

Provider and Consumer Perceptions on Mobile Money and Microfinance Integrations in Ghana: A Financial Inclusion Approach

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Abstract: This study examines the use and impact of mobile money and microfinance services in Ghana. It explores the perspectives of mobile money and microfinance service providers and consumers to identify the nature and extent of use, and their separate and complementary impact on financial inclusion. Qualitative data collected through interviews with service providers, agents, and consumer focus groups were used to draw parallels and contrasts between provider and consumer perceptions on impacts and challenges of the systems. The study addressed four specific objectives identified as provider perceptions on mobile money and microfinance integrations and financial inclusion; consumer perceptions on mobile money and microfinance integrations and financial inclusion; impacts of mobile money and microfinance integrations on the financial inclusion ecosystem; and challenges of mobile money and microfinance integrations for financial inclusion in Ghana. The results showed that provider perceptions primarily focus on consumer access, product range, convenience, and regulatory climate. Consumer perceptions also focus on network capacity, fraud and security, and complex user designs. The impacts of mobile money integrations appear to be additive for most users but also transformative for users who were previously excluded from the formal financial sector. However, there are eminent challenges related to system failures, fraud and security concerns, and consumer protection to be addressed to help facilitate the efficiency and sustainability of the mobile money ecosystem.

Keywords: Mobile Money, Microfinance, Consumers, Service Providers, Financial Inclusion

1. Introduction

About three-quarters of the countries participating in the technological and financial revolution of mobile money are in Africa, where there are now more mobile money accounts than bank accounts [1-3]. According to the Group Specile Mobile Association (GSMMA), sub-Saharan Africa (SSA) has 338.5 million active mobile money accounts registered through 135 network operator services which makes it the highest of any world region [4]. For half of these active subscribers, mobile money is transformative as these wireless provider-led financial transaction accounts is their only connection to the financial system without directly owning a bank account [5].

Some microfinance institutions (MFIs) are leveraging

mobile money systems for convenient loan repayments, loan disbursements, and savings transactions for clients [6, 7]. Just about 9% of adults in developing economies have savings and credit with formal financial institutions, and the rest use informal options such as MFIs, individual money lenders, and family members [5]. Some studies have also indicated that the successful integration of mobile money and microfinance through services such as Musoni and Faula in Kenya, and the b-Kash project in Bangladesh, have helped to increase access to formal financial services [6, 7]. While the microfinance sector has demonstrated positive impacts on the social, financial, and economic well-being of the poor, there are challenges to providing flexible product options at reasonable costs for both users and providers. Most studies have examined the use and impact of mobile money and

microfinance separately and little attention has been given to the important intersections between the two in relation to financial inclusion. This study therefore focuses on the opportunities to be explored through the integration of mobile money and microfinance products. The study examines the ecosystem of mobile money and microfinance in Ghana to identify the key indicators of adoption and the impacts on financial inclusion. The specific objectives addressed are as follows:

- (a) What are the perceptions of service providers on mobile money and microfinance integrations and financial inclusion?
- (b) What are the perceptions of consumers on mobile money and microfinance integrations in Ghana?
- (c) What are the benefits of mobile money and Microfinance Integrations on the financial inclusion ecosystem?
- (d) What are the major challenges of mobile money and microfinance integrations for financial inclusion in Ghana?

In-depth individual and focus group interviews are used to obtain the perspectives of banks representatives, mobile network operators (MNOs), MFIs, mobile money agents, and consumers. The study sheds light on what is known about mobile money and microfinance services and how they co-exist in Ghana which may be applicable to the broader West African region.

1.1. Previous Studies

1.1.1. Financial Access and Financial Inclusion: Demand and Supply-side Implications

Studies have shown that about 80 percent of the adult population of SSA do not use formal financial services with only 24 percent having an account at a formal financial institution [8-10]. Access to basic financial services such as savings, payments, and credit is associated with positive impacts for both individuals and firms and lack of access to finance is a major obstacle to the growth of small-medium sized enterprises (SMEs) [11-16]. Another study also found that financially excluded consumers in developing countries experience vulnerability in different ways with negative consequences on their personal, economic, and social lives [17].

The major barriers to financial inclusion are typically geographic, infrastructural, and institutional factors affecting the supply of financial services, as well as socio-economic factors affecting the demand for these services [18, 19, 15]. For instance, proximity to a financial institution remains a major geographic constraint affecting rural residents and therefore, the percentage of adults who are formally “banked” in rural areas is consistently low due to the time and distance of travel to reach banks [20, 21]. Structural supply-side issues such as menus that are not intuitive, complex and costly registration and sign-up processes, and security passwords that are difficult to remember were also identified as factors that may hinder the poor from using formal financial services [22]. Studies have also emphasized the importance of income, age, gender, and education on financial access and adoption. For

instance, 54 percent of adults in the poorest 40 percent of households within developing economies are shown to remain unbanked, compared to 40 percent of the richest 60 percent of households. Also, 30 percent of people around the world who had no access to formal financial services reported that the lack of sufficient funds to hold a bank account is the biggest barrier to financial inclusion. Besides, women and young people are typically excluded from formal financial markets due to certain social, economic or legal factors such as lower literacy levels, informal or irregular sources of income, lack of legal identification or formal collateral, and time and mobility constraints [23-27]. Amid these constraining supply and demand-driven factors, recent innovations in financial products driven by mobile money and mobile microfinance integrations have proven successful at improving financial access in countries like Kenya, Tanzania, and the Philippines [28, 6, 2].

