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WOMEN, MONETARY PRACTICES AND TECHNOLOGICAL INNOVATION

A CASE STUDY ON THE USE OF MOBILE MONEY SERVICES BY WOMEN OF THE "GOURO" PROVISION MARKET IN ADJAMÉ, CÔTE D'IVOIRE

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Overview of Research

In Côte d'Ivoire, money transfer is a common monetary practice. Money transfers are indeed one of the main means of expressing social solidarity. This solidarity is especially applied from the cities toward rural areas. Moreover, the flow of remittances out of the country is particularly important since the country is an important destination for West African emigrants. For a long time, the density of the Ivorian road network and the existence of efficient transportation companies have favored money transfer by car. This mode of transfer was a lot easier and less expensive for most populations than complex and often cumbersome procedures of companies specialized in money transfer (e.g. Western Union, Moneygram, etc.).

Since 2008, the introduction of mobile money has revolutionized money transfer in Côte d'Ivoire with mobile network operators like Orange, MTN and Moov acting as major service providers. There were about 5 million[1] mobile money accounts in 2013. Proximity, speed, ease of use and low cost transfers appear to be factors explaining the craze around money transfer by mobile phone. The desires to assess the contribution of women to this craze were at the origin of this project.

Research Methodology

This study aims to define the profile of Gouro market women who use mobile money services in orderto determine the principal factors that influence their adoption of mobile money. By revising existing literature on adoption of mobile money services, we designed a survey questionnaire consisting of five sections. Section I was aimed at gathering information relating to women's access to mobile phones and mobile money services. Section II was

[1] Report published by GSMA.

limited to gathering information on women's usage of mobile money services. Section III was aimed at obtaining information on women's perceptions of mobile money services. Based on the Technological Adoption Model (TAM), this section contained questions designed to assess perceived ease of use, perceived usefulness, and perceived risk and trust relative to mobile money services. Questions were adapted from Lu et al. (2008) and Ali et al. (2013), and appeared as dichotomous variables instead of using a Likert scale approach. Section IV dealt with respondents' monetary practices. Finally, Section V aimed at gathering demographic and cultural information about respondents, including age, employment status, education, religion, and marital status.

Data Collection

Data was collected by administering the questionnaire to women food vendors at the Gouro market of Adjamé in Abidjan (Côte d'Ivoire). Gouro market is a well-known place at the heart of the commercial market of Adjamé. Originally, it was created by Gouro women, an ethnic group from the western region of Côte d'Ivoire with large plantain, cassava, tomato, and spice farms, etc. These women are organized in a cooperative that is in charge of supplying the market.

In total, 477 respondents were approached in the survey. We chose to pursue simple random sampling wherein each woman had the same chance of being interviewed. Interviews were conducted in the widely-spoken languages of the market (Gouro, Baoulé and Dioula).

Research Results

Data entry has been processed with CSPro software, and we used Stata 12 software for data analysis. First, we generated basic statistics in order to describe our sample. Then we assessed possible determinants of mobile money adoption by running a logistic model.

Descriptive Statistics

Data from 477 respondents were used in the analysis. The demographics of the sample can be summarized as follows: **age** (15–19 years, 6.29%; 20–29 years, 33.96%; 30 – 44 years, 45.49%; 45–59 years, 12.16%; over 60 years, 2.10%); **level of education** (none, 46.75%; Islamic education, 2.94%; primary level, 29.98%; secondary level, 18.24%; university degree or advanced vocational school, 2.10%); **religion** (animistic, 12.16%; Christian, 39.83%; Muslim 48.01%); **marital status** (single, 36.06%; married, 60.38%; divorced, 0.1%; widowed, 3.35%); and **occupation** (wholesaler, 31.23%; retailer, 36.48%; vendor, 32.29%). These statistics show us a young, less educated population with around two-thirds being married. We also noticed that the distribution of occupations is roughly equal, i.e. around 1/3 for each category.

