cities.</p>	<ul style="list-style-type: none"> • Potential rural-to-urban migrants gather information about urban employment opportunities in distant destinations, often collecting references from within their networks (Banerjee, 1991). Networks play a strong role in the decision to migrate in Mexico (McKenzie & Rapoport, 2007) and India (Nayyar & Kim, 2018). • In Niger, randomized access to mobile phones significantly increased the likelihood of migration by a household member, along with the number of households' members engaging in seasonal migration (Aker et al., 2011). It therefore seems plausible that any digital channel or online forum for migrant information would facilitate migration. • However, in a randomized control trial in rural Bangladesh, Bryan et al. (2014) did <i>not</i> find that an information-only treatment had any effect on the rate of temporary outmigration. The city of Seoul, Korea, created an app to improve women migrants' access to information in the city (Gelb & Krishnan, 2018), though it doesn't seem this has been studied. • In 2016, Innovations for Poverty Action (IPA) and University of the Philippines began a randomized evaluation to test the impact of installing cellular towers and providing free SIM cards on migration and labor market outcomes (among other things). A follow-up survey is planned for 2019 to evaluate the intervention's impact (IPA 2019).
<p>8. Mobile phones may facilitate rural outmigration by making it easier to maintain oversight of property left behind.</p>	<ul style="list-style-type: none"> • Some rural outmigrants opt to retain their land as insurance (if the migration is unsuccessful) or as a site for a future retirement (Wineman & Liverpool-Tasie, 2017; Hirvonen & Lilleør, 2015). Even when an outmigrant might have preferred to liquidate his/her landholdings, this sometimes isn't possible in the absence of a land market. Maintaining oversight of the property left behind may be a challenge. • Mobile communications can plausibly make oversight easier. Mobile money can also make it easier to employ a farm manager to continue running the farm in one's absence. • We haven't found this specific topic discussed in the literature.
<p>Digital services can also play a role uniquely relevant to women's migration experiences</p>	
<p>9. Digital savings tools may be helpful for women to save to finance a move if they find it more difficult than men to safeguard their income.</p>	<ul style="list-style-type: none"> • There's some evidence that women find it more difficult than men to allocate their income to savings rather than household consumption (Subia & Martinez, 2014). Women in rural Kenya are less likely to have savings of any kind (Demombynes & Thegeya, 2012). • Women are also often less likely to have access to a SIM/phone (Van Hove & Dubus, 2019) or a bank account (Dupas & Robinson, 2013). • There's evidence that having a savings account can counteract social pressure to share resources, (Batista & Vicente, 2017), and women in rural Kenya use their phones to hide money (or remittances) from their male family members (Kusimba et al., 2016; Morawczynski, 2009). • There's some evidence that mobile money is especially effective for women or female-headed households (Suri & Jack 2016; Ky et al., 2016). Therefore, we might expect to see a gender-

	<p>specific effect of access to digital savings tools on the likelihood of migration. However, in our review of the literature, we haven't come across any studies directly investigating this link.</p>
<p>10. Digital tools that strengthen property rights may increase the likelihood of women's rural-to-urban migration <i>if</i> women are more likely to remain in rural areas specifically to maintain a claim to the family's property.</p>	<ul style="list-style-type: none"> • There's evidence that secure property rights enhance labor force participation and out-migration, indicating that people with insecure property rights stay in place precisely because they don't want to leave their property unguarded (Field, 2007). In rural China, as the risk of land expropriation diminishes, rural-to-urban migrants remain in cities longer (De la Rupelle et al., 2009). And in rural Ethiopia, land certification is positively associated with a household sending away a migrant (Kriticos & Di Falco, 2018). • In Ghana, where land rights are secured through usage, more secure property rights allow land-users to fallow their fields longer (Goldstein & Udry, 2008). However, women possess weaker property rights and are less able to fallow their fields. In general, women face more constrained choices regarding whether and for how long they can allocate labor away from the farm (Joireman, 2008). • Digital tools, such as blockchain technologies, may have potential to clarify and strengthen property rights in developing countries. Honduras, Georgia and Rwanda (among others) have taken steps toward building blockchain-based land-titling systems (Mwanza & Wilkins, 2018; Kshetri, 2018). • We have not found discussion of women remaining in rural areas specifically because they were tasked with protecting the family's property. This hypothesis may merit some exploratory qualitative research.
<p>11. Digital tools may enhance physical mobility, enabling women to securely leave home while maintaining oversight of their family's care.</p>	<ul style="list-style-type: none"> • Women in rural Africa tend to be responsible for raising children, providing care for the infirm and elderly, and managing the household (Kevane, 2012). • Mobile phones may (conceivably) enable women to physically move to the city while remaining in close contact with their family so that they are still "on call" in case of an emergency. However, we did not find any discussion of this proposed link between digital tools and women's physical mobility.
<p>12. Digital services that improve physical security in urban spaces may be especially important for women.</p>	<ul style="list-style-type: none"> • Women, in particular, may be dissuaded from migrating to cities if cities are unsafe. Technology that improves physical security can therefore encourage women to migrate. For example, we heard of a mobile phone app in Mexico City that facilitates reporting of sexual harassment and violence (UN Women, 2017).
<p>13. Any technology that makes it easier for children to receive services in a new location (e.g., to enroll in a new school) may make it easier for women to move, too.</p>	<ul style="list-style-type: none"> • Unfortunately, we have not come across a discussion of this hypothesis or the ways that digital tools may facilitate the mobility of children.