Earlier studies on mobile money adoption in Ghana indicated low adoption rates and mixed outcomes on value and utility of mobile money products. Some studies showed that the products primarily targeted the middle and upper-income classes to the exclusion of lower-income groups and had shown no salient impact on social life given the strong preferences for cash-based transactions in Ghana. Much as the urban poor had the least knowledge and lowest degree of confidence in the utility of mobile money products, the service was shown to be widely used for sending and receiving remittances due to the high mobile phone penetration in Ghana and the speed and convenience of mobile money transactions [29-31]. Other studies also showed that active users and facilitators of MTN mobile money do receive value from using/providing banking services via the mobile phone, particularly for business development [1]. Despite the variations in findings, the studies generally indicate that mobile money had tremendous prospects in the financial service ecosystem. This study seeks to expand the literature on mobile money in Ghana and involves the use of multiple case studies to present both provider perspectives and user experiences.

1.1.2. Impacts and Challenges of Mobile Money and Microfinance Integrations

Following the 2009 mobile money launch in Ghana, initial adoption rates were low due to competition with longstanding preferences for cash and product features targeting middle to high income groups [29-30]. However, since the mid-2000s, West African countries, led by Ghana, are catching up rapidly in relative adoption rates [31, 32, 4]. Adoption rates have varied across sub-Saharan Africa due to challenges related to distribution, liquidity management, product development, risk management, and fraud [2]. Less stringent ‘know your customer’ guidelines in 2015 relaxed the central Bank of Ghana’s 2008 Branchless Banking Guidelines which increased the reach of agents and non-bank wireless service providers [33]. The author in [6] indicates that the factors which appeared particularly important for Kenya’s notable success with M-Pesa include product appropriateness, a strong agency network, liquidity

management, and the pre-existing dominance of the service provider. Hence, soliciting provider perspectives is important to understand the co-existing ecosystems of mobile money and MFIs in Ghana.

Microfinance schemes are not only useful financing options, but important tools for economic empowerment and social change, particularly for women [23, 27, 34-37]. For instance, the authors in [37] surveyed 840 women beneficiaries of microfinance in Ghana and concluded that about 72% of the respondents reported being better financially resourced to provide the educational, health, and basic needs of their families. Most of the respondents also indicated they had better housing conditions and improved financial conditions to engage in communal activities due to their involvement with MFIs. Similarly, 85 Ghanaian women entrepreneurs who participated in a microfinance scheme for about ten years indicated that they had expanded their businesses, acquired assets, and improved livelihoods which transferred to better overall well-being of their families and communities [38].

Mobile money and microfinance services appear to operate parallel to each other but also overlap based on their similar goals of providing financial access to underserved and dispersed communities. Micro-credit transactions have increasingly been facilitated by readily accessible mobile money due to cell phones being prolific even in the most remote areas where branched banking or microfinance have not reached. For instance, M-Pesa Kenya was the first MFI to go completely cashless and disburse all loans through M-pesa. A few other M-pesa enabled MFIs such as Kenya Women Finance Trust (KWFT), Faula Kenya, and SMEP DTM Limited also offer their customers, convenient, less costly, and more flexible transaction options [39, 6, 7].

Similarly, BANKO Philippines and BRAC-bKash in Bangladesh offered payment, savings, credit, and insurance products accessible primarily over mobile phones and at partner outlets [40, 7]. However, MFIs were using m-banking most often for loan repayments and savings mobilization than for loan disbursements. This was because, with the high average value of loan disbursements and low transaction limits, customers had to withdraw from multiple agents, thus reducing convenience and increasing cost due to multiple transaction fees. Another study found that apart from the formal banking and credit programs like M-kesho and M-shwari that were linked to mobile money, individual family networks as well as rotating savings and credit associations (ROSCAs) also used mobile money more frequently for convenience. Mobile money usage had penetrated informal saving groups, family associations, and kinship networks and fundamentally changed social life in Kenya by creating mobile communities of the “absent presence” and a “floating world” [41].

The Ghanaian market has also witnessed similar integrations of investment, insurance, and energy products with mobile money platforms. For instance, Ecobank Capital Advisors (ECA) “TBill4All” service allows customers to remotely register, apply, purchase, rediscount and redeem treasury bills through transfers between customer mobile

money wallets and ECA mobile money wallets [42]. Tigo Ghana in partnership with BIMA and MicroEnsure offer a free opt-in life insurance coverage in proportion to airtime usage as a loyal benefit to its customers with an option to double the coverage amount for a monthly fee of GHC1 (US\$0.25). Tigo has also partnered with PEG Ghana to provide the first mobile pay-as-you-go solar energy service to low income and rural consumers. Additionally, the social cash transfer program is in the process of being shifted onto mobile platforms to cost-efficiently reach poor and vulnerable populations [42-44]. Mobile money could be the springboard to financial inclusion for the traditionally disempowered such as women, rural residents, and the poor. Exploring and understanding the intersections between mobile money and microfinance could possibly be the unrealized potential for sustained growth in financial access by communities in Ghana.

