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FINTECH, REMITTANCES AND MIGRANTS' PROSPERITY:

A systematic review and exploration of the
Mexican case

Silvia Velasco

May 2021



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FINTECH, REMITTANCES AND MIGRANTS' PROSPERITY: A SYSTEMATIC REVIEW AND EXPLORATION OF THE MEXICAN CASE

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MSc in Global Prosperity, 2019-2020

**This working paper is based on Silvia's MSc dissertation,
which won the IGP Dissertation Prize.*

ABSTRACT

This working paper was originally submitted as a dissertation as part of the MSc in Global Prosperity. It will explore, through a systematic review, to what extent fintech—financial technologies—are an instrument to transform migrants and remittance recipients' foundations of prosperity, understood as the baseline for people to thrive, linked with secure jobs, income, financial stress, financial and digital inclusion, and local income equality. Additionally, it explores what are the elements shaping fintech's impact. Findings illustrate that technology is positively impacting prosperity, yet, adopters are not those on the last mile; fintech leaves behind those who are unbanked, unskilled, highly rural-based and with strong needs for financial services. Governments' role concerning capacity, fintech regulation and ICT promotion is crucial for drawing impact, along with fintech service attributes such as domestication, agent banking and interconnectivity.

Based on the systematic review, the working paper explores the Mexican case, as a country highly uneven and dependent on remittances, and its potential to boost prosperity for migrants and remittance recipients through fintech. It concludes that the nation has the capacity and necessity to accelerate its fintech ecosystem and strengthen migrants' foundations of prosperity, yet, government and fintech need to work together to reduce access disparities among rural and urban population, acknowledging the potential market in rural areas, where 70% of the residents are unbanked despite they received 60% of national remittance inflows.

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I want to dedicate this to my parents, who climbed a wall for my education, our prosperity and me. Because they inspired me to fight for making a fair world for every migrant and remittance' recipient like us, who definitely can break barriers with the right tools.

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1. INTRODUCTION

The world's reliance on technology is changing the way we live, influencing our economic, social and financial behaviour; undoubtedly, it is changing our relationship with money. While *social distancing* becomes the rule, in some degree it exacerbates the relevance to address real situations of miles of “distancing” such as international migration. It can be thought that digital solutions could lead a positive transformation in people's lives. Nonetheless, we cannot forget that access to information and communication technologies (ICT) that facilitate implementation and adoption of tech-solutions, have social and economic disparities underpinned, such as income, education, digital literacy skills, among others. Hence, before embracing the renewed tech revolution, we should investigate if the technology is transforming lives for those financial agents living in a context of inequality, such as migrants and remittance's recipients; to rethink if fintech can promote inclusion and fairness in accessing to digital and financial services for those traditionally left behind.

In section II, the research will explore international migration, a relevant topic for global prosperity, which involves 272 million people moving across the world, from LMICs to high-income countries, plus 700 billion USD of remittances travelling into poor, almost unbanked, countries every year. Focusing on migration and remittances is necessary because of the uneven development and disparities behind these practices—a problem which this paper will not address—that might be mitigated with an efficient and fair remittance market. This section will also emphasize migrants' financial behaviour and their need to access services that address their financial needs.

Section III will explore the remittances market worldwide, highlighting their disparities, the key and traditional players costs and operation, showing their strengths and flaws when offering services and tailor potential users under the context of migration. In hand, section IV illustrates the financial technologies used for sending and receiving remittances—online platforms, cryptocurrencies and mobile money—exemplifying them according to the market. Moreover, it will analyse existing literature of financial technologies in general, their gains and potential risks.

In section V a systematic review (SR) will be carried out, to explore fintech's impact and the variables shaping how digital solutions influence migrants, remittances and recipient's communities in terms of prosperity, looking in detail who are the adopters, how they behave and who is left out. It will summarise a first conclusion on the impact of fintech and its limitations when it comes to reaching the last mile, and the context-specific variables to look forward before promoting digital solutions in LMICs countries.

Based on the SR' findings, a comparative study on the Mexican case will be drawn in section VI. It will explore the Mexican migration and remittances landscape, highlighting the necessity of alternative solutions when transferring and receiving remittances, and the socioeconomic, ICT and financial indicators of the country, within an exploration of its fintech sector. It will condense a conclusion on the potential of Mexico to increase migrants and remittance recipient's foundations of prosperity through fintech, and possible suggestions based on the systematic review evidence. Final remarks and conclusions are presented in section VII.

2. MIGRANT REMITTANCES

In 2019, international migration reached 272 million people across the world, 3.4% of the global population (UN DESA, 2019). In this moving towards prosperity, economic prospect is the most common cause of migration, and migrant workers, people who engaged in a remunerated activity in a country or state where they did not born into, are about 60% of the migrant population. International migrant workers commonly move from LMICs to high-income nations in Europe, Asia and North America (IOM, 2019), and send remittances—money transfers—to families, friends or communities in their home countries.

Because of the magnitude of migrant workers, remittances can become a significant source of income and represent an opportunity to strengthen the foundations of prosperity for migrants and recipient' communities. In 2019, remittances achieved 700 billion USD globally, with 551 billion USD sent specifically to LMICs—more than three times the size of official development assistance for developing countries, the largest source of foreign exchange earnings and a stable financial source in receptor countries (KNOMAD, 2019).

Research supports that remittances can be an alternative source of finance for developing countries, as they increase income at national and household levels and consumption of essential goods and services. Before the COVID-19 health crisis, recipients' countries received between 16% and 35% of their GDP in remittances, and for most of them, these transfers were a least volatile component of balance-of-payments inflows (IMF, 2018). The impact is substantial in rural areas, where nearly half of global remittances go to and where 75% of the world's poor and food-insecure live (IFAD, 2017).

Despite the debate about the effect of migration in destination countries, research supports positive outcomes in both destination and home countries. Immigration automatically increased the labour supply, and the agglomeration of skills enhance productivity and economic activity; this is the case for high-income countries dependent on migrant-intensive sectors such as agriculture, construction or healthcare. In Vaaler's (2011) research of 61 developing countries, he discovered that remittances increase new business start-up rates when the developing country's public sector is sufficiently small. Additionally, remittances provide a net positive fiscal effect on destination countries, as migrants pay more in taxes than they received in benefits (Dustmann & Frattini, 2014), contributing to social security and easing the strain on retirement systems (OECD, 2014).

Remittances play a role in alleviating poverty and reducing income inequalities in home countries. Serino and Kim (2011) found that remittances contribute to poverty reduction, with higher effects among impoverished. In a study with 71 developing countries, Adams & John (2005) showed that a 10% increase in per capita official international remittances could lead to a 3.5% decline in the share of people living in poverty. Likewise, the IMF (2018) discovered that, after moving to developed economies, migrants from low-income countries experienced a doubling of school enrolment rates, a 16-fold reduction in child mortality, and a 15-fold increase in annual income. The extra income is partly transferred to family and friends in origin countries, helping recipients to avoid falling back into "poverty traps" IFAD (2017).

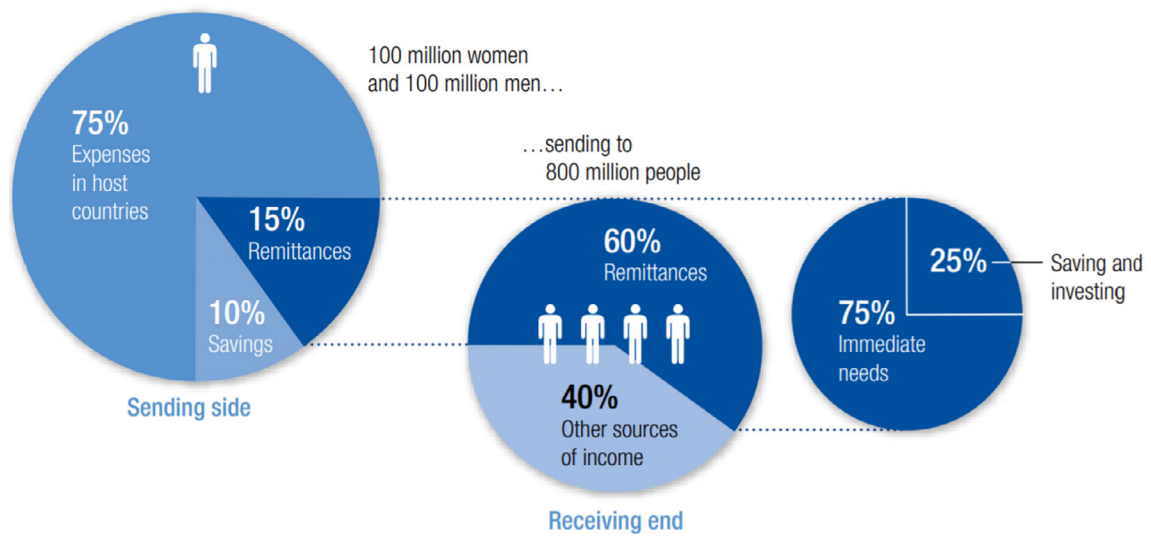


Figure 1. Migrant worker income distribution. Source: IFAD 2017.

Through remittances, migrants and recipients cover basic needs but also, save or invest in securing their future using channels they understand and trust. As shown in figure 1, at least 10% of migrants' income is saved; hence, US\$100 billion annually are dedicated to building secure livelihoods, investments in assets and income-generating activities (IFAD, 2017). Financial inclusion matters for migrants, as it allows individuals and businesses to access useful and affordable financial products and services that meet their needs—transactions, payments, savings, credit and insurance—delivered responsibly and sustainably (World Bank, 2018).

