

DIW Roundup
Politik im Fokus

Deutsches Institut für Wirtschaftsforschung

2019

The Impact of Mobile Money in Developing Countries

Jana Hamdan

The Impact of Mobile Money in Developing Countries

Jana Hamdan | jhamdan@diw.de | Department of International Economics at DIW Berlin
July 16, 2019

Mobile money is a success story in terms of facilitating account ownership and payments in developing and emerging countries. Today, telecommunication companies offer mobile money services across more than 90 countries. The most popular services are deposits and instant digital money transfers between users. Widespread mobile money adoption is boosting financial inclusion, reducing in transaction costs and facilitating successful consumption smoothing and risk sharing among users. Nonetheless, mobile money is also associated with heterogeneous effects and risks among the poor and vulnerable populations. This article reviews the recent literature on the impact of mobile money in developing countries.

The mobile money revolution

The introduction of mobile payment services reaches millions of unbanked people and businesses in developing and emerging economies. First launched in Kenya in 2007, mobile money services are now active in about 90 countries and represent more than 866 million registered accounts, processing 1.3 billion US dollars per day ([GSMA, 2019](#)). The technology is most popular in developing and emerging markets, satisfying the demand for easily accessible and cheaper financial services.

Since the turn of the millennium, global mobile phone ownership rates have increased dramatically. The adoption of mobile phones has laid the foundation for the innovative mobile money technology. In Sub Saharan Africa, this paves the way for new possibilities for the continent (Aker & Mbiti, 2010). Here, 21 percent of adults had a mobile money account in 2017. This is nearly twice as much as in 2014, driven by a spread from East Africa to other regions ([Demirgüç-Kunt et al., 2018](#)).

From a global point of view, the largest share of 45.6 percent of global registered mobile money users in 2018 come from Sub-Saharan Africa, 33.2 percent from South Asia and 11 percent are located in East Asia & the Pacific (GSMA, 2019). The growth rate in adoption remains astonishing. In 2018, the number of registered mobile money accounts grew by 20 percent compared to 2017 levels.

Cash-in and cash-out transactions make up the majority of mobile money usage, but transactions grow comparatively more as different payment services become more popular. A typical active Mobile Money customer now moves about 200 US Dollars equivalent per month through on average 12 transactions (GSMA, 2019).

Still, about 1.7 billion adults lack financial access, most of them living in developing countries, as they have neither an account with a financial institution nor with a mobile money provider (Demirgüç-Kunt et al., 2018). Offering cheaper and more accessible products to the poor and rural populations often fails to be viable for commercial banks and insurance companies. This marks an obstacle for small business owners who mostly fail to grow their businesses beyond subsistence levels – see [DIW Roundup 114](#) for a literature discussion on this topic. With ever-rising

adoption levels, mobile money is likely to drive financial inclusion further and reach more poor and rural populations.

How does it work?

Registered mobile money users can deposit cash in their digital accounts and can withdraw it again at any point in time. They can do so through a vast network of licensed agents who earn commission. Large telecommunication companies in the respective countries provide the services and manage these networks, whilst also selling SIM cards and airtime to their customers. Thus, mobile money use is not linked to pre-existing bank accounts and therefore distinct from mobile payments in developed countries. For prospective users, the prerequisites for mobile money usage are the possession of a SIM card of the provider, a national ID card for registration and a mobile phone. Importantly, this must not be a smartphone.

Users can make mobile money payments to transfer remittances instantaneously to other users in their network, users in other networks and even non-users. Whereas signing up and account ownership is free of charge, transaction costs arise for all additional services. Fees typically fall with increasing transaction amount and vary by type of mobile money service.

Recently, some telecommunication companies have introduced additional services such as making payments for utilities or granting short-term loans. Still, customers continue to be mostly drawn to mobile money in order to secure small amounts and to send them to other users. Economides & Jeziorski (2017) show that the money cashed into the mobile money system in Tanzania leaves it relatively quickly, usually within two to three days.

Reducing transaction costs and allowing privacy

In general, the transaction costs in mobile money depict a significant reduction compared to alternative financial services. This occurs through multiple channels: a reduction in travel time and costs, a decrease in coordination costs, delay and leakage probabilities and general opportunity costs from efforts to transfer money (Aron, 2018). Compared to formal banking, mobile money overcomes problems of weak institutional infrastructure and cost structure in developing countries, where regular charges of bank accounts are too high for many (Aron, 2018). The fact that mobile money is highly accessible through a vast network of agents reduces monetary and opportunity costs. This is especially true for rural populations. Moreover, mobile money services offer safety and privacy improvements over a cash economy (Suri, 2017). Individual mobile money accounts can help protect and encourage savings for members of larger households (Aron, 2018).