1.2. Significance of the Study

Existing literature indicates that African countries have relatively less access to formal financial services and tools and face distinct financial sector developmental challenges related to issues of trust, consumer protection, and operation network systems [45, 2, 9]. Microfinance has been the primary source of credit and savings for small-micro enterprises and low-income households for several decades in most African countries. Mobile money has also been shown to have expanded financial access to the working poor in Kenya, Tanzania, and Ghana, where the adult populations with formal bank accounts have increased steadily alongside the viral growth in mobile money [46, 2-5, 32,]. However, previous studies mostly focus on consumer perspectives on mobile money adoption and revealed a distinct gap in the adoption of basic financial products and service for the urban poor in Ghana. These studies have shown that cash is still the primary form of payment for day-to-day purchases and mobile money products are mainly targeting the middle and upper class [29, 30].

Additionally, microfinance research on the gaps in the regulatory framework and impact on financial inclusion in Ghana is limited. This study is therefore significant because it seeks to explore the impact of mobile money and microfinance services on financial inclusion from the perspectives of both the service providers and the consumers in Ghana to fill the existing gaps in literature. The results of this study are expected to provide important insights for innovation in the financial sector, regulation reform on inclusive financial policies, and improved integration between mobile money and microfinance services as drivers of financial inclusion and economic development.

1.3. Theoretical Framework

The ecosystem model grounds the present study to address the research questions from a systems approach. As noted in [45], the success of any digital financial system depends on the ability to add value for all the different parties in the

‘partnership ecosystem (i.e. customers, banks, MNOs, MFIs, agents, financial regulators, and technology companies). Figure 1 also illustrates that a mobile money product requires multiple commercial partnerships where the parties are simultaneously working together and competing. Each partner has specific responsibilities to contribute to the development of the system and failure to add value for any one partner can ultimately result in the failure of the whole system.

The key partners in the mobile money ecosystem as identified by previous studies include the regulators, infrastructure and technology companies, service providers such as banks, MNOs, and MFIs, agents, and the consumer. The primary regulator here is the central bank which issues policies and guidelines relating to e-money issuance, agent networks, know-your-customer (KYC) requirements and consumer protection. The service providers which typically include banks, MNOs, MFIs, and other payment and retail companies require a combination of co-operation and competition to collaborate in an interoperable ecosystem. For instance, at the basic partnership level, MNOs require banks to hold their float and banks require MNOs to issue short codes for their customers to access their account over a mobile phone. As more advanced forms of partnerships develop over time, providers may compete for the same customers once integrated services and add-on products like savings, loans, and insurance are offered. The ecosystem model approach helps to identify key stakeholders with whom common themes related to perceptions, impacts, and challenges of mobile money and microfinance in Ghana could be explored to address the research questions. The selection of key participants for the interviews was thus informed by the identified partners in the mobile money ecosystem model shown below in Figure 1.

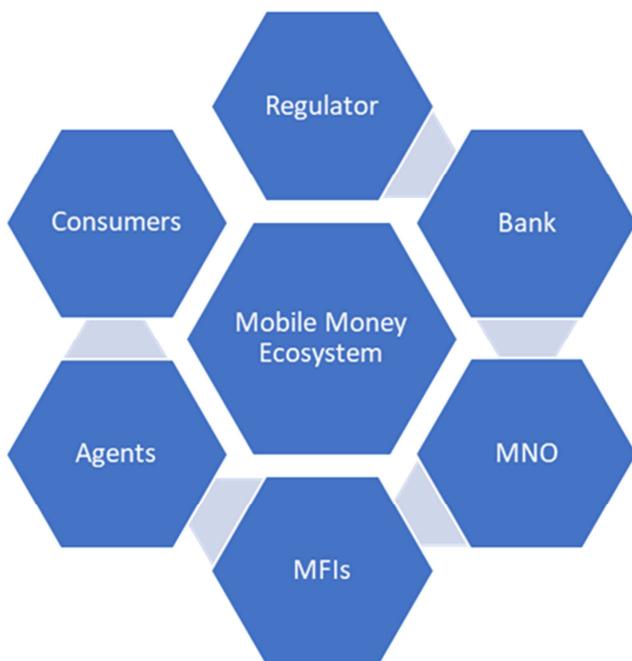


Figure 1. Mobile Money Ecosystem Model [45].

Previous studies on the adoption of innovative financial services have been grounded in frameworks that borrow from various theories including the Technology Acceptance Model (TAM) and other conceptual extensions. TAM posits that perceived usefulness and perceived ease of use are the fundamental determinants of use of any new system or technology and assumes that users could choose to employ a specific technology based on individual cost-benefit considerations [47, 48]. Additionally, the author in [47] claims that given any two systems with the same level of perceived usefulness, the one believed to be easier to use will be preferred by users. Mobile money adoption studies have thus confirmed that a system or money object that is easier to use within the socio-cultural context will result in positive attitudes and faster consumer adoption, whereas those that are not will be slower to be accepted or even marginalized. Consequently, moving users from a free and easy-to-use product like cash to mobile money, which is a more expensive and complex product, is likely to present a key challenge [6, 30]. The selection of variables for the key components of the interviews was informed by the TAM which shows that socioeconomic factors, technology and infrastructure, regulation, and consumer attitudes may affect the adoption of mobile money and microfinance services in the context of any given country or region.