Nevertheless, just as gains, remittances have accompanying high costs. One is related to human emigration and its effects on labour shortages, family disruption, and risk exposure, especially for those emigrating through illegal channels. Another one is the cost of migration through legal or illegal channels. Legal channels usually charge migrants recruitment fees between \$5,000-\$9,000, the equivalent of 12-48 months of foreign earning for workers from LMICs (KNOMAD, 2019) When using illegal channels, fees paid to smugglers are higher. Irregular migrants from

Nepal and India paid between \$15,000-\$30,000 USD to enter Europe; in America, the coyote fees go above \$12,000 to cross the US-Mexican border (UNODC, 2018; World Bank, 2019). To cover these expenses, migrants usually combined different 'types' of money and finance, accessed in diverse private and public spaces, premised upon social and financial relations and shaped by structural factors including the degree of financial penetration in home countries (Datta & Aznar, 2018) . Consequently, migrant borrowing is shaped by transnational duties and obligations to those 'left behind', precarious employment, high living expenses and the accumulation of significant debt.

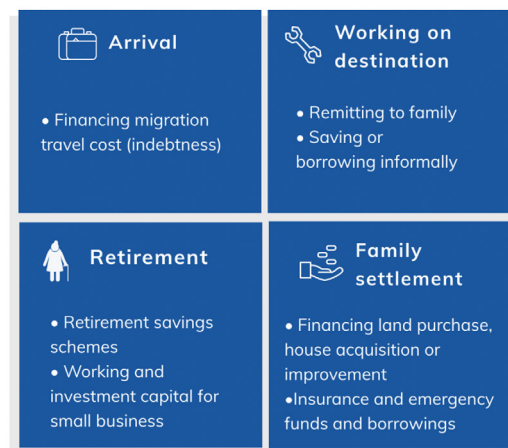


Figure 2. Migrant's financial needs and behaviour.

To make the most out of remittances, as suggested by Guermond (2019), the remittances market should acknowledge the realities of indebtedness, sacrifice, separation, racism, xenophobia, exploitation, and even loss of life that underpin domestic and international migration. Furthermore, it is pivotal to recognise migrants as financial agents that faced not only high transaction costs but also demand services subject to their financial behaviour. Migrants' necessities go from accessing financial institutions and low-cost, secure transfer channels, to executing basic financial transactions, reduce risks when saving and acquire products such as loans and complimentary services to develop farming or entrepreneurial activities (Figure 2; IFAD, 2017). However, migrants remain excluded from essential financial services, and most of them remain unbanked before, during and after immigration. This is the case for top remittances recipients' countries like Mexico, Philippines and Egypt, where only 35% of their population has a bank account.

The absence of formal financial products for migrants diminishes remittances' potential. The lack of accessible and cheap transfer channels forces migrants to reduce the frequency of remittances, storing their cash "*under the mattress*" without receiving interests and exposing it to theft or loss. Lack of financial inclusion pushes communities to rely on relatives and local lenders for borrowing, sometimes at a higher cost, embedded with social obligations and power dynamics (Demirgüç-Kunt et al., 2018; Datta & Aznar, 2018).

3. THE REMITTANCES MARKET

During the period 2007-2016, for developing countries, global remittances had grown by 51%, in contrast with migration rates of 28%. Despite the size and relevance of the market, there are disparities when it comes to operation. The remittances market operation is subject to an intermediary process, as shown in figure 3, where the different Remittance Service Providers (RSPs) in the host and home countries, play a role in defining the levels of prices and access to financial services for migrants and remittance’s recipients (IFAD, 2015).

According to the IFAD (2017), an estimated 3,000 RSPs worldwide charge more than 30 billion USD to process approximately 2 billion transactions annually. Transfer’s costs include commission fees established by the RSPs, and for some providers, a currency conversion fee for paying the remittance in local currency. Pricing is higher for cash-based models, considering their additional expenses and commissions to local agents, in comparison with electronic-based transactions. In the second quarter of 2020, among the RSPs available, banks were the costliest channel for sending remittances with an average cost of 10.57% of the total transfer, followed by post offices— 7.63%—, MTO’s—5.78%—and mobile/online operators at 3.23%, as shown in figure 4 (World Bank, 2020).

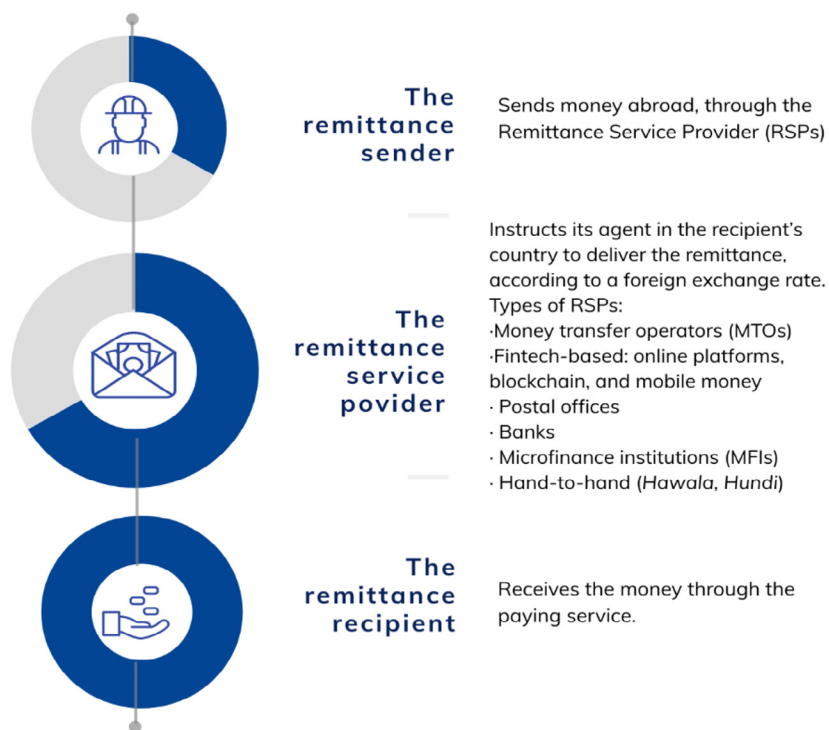


Figure 3. The remittances operation.

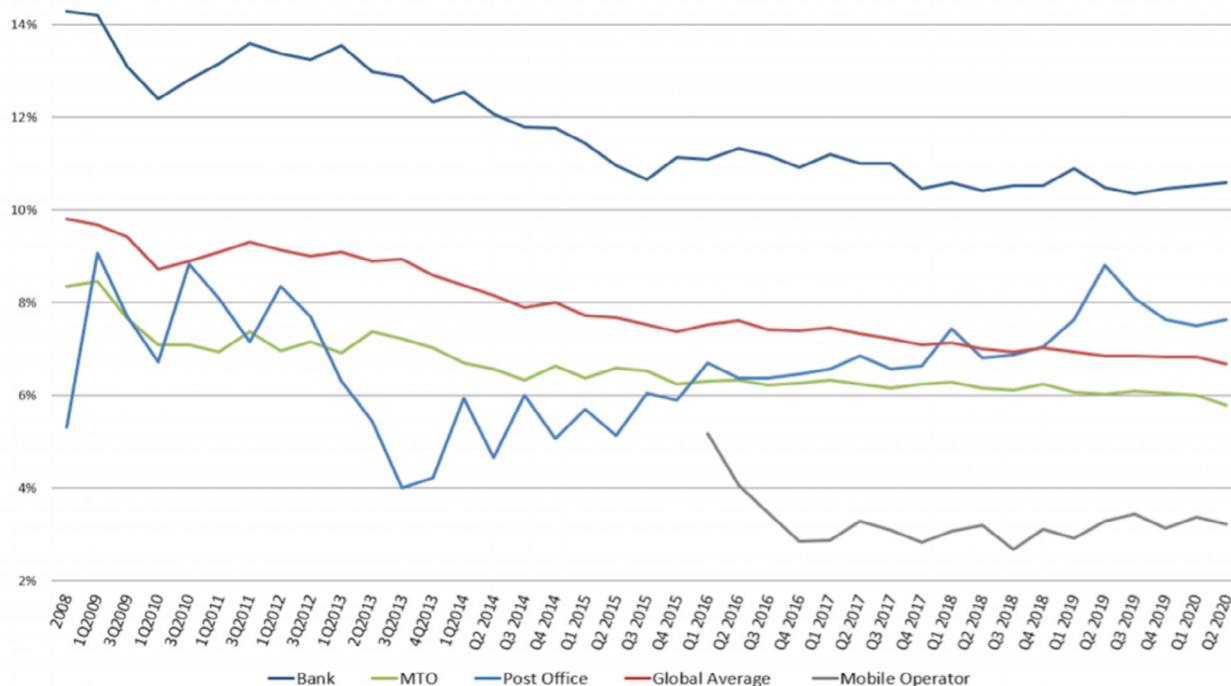


Figure 4. Average cost of remittances over time, by RSP.

Due to extensive agent networks, MTOs lead the market with service in more than 150 countries; in 2016, they represented more than 60% of the market share, with a concentration of the market (35%) in MoneyGram, RIA, and Western Union (IFAD, 2017). Based on a cash-to-cash scheme, MTOs’ agents received cash from senders and paid it to recipients in the receiving point. Aside from transfers, most of MTOs do not offer additional financial services; yet, they are the most used service to transfer worldwide since they possess the following attributes:

- Lack bureaucratic procedures to remit and are flexible with identification documents, which can encourage illegal immigrants to use their service.
- In comparison with banks, they offer a higher foreign exchange currency rate at a “lower” price.
- Are accessible and suitable for migrants in terms of language, longer opening hours and geography.
- Create proximity and engagement with both the remitter’s and the recipient’s communities.