Usage of mobile phones and awareness of mobile money

Usage of mobile phones remains high with 88% (n=420) of the total pool of respondents reporting that they owned a mobile phone. Only 57 respondents had no mobile phone, which seemed to be related to their level of education as 42 of them had never been to school. More than half of women with mobile phones subscribed to only one MNO (see table 1).

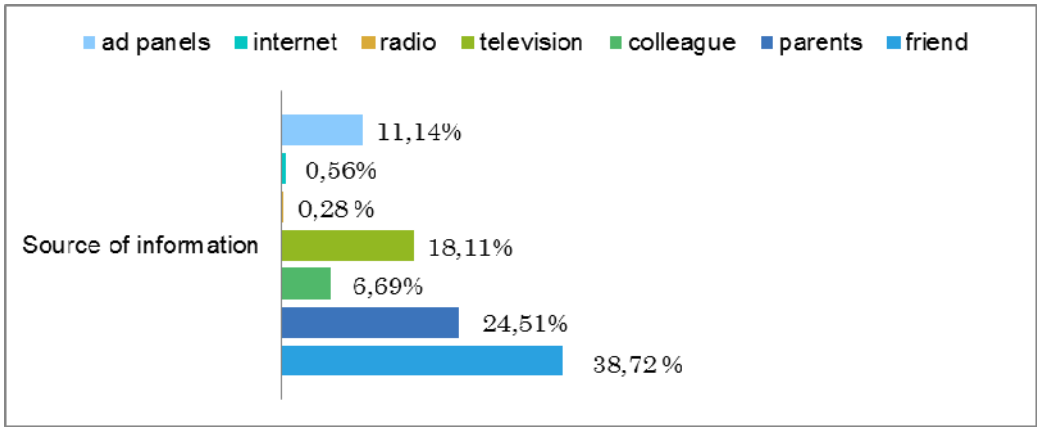
We also noticed the “multi-SIMing” phenomenon, i.e. subscribing to two or more MNOs. This is a widespread phenomenon in Côte d’Ivoire. The social practice of having multiple phones as an exterior sign of wealth and the arrival of dual SIM phones are the main factors contributing to this phenomenon. We should also note the willingness to make intra-network calls in order to minimize communication costs. Indeed, 40.24% of mobile phone users subscribed to two MNOs. The combination of the two major MNOs—MTN and Orange—was mainly used.

Table 1: How many MNOs do you subscribe to?

RESPONSES	Frequency	Percentage
1	**224**	**53.33**
MTN	**149**	
Orange	46	
Moov	19	
Koz	7	
GreenN	3	
2	**169**	**40.24**
MTN-Orange	**81**	
Orange-Moov	28	
MTN-Moov	26	
MTN-GreenN	13	
MTN-Koz	11	
Other combinations	10	
3	**26**	**6.19**
MTN-Orange-Moov	**15**	
Other combinations	11	
4	**0**	**0**
5	**1**	**0.24**
Total	**420**	**100**

More than 85% (n=359) of mobile phone users knew about the existence of mobile money services. Nearly 69.92% of them were informed about mobile money by the members of their entourage (parents, friends and colleagues), followed by those who got information through advertisement panels (11.14%) or via media, especially TV (18.11%).

Graph 1: Source of information about mobile money



Usage of mobile money services

More than two thirds (75.21%) of respondents who were aware of mobile money used mobile money services, mainly through their own accounts (n=153) or family members' accounts (n=71; children, husband, brothers, sisters, parents, etc.).

Table 2: Do you use a Mobile Money Services?