2. Methods and Procedures

2.1. Data and Participants

The key informants identified for the in-depth interviews were representatives from commercial banks, MNOs, and MFIs, as well as agents and consumers. All interviews were conducted in-person by the first author between June 2nd and 30th 2017, with an assistant to help with approved video or audio recording and note-taking. Interviews with service providers and consumers were conducted based on the availability of respondents. Purposeful sampling was used to recruit informants who could provide detailed information of interest. Bank and MNO representatives were recruited through semi-formal introductions from personal contacts at the organizations, while MFIs and agents were approached directly by the first author and requested to participate in the study. Consumers were also recruited through informal introductions by individual community residents, church group leaders, and market association leaders. Approval was obtained from the Institutional Review Board at a U.S. university and all participants signed consent forms prior to the interviews. An interview protocol was also followed to ensure consistency of the data collected and procedures for recording data. The protocol used included an introduction of the interviewer, the project description, consent agreement, and participant profile questions, followed by the interview questions. The semi-structured interviews lasted for about 45 minutes to one hour, were audiotaped with the participants consent, and additional notes taken to corroborate with the audio transcripts.

2.1.1. Service Providers

(a) Commercial Bank

Formal requests for interviews were made to six commercial banks selected from a list of 35 banks available from the central bank's website. The banks were purposefully selected based on the availability of personal connections (friends or acquaintances) to help facilitate agreement to participation. Four of the six banks agreed to participate and provided representatives for the interview. The interviews

were completed in person, audio-recorded with the participants consent, and supplemented with written documents. All four banks have mainstream mobile banking portals that allow customers to access their bank accounts on their mobile phones using SMS codes, and 3 are mobile money partners providing both float management and retail services through account integrations. Table 1 below provides a summary of the key characteristics of the banks.

Table 1. Commercial Bank Profiles.

	Bank 1	Bank 2	Bank 3	Bank 4
Ownership	Private (Domestic)	Private (Domestic)	Private (Domestic)	Private (International)
Years in Operation	10	16	11	2
Number of Branches	200	50+	50+	5
Mobile Banking Portal	Yes	Yes	Yes	Yes
Mobile Money Role(s)	Partner, retail agent	Partner, retail agent	Partner, retail agent	None
MM Integrated Services	Account integration, agent/merchant e-payments	Account integration, agent/merchant e-payments	Account integration, agent/merchant e-payments, savings, card-less ATMs	None

(b) Mobile Network Operators

Formal requests for interviews were also sent to all four mobile money operators in May 2017. Three providers agreed to participate and interviews with their representatives were conducted in June 2017. The fourth MNO declined the interview due to concerns about proprietary information. Two of the three interviews were audio recorded with additional notes taken with

the help of a research assistant. Notes were taken by the researcher for the interview with the third MNO and supplemented with written responses provided by the representative since the permission for audio-recording was declined. As shown in Table 2 below, the three mobile money service providers have practically uniform basic products and frequently used services, as well as partnerships and integrated products.

Table 2. Mobile Network Provider Profiles.

	MNO 1	MNO 2	MNO 3
Basic Products	cash-in/cash-out, cash transfers, bill payments, utility payments, purchases, mini statements	cash-in/cash-out, cash transfers, bill payments, utility payments, purchases, mini statements,	cash-in/cash-out, cash transfers, bill payments, utility payments, purchases, mini statements,
Frequently Used Products	cash-in/cash-out	cash-in/cash-out, transfers	cash-in/cash-out
Partnerships	Banks, payment companies, insurance companies, MFIs	Banks, payment companies, insurance companies	Banks, payment companies, insurance companies, MFIs
Product Integrations	Bank to wallet, insurance, gov't payments, utility/merchant payments, Card-less ATM services, MFI services	Bank to wallet, insurance, gov't payments, utility/merchant payments	Bank to wallet, insurance, gov't payments, utility/merchant payments, Card-less ATM services, SLC/MFI services
Primary Incentive	Financial inclusion, product innovation, customer convenience	Financial inclusion, drive for cash-lite society	Financial inclusion, product innovation, customer convenience, flexible products

(c) Microfinance Institutions

Three MFIs were selected from the online registry of the Bank of Ghana and in-person requests for interviews were made with branch representatives in June 2017. The institutions were selected to represent the three hierarchical tiers of the microfinance sector with one representative for each tier. Two of the interviews were completed in-person and audio recorded, and the third interview was partially

done in-person and completed over the phone. Notes were taken for the third interview and supplemented with written documents since the permission for audio-recording was declined. The three MFIs included a top and middle-tier deposit-taking institutions with bank-like products, and a lower-tier non-deposit money lending institution, as shown below in Table 3.

Table 3. Microfinance Finance Provider Profiles.