In a focus group discussion held with Brazilian migrants in the UK, Datta (2017) found that migrants worried about banks cutting back their money

because of their home countries’ tax schemes. Migrants also identified MTOs as much more competitive; nevertheless, security and trust are not representative of these transfers. One participant mentioned that:

[It] is dangerous [to use these], like with Banco do Brasil it is all above board, so you send your money and you know it will arrive, but the exchange rate is no good, whereas with the agencies it is dangerous, but their exchange rate is much better, you really risk [losing your money] in the remittance agencies.

Postal offices offer cash-to-cash transfers, with more than 500,000 active cash-out or cash-in points for MTOs and represent more than half of pay-out networks for leading MTOs; this network has the potential to reach the *last mile* within rural areas. Nonetheless, they are costly and do not offer additional services beyond cash transfers.

Although banks can be more effective for financial inclusion, they are poorly engaged in providing remittance’s services as they consider migrants and transfer recipients too risky; as shown in figure 4, they charge the highest fees. Even when they have partnerships with MTOs to deliver transfers

in some regions, they lack accessibility within the migrant community, maintaining barriers such as language, a reduced network of cash-out points, mistrust, and inaccessible opening times. Moreover, undocumented migrants have limitations in opening bank accounts, and even if they do, banks' overhead costs are high and there is not enough transparency on banking conditions.

MTOs, banks and post-offices are costly for users, bureaucratically slow, not always secure and inaccessible, beyond geography, for irregular migrants. Seeking to fill gaps, mobile network operators and digital platforms have arisen in the past few years, offering products to send and receive money, including payment applications, mobile banking and web-based portals (IMF, 2019). Mobile operators and digital platforms are an example of fintech. The following section will explore how these financial technologies are changing remittance's marketplace.

4. THE FINTECH-BASED REMITTANCE

Estimations show that at least 4,000 fintech firms were active worldwide in 2015, and the investment in these was about \$22.3 billion in 2015; 12 times higher than 2010 (Cortina & Schmukler, 2018). A study about fintech adoption by Ernst Young (2020) shows that the fintech top-ranked categories, according to adoption rates, are:

1. Money transfer and payments—75%,
2. Savings and investments—48%,
3. Budgeting and financial planning—34%,
4. Insurance—29%—and borrowing—27%.

Another study made by PricewaterhouseCoppers (2020) highlights that 28% of traditional businesses focused on banking and payments are at risk due to fintech's emergence.

Fintech companies are on the rise because of their implications for users, financial markets, and governments. For users, fintech-based remittances services—innovative technology used to send, receive and manage remittances—are cheaper, convenient for money administration, relatively easy to use, secure and can improve financial behaviour. For governments, digital solutions can facilitate the effective and transparent use of public resources, reducing the “leakage” of social payments and “ghost” recipients. For the market, fintech' business models can reduce operations costs and rapidly scale up access to financial services, increasing coverage. Moreover, they can address chronic financial frictions such as information asymmetries, difficulty in meeting “Know Your Customer” (KYC)

and “customer due diligence” (CDD) requirements and the lack of suitable financial products for the low-income population (Tobias, 2019). Yet, fintech penetration remains slow for some countries, with global adoption rates of 64% (EY, 2020).

Fintech-based remittance services comprise online platforms, cryptocurrency or blockchain and mobile money. Following Hanm et al. (2019), their operation is as follows:

Online platforms

Online platforms are internet-based transfers; remittance services made via websites or mobile applications. To transfer, senders must have a bank account they can link with the platform; receivers can get the money by either cash or bank account. Platforms operate a peer-to-peer (P2P) model that instantly connects sellers and buyers of different currencies, allowing receivers to obtain a different currency from the sent one. P2P model enables RSPs to charge official exchange rates, reducing transaction costs. An example of this technology is TransferWise, a UK based company for sending money, currently leading the money transfer platforms with a volume of US\$40 billion and presence in 49 countries; it is followed by Xoom, Remitly and WorldRemit (McCann, 2019).

It is expected that the number of online platform users reaches 14.5 million by 2024, and the transaction value of these digital remittances segment achieve \$87,935 million in 2020 (STATISTA, 2020). While these payments are popular in Europe and Asia, recently the share of digital transfers have been increasing from 24% to 37% for key US to Latin America country corridors (Orozco et al., 2020)

Cryptocurrency/Blockchain

Cryptocurrency, or blockchain fintech, is a decentralised payment scheme—made through online platforms or applications—that does not require a single trusted third party to validate transactions; a network of computers validates it. Under this process, fintech puts aside, or substitute, the role of banks and other institutions that act as trusted intermediaries, making payments faster, secure and efficient. To transfer, senders must have a bank account they can link to their blockchain remittance service.

As Buenaventura (2017) recalls, blockchain-based RSPs are not cryptocurrency exchanges, as the recipient never deals with the cryptocurrency and the fintech service manage the risk. A case of study is Bitspark, which focuses on cross-border money transfers using cryptocurrency. Their cash-in and cash-out model was one of the first in the world and developed a model that other cryptocurrency remittance start-ups would also later employ, i.e. using bitcoin purely as a back-end settlement mechanism.

Mobile money

Mobile network operators provide this service, which consists of *electronic wallets* linked to the customer's mobile phone number. With these e-wallets, individuals use mobile airtime as a form of currency, being able to transfer funds, make payments, deposits, and withdraw cash through a mobile money agent and by using their mobile phones. Since a mobile phone and network connectivity are the only requirements to access the service, it has been proposed as a potential financialisation tool for two-thirds of all unbanked adults worldwide—1.1 billion—who possess a mobile phone.

Mobile money accounts are proliferating in LMICs, especially in Sub-Saharan Africa, which in 2017 was

leading the mobile money' accounts. Outside Africa, LMICs such as Haiti, Bangladesh and Chile are raising their national coverage. Today, mobile money is available in two-thirds of LMICs (Aron & Muellbauer, 2019).

An example of mobile money is M-Pesa, provided by Safaricom, a subsidiary of Vodafone. M-Pesa started operations in 2007 for domestic remittances across Kenya and South Africa, and by 2012 opened its service worldwide. Since then, it has offered cross-border transfers to Eastern Europe and through partnerships with MTOs such as Western Union in the US. It also has gone beyond P2P transfers; users can now access small loans and mobile-backed insurance products through *M-Shwari*, the M-Pesa saving financial product. Loans are calculated according to an algorithm based on the user's financial behaviour and trends when storing money in their M-Pesa accounts.

Whilst traditional financial institutions limit migrants' participation in their financial service coverage, fintech are more flexible and accessible. Fintech' services reduce the costs of entrance, transportation, and time-investment of users, and offer alternatives when it comes to identification requirements such as biometric data. This is the case in refugee camps in Jordan, which uses blockchain for humanitarian aid through iris scans, accessing information on how much cash and products an individual should receive (Sharma, 2019).

Fintech's influence on cost reduction goes in hand with the Goal 8 Target 10.c of the 2030 Agenda for Sustainable Development, aimed to reduce to less than 3% the transaction costs of migrant remittances. Through effective cost reduction worldwide, migrants could save an additional US\$20 billion annually (IFAD, 2017). Lower prices can enhance competition in the banking sector, promoting financial development, and reducing exchange rate volatility (Freud & Spatafora, 2008). Furthermore, they can reduce informal transfer channels, which tends to be risky

and expensive (Hanm et al., 2019).

Nevertheless, as fintech popularity and benefits grow, potential risks and concerns are coming into play. Cortina and Schmukler (2018) argue that the lack of safety nets in business models, misuse of personal data, difficulties in identifying customers, and electronic fraud are among the main vulnerabilities of the new digital financial practices. The authors note that as fintech companies operate globally, financial regulation remains region-specific and fragmented, which can create black holes when regulating financial practices. The Bali Fintech Agenda (IMF, 2018) points out concerns around consumer and investor protection; the (lack of) clarity and consistency of regulatory and legal frameworks, the potential for regulatory arbitrage and contagion—both within jurisdictions and across borders, and the integrity of financial systems within the risks of criminal misuse of fintech.

On the social side, there is concern on how these technologies addressed debt and increase predatory lending. According to Di Maggio & Yao (2018), beyond easing credit access for borrowers underserved by the traditional banking industry, fintech is attracting the most credit-worthy borrowers, which have a high income, are more likely to be present-biased and to be delinquent and exhibit higher indebtedness. Similarly, Katz (2020) state that, at the end of 2019, 20.8 million Americans owed money on at least one personal loan, with more than 30% from a fintech company, this recent type of predatory lending, easily accessible through a click, can set the stage for a new consumer financial crisis today across developed and developing countries.

On the political sphere, Langley & Leyshon (2020) reflect that the fintech sector, instead of disintermediating, is seeking to '*reintermediate*' retail monetary and financial relations, displacing and transforming informal and traditional banking participation. From their perspective, equating the rise of fintech with a wave of competition-enhancing

disruption is problematic, especially as they have monopolistic and oligopolistic tendencies. Fintech business model is to rapidly recruit and retain user populations and their data, to 'leverage network effects' by 'scaling up'. Additionally, Rella (2019) indicates that these technologies *are the latest iteration of technologies heralding frictionless capitalism*; they focus on profits, risks, costs, interoperability and "idle capital" in correspondent banking accounts, rather than on financial inclusion per se.

The next section will hold a systematic review, exploring how fintech influence migration, prosperity foundations and financial inclusion, with particular focus on the key variables or conditions needed before promoting its adoption in LMICs.

5. SYSTEMATIC REVIEW OF FINTECH'S IMPACT ON MIGRANTS, REMITTANCES AND RECIPIENT COMMUNITIES SERVICES

Based on evidence and through a systematic review (SR), this section will delimitate to what extent the effect of fintech is positive, and how fintech services are creating it. Beyond looking for outcomes, it will underpin the variables playing a significant role for fintech services, to generate recommendations or to draw possibilities in countries such as Mexico.