RESPONSE	Frequency	Percentage
No	**89**	**24.79**
Yes	**270**	**75.21**
own account	153	
operators' account	25	
family members' account	71	
colleague & friends' account	21	
Total	**359**	**100**

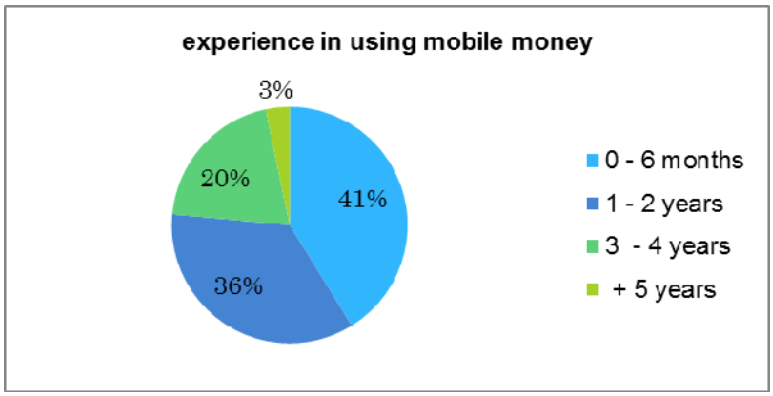
MTN mobile money was the leading provider of mobile money services, followed by Orange money and Moov's Flooz service. The phenomenon of owning multiple mobile money accounts is not as widespread as multi-SIMing; less than 6% of mobile money account owners reported that they had more than one account.

Table 3: How many mobile money accounts do you have?

RESPONSES	Frequency	Percentage
1	**144**	**94.12**
MTN mobile money	66	
Orange money	59	
Flooz	19	
2	**9**	**5.88**
Orange money-MTN mobile money	8	
Orange money-Flooz	1	
3	**0**	**0**
Total	**153**	**100**

As for how long they had been using their mobile money accounts, 41.17% had been using mobile money services between one and two years, followed by those who had used them for less than six months (35.29%). Less than one-quarter (20.26%) had used mobile money for between three and four years (see graph below). A very small number of respondents had used it for more than five years (3.27%). As a reminder, the first mobile money service in Côte d'Ivoire (Orange money) was launched in December 2008.

Graph 2: Experience in using mobile money services



Transfers and cash withdrawals are the two most frequently used services—with 78.15% and 60.74% of mobile money users respectively having used them—followed by deposits (34.81%). Trade is the main reason for these transactions, including the purchase of food products within the country. By contrast, buying airtime and bill payment services for water/electricity are used by less than 6% of mobile money users.

Perceptions about mobile money services [2]

We measured the Perceived Ease of Use (PEU) of mobile money service based on responses to the following questions:

Q16. Does the use of mobile money sound difficult to you?

Q17. Do you want a simplification of mobile money?

Question Q17 was used to control the answers given to question Q16.

63.57% of respondents reported that they had no difficulty performing procedures related to mobile money services independently. Age and education may explain the PEU, as a Fisher test indicates significant correlation among these variables and PEU.

We constructed a tool to measure three levels of Perceived Usefulness (PU) (0 = useless, 1 = medium utility, 2 = high utility) of mobile money services based on answers to the following questions:

Q18. Can the use of mobile money services save you time in your daily activities?

Q19. Can the use of mobile money services increase your revenue?

Respondents who answered “no” to both questions were at level zero. Those who answered “yes” to either of the two questions were at level one. Finally, those who answered “yes” to both questions fell into the “high utility” category. Slightly less than two-thirds of respondents

[2]

(65.48%) believed that mobile money services had medium utility, while 18.57% of them saw no utility.

We also chose two questions to measure respondents' trust in mobile money services.

Q23. Do people who influence your behavior suggest that you use mobile money?

Q24. Do you intend to create a mobile money account / Do you intend to continue using the mobile money service?

Q23 measures the respondent's explicit trust in her entourage, while Q24 measures the respondent's implicit trust. Three levels of trust (0 = no trust, 1 = medium trust, 2 = high trust) emerged in the analysis, organized similarly to the measure of PU. We note a quite credible and reassuring image of mobile money services among respondents, as only 8.81% had serious doubts about mobile money services while 61.90 % had complete confidence in them. Furthermore, only four out of ten respondents felt that mobile money was risky. Respondents' main fears concerned the possibility of being the wrong recipient in a money transfer, or of being robbed of their phone and PINs.