	MFI 1	MFI 2	MFI 3
Classification	Savings and loans company	Microfinance Company	Micro-credit/ money lending
Branches/Reach	25/6 regions	1/ Accra	10/Accra
Basic Products	Savings, specialized accounts, loans, group lending, fixed deposits, treasury bills,	Savings, specialized accounts, loans, fixed deposits	Personal loans, working capital loans
Other Services	ATM services, mobile banking, biometric services	Mobile banking payment services	N/A
Mobile Money Integrations	Wallet integrations (transfers, deposits, loan payments, air-time transfer)	Wallet integrations (transfers, deposits, loan payments, air-time transfer)	N/A
Challenges	Network failures, fraud, slow customer adaptation	System failures, consumer attitudes	Consumer attitudes, inconsistent cash flow

(d) Mobile Money Agents

Three mobile money agents were also purposefully selected to participate in the study based on their location and type of operation. The agents were approached in person by the researcher and requested to participate in the study, which they all agreed. The first agent operated a store-front service in a low-income, high-illiteracy, high-density community. The second agent operated a store-front service at a local market in a moderate income, medium density community, and the third agent operated a small table-top service in a

moderate income, medium density residential community. An interview date and time was scheduled after the initial introductory visit with two of the agents, and the third agent was interviewed on the same day of introductory visit. All the agent interviews were conducted in June 2017 and were audio-recorded with their permission. The agent interviews also served as participatory observations for routine transactional procedures as all the interviews were conducted during business operation hours. Table 4 provides a summary of the mobile money agent profiles.

Table 4. Mobile Money Agent Profiles.

	AGENT 1	AGENT 2	AGENT 3
Gender	Male	Male	Female
Operation Type	Store-front	Store-front	Table-top
Years in Service	2.5	3	1.5
MNOs Served	2	4	2
Other Services	Insurance agent, bank agent, internet service agent, air-time transfers/scratch cards	Money transfer agent, internet service agent, government/bulk payments withdrawal agent, daily deposit (susu) agent	Air-time transfers/scratch cards
Pricing Disclosure	Price schedule visibly displayed	Price schedule visibly displayed	Price schedule provided upon request
Profitability	OK- depends on customer flow and other services provided.	Low- Customers mostly engage in small amount transactions.	Relatively fair but not consistent.

Interviews with service providers were focused on supplier perspectives on product/service options, agent networks, regulation and licensing, and opportunities for partnerships and scale. Interviews with mobile money agents were also focused on direct marketing issues such as client retention, service pricing and disclosures, profitability, consumer protection, and security and technological challenges.

2.1.2. Consumers

Three focus group discussions were conducted at different locations in the city of Accra selected to increase the probability of recruiting respondents from diverse backgrounds since the target population was the everyday consumer. The first location is a predominantly low-income, high illiteracy, high density community which was selected to reflect the low to moderate-income, less educated consumers' perspective. Participants in this session were initially approached at a social event in the community and requested to voluntarily sign-up for the meeting at a given time and place. Four of the five volunteers participated in the discussion as one person did not show up. Participants at the second location were members of a small group at a church with an estimated 2000 active members from diverse backgrounds and communities in and around the city. Five participants were recruited for this session which was held during a weekly group meeting at the church premise. The third location is the largest local market in Accra with more than 5000 traders ranging from hawkers, small table-top sellers, small shed/stall traders, and shop owners, where a unit leader was approached to help with recruiting participants for the focus group discussion. The five participants who were initially recruited included a male trader who declined to participate and was replaced with another female participant. Typically, markets in Ghana have

about 98% women traders and therefore having an all-female focus group in a market location is not surprising.

There was a total of 14 participants in the focus group interviews. The discussions were primarily conducted in one of the two predominant local dialects in the area (Ga or Twi) based on the participants' preferences to allow consumers to express themselves freely. The first author and research assistant are both Ghanaian natives and fluent in both dialects. Each group discussion began with a brief introduction on the researcher, the purpose of the study and intended uses of the data, followed by the signing of consent forms, and then discussion questions. The questions were built on the pre-determined themes relating to financial product options and preferences, familiarity, use, and experiences with mobile money products, and associated benefits and challenges with mobile money and microfinance. Other themes that emerged from the discussions were also incorporated in the analysis. The participants also completed a short socio-demographic survey without any personally identifiable information, which was used for the descriptive profile provided in Table 5. The interviews were audio-taped with additional notes taken by the research assistant to corroborate the audio transcripts.

The majority of the 14 participants were women (71%), between the ages of 18 – 34 years (57%) and having only basic through high school education (57%). Of the participants who were employed and earning an income, 45% were employed by the government and private sectors and 55% were self-employed, while 64% earned between \$101 to \$250 per month. Income ranges were quoted in the local currency (GHC) and converted to the dollar equivalent (GHC.4: \$1 at the time of data collection) when the data was transcribed. Table 5 provides a summary of the profiles on the focus group participants.

Table 5. Summary Profile of Focus Group Participants.

	Mamprobi (Community residents)	Accra Central (Church group)	Makola Market (Traders)	Total
No. of participants	4	5	5	14
<i>Gender</i>				
Male	1	3	-	4
Female	3	2	5	10
<i>Age groups</i>				
18-34 years	3	4	1	8
35-54 years	1	1	3	6
55+ years			1	1
<i>Educational level</i>				
High sch. or less	2	1	5	8
Associate degree	2	3	-	5
College degree or higher		1	-	1
<i>Employment status</i>				
Employee (gov't/private sector)	2	3	-	5
Self-employed	1		5	6
Unemployed	1	2		3
<i>Income</i>				
up to \$100/month	1		2	3
\$101 - \$250/month	2	2	3	7
\$250+/month		1		1
<i>Financial services used</i>				
Bank account owners	4	3	4	11
MFI accounts	1	1	5	6
Informal savings group	2	1	3	6
Mobile money accounts	4	3	5	12