3. Example: Landscape of Rural-to-Urban Migration and Digital Technology Usage in Ethiopia and Tanzania

Ethiopia	Tanzania
<p>Migration</p> <ul style="list-style-type: none"> • 44.4% of urban Ethiopians are migrants (Ethiopian Central Statistical Agency, 2014). • Rural-to-urban migration accounts for 32.5% of migration in Ethiopia (Ethiopian Central Statistical Agency, 2014). • 59% of Ethiopian women’s migration was internal, compared to 82% for men (Litchfield, 2018). • From 2005 to 2013, rural-to-urban migration increased from 24.3% to 32.5% (Ethiopian Central Statistical Agency, 2014). • Seasonal migration as a share of internal migration from rural areas was 17% in 2014, and of these, 39% were women (MOOP, 2014). • 41% of surveyed migrants in Ethiopia finance migration through savings, while 20% finance it through mortgaging land or selling belongings (Litchfield, 2018). • For Ethiopian women ages 15-64, 37.9% migrated to a search for work, 14% migrated for marriage, 13.4% migrated for education, and 14.9% migrated along with family. (Ethiopian Central Statistical Agency, 2014). • 30% of Ethiopian men who migrated rural-to-urban eventually returned to a rural area. For women, 17% return to rural areas after migrating to urban areas (FAO, 2018). <p>Use of Digital Technology and Digital Financial Services^a</p> <ul style="list-style-type: none"> • 2017 Findex data shows that only .03% of Ethiopian adults use mobile money accounts (Demirgüç-Kunt et al., 2018). • 92% of unbanked Ethiopian adults have only a primary education or less (Demirgüç-Kunt et al., 2018). • There are currently two mobile money providers in Ethiopia, M-Birr and helloCash (Biallas & Ngahu, 2016). • Findex data did not show a meaningful difference in mobile money usage between genders. 	<p>Migration</p> <ul style="list-style-type: none"> • The 2012 Population and Housing Census showed that 7.8 million Tanzanians were living outside of the place of their birth (Tanzania National Bureau of Statistics, 2015). • 31.3% of migration flows from rural households are rural-to-urban (from 2008 to 2012) (EPAR - own calculations from LSMS-ISA, 2019). • 70% of the increase in Dar es Salaam’s population between 1978 and 2012 can be attributed to rural-to-urban migration (Wenban-Smith, 2014). • 52.8% of Dar es Salaam’s population in 2012 were migrants (Tanzania National Bureau of Statistics, 2015). • 60.3% of rural-to-urban migrants are women (EPAR - own calculations, 2019). This includes migration for marriage. • 2.8% of rural people (age 15+) migrate away from their homes per year (from 2008 to 2012) (EPAR - own calculations, 2019). • For newly migrated rural-to-urban women, their reasons for migrating are: 32.2% for better services/housing, 26.2% for family, 24.0% for marriage, and 11.9% for work (EPAR - own calculations, 2019). • For newly migrated rural-to-urban men, their reasons for migrating are 33.8% for better services/housing, 27.1% for family, 2.4% for marriage, and 22.5% for work (EPAR - own calculations, 2019). <p>Use of Digital Technology and Digital Financial Services</p> <ul style="list-style-type: none"> • 2017 Findex data shows that 38.5% of Tanzanian adults use mobile money accounts. • 86% of unbanked Tanzanian adults have only a primary education or less (Demirgüç-Kunt et al., 2018). • In a recent survey, almost a third of households had sent or received remittances through mobile money in the previous six months (Mirzoyants, 2013). • 55% of mobile money using households received remittances, compared to only 13% of non-mobile money households (Mirzoyants, 2013).

^a Additional statistics related to financial inclusion can be found in Appendix C.