Consumption smoothing and risk sharing

A large strand of the literature on the impact of mobile money adoption is devoted to consequences for consumption smoothing and risk sharing.

Munyegera & Matsumoto (2016) show that Ugandan households with mobile money accounts are 20 percentage points more likely to receive remittances, get them more frequently and the total value of all remittances received is 33 percent higher than for non-user households. The authors then estimate the impact of adoption on welfare measured by household per capita consumption. Their OLS results suggest that mobile money adoption causes on average a 13 percent increase in household per capita consumption, statistically significant at the 1 percent level. Fixed effects and propensity score matching specifications generate very similar coefficients.

Several researchers find that mobile money adoption enables successful consumption smoothing and increases risk sharing through inflows of remittances after exogenous shocks.

In Kenya, Jack & Suri (2014) investigate the impact of mobile money use on risk sharing by analyzing panel survey data. They provide evidence for successful consumption smoothing after income shocks among mobile money users. In contrast, income shocks reduce household consumption per capita on average by 7 percent for non-users. The authors show that mobile money users are more likely to receive remittances after exogenous shocks. They are on average 13 percentage points more likely to receive funds from others compared to non-users. These remittances occur also on average more often, from a larger network and are larger in terms of their total value. The findings are stronger for the bottom three quintiles of the income distribution.

Riley (2018) continues along this line of literature and explores both consumption smoothing and spillover effects. She focuses on mobile money users' and non-users' self-reported shocks, remittances, wealth and consumption by using panel data from the Tanzania National Panel survey. By applying a difference-in-difference approach, she finds that only mobile money users are able to prevent a significant drop in their consumption after heavy rainfalls. They receive on average more remittances, specifically 4 percent of per capita income, accounting for two thirds of the negative effect of the shock. Her finding supports the earlier evidence that mobile money acts as an insurance against exogenous shocks. In addition, she provides evidence that non-users in the same villages are not able to smooth their consumption and do not seem to engage in risk sharing as effectively. The author implies that certain benefits from mobile money are likely to be exclusive to registered users and lack positive spillover effects.

Jack & Suri (2016) estimate the longer-term effects of mobile money adoption in Kenya and find that mobile money adoption increases per capita consumption levels overall. By conducting five survey rounds of a household panel starting in 2008, they are able to compare the 2014 outcomes of households that saw relatively large increases in mobile money agent access with outcomes of households that did not. The authors estimate that mobile money adoption lifted 2 percent of all Kenyan households out of poverty. Jack & Suri (2016) argue that changed financial behavior, improved financial resilience, additional savings and different labor market outcomes drove this positive change.

Business growth and macroeconomic development

Business and personal outcomes for female small business owners are the subject of interest for a study by Bastian et al. (2018). In Tanzania, they study the impact of mobile money adoption by implementing a randomized control trial. The treatment sample is invited to a training and registration session for M-Pawa, a mobile savings account offering interest and micro loans. Part of this treatment group is invited to an additional business training. After six months, it shows that the treated women save much more than the untreated in their M-Pawa account, however crowding out some alternative saving places. In addition, the business training has further positive effects on total savings in the mobile money account and business practices such as financial planning and record keeping. Bastian et al. (2018) do not find significant impacts of M-Pawa adoption on business outcomes such as sales and profits or investments, but discover that treated women are more likely to generate side incomes and state higher levels of empowerment and subjective well-being.

Beck et al. (2018) show that mobile money adoption causes significant business growth and benefits macroeconomic development by analyzing firm-level data on

urban businesses in Kenya in a quantitative dynamic general equilibrium model. They explain this by channels such as reduced risk in theft and improved access to supplier credit, boosting firm-level performance by reducing output losses.

Another apparent positive impact of mobile money originates from its efficiency compared to other financial institutions in developing countries. In Afghanistan, [Blumenstock et al. \(2015\)](#) find that mobile money adoption significantly increases the efficiency of salary administration. Moreover, their results reveal positive effects on small additional savings but little consistent evidence on significant impacts on household welfare and well-being in general. They suggest that the adoption of mobile money itself in order to receive salaries is not necessarily sufficient to improve the livelihoods of users.

On the other hand, a field experiment in Uganda by [Riley \(2019\)](#) shows that receiving a loan into a mobile money account increases business profits and business capital significantly compared to cash payout. The effects are especially strong for women who report social pressure to share their money with other household members. This supports the idea that the impact on privacy and control over money is non-negligible.