2.2. Data Analysis

Data collected from the interviews were used to generate case studies with detailed descriptive analysis of the mobile money and microfinance ecosystems in Ghana. The descriptive analysis was presented in relation to the specific objectives of the study and the key themes identified from existing conceptual and theoretical research. The analysis followed the stepwise procedure for case study analysis and representation as outlined in [49]. First, transcription files were created for organization and initial coding, the content was then described in context using categorical aggregation to establish themes and patterns. The data were interpreted in the general context of the research focus and themes, and in-depth cases are presented using narratives and illustrations showing participant profiles. Additional inferences are drawn from interrelationships between the themes across service provider and consumer participant groups. Translation of interview responses from the local languages to English were completed and checked for accuracy and consistency by the first author.

Creswell in [50] recommends that researchers identify and discuss one or more reliability and validity strategies as a procedural check for accuracy of their findings. Multiple validity approaches were therefore incorporated to ensure that the findings of the case studies are accurate from the point of view of the researcher, the participants, and research audience. First, by presenting various perspectives on the issue of interest, the results are more realistic and richer and add to the validity of the findings. Secondly, triangulation of existing literature was employed to build coherent

justification for the themes. Service providers have been assigned random numbers and focus group participants are referenced by locations in the narratives to maintain anonymity.

3. Findings

3.1. Service Provider Perceptions of Mobile Money and Microfinance Integrations

The MNOs shared the notion that strategic partnerships and agent network developments were the key factors that have promoted the success of mobile money. Besides, customer relations also play an important role because the service builds on the trust and confidence of clients and the existing relationships with telecom service providers. MFIs have also focused on convenience and flexibility as the key strategy to attract the masses into the semi-formal financial sector. The bank-like MFIs have also formally integrated their services with mobile money platforms as an added convenience for consumers. However, the representatives indicated that consumer adaptation appears to be slow as the core clientele for the sector are typically less educated and unsophisticated mobile money service users.

Generally, the bank representatives agreed that the ability to meet the documentation requirements for account opening which included proof of ID, proof of residence, and income or employment verification is a primary challenge for unbanked consumers. To address this need, most banks have relaxed the ID requirement to include flexible options like voter registration ID, health insurance card, school ID card, and passport size photo attached to a signed letter from a

local community official. As one of the interviewees stated, “... a student that has been accepted into a college can bring a passport photo attached to the admission letter as proof of ID to open an account before enrollment” (Bank 2, personal communication, June 2017). Other important banking needs identified by the banks were proximity to branches, small amount deposit needs, consumer convenience, credit worthiness, and liquidity constraints. Banks 1 and 3 use field agents to reach consumers at their workplaces, (particularly at local markets) to facilitate daily/weekly convenient deposits without having to make a trip to the bank branch. Liquidity constraints was particularly indicated as a major concern appeared for most underbanked consumers who preferred to use alternative financial services for their saving and borrowing needs.

All three MFIs specifically target lower to moderate income individuals (rural and urban poor), and less educated, unsophisticated consumers who typically require little documentation, and low fee convenient deposits and credit products. Their product lines therefore include flexible, small amount and customized savings and loan products which are particularly appealing to inconsistent income earners like small business owners, traders, and contract workers. The depository MFIs typically require three to six months of saving with the company, a counseling session, a guarantor, and proof of employment/income prior to the approval for a loan. Additionally, all three companies make extensive use of field agents who make routine home or workplace visits to collect deposits and loan repayments, which is the added convenience and highlight of the appeal of microfinance services.

3.2. Consumers Perceptions on Mobile Money and Microfinance Integrations and Financial Inclusion

In general, our focus group participants were convenient users of multiple financial services which included banks, MFIs, informal savings groups, and mobile money services. Banks are the convenient option for direct deposits of salaries, routine bi-weekly or monthly withdrawals, and longer-term savings. MFIs and informal savings groups are the typical options for routine/short term savings, and family and friends or informal savings groups are the preferred choices for borrowing. As one participant noted about loans with MFIs, “their interest rates are too high and the loans take forever to process so my work savings group loan comes in very handy and I can pay it off in a few months and start over again” (Mamprobi group participant, personal communication, June 2017).

Mobile money appears to have addressed the many challenges on financial inclusion relating to proximity, cost, and documentation requirements, and thus provides a convenient alternative to bank accounts for some groups on consumers. As one participant indicates ---

I do not have enough money to open a bank account and since I have a mobile money account, I can send and receive money everywhere without having to wait in long lines or fill out any complicated paper forms so I really do not need a

bank account (Makola group participant, personal communication, July 2017).