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Appendix A. Consideration of Migration and Gender in Studies of Digital Financial Services¹

Study	Outcome(s) related to migration	Outcome(s) disaggregated by gender	Outcome(s) reporting on migration of women
Conrad, M. & Wollni, M. (2016)	×	✓	×
Suri, T. & Jack, W. (2016)	✓	✓	✓
Riley, E. (2018)	×	×	×
Sekabira, H. & Qaim, M. (2016)	×	✓	×
Cohen, I. (2016)	×	×	×
IPA & CGAP (2016)	×	×	×
Muralidharan, K. et al. (2016)	×	×	×
Aker, J. et al. (2016)	✓	✓	×
Moceviciute et al. (2016)	×	×	×
Harigaya, T. (2016)	×	×	×
Schaner, S. (2016)	×	✓	×
Blumenstock, J. et al. (2016)	×	×	×
Mazer, R. et al. (2016)	×	✓	×
Munyegera, G. & Matsumoto, T. (2018)	×	✓	×
Lee et al. (2017)	×	✓	×
Waldron, D. & Wolvers, M. (2017)	×	×	×
Breza et al. (2017)	×	✓	×
Dyer et al. (2017)	×	×	×
Batista, C. & Vincente, P. (2017)	×	✓	×
Scharwatt, P. & Minischetti, E. (2014)	×	✓	×
Wandibba, S. et al. (2014)	×	✓	×
Jack, W. & Suri, T. (2014)	×	×	×
Kikulwe, E. et al. (2014)	×	✓	×
Munyegera, G. & Matsumoto, T. (2014)	×	✓	×
Bachas, P. et al. (2014)	×	✓	×
Masino, S. & Miguel, N. (2014)	×	×	×
Callen, M. et al. (2014)	×	✓	×
Koning, A. (2015)	×	×	×
Ky, S. & Rugemintwari, C. (2015)	×	✓	×
Sangaré, M. & Guerin, I. (2015)	×	✓	×
Balderrama, M. & Rocabado, O. (2015)	✓	✓	✓
Frydrych, J. and Scharwatt, C. (2015)	×	×	×
Shah, R. (2015)	×	×	×
Blumenstock, J. et al. (2015)	×	×	×
Karim, S. & Tyers, A. (2015)	×	✓	×
Valenzuela, M. et al. (2015)	×	×	×
Jack, W. & Habyarimana, J. (2018)	×	✓	×
Azevedo, V. et al. (2018)	×	×	×
Bastian, G. et al. (2018)	×	✓	×

¹ Studies included in the Partnership for Finance in a Digital Africa's Evidence Gap Map Analysis (2017)

Appendix B. Proposed Search Strings for Future Literature Review

If the goal is to understand the evidence base, we can more systematically review the literature with keyword-based searches of Scopus and Google Scholar. We typically code the literature based on type of study, geography, and main findings. Below are the results returned in preliminary searches for the general topic, followed by some specific hypotheses.

Search string results relating to internal migration, gender, and DFS (Number of results returned)

Focus: Internal Migration, Gender, and DFS	Scopus	Google Scholar
("mobile money" OR "digital financial services" OR "digital services") AND ("migration") AND ("experimental") OR ("East Africa") and (gender OR women OR female)	27	1,020
("mobile money" OR "digital financial services" OR "digital services") AND ("migration") AND ("experimental") AND ("Ethiopia" OR "Tanzania" OR "East Africa") and (gender OR women OR female)	13	302
("mobile money" OR "digital financial services" OR "digital services") AND ("migration") OR ("rural" OR "Urban") AND ("experimental") OR ("East Africa") and (gender OR women OR female)	101	2,230
("mobile money" OR "digital financial services" OR "digital services") AND ("migration") OR ("rural" OR "Urban") AND ("experimental") OR ("East Africa") AND ("Ethiopia" OR "Tanzania") and (gender OR women OR female)	61	1,650
("mobile money" OR "digital financial services") AND (internal) migration AND experimental OR Africa and (gender OR women OR female)	18	1,120
("mobile money" OR "digital financial services") AND (internal) migration AND experimental OR "East Africa" and (gender OR women OR female)	10	560

Focus: Digital ID may facilitate inter-state migration by making it easier to transfer government benefits	Scopus	Google Scholar
("digital servic*" OR "digital tools*" OR "digital use") AND ("migration") AND ("government")	28	2,450
("digital service*" OR "digital tools*" OR "digital use") AND ("migration") AND ("government") OR ("government-to-person") OR ("Digital wage payment" OR "digital social payment")	28	3,010

Appendix C. Key Statistics from 2017 Findex

Indicator	Ethiopia		Tanzania	
	2014	2017	2014	2017
Financial institution account, rural (% age 15+)	19.0%	32.4%	15.9%	19.6%
Financial institution account, female (% age 15+)	21.0%	29.1%	17.1%	19.0%
Financial institution account, male (% age 15+)	22.6%	40.9%	21.1%	23.1%
Made or received digital payments in the past year, female (% age 15+)	6.3%	8.2%	29.3%	37.8%
Made or received digital payments in the past year, rural (% age 15+)	4.4%	10.4%	30.9%	41.6%
Mobile money account (% age 15+)	0%	0.3%	32.4%	38.5%
Mobile money account, rural (% age 15+)	0%	0.1%	28.5%	37.8%
Mobile money account, female (% age 15+)	0.1%	0.1%	26.6%	33.2%
Mobile money account, male (% age 15+)	0%	0.6%	38.4%	44.1%

Source: The Global Findex Database 2017