5.1 Methodology

Review questions

The SR will identify key variables and country-specific characteristics playing a role in fintech interventions and their outcomes, assessing two research questions:

1. To what extent fintech (online platforms, blockchain and mobile money), are an instrument to increase migrants' foundations of prosperity?
2. What variables can be identified as key in shaping fintech's impact?

Study selection criteria

The inclusion criteria considered qualitative or quantitative research built around empirical evidence on fintech's interventions—online platforms, blockchain and mobile money—or assessing and quantifying fintech effect on remittances or financial development for migrant communities on country-specific or regional base (LMICs). Figure 5 explains the population, intervention, comparison, outcomes and context (PICOS) of the research.



Figure 5. PICOS criteria.

Searching and screening

The search strategy followed a top-down approach, reviewing international documents, policy briefs and working papers by the World Bank, the IMF, UN, IDB, IFAD and IMO, among others, to identify potential research papers that follow the study selection criteria. Search platforms include *Google Scholar*, the *Web of Science* and the *UCL library online* resources. Exclusion criteria, according to the title, abstract and full reports, considered:

- Studies not related to fintech-based remittance services;
- Studies not addressing impact through a quantitative or qualitative analysis;
- Exclude theoretical or feasibility only.

Synthesis

The electronic search yield 2,300 records; after filtering, 107 potential publications on fintech and remittances were found. Most of the potential documents illustrated the impact of fintech on financial inclusion, yet, they built preliminary assessments based on literature. After applying the criteria, the sample was reduced to 11 documents (10%). A full list of the papers reviewed can be found in the annexe. The selection includes eight studies based on quantitative methods and three papers using qualitative methods. Eight pieces studied mobile money impact—the popular M-Pesa service in different parts of Africa—, two on blockchain and cryptocurrencies—Bitcoin and Bitpesa—and one addressing mobile money and internet-based remittance services in general.

Qualitative studies provide findings based on interviews and focus groups with mobile money users, non-users and mobile money agents, plus ethnographic methods within rural communities. Quantitative papers use panel studies and surveys before and after the fintech intervention; each explaining in detail econometric techniques to control bias and to identify causal relation among variables.

While the study sample provides empirical findings of fintech-based remittances services, there are significant limitations to mention. First, it is not entirely LMICs representative; studies are built mostly on the African experience, leaving behind essential regions that highly depend on remittances, such as Latin America and Asia. Additionally, the sample provides more insights on mobile money, missing empirical evidence about online platforms and cryptocurrencies, a relevant service in regions such as Europe, Asia and the US. Both limitations are due to the lack of current empirical research.

5.2 Results

5.2.B. The impact of fintech-based remittances services.

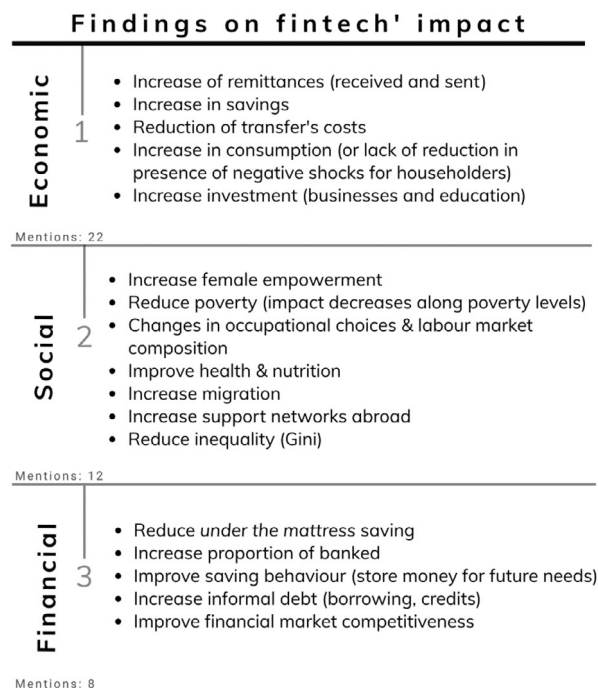


Figure 6. Fintech' impact.

• Economic outcomes

According to the sample, in general, the use of fintech-based remittances services has a positive impact on migrants and recipient communities' foundations of prosperity. More than half of the studies support that technology influence economic variables that increase real household disposable income, as shown in figure 6. For at least 63% of the sample, fintech rises the amount and frequency of remittances, as users consider the service is cheaper, easier to access and safer than other options. Mbiti and Weil (2011) found that competitive pressure from M-Pesa accounts for approximately 60% of the decline in prices from 2003 to 2010 in Kenya. Whilst the percentage increase in remittances varies along with the sample, the threshold for frequency—sending and receiving transfers—goes between 22% and 82%, and the value of remittances, according to Lee et al. (2018), increases by 30% for mobile money users. In hand, Morawczynski (2009) qualitative

research indicates that, since adopting M-Pesa, migrants make smaller but more frequent transfers, increasing the total amount of money sent back home. In Tuwei (2018) research, an interviewed user mentioned:

I receive money from abroad instantly and anytime on my phone. These days, I do not have to go Western Union to transfer the money sent to me. I simply go to the nearest M-Pesa agent in my neighborhood.

Furthermore, for nearly half of the sample, the use of fintech boosts savings, in comparison with non-users, as the service facilitates to store of money. In a focus group with female M-Pesa users, Morawczynski (2009) found women frequently use the application to keep their 'secret savings'; they preferred to store money outside the house because it decreased the risk of it being found and stolen by their husbands. Suri and Jack (2016) identified a 23% increase on financial savings for female-headed households, including self-reported cash, balances in bank accounts and savings and credit cooperatives (SACCOs) or rotating savings and credit associations (ROSCAs). Nevertheless, while fintech services can improve saving behaviour and facilitate money storing, the provision of formal financial instruments is mandatory for effective financial inclusion. Before the introduction of M-Shwari, the saving scheme of M-Pesa, Mbiti and Weil (2011) found that the length of "e-money loop" was near one, indicating that people used to withdraw their money almost immediately after receiving a deposit, without storing significant value on M-Pesa accounts; this, due to the lack of interests and proper saving schemes offered at that moment.

Several authors indicate that fintech can increase investment and consumption, especially for education, health and nutrition. Estimations from Apiors and Suzuki (2018) exhibit a 24% increase in consumption for mobile money users, with yearly investment in education and microbusiness rising by 121% and 102% respectively, in comparison with

fintech non-users. In a focus group with female M-Pesa users, Morawczynski (2009) found that women's savings were used to "...purchase household items, to address illness, to pay for school fees and to invest in a business." Moreover, in the presence of adverse shocks, Jack and Suri (2014) identified that households who do not use the technology suffer a 7% drop in consumption when hit by a negative income shock, while the consumption of households who use M-PESA remains unaffected.

- Social impact

In terms of social impact, one-third of the sample revealed fintech's positive effects to reduce inequalities, with mentions around female empowerment and poverty levels. Since a common trend in remittances concerns men emigrating and women becoming heads of household, having access to financial technology facilitate how women received and managed remittances. Munyegera and Matsumoto (2017) found that female-headed households receive significantly more remittances than their male-headed counterparts do. For Morawczynski (2009) mobile money empowers women by making easier for them to solicit funds from husbands or contacts, being the later a way to expand women's support network, which usually acts as an insurance for remittances recipients when facing shocks. Likewise, fintech foster their financial autonomy; Jennifer, a woman part of a focus group, explains:

Having something small in my secret savings is important. I can make decisions and not ask my husband. I want to save money and then start some business. Maybe I can sell some onions around Kibera...I know that he [my husband] won't give me the money. So, I will put a small amount of money into M-PESA every week...I will soon have enough to start business.

Jennifer embodies how, through fintech, minorities can access secure channels to receive and manage

their money, being able to undergo poverty lines and reduce social inequalities. Reeves (2017) analysis supports that access to technology and internet exposure has a positive effect on poverty lines and inequality indicators (Gini). In hand, Suri and Jack (2016) quantified that the spread of mobile money helped raise at least 194,000 households out of extreme poverty—a poverty decline of 2 percentage points—and induced 185,000 women to switch into business or retail as their primary occupation, enhancing their access to better jobs. Interestingly, Mbiti and Weil (2011) support the change in occupational choices and found that M-Pesa increases farm labour and self-employment, such as owning a shop; this is evident when understanding how relevant the M-Pesa agent scheme is. Agents are critical intermediaries between the mobile money provider and the final users, acting as a “human bank”. Hence, its growth creates changes in the labour market composition. In Tuwei (2018) qualitative research, an M-Pesa woman agent mentioned:

(...) Many jobs require people with university education and high-level skills that I do not have. I applied to operate the mobile money agency business because I could not find a job given my “low-level” education (...). This business accommodates my level of education. (...) M-Pesa agency has provided me a source livelihood. Right now, I depend on this agency to support my family.

Fintech’ effects on socioeconomic variables, among urban and rural areas, are similar; however, authors agree that for rural users below poverty lines the outcomes in consumption, especially in health for children, tend to be more significant. Nevertheless, Lee et al. (2018) research reveal the trade-offs of these rural gains. For urban migrants using e-money services, there is a negative impact on health, as migrant workers reported difficulties with daily work, body pain, emotional and physical health

problems. This is consistent with pressures to work longer hours and increase remittances enabled by the new technology. Authors also exhibit that consumption and income arise with higher work intensity, intensifying migration in households with the e-money service.