Heterogeneous effects

[Blumenstock, Eagle & Fafchamps \(2016\)](#) investigate market data on Rwandan mobile money users to assess risk sharing after unexpected shocks. They have almost complete usage data from 2005 to 2009 on national mobile phone communication. As they study a period before the large rollout of mobile money services in the country, they analyze airtime transfers. At the time, airtime transfers were a popular method by Rwandans for sending money to friends and family members. Transfers were free of charge but withdrawals at informal vendors cost 10 to 20 percent. Due to the high similarity to today's mobile money market, the study can provide some relevant evidence. The authors observe that individuals across Rwanda transfer airtime and make calls to individuals located in a region affected by a severe earthquake. They find that wealthier individuals are more likely to receive transfers under normal circumstances and even more likely receive transfers after the natural disaster. This is considered consistent with a model based on reciprocity. People are more likely to send money to people from which they have received remittances in the past. In addition, transfers on average decrease with the distance between individuals. In sum, their evidence suggests that Rwandans help others to cope with shocks using airtime transfers and the pattern is consistent with conditional reciprocity. These results also indicate that poorer households might profit less from risk sharing than wealthier ones.

Whether urban or rural populations are more prone to use mobile phones and services and how consumer location matters are other areas of research on mobile money.

[Mothobi & Grzybowski \(2017\)](#) use survey data from 11 countries in Sub-Saharan Africa in 2011 to assess the impact of the availability of physical infrastructure on mobile phone and mobile money adoption. Using nighttime light density as a proxy for physical infrastructure, they find that mobile money adoption is higher in areas with poor infrastructure. This supports the idea that mobile money is a means for the rural populations to access financial services otherwise inaccessible to them. Moreover, they find that mobile money service is used equally often among all income groups, conditional on having a mobile phone.

[Economides & Jeziorski \(2017\)](#) also look into heterogeneous effects and difference in price sensitivity across types of mobile money services. They find differences in willingness to pay depending on consumer location and distance between receiver

and sender. Specifically, the demand for long-distance transfers is less elastic than for short distance. They argue this is based on the underlying assumption that urban consumers, who are more likely to transfer short-distance - are more dependent on using mobile money as a means to steer clear of risks of money loss through high crime rates in urban Tanzania. Furthermore, Economides & Jeziorski (2017) assess that urban users are willing to pay more than rural users for short-dated deposits. The authors observe such transactions that have very short lifetimes of less than one hour and have median travelling distances of below 6.2 kilometers. They suggest that users deposit money before a travel trip and cash out after arrival – even if withdrawal fees are on average 7 percent. Economides & Jeziorski (2017) argue that this revealed preference is connected to high levels of street crime and burglaries. On average consumers are willing to pay up to 1.24 percent of the transaction amount to avoid walking an extra kilometer carrying cash. In addition, large transactions are usually more price inelastic than smaller ones, possibly due to income effects.

Red flags

For development and financial stability considerations, it is important to understand the risks associated with mobile money use. A recent [OECD policy guidance note](#) stresses that digital financial services can be threats for the financial well-being of individuals and businesses if consumers misuse the products due to being uninformed or lacking financial literacy. This can lead to over-indebtedness of the most vulnerable and to a reduction of trust into the financial system and technology in general (OECD, 2018).

As mobile money providers continue to enter the credit market, debt in mobile money accounts becomes more prevalent in developing countries. Telecommunication companies profit from the reduction in asymmetric information faced by banks as the providers obtain extensive records of their customers. Thereby, they can assess individual credit scores before granting loans, insurance products or savings accounts (Aron, 2018). [The Economist \(2018\)](#) is concerned about this and warns “borrowing by mobile phone gets some poor people into trouble” and quotes recent evidence that digital credit via mobile money providers is promoting over-borrowing and financial distress among many East Africans.

Conclusion

Mobile money adoption can help people in safeguarding themselves against consumption shocks and risk sharing. In addition, research has shown positive effects on business practices and efficiency. Key benefits are the reduction in transaction cost, increased privacy and reduced risks of theft. A lack of financial literacy and partially costly fee structure, especially with regard to credit, serve as a warning for policy makers. Aron (2018) stresses that there are methodological issues with some studies such as the selection problem and ambiguous causality – characteristics such as education or wealth may impact the adoption and usage pattern of mobile money services and generate self-selection problems.

These market risks and the fact that this is a relatively new field of research make it necessary to further understand and evaluate the consumer behavior in the mobile money sector.