A. Monetary Practices

There was a very low level of inclusion of women in the formal financial system. Indeed, 84.29% of respondents had no access to banks, insurance, or microfinance. As for primary methods of saving, 47.86% of respondents reported saving their money at home, followed by 26.43% who were members of *tontine* (savings groups).

Econometric Model

In this section, we construct a model of adoption of mobile money services in which our dependent variable is a "dummy" variable that indicates whether or not a woman has a mobile money account. We suppose that demographic variables (age, religion, marital status, occupation status, education) and TAM variables (PU, PEU, Trust, Perceived Risk) could be

possible determinants in using a mobile money account (MMA). Furthermore, we also add "access to mobile network operator" as a possible factor. We estimate a logistic model of the probability of having a MMA against the variables listed above. The data is drawn from the population of respondents who knew about the existence of mobile money services (n = 359).

Table 4: Do you have a Mobile Money Account?

RESPONSE	Frequency	Percentage
No	206	57.38
Yes	153	42.62
Total	359	100.00

We found that access to primary education and secondary education both have positive impacts on having a MMA.

Table 5 : Mobile Money Account ownership

VARIABLE	Coef.	Odds Ratio	Std. Err.	P>z
Age				
20- 29	-.9412369	.390145	.3310356	0.267
30-44	-.748526	.4730633	.4205569	0.400
45-59	-.8034288	.447791	.4677833	0.442
+60	.1738211	1.189843	2.176376	0.924
Religion				
Christian	.0329759	1.033526	.701088	0.961
Muslim	.6482949	1.912277	1.251665	0.322
Education				
Primary	**1.349542****	**3.855658**	**1.664206**	**0.002**
Secondary	**2.605146*****	**13.53321**	**7.310163**	**0.000**
Superior	2.170398	8.761771	11.13143	0.088
Islamic	**-2.22666***	**.1078882**	**.1459136**	**0.100**
Marital status				
polygamy	1.080526	2.946229	1.698154	0.061
partnership	.2011845	1.22285	.7211371	0.733

single	-.4125451	.6619634	.3322567	0.411
widowed	-.902347	.4056166	.4927606	0.458
divorcee	0	1	(empty)	
Vendor category				
Semi-wholesaler	-.5634809	.5692242	.3688322	0.385
Retailer	-.5487302	.5776829	.321532	0.324
Sales employee	-.8703888	.4187887	.2486563	0.143
PEU	**-2.16891*** **	**.1143021**	**.068838**	**0.000**
PU				
Medium utility	.4248138	1.529306	1.002038	0.517
High utility	-.9079725	.4033412	.3460614	0.290
Trust				
Medium trust	-.6925567	.5002953	.4130678	0.402
High trust	-.5099404	.6005314	.4910864	0.533
Orange	**1.883877*** **	**6.578963**	**2.686503**	**0.000**
MTN	.4006563	1.492804	.7349897	0.416
Moov	**.9202901** **	**2.510018**	**1.175215**	**0.049**
Koz	-.499509	.6068285	.4061169	0.455
GreenN	-.0466675	.9544047	.764891	0.954
Constant	-.7959339	.4511597	.8240216	0.663

Observations: 359 Pseudo R-squared: 0.4527 Prob>chi2:0.0000

However, we also found that a hierarchy exists regarding the effects of these levels of education: The women's probability of having a mobile money account is four times greater when they have a primary school education level, and fourteen times greater if they attended secondary school. This may be explained by the fact that secondary school provides more skills needed for using mobile money services than primary education. PEU is the only TAM variable with a significant relationship to having a MMA. The coefficient suggests that women who perceived difficulties in using mobile money services are around nine times less likely to have a MMA when compared to women who perceive mobile money services as easy to use.

Access to the mobile network operators Orange or Moov also had significant positive effects on having a MMA. The women's probability of having a MMA is three times greater when they have a Moov SIM card, and seven times greater if they have an Orange SIM card. One potential explanation for these differences is that while Orange has followed a strategy of targeting all segments of the population through frequent marketing activities and a large network of mobile money operators, Moov has made fewer investments in this regard.