- Financial effects

The sample indicates fintech’ positive effects on financial variables, as the technology boosts financial access, enhances financial behaviour—by inculcating the desire to save and store money in safer channels—and, in some cases, reduces savings through informal instruments such as club savings or under the mattress. Mbiti and Weil (2011) revealed that after the launch of M-Pesa, informal savings such as ROSCAs or secret hiding places diminished by 30%, while the proportion of banked increased by 28 percentage points. Ran (2020) study illustrated that access to ICT infrastructure—mobile network, internet and broadband—increases the number of deposit accounts and loan accounts at commercial banks. For Munyegera and Matsumoto (2017) analysis, the adoption of mobile money increases informal borrowing arrangements among family and friends, moneylenders and local credit associations. These results can be concerning, as the studies do not define if the debt is productive or just for personal consumption, increasing the possibilities of indebtedness risk and financial stress for the latter. Most of the authors conclude that more than a substitute, fintech is a complement of traditional banking and informal channels, and through competition, can improve financial services.

5.2.B Key variables shaping fintech' impact

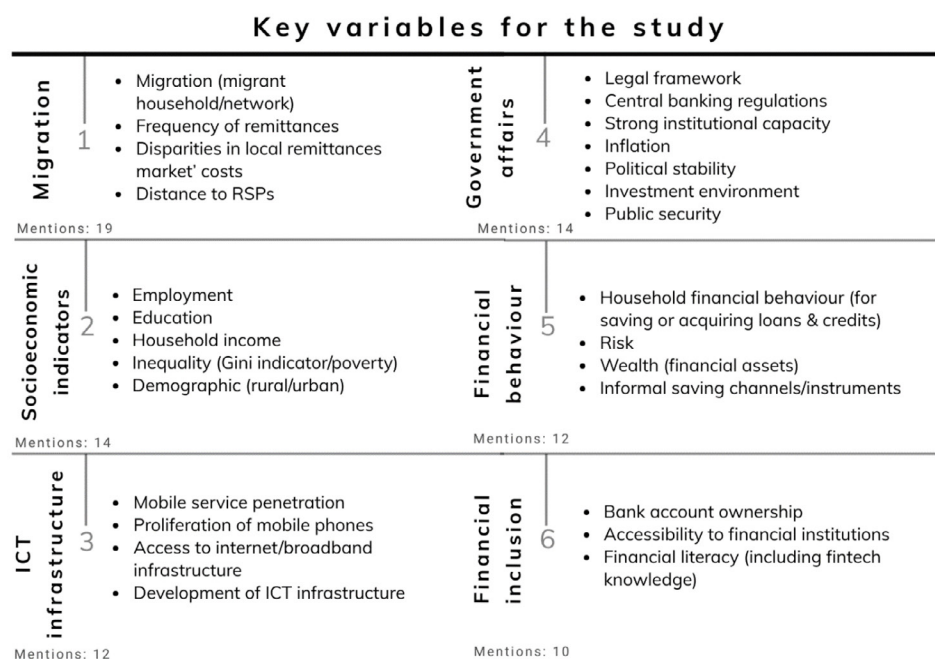


Figure 7.a Key variables shaping fintech' impact.

Fintech-based remittance services take more than technology to achieve relevant outcomes. The SR recognise 32 variables mentioned across the sample, divided into six context-specific categories, as shown in figure 7.a; an additional category, fintech services' attributes, is displayed in figure 7.b.

While all categories are relevant inputs for understanding and measuring fintech impact, the migration characteristics and socioeconomic indicators play the most crucial role. They are followed by ICT infrastructure, government affairs, financial behaviour within users and potential users, and financial inclusion.

- Migration

Consistent with the rationale behind remittances—migrate to work abroad and send money home—70% of the sample indicate that migration characteristics are the most important when measuring fintech's impact; since having a migrant in the household or migrant networks represent an additional income and frequency of remittances that push people to look for alternatives that facilitate transferring money.

In Morawczynski (2009) ethnographic study, when asking a woman about her decision of not using the mobile service, she responded:

[I] had no reason to use this [M-Pesa] application because nobody was sending me money... [M-Pesa] is a thing for the rich... those households with lots of connections in the urban.

The means of living in a migrant household or having a migrant network across the studies go from a range of 42-100% on the overall samples; household's remittances represent one-third of the total income and the remittance value as a percentage of GDP is, on average, 4%. According to the authors, fintech-based services facilitate communication between migrant networks and remittances' recipients. In the case of

M-Pesa, the costs structure is made in a way that sending money to another customer of the service is cheaper. Hence, the magnitude of migrant networks in a country is crucial when drawing

fintech services, as they play a role in the business strategies that support transfer costs and enhance remittances frequency. Jack and Suri (2014) point out that a powerful tool to overcome adverse shocks in remittances' recipient communities is their active migrant networks that facilitate insurance.

Regarding transfer costs, some authors point out the existence of disparities of prices among the studied local remittances' markets. In Lee et al. (2018), the direct and indirect financial cost for sending 4,000 Takas (Bangladesh national currency) across the country was 24% through family members, 8.5% via post offices, 5.8% with banks, 5% through specialized coaches and 2% with mobile banking. In Mwangi (2014) study, the costs of sending 500 pounds from Kenya to the UK was 5.4% through PayPal, 3.98% with Western Union and 1% using Bitcoin. During Morawczynski (2009) interviews, a mobile-money user mentioned:

My husband used to send me money through Akamba [bus company] before M-Pesa. I used to go and pick the money at end-month in Kakamega [...] The journey was expensive. I had to borrow 100 bob [slang for Kenyan shilling] from my neighbours for the matatu to town [Kakamega]. Then I had to pay 100 bob to come back ... I paid 200 for transport to pick the money. Now I walk to Bukura when my husband sends ... I can keep my 200.

Despite the transfer costs' reductions in fintech services, Tuwei (2018) highlights that some individuals found the price of M-Pesa services unaffordable: "it cost money to perform a wide range of e-money transactions."

- Socioeconomic variables

When measuring impact, authors reported to have identified more educated or with higher levels of

occupation—including employment in better-paid sectors—early adopters of the service (Mbiti and Weil, 2011, Suri and Jack, 2016). They also described that users tend to be more urban-based while most non-users were rural-based. This is consistent with the social dynamics behind migration; workers following economic opportunities commonly located in urban spheres, to remit their home communities in rural areas. Nevertheless, demographics represents a challenge when providing users with possibilities to access their money. It defies the idea that fintech reaches to the *last mile*, as tech users are shown to live in urban areas, with higher income, knowledge and opportunities than those who do not access the technology. For example, Lee et al. (2018) findings are based on an intervention that eliminates substantial barriers—English language, costs of moving to agent banking, training to use the service—to access mobile money for non-users with basic levels of literacy. Under real conditions, fintech should eliminate these hurdles to assure all people below poverty lines can use the technology. Mwangi (2014) study detects that, according to Bitpesa employees, the major challenge of the company is in educating their clientele about Bitcoin's reach and enabling them to understand its complexity, including what a cryptocurrency is and how it is buy and send to a recipient in another country.

- ICT infrastructure

For authors in the sample, the development of ICT infrastructure and the access to internet or broadband infrastructure are essential to operate successfully in the context of migration and to guarantee an adequate use of fintech services. Ran (2020) emphasize this, as she finds that a 1% increase in the number of mobile subscriptions per 100 inhabitants and in the proportion of internet users tends to boost the bank account ownership for deposit and loans and increase the proportion of outstanding loans on GDP. In her research, internet access is a relatively stronger predictor than

mobile penetration. Whilst values can differ among the sample, mobile network penetration rates go between 66%-85%, the proliferation of mobiles—people owning a phone—between 35% and 69%, and internet access above 35%.

- Government affairs

Government affairs, regulation, legal frameworks and institutional capacity are highly needed to strengthen fintech's performance. Central Bank regulations should consider and open the possibility for fintech—non-financial institutions, mobile network operators, among others—to offer services for receiving, sending or storing money at the least. Likewise, they should endorse fintech-specific legal frameworks for fintech operation, promoting transparency and effectiveness when it comes to accountability and setting the limits of transaction sizes and the amount of money held in fintech users' account. Regulations should also stimulate interconnectivity and interoperability—the ability to transact across banks and different fintech providers—and KYC procedures that help to raise financial inclusion, considering profiles around poverty and displacement, without compromising financial integrity.

Suri and Jack (2016) noticed that, while the M-Pesa service was growing, several commercial banks lobbied the Central Bank of Kenya to restrict and regulate the fintech more heavily. For the Bitcoin case in Kenya, Mwangi (2014) recognises that Kenya's Central Bank is not equipped to regulate and respond to the launch of complementary currencies like Bitcoin. It should be amended to include regulatory guidelines for complementary currencies and cryptocurrencies. Ran (2020) research also reinforces the importance of government interventions to increase financial inclusion impact. She suggests countries should encourage different sources of investment, for ICT infrastructure and digital payments, among public institutions, the private sector, and public-private partnerships. She concludes that index such as government effectiveness, political stability and the

rule of law have an impact on financial inclusion. Additionally, governments should implement efficient macroeconomic policies to maintain inflation. According to her research, it strongly determines the number of bank deposits and loans.

Qualitative studies stress out the importance of public security when addressing fintech services as, according to the interviews and focus groups, inhibits the experience of users and fintech' employees, and reduces business safety. M-Pesa agencies handled cash in the same way of commercial banks, but do not possess their security. Tuwei (2018) found that these agents became targets for burglary and theft, threatening the sustainability of the M-Pesa business and denting the positive tag that had come to be associated with M-Pesa agents.