Mobile money transfer services enable consumers to conveniently send and receive money for various purposes in both formal and informal transactional contexts. However, the formal use of mobile money for payments, savings, investments, and microinsurance services is quite low because most consumers do not understand the basic processes involved. Additionally, consumers had low confidence in the efficiency and security of the system due to the frequent network failures and increasing rate of fraud. One participant stated that, “Mobile money is a very good service but some of the agents are thieves [even some of the service providers (MNOs)]. I don’t leave any money in my account anymore because I don’t trust them” (Makola group participant, personal communication, July 2017)

3.3. Impacts of Mobile Money and Microfinance Integration

The key impact of mobile money identified in this study is the convenience it affords consumers through its integrations with both formal and informal financial services, as well as the transformative connection to the financial sector it offers to unbanked consumers in Ghana. For instance, three of the four banks in this study provide mobile money integrated services known as account-to-wallet/wallet-to-account transfers, which allows consumers to push and pull money between their bank account and m-wallet, and agent/merchant wallet transactions. In addition to the customer m-wallet and merchant wallet/retail services, Bank 3 also offers a specialized mobile money savings account, and card-less ATM withdrawals for mobile money account holders. The specialized mobile money savings account requires an initial minimum transfer of \$1.25 (GHC 5.00) from the mobile money account and no additional ID or forms required. The account earns 12% interest annually and can only be accessed through one’s mobile money account. Additionally, the card-less ATM services allow mobile money account holders (regardless of bank account status) to make withdrawals from their m-wallets at various ATM locations.

In addition to their individual company’s mobile banking platforms, MFIs 1 and 2 also have mobile wallet to deposit account integrations through partnerships with the mobile money operators. Wallet-to-account and account-to-wallet transfers can be used for airtime purchases and bill payments, deposits, loan repayments, and money transfers (remittance). Both providers charge a flat monthly service fee for mobile banking services which includes wallet transfers, deposits, and loan payments. However, transfers between accounts (remittance) and merchant and bill payments may incur a convenience fee per transaction.

Most of the bank account owners in our focus groups had mobile money integrated bank accounts and had made a bank account to m-wallet or m-wallet to bank account transfer at least once in the last three months. Additionally, one participant had a mobile money investment account, and two

participants also had hospital (disability) insurance through their mobile money service provider. The insurance program enrollees explained that low weekly premiums were deducted from their air-time credit for a given daily pay-out per hospital admission. Neither of them had ever filed a claim and could not explain how the process worked but they both indicated that they knew of friends/family members who had made successful claims. Interestingly, none of our MFI account holders had mobile money integrated accounts and only one participant was aware of the availability of the service for deposits and withdrawals with the service provider.

The key highlight of our discussions on mobile money integrations was the widespread use in the informal context. Almost all the informal savings group participants from all three sessions have used mobile money at least once in the past month to make their weekly contributions. The market group participants were the most prolific users as they mostly use mobile money to pay for goods (supplies) they have bought on credit and to receive payments for goods sold on credit to their retail clients. Generally, our participants routinely use mobile money to send and receive money as payments for goods and services such as clothes, hair products and salon services, painting, plumbing, catering, and transportation services. These informal payments are typically transacted as person-to-person transfers and are therefore not considered as payments on the service provider end. Additionally, the participants indicated that the transaction fees incurred usually compensates for the time and transportation costs saved, as well as the convenience and flexibility of paying for goods and services after the fact.

3.4. Challenges of Mobile Money and Microfinance

Issues related to regulation, infrastructure and network capacity, fraud and security concerns, and consumer behavior were identified as key areas of challenges for mobile money and microfinance integrations and financial inclusion. Bank representatives generally indicated that mobile money presents more of an opportunity than a threat to the traditional bank. However, in relation to its regulation, one representative stated --- *“mobile money is growing so fast and we can't predict what will happen next... I think regulation is so far behind and seems to be playing catch-up with the system”* (Bank 2, personal communication, June 2017). The other representatives also added that, the regulators need to pay more attention to issues such as interoperability, transaction limits, and uniform pricing, while the MNOs need to improve their network and infrastructural capacity to maintain efficiency of the service.

MNO representatives also agreed that a lot of progress has been made to improve the policy environment particularly following the release of the 2015 e-money issuer guidelines by the Bank of Ghana in [51]. However, a key challenge noted was the slow push for interoperability by the Central Bank. Additionally, there are restrictions on transaction limits and pricing which were also dictated by the Central Bank

with little to no consultation with the MNOs. Another key challenge area is network and technological capacity. The absence of basic infrastructural systems in most remote communities presents a dire challenge. However, each of the MNOs stated that efforts were being made to develop a more flexible system and an improved network capacity to meet the high volumes of transactions.

The MFI representatives also identified issues related to system errors and network failures, as well as the increasing rate of fraud as the key challenges associated with integrating mobile money services. Network challenges, fraudulent activities, and lack of consumer education were also recurring challenges in the agent interviews as well as focus group interviews with consumers. With most mobile money consumers being uninformed, consumer fraud appears to be on the rise, particularly for older and less educated consumers. An MNO representative indicated that ---

customers' lack of awareness and education on how to use the services have created an over-the-counter transactions system where customers either rely on agents to manage their m-wallets or make basic transactions through the agents' merchant wallets making them more susceptible to fraud” (MNO 3, personal communication, June 2017).

4. Discussion of Results

The results of our interview responses analysis indicate that mobile money and microfinance adoption are both influenced by external factors such as proximity and socioeconomic variables as well as the consumers' perception of the value, ease of use, and security of the system. While our focus group participants typically use multiple financial products, microfinance products were particularly shown to be well-tailored to the needs of these less educated, lower income, and unsophisticated consumers, compared to the complex user designs of integrated mobile money products. The participants were also less knowledgeable about the integrated products and predominantly used mobile money for basic deposits/withdrawal and transfer transactions. This finding is partly consistent with previous studies where mobile money products were shown to provide little to no added value for the urban poor [6, 29 – 30]. However, in our context mobile money also provided value as a convenient and low-cost alternative financial service for the unbanked, and thus serves as key driver of financial inclusion. This finding is consistent with previous research where mobile money was shown to be the only connection to the financial system for about half of the active adult mobile money subscribers in SSA [5].