Implications

In Gouro Market, women with secondary education and with significant PEU are more likely to have a MMA. Nevertheless, adoption remains low, as less than 40% of women have their own MMA. In spite of this fact, the use of mobile money services is relatively good among women in this market. Several reasons can be cited:

- the presence of mobile money operators in the market
- the adoption of mobile money services by members of their families
- a medium PU of mobile money services
- a general trust in mobile money services providers

Thus, in order to achieve universal adoption of mobile money services by women in general and women merchants in particular, providers need to design new strategies towards those with no or very low education for improving the image of mobile money services as less risky, more useful, and easier to use.

Focus Groups Methodology

The main purpose of this qualitative part of our research was to find out the deeper motivations and associations underlying foodstuff vendors' decisions to adopt mobile money

services. We used focus groups to help reveal further details about the adoption factors identified in our quantitative research.

The size of focus groups was fixed at six with a total of thirty-six women participating in six focus group discussions held in Gouro Market. Through open recruitment, participants were selected by stratified sampling in order to foster successful interactions and group dynamics. Vendor category (retailers, semi wholesalers, and wholesalers) was employed as the primary variable of stratification. We formed two groups of six within each category of vendor. Groups were formed in order to reflect the distribution of the status of women obtained through quantitative surveys (those with a MMA, those using MM services without their own MMA, and those without any experience with MM) within each category (Table 1).

Table 6 : Repartition of sample

	With MM account	Using MM services without own MM account	No experience of MM
Wholesalers	3	1	2
Semi wholesalers	3	2	1
Retailers	1	2	3

Findings

Sample characteristics

More than half of the participants were married. Around 42% of the sample was not able to read or write. With regard to age, only eight participants were older than 45 while sixteen were aged between 30 and 44. Around one-third of all participants were in their twenties (see table below).

Table 7 : What is your age?

	Freq.	Percent
[20-29]	12	33.33
[30-44]	16	44.44
+45 years old	8	22.22
Total	36	100.00

Women vendors' perception of banks

The first part of the discussions was geared towards reaching an understanding of how women conceive of bank accounts, why they did not have accounts, and what could motivate them to open one. These discussions aimed to assess whether mobile money is indeed the solution to bringing financial services to these women.

The vendors in Gouro market had a very simplistic view of banking services. Indeed, bank accounts were essentially viewed through their deposits function. Banks are well regarded as a kind of *tontine*[3] reserved for those who want to save. The following quotes illustrate very well this conception of bank accounts.

"A bank account is like a tontine, *you put money, you contribute and then you can withdraw it."*

- A semi-wholesaler, 33 years old, Muslim, primary school education, single

"It is for someone who wants to save."

-A wholesaler, 45 years old, Christian, primary school education, single

The possibility of having a return on savings or a loan was very rarely raised during the discussions. These omissions seem to reflect a poor banking culture and a lack of confidence in this category of banking services.

The low access to banking services among women vendors

According to economic literature, lack of resources or lack of economic surplus are major factors of low access to banking services. This has been confirmed in our study insofar as participants largely believed that they did not have enough money to open a bank account. However, most of these women were saving at home or through *tontine*. It seems that these women associate the opening of a bank account with reaching a relatively high income threshold. This misperception of the conditions of the bank reflects financial illiteracy, which is regularly cited as an obstacle to their access to banking services. The level of illiteracy may also explain perceptions of banking procedures as too complicated to be adopted.

Moreover, these discussions helped to highlight a category of factors specific to the vendors' sales activities. Participants explained that they did not see the usefulness of opening a bank account, especially because the sale of food products requires a daily and intensive use of money. In this same vein, they reported not having enough time to manage a bank account (deposits, withdrawals, etc.) given the requirements of their sales activities. This time constraint is further enhanced by the lack of bank branches close to the market.
These factors of low banking were ultimately summarized through this quote from a semi-wholesaler:

“I don’t have enough money, we don’t have time; people are waiting too long time there […], so it does not help us.”