- Financial behaviour of users and potential users

Financial behaviour variables represent the necessity and call for alternative financial services in migrant communities that can be potentially absorbed by fintech. The SR sample reveals that fintech users and non-users have preferences to save money and invest in micro-enterprise, land or education. For Apiors and Suzuki (2018) tech users maintain higher savings than non-users, but smaller household assets; for Jack and Suri (2013) more than 60% of mobile users and 85% of non-users save money under the mattress. Additionally, authors draw on the existence of informal channels to address financial needs for non-users, being a vehicle for saving and borrowing money before fintech intervention. Prior to M-Pesa launch in Kenya, in 2006, individuals' most used channels to send and received domestic remittances—50% each—were through friends or coach companies who offered money or parcel transfer services. Two years after the fintech introduction, bus services method was eliminated, and friends channel was reduced to 30%.

- Financial inclusion

Financial inclusion figures emphasize that fintech is leaving behind those unbanked or digitally unskilled. Authors recognized that banked self-selection in fintech services is common. In the case of blockchain and money transfer platforms, all users need a bank account; for mobile money is not required, yet, users own a bank account. With some exceptions, such as Mwangi (20014) and Lee et al. (2018), who work with unbanked rural communities, the bank account mean values—account holders as a percentage of sample population—for mobile money users across the studies is between 40-70%; the values for non-users is between 10%-30%.

Moreover, authors reveal that distance to financial institutions, MTOs and fintech agents, and digital skills literacy—capacity to navigate applications—are paramount when deciding to use financial technology. The evidence, once again, points out that fintech is not reaching those who need it the most and confirm the unfulfilled promise of technology to increase financial inclusion of those unbanked.

- Fintech service’ attributes



Figure 7.b Key variables shaping fintech’ impact.

The SR highlights crucial attributes for shaping impact. Firstly, training on using the services for potential customers and agents, and investment for domestication—facilitating the regular use of the service—is essential to eliminate barriers that limit access. Secondly, considering cash-preferences, fintech needs to provide accessible agent banking; options for individuals to deposit and withdraw their money, at the least. Almost half of the research

sample agreed that behind the success of M-Pesa, there are thousands of M-Pesa agents, essential intermediaries between users and the mobile service provider. Similar to the MTO’s effect within migrant and recipient’ communities, M-Pesa agents create a positive engagement at a local level. They help users to navigate the M-Pesa technology and become close, beyond geography, with fintech adopters. They execute customer registration and KYC practices, and like an ATM, facilitate deposit, sending and withdrawing of money. In this sense, distribution and agent density are critical in creating fintech’ positive effects. In Tuwei (2018) qualitative research, when conducting a focus group with M-Pesa and M-Shwari agents, one participant mentioned:

I take deposits and withdrawals and do SIM registration and replacement. I do customer service; I explain to customers about services such as M-Shwari. For customers who do not know how to execute deposits and withdrawals, or how to send money, I show them. I also show them how to reverse cash send to wrong agents or wrong recipients. Customers appreciate what agents do. So they trust the agents.

Therefore, the number of M-PESA agents has grown exponentially, from 23,000 agents in 2010,110,000 in 2014 to more than 140,000 in 2016, all serving both M-Pesa, M-Shwari and other mobile services (Suri and Jack, 2016). Finally, as some fintech are still in need of bank accounts to move money, especially the online-based and blockchain applications, for some authors, interconnectivity—the partnership interlinkage between fintech operators and banking institutions, commercial banks and MFIs—is essential to expand and boost fintech services. Partnerships between fintech and traditional banking and MTOs increase users’ options to access their money and other financial instruments and creates

market competition while expanding the financial infrastructure.

Nonetheless, easing fintech entrance into the market and promoting adequate competitive environments, such as facilitating these partnerships, also relates with robust, transparent and effective policies by governments. In Tuwei (2018) research, a user emphasized the convenience of banking interconnectivity between mobile money and traditional banking, saying:

When I have money in my M-Pesa account, I can transfer it to my bank account or move money from my bank account to my M-Pesa account. I do not have to plan a trip to the bank. Therefore, I prefer to transact with my phone. When you want to withdraw money, you go to the nearest agent at your own convenience to cash the money.

5.3 Conclusions of the systematic review

According to the sample, fintech, on the overall, foster remittances and reduce costs of transfers, increasing the household disposable income perceived as a result of migration. It also influences financial access, reduces financial stress and shapes financial behaviour for both the remittance sender and recipient; it empowers female receptors whilst facilitating occupational changes in better jobs. Indeed, fintech represents an opportunity to strengthen the foundations of prosperity for migrants and remittance recipient's communities. Nevertheless, they affect negatively migrant worker's health, increase migration and borrowing through informal channels, and even through fintech, increasing the risk of unsustainable indebtedness. Moreover, fintech impact is subject to those who use the service, which, to some degree, carries a sense of inequality.

Fintech users are not those on the *last mile*. Users maintain a considerable dependence to remittances, despite they lived in a market with high transfer's prices disparities, with active migrant networks that facilitate remittances, and are more educated, urban-based, usually employed in better-paid jobs and more likely to have digital literacy skills. While they experience inequalities, early adopters tend to own a phone with high coverage of mobile network and long-run increasing access to the internet. They are also more likely to save, invest and borrow through formal and informal channels. Moreover, they possess financial assets and are mostly banked, with financial institutions or fintech agents close to their communities. Indeed, financial technologies are creating a positive impact, yet, they leave behind those unbanked, literacy unskilled, highly rural-based. Rethinking their target and considering strategies to boosts their coverage among potential users below poverty lines should be the next step in order to achieve real transformations.

In addition, two context-specific and user-independent categories outline the impact of fintech. Firstly, the government affair's effectiveness, which embodies the existence of regulations by Central Banks and legal frameworks that ensure fintech's proper operation, its limitations and accountability, while endorsing competition, interconnectivity, interoperability and investment—public or private—for ICT infrastructure and digital payments. Likewise, countries' political stability, security perception and capacity to maintain inflation, as they strongly determine financial access indicators. Secondly, the fintech services' attributes, that entails the ability of financial technologies to eliminate barriers for potential users, facilitate training and investment for domestication, and enable accessible and strategic agent banking. Fintech must understand the power of closer and stronger relationships with customers, on a local agent level, and enhancing engagement within communities.

This systematic review is a starting point in comprehending how fintech is influencing remittances, what financial necessities are attended, what social and economic gaps remain, and what factors come into play for these alternative solutions. According to these results, the next section will illustrate how feasible it is for Mexico to adopt an ecology of fintech-based remittances services and increase migrants and recipient communities' foundations of prosperity.

6. THE MEXICAN CASE AND THE POTENTIAL OF FINTECH SERVICES

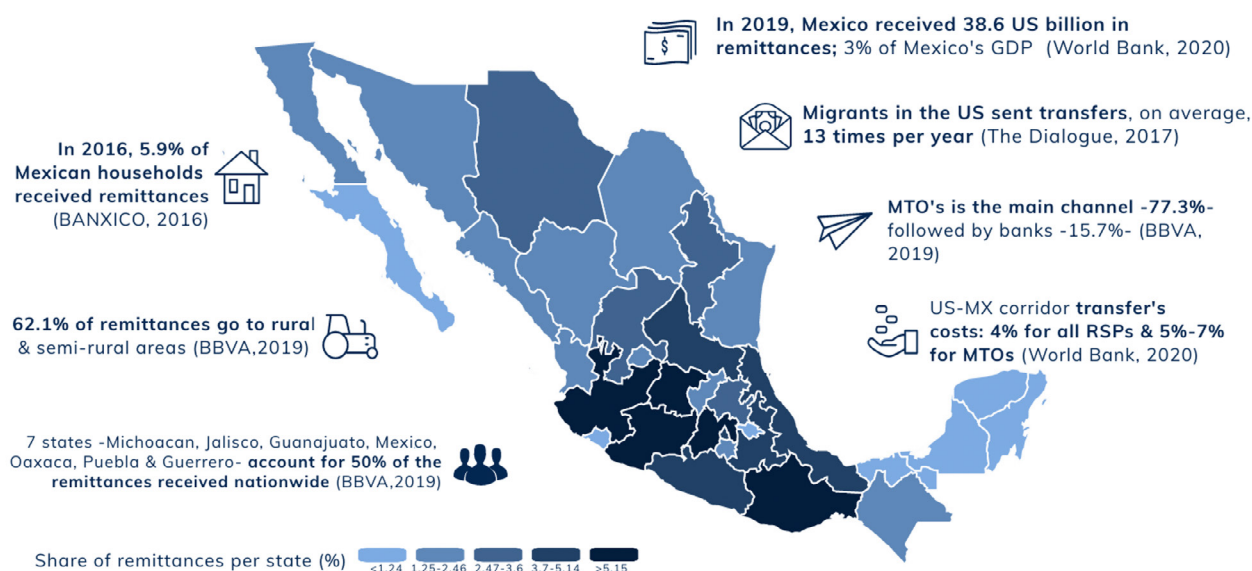


Figure 8. Migration statistics for Mexico.

6.1 Mexico's migration and development outlook

Mexico is the fourth country with the highest values of remittances worldwide. In 2019, it received 38.6 billion USD, as shown in figure 8 (World Bank, 2020; BANXICO, 2018). Worldwide, the Mexico-US corridor is the biggest, and transfer prices are relatively low, in comparison with other corridors. Nevertheless, for almost 77% of remittance senders, MTOs are still the main channel to send money back home, with RSPs such as Western Union, Money Gram and Elektra as the most used (CNBV, 2015).