Additionally, convenience is the main appeal of the prolific use of mobile money for remittances which is also consistent with the findings in [41], where individuals, family networks, and rotating savings and credit associations (ROSCAs) were shown to use mobile money more frequently for convenience. The issue of security concerns and particularly in relation to fraud was also an important recurring theme in the service providers and focus group

interviews that cannot be overlooked. The service providers typically associate the increasing rate of fraud to consumer attitudes and the rise in over-the-counter transactions. Consumers, however, identify inefficient network security systems, lack of transparency in pricing disclosures, complex user designs, and lack of consumer education as the key drivers of consumer vulnerability to fraud. Consequently, the low confidence in the value and efficacy of mobile money and microfinance integrations and slow adoption rates for product options such as insurance, investments, and credit. This finding is also consistent with previous studies that showed that security and privacy concerns were major barriers to the use of mobile banking and mobile money services [52, 53, 7].

5. Conclusion, Implications, and Recommendations

This study examined the use and impact of mobile money and microfinance services simultaneously, to determine the factors that influence their use, and to identify their complementary impact on financial inclusion in Ghana. The findings show that regulation, network and system failures, fraud and security concerns, and consumer behavior were the major identified challenges to the growth and sustainability of mobile money and microfinance integrations. While regulatory challenges were the primary concerns from the provider perspective, network capacity and the consumers' lack of awareness and understanding of the system were recognized as major challenges by both service providers and consumers. Microfinance providers, for instance, indicate network and systematic failures as the primary obstacle for successful integrations with mobile money services. Agents and consumers also indicate network issues as a primary reason for lack of confidence in the mobile money system. However, security concerns and the increased risk of fraud were the most recurring challenges to the growth of the mobile money and microfinance systems. Issues such as compromised pins, unauthorized withdrawals, overcharged transactions, scams, and theft are a few of the specific cases discussed across the MFI, agents, and focus group interviews.

The findings also showed that mobile money and microfinance services are both advancing the overall goal of financial inclusion, but more separately than integrally. Specifically, microfinance products are more of additive financial services that are well tailored for the less educated, as the consumers were shown to be convenient users of multiple services. Mobile money on the other hand showed evidence of being both additive and transformational as there were some consumers who were only actively connected to the financial system through mobile money services.

However, there were a few limitations to the findings of the study. First, the interview data was primarily collected in-person by the first author and the responses of the participants may have been influenced by unrecognized

researcher bias. The effects of qualitative research bias were largely controlled for by using uniform protocol and interview scripts and by remaining neutral in tone, dress, comments, and body language. However, it is inevitable to control for all the effects of the interviewer's age, gender, social status, and style of language, among other things, on the interviewees' responses. Secondly, participation in the qualitative interviews was entirely voluntary and there is always the possibility of self-selection bias effects on the final outcomes of the study. Finally, the study participants were entirely urban, and the results can only be generalized to the urban population. The specific findings may therefore not necessarily hold for rural mobile money and microfinance users since there may be some location specific challenges that were not identified in this study. Future studies may therefore consider using more representative samples and larger sample sizes that include both urban and rural participants to generate more generalizable results.

This study also presents important implications for policy and regulation of mobile money and microfinance services. The policy environment in Ghana's mobile money market appears to be very conducive for effective partnerships, expansions in the available service options, and the growth of a-cash-lite economy. However, the authors recommend that the central bank improves monitoring of mobile money operations to ensure the adherence to the established provisions in the e-money issuers guidelines and regulation to minimize the risk of fraud and protect the valuable savings of the poor. Licensing and regulation of the microfinance sector also needs to be enforced closely to ensure adherence to the sector operational guidelines to resolve the increasing incidence of insolvency of MFIs. Regulation to minimize the risk of fraud and protect the valuable savings of the poor through deposit insurance will ensure high value for monetary transactions and stimulate consumer confidence in the system and in turn increase adoption rates. Future studies may also consider exploring the nature, extent, and key indicators of mobile money fraud to identify policy strategies to address consumer protection and redress.

Mobile money has deeply penetrated the economy in both formal and informal contexts due to the high mobile phone penetration. However, there are specific issues that require careful considerations on the part of the service providers. These issues include consumer education to improve awareness, improving the network capacity and security of the system, and preventing fraud. MNOs should be more open to employing different educational/informational projects to increase consumer awareness and understanding of the basic processes. This may involve the use of consumer analytics to develop more group specific marketing tools based on consumer profiles. Additionally, improvements in the network and capacity of the system to hold higher volumes of transactions will also ensure more efficient integrations, improved partnerships, and increased consumer confidence. Consumer advocates and community agencies who work with consumer groups particularly in the informal

sectors can also serve as channels for creating consumer awareness as well as assisting consumers to address redress issues.

Mobile money and microfinance services share the core goal of providing financial access to underserved and dispersed communities, and their efficient integration presents an enormous potential for sustained local economic and social development in Ghana.

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