References

- Aker, J. C., Mbiti, I. M. (2010) "Mobile phones and economic development in Africa". *The Journal of Economic Perspectives*, Vol. 24, Issue 3, pp. 207 – 232
- Aron, J. (2018) "Mobile money and the economy: a review of the evidence". *The World Bank Research Observer*, Vol. 33, Issue 2, August 2018, pp. 135 – 188
- Bastian, G., Bianchi, I., Goldstein, M., Montalvao, J. (2018) "Short-term impacts of improved access to mobile savings, with and without business training: experimental evidence from Tanzania". Working Papers 478, Center for Global Development. Retrieved May 2, 2019, from <https://www.cgdev.org/publication/short-term-impacts-improved-access-mobile-savings-business-training>
- Beck, T., Pamuk, H., Ramrattan, R., Uras, B. R. (2018) "Payment instruments, finance and development". *Journal of Development Economics*, Vol. 133, pp. 162 – 186
- Blumenstock, J. E., Callen, M., Ghani, T., Koepke, L. (2015) "Promises and pitfalls of mobile money in Afghanistan: evidence from a randomized control trial". In *Proceedings Of The Seventh International Conference On Information And Communication Technologies And Development*. Retrieved March 1, 2019, from <https://epod.cid.harvard.edu/publications/promises-and-pitfalls-mobile-money-afghanistan-evidence-randomized-control-trial>
- Blumenstock, J. E., Eagle, N., Fafchamps, M. (2016) "Airtime transfers and mobile communications: evidence in the aftermath of natural disasters". *Journal of Development Economics*, Vol. 120, pp. 157 – 181
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., Hess, J. (2018) "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution". Washington, DC: World Bank. Retrieved October 26, 2018, from <https://globalfindex.worldbank.org/node>
- Economides, N., Jeziorski, P. (2017) "Mobile Money in Tanzania". *Marketing Science*, Vol. 36, Issue 6, pp. 813 – 1017
- GSMA (2019) "2018 State of the Industry Report on Mobile Money". Retrieved March 1, 2019, from <https://www.gsma.com/mobilefordevelopment/resources/2018-state-of-the-industry-report-on-mobile-money/>
- Jack, W., Suri, T. (2014) "Risk sharing and transaction costs: evidence from Kenya's mobile money revolution". *American Economic Review*, Vol. 104, Issue 1, pp. 183 – 223
- Jack, W., Suri, T. (2016) "The long-run poverty and gender impacts of mobile money". *Science*, Vol. 354, Issue 6317, pp. 1288 – 1292
- Mothobi, O., Grzybowski, L. (2017) "Infrastructure deficiencies and adoption of mobile money in Sub-Saharan Africa". *Information Economics and Policy*, Vol. 40, Issue C, pp. 71 – 79
- Munyegera, G. K., Matsumoto, T. (2016) "Mobile money, remittances, and household welfare: panel evidence from rural Uganda". *World Development*, Vol. 79, Issue C, pp. 127 – 137
- OECD (2018) "G20/OECD INFE Policy Guidance on Digitalisation and Financial Literacy". Retrieved July 3, 2019, from <https://www.gpfi.org/publications/g20oecd-infe-policy-guidance-digitalisation-and-financial-literacy>
- Riley, E. (2018) "Mobile money and risk sharing against village shocks". *Journal of Development Economics*, Vol. 135(C), pp. 43 – 58
- Riley, E. (2019) "Hiding loans in the household using mobile money: Experimental evidence on microenterprise investment in Uganda". Working paper, retrieved July 3, 2019, from <https://novafrica.org/wp-content/uploads/2019/05/Hiding-loans-in-the-household-using-mobile-money-Experimental-evidence-on-microenterprise-investment-in-Uganda-4.pdf>
- Suri, T. (2017) "Mobile Money". *The Annual Review of Economics*, Vol. 9, pp. 497 – 520
- The Economist (2018) "Not so fast. Borrowing by mobile phone gets some poor people into trouble". Issued November, 17, 2018. Retrieved February 1, 2019, from <https://www.economist.com/finance-and-economics/2018/11/17/borrowing-by-mobile-phone-gets-some-poor-people-into-trouble>
- World Bank (2018) "Financial Inclusion". Washington, DC: The World Bank. Retrieved November 1, 2018, from <https://www.worldbank.org/en/topic/financialinclusion>

Imprint

DIW Berlin – Deutsches Institut
für Wirtschaftsforschung
Mohrenstraße 58, 10117 Berlin

Tel. +49 (30) 897 89-0
Fax +49 (30) 897 89-200
<http://www.diw.de>

ISSN 2198-3925

All rights reserved.
© 2019 DIW Berlin

Reprint and further distribution
–including extracts–
with complete reference and
consignment of a specimen
copy to DIW Berlin's
Communications Department
(kundenservice@diw.berlin) only.