Migrants in the US sent an average of thirteen remittances per year. In terms of distribution, nationwide, 5.9% of Mexican households live from remittances, and nearly half of these inflows go to rural communities (BBVA, 2019; The Dialogue, 2017). Despite remittances inflows into rural households,

there are disparities in terms of geography, income, education, access to financial services and technology; altogether, placing Mexico with higher socioeconomic inequalities and poverty levels, as shown in figure 9a. Education years for rural communities is one level below urban, and, when looking at employment, informal occupation rates are relatively higher for rural areas indicating the existence of precarious labour, lack of social security plus uncompetitive income (ENOE, 2020).

About ICT infrastructure, there is a long-run growth across Mexico for cellular and broadband subscription, yet, only 40% and 55% of rural inhabitants have access to the internet and a phoneline, in comparison with 73% and 79% for urban inhabitants (ENDUTIH, 2018). Of those with mobile devices, 51% have a bank account or a financial institution (ENIF, 2019).

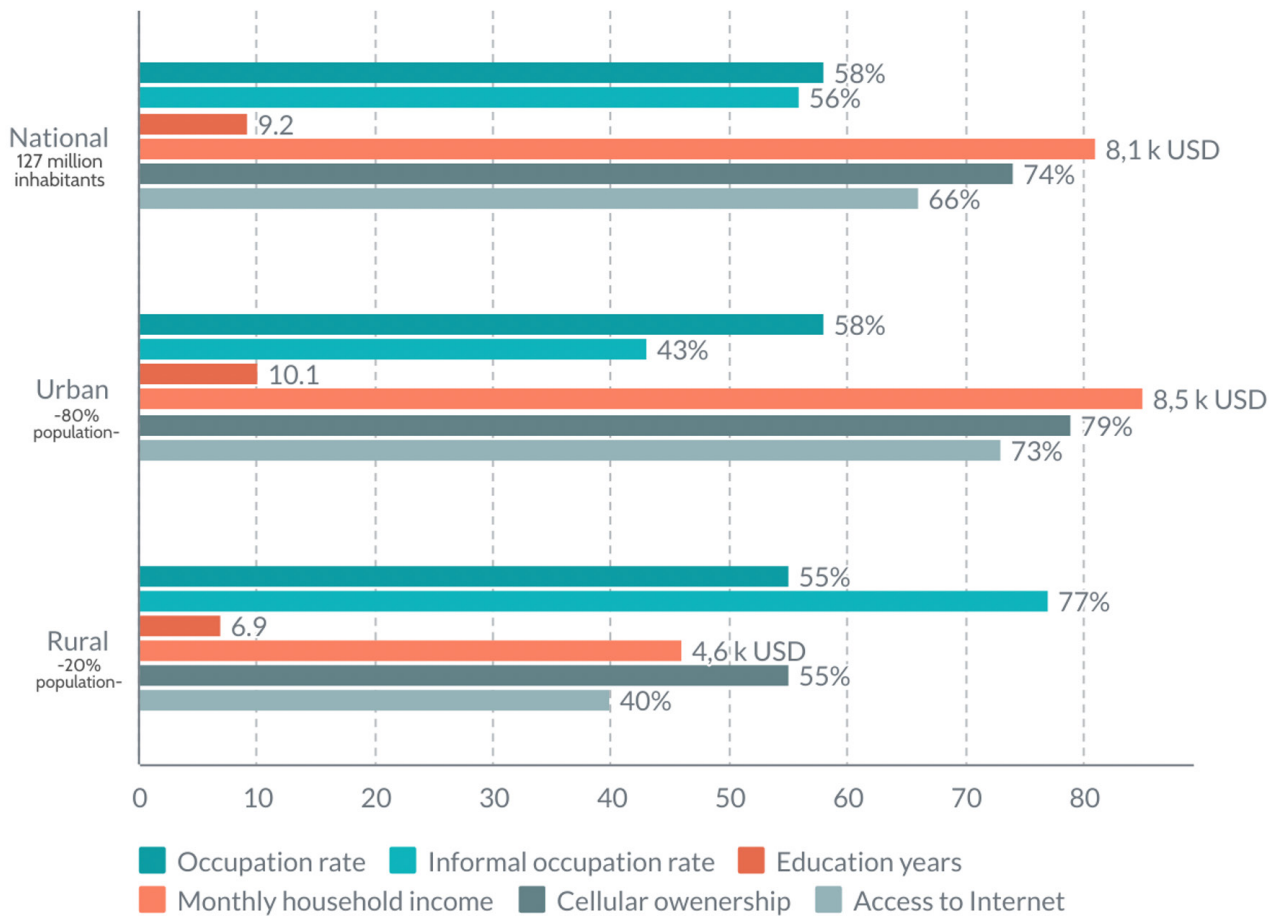
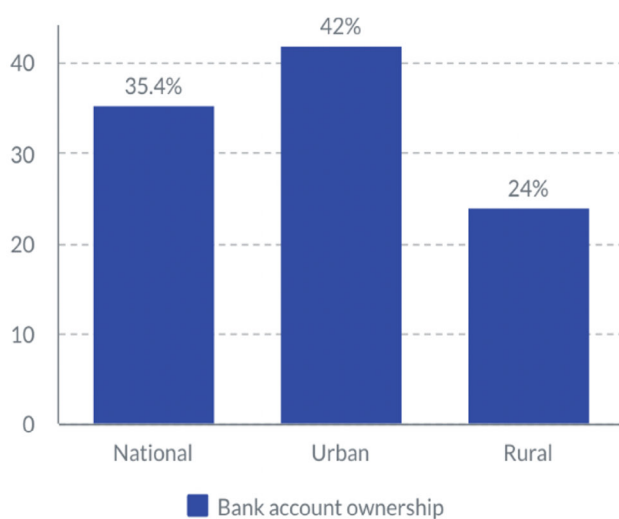


Figure 9.a Mexico's sociodemographic statistics.

Concerning government affairs, as a developing country, Mexico similar values to the SR, with the rule of law index in -0.07 (World Bank, 2018). For all Mexicans, public security is placed in a low level, as nearly 30% of the population reported to feel safe in their area or municipality and one-quarter of the population feel safe in around financial institutions and ATMs.

Finally, financial inclusion data showed in figure 9.b (CNBV, 2019) illustrates that Mexicans have financial assets, save and borrow, using informal channels such as saving clubs, called *tandas*, or through people outside the family. Nevertheless, the percentage of bank account owners in urban areas doubles the value for rural residents, and the

coverage of financial institutions for the latter is no more than 25% of the total population (FINDEX, 2020). Of those unbanked, 52% think the financial costs are too expensive; 32% of the total population is financially literate (Klapper et al., 2015).



Financial behaviour

Mexican households save between 6%-7% of their monthly income

12.68% of households save using ROSCAs or informal channels

14% of households borrowed using informal lenders

Financial inclusion

52% of unbanked Mexicans think financial services are too expensive; 26% do not trust in financial institutions

On average, Mexico has 4 financial institutions per 100,000 residents

23% of rural municipalities have financial institutions around

Sources: FINDEX (2020) and CNBV (2016)

Figure 9.b Mexico’s financial statistics.

Financial limitations are alarming, especially when rural residents receiving remittances have financial needs unattended. In a study about the financial behaviour of households receiving international remittances, Sanford (2016) found that rural households use informal credit and saving instruments to smooth consumption, such as loans from friends and family and participation in ROSCAs. This, as the transfer’s irregularity exacerbates income volatility. For a sample of 16 remittance recipient households, the research revealed that each household used an average of 5.4 financial instruments—formal and informal—with informal credit instruments being the highest, 2.8 per household. It also suggests that formal instruments are not a substitute but rather a complement to informal financial instruments that rely on social networks. When asking households in the sample what were they saving for, a participant answered:

[I save] for anything, in case of any emergency, or what if in a little while they could catch my husband and send him back here, and with what . . . ? That is, to sustain us, the little that we could.

6.2 The Mexican fintech landscape

Since 2016, fintech in Mexico has been growing to a 23% rate, turning the country in a relevant actor across Latin America and the Caribbean (LAC) region (Finnovista, 2020). The Mexican Fintech Law, released in 2018, has become a pioneering example in the region on how to provide legal certainty through a framework that regulates fintech, ensuring competition among start-ups, financial institutions and traditional banks, while strengthening the sector’s performance (IADB, 2018).

Mexican regulation aims to accelerate financial inclusion and develop fair financial services. It establishes fintech’s authorisation regimes, requirements for licensing and operation, consumer protection, and defines regulation entities and alternative finance sources. It is focused on crowdfunding firms and electronic payments institutions, cryptocurrencies, open banking and temporary authorisations for innovation testing (sandboxes). The Central Bank has made additional efforts to promote mobile payments; through *Cobro Digital* (Codi) it facilitates payments and electronic transfers using mobile phones. Codi is based on QR-code and NFC technology without any costs for users, and today, it has 400,000 active users (CODI, 2020).

Today, the Mexican fintech market comprises 442 companies, and its biggest segment is payments and remittances, with 20% of the share and 90 companies offering services of mobile payments, e-wallets, mobile-points of sale, payment gateway, cryptocurrencies and international transfers/remittances. For the fintech-based remittance services, in 2018, digital transfers from the US to Mexico represented 33% of the monthly transfers sent, including transactions from strongest players such as Xoom, Remitly, WorldRemit, and WesternUnion.com, according to The Dialogue (2020). The Dialogue also exhibits that while Mexican's bank ownership in the US is 70%, only between 20%-30% of online transfers are deposit into bank accounts; yet, it estimates that the potential digital outbound remittance market for Mexico could reach 5 million dollars monthly.

With consumer and SME adoption rates of 71% and 11%, respectively, the ecosystem has become a target for investors. In 2019, 60% of fintech received some type of funding during the last months (Finnovista, 2020).

6.3 Can Mexico boost migrants and remittance recipient's prosperity through fintech?

Beyond the need for financial inclusion, Mexico has the necessity—due to increasing inequalities among its population—and, in some degree, the technical capacity to increase migrants and remittance recipient's foundations of prosperity. However, it needs to target fintech potential users accurately to raise, successfully, coverage and prosperity of those in the context of migration.

Similar to the cases previously studied, Mexicans have qualities that can facilitate the adoption of fintech. They have a strong dependence on remittances and demand for cheaper, accessible, channels to send money back. The remittances' frequency indicates that Mexicans demand alternatives that facilitate

transferring and receiving money. Moreover, the values of occupation, education and poverty within the population profiles, at national levels, are also alike previous findings. ICT long-run growth and penetration appears to be higher in Mexico, suggesting the country's potential to boost financial technologies.

In terms of government capacity, public security and the rule of law, crucial when addressing fintech impact, are relatively low for the country, in comparison with the SR; this can limit tech interventions, adoption rates and influence the investment environment. Regarding fintech regulations, Mexico's fintech law, the first one across the LAC region, can enhance competition within the sector, legal certainty and growth, and, since financial inclusion and fair access are its main objectives, it has the potential to increase coverage for those underserved. Nevertheless, looking into the future, Mexico's fintech sector must rethink how to approach those undeserved and create fairer access.

Mexican fintech's efforts, so far, advocates to increase the scope of financial access beyond basic financialisation, raising the number of people accessing different products and services beyond debit bank accounts, changing their relationship with money, their financial literacy and positively transforming regulation and fintech ecosystem in the region. Yet, most Mexican fintech's users are the 'early adopters', urban middle-class, more educated, younger, banked, with competitive and cheap access to ICT services and digital literacy skills above the national average; those who are not necessarily below poverty lines (Ortiz & Carraro, 2020). Fintech has to recognise those who are left behind by financial institutions and financial technology itself to achieve social transformations for migrants and remittance's recipients.

There is a potential market that could be absorbed and right now is unattended; a market that stands for 65% of the population unbanked. Mexicans

do save, invest and borrow money, and, due to the lack of proper coverage and financial literacy, they use informal channels to assess their financial needs. In rural areas, the demand for financial services is even higher, as 76% of the inhabitants are unbanked although they received 60% of international remittances, with recipients reporting using an average of 5.4 financial instruments. In a second phase of the fintech revolution in Mexico, the government should facilitate access to ICT infrastructure in rural areas and encourage fintech to increase their services and “fairness” in financial and digital access, among the rural unbanked, through schemes and incentives for those who specialised in closing gaps. Next, tech solutions should understand the potential rural and semi-rural users, their needs and limitations, to accomplish the promise of financial inclusion and fair access to all.

Moreover, Mexican fintech service attributes should be design based on the user’s necessities instead of technology itself. Recommendations, in this regard, can be those draw on the SR. Firstly, they need to let people know about their existence, and trained potential users for using the service, while investing in domestication. Domestication might be hard since nearly half of fintech is below two years of existence; nevertheless, investment is available for scaling up and improve fintech services in the country. Secondly, considering cash predominates in Mexico, with 95% of people using it for smalls transactions (ENIF, 2019), alternative tech solutions need to tailor effective agent banking, where users can rely on if they need to withdraw their money, acquire digital skills and assistance navigating technology, and create proximity with clients and the community.

For Mexico, few fintech offered in-situ services, and if they do, they only reach those living in big cities, as 70% of fintech enterprises are located in these areas. Finally—with some exceptions—while fintech and traditional banks and financial institutions in Mexico are communicating, most of the interaction relates

to funding or absorbing fintech. The government should promote strong interconnectivity among fintech, financial, non-financial institutions, MTOs and other RSPs—especially postal offices—and the use of existing infrastructure to increase the coverage in isolated areas, especially when thinking about reaching the last mile.

The Mexican case embodies infinite possibilities to make the best out of remittances, increase household’s disposable income, promote occupational changes, reduce financial stress, social inequalities and promote financial inclusion for remittance’s recipients in rural areas. While the demand and capacity to increase Mexican’s foundations of prosperity are there, the challenge is to rethink the target for effectively close the gaps.

7. FINAL REMARKS AND REFLEXIONS

As we enter an era where digitalisation is not an option but a necessity, the challenge of reducing social inequalities and improve lives of those significantly distanced, through financial technology, become more relevant than ever. The present research main objective was to analyse the impact of fintech, in the context of migration, through a systematic review. It discovered fintech strength migrants and remittance recipient's foundations of prosperity, as it increases their real household disposable income, access to better jobs, financial and digital services while shaping financial behaviour. It can also encourage women empowerment and reduce poverty levels, yet, it is not clear its effect on social inequality and financial stress, as it promotes debt and credit. More important, the SR draws how early adopters look like, highlighting social and economic disparities among tech-users, and the variables shaping fintech' impact. By using the case of Mexico, it explores how significant is fintech growth in developing countries, yet, looking into the future, it reflects on the necessity to rethink fintech users' target.

Fintech success rests on those who use the technology, which in Mexico and in the LMICs analysed, are not those on *the last mile*. They, indeed, are remittance-dependent households, with high disparities among the remittance market, nonetheless, they are more educated, urban-based, banked, usually employed in better-paid jobs and more likely to have digital literacy skills. Impact also rest on the government's actions to increase regulations around the fintech sector, facilitating operation, interconnectivity, the capability of law execution, security and investment, public or private, and robust ICT infrastructure.

Fintech impact it is also based on the attributes that fintech itself possess; recommendations include

eliminate barriers in access for potential users, such as language and digital literacy skills, create a constant investment for domestication, and promote agent banking, embracing the power of user-centred financial relationships, on a local level, combining *tech and touch* implementation strategies. The last one becomes pivotal to promote financial education and increasing minorities' engagement and empowerment.

As long as the technology itself left behind those who need it the most, fintech impact will be limited, so as its reach on global prosperity. Mexico has the potential to boost migrant's and remittance recipient's foundations of prosperity; nevertheless, more participation from its government is needed, in hand with policies that effectively break barriers to assure "fair access" through the technology. In addition, Mexican fintech should look beyond the numbers and outside the cities, to realise the potential market waiting to for their financial needs to be covered; who want to make the best out of their remittances, and an opportunity to change their lives and move forward. Migrants and remittance' recipients waiting for technology to thrive.

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FIGURES

Figure 1. Migrant remittances inflows in 2019 (estimations). KNOMAD (2019). Migration and remittances. Recent development and outlook, Washington, DC.: The Global Knowledge Partnership on Migration and Development (KNOMAD)

Figure 2. Migrant worker income distribution. IFAD, 2017. Sending money home: contributing to the SDGs, one family at the time.,pp. 41: International Fund for Agricultural Development (IFAD).

Figure 3. Migrant's financial needs. Own elaboration with information from IFAD, 2017. Sending money home: contributing to the SDGs, one family at the time.,pp. 44: International Fund for Agricultural Development (IFAD).

Figure 4. The remittances operation. Own elaboration with information from IFAD, 2015. The use of remittances and financial inclusion, s.l.: International Fund for Agricultural Development (IFAD).

Figure 5. Average cost of remittances over time, by RSP. World Bank, 2020. Remittance Prices Worldwide: Issue 34, June report. Pp. 14 : The World Bank.

Figure 8. Migration statistics for Mexico. World Bank, 2020. Personal remittances received by country, Washington, DC: World Bank.; World Bank, 2020. Remittance Prices Worldwide: Issue 34, June report., Washington, DC.: The World Bank.; BANXICO, 2018. Impacto de las Remesas sobre la Formación de Capital en los Hogares Receptores en México: Un Análisis Regional, Mexico City: Banco de Mexico BANXICO; BBVA, 2019. Anuario de migracion y remesas, Mexico City: Fundacion BBVA.

Figure 9.a Mexico' sociodemographic statistics. INEE, 2018. Panorama educativo de Mexico, Mexico City: Instituto Nacional para la Evaluación de la Educación (INEE); ENOE, 2020. Indicadores de ocupacion y desempleo, Mexico City: Instituto Nacional de Estadística y Geografía (INEGI); ENDUTIH, 2018. Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2018, Mexico City: INEGI.

Figure 9.b Mexico' financial statistics. CNBV, 2019. Reporte de Inclusion Financiera en Mexico, Mexico City: Consejo Nacional de Inclusión Financiera (CNBV); FINDEX, 2020. Global Financial Inclusion Database, Washington, DC: World Bank.

ANNEX

NO	NAME OF THE PAPER	AUTHORS
1	Communication technology, capabilities and livelihoods: the role of mobile money in facilitating financial inclusion and development in rural Kenya	Tuwei, 2018
2	Mobile money, individuals' payments, remittances, and investments: evidence from the Ashanti region, Ghana	Apiors & Suzuki, 2018
3	Poverty and migration in the digital age: experimental evidence on mobile banking in Bangladesh	Lee, et al., 2018
4	ICT for financial access: mobile money and the financial behaviour of rural households in Uganda	Munyegera & Matsumoto, 2017
5	The long-run poverty and gender impacts of mobile money: mobile money in Kenya	Suri & Jack, 2016
6	Mobile banking: the impact of M-pesa in Kenya	Mbiti & Weil, 2011
7	Risk sharing and transactions costs: evidence from Kenya's mobile money revolution	Jack & Suri, 2014
8	Information and communication technology development, digital payment and global financial inclusion: a cross-country analysis using panel data	Ran, 2020
9	Cryptocurrency-remittance transfers futuristic technologies & poverty alleviation	Reeves, 2017
10	Exploring the usage and impact of "transformational" mobile financial services: the case of M-pesa in Kenya	Morawczynski, 2009
11	Adoption of bitcoin in Kenya, a case study of Bitpesa	Mwangi, 2014



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