-40 years old, Christian, secondary school education, married.

Thus, issues of low banking among women foodstuff vendors include:

- erroneous perception of banking conditions
- high level of financial illiteracy
- incompatibility of their business with traditional banking transactions (deposits, withdrawals, etc.) that require going to a bank branch.

These issues also indicate the challenges that mobile money has to overcome in order to be more transformational than simply additional, i.e. to be able to bring financial services to the largely unbanked population of developing countries (Tobbin, 2012).

Enabling adoption of mobile money

For women foodstuff vendors, creating a mobile money account is largely motivated by its perceived usefulness in relation to their sales activities. First, mobile money provides an opportunity to make daily deposits of their sales' revenue, and the possibility of making business trips securely with a huge amount of money in their mobile wallets. There is also the convenience of remote financing of the supply chain market (farmers, intermediaries, and carriers).

Illustrations

"In this market there is too much theft and aggressors so we preferred to make deposits on our mobile money accounts at the end of each day"
-Semi-wholesaler, 44 years old, Muslim, no education, married

"I chose to open a mobile money accounts to avoid carrying large amount of cash during my recurrent business trips.…"
-Wholesaler, 59 years old, Christian, secondary school, widow

In addition, most participants with MMAs have demonstrated a need for constant accessibility to their money, and this need was completely fulfilled by having a MMA. They viewed it as an additional wallet with more security.

Illustrations

"We chose to open a mobile money account because it is always better to have access to your money."

-Semi-wholesaler, 50 years old, Christian, primary school, married

"I have created a mobile money account to get my money in a safe place."

-Wholesaler, 40 years old, Animist, no education, single

The choice to create a MMA results from a comparison with other existing transfer operations. Indeed, some participants have created MMAs in order to enjoy the convenience, reliability, and speed that they experienced through mobile money transfers.

Disincentive factors

As with bank accounts, some discussants believed that they were too busy to manage a MMA. Also, the important need for transactional cash resulting from foodstuff sales activities remains a barrier to the creation of a MMA. Illiteracy, ignorance, and lack of identity documentation were also cited as obstacles to the adoption of mobile money services.

In general, discussions with women without MMAs highlighted a strong risk aversion. It comes down to low trust in mobile money operators, and a strong feeling of insecurity as regards using a MMA.

Table II	Summary of disincentive factors of mobile money adoption
Factor	*Illustrative quotes*
Lack of identity documents	*"I don't have any identity documents."* Retailer, 32 years old, Muslim, secondary school education, married
Time and Cash constraints	*"I don't have time to leave and come back when I have to sell and I always need cash."* Wholesaler, 35 years old, animist, no education, married
Illiteracy and Ignorance	*"The mobile money does not interest me; I do not understand French and I have no information"* Semi-wholesaler, 30 years old, animist, no education, married
Risk aversion and Mistrust	*"It's too risky."* Retailer, 30 years old, Muslim, no education, married *"I don't trust in them [mobile network operators], it's not secure."* Wholesaler, 59 years old, animist, no education, married

Risk factors

Focus groups were also used to identify factors that contribute to the perceived risks associated with the use of mobile money. Insecurity in the Gouro market appeared as one of the basic risk factors of using mobile money services. Participants have, indeed, stressed the fact that phones are usually stolen within the market by young people. Long queues at mobile money agencies and the related loss of time are also interpreted as risks, namely of losing money and customers. Furthermore, fluctuations of mobile network service lead to uncertainties about mobile money's operational outcomes, and make using mobile money more risky. In addition, illiteracy works as a major risk factor insofar as it may lead to a misunderstanding of instructions and poor interaction with a mobile money platform. The fact that a MMA owner could forget her code made it risky since code input is a necessary condition of most of operations.

Illustration

"Yesterday, they have stolen my 10 thousand XOF ($20). We don't understand French very well, and mobile money agents fool us […] It is too risky. There is also a problem of the network. People often call us and say that money has not been transferred."

-Wholesaler, 59 years old, Christian, secondary school, widow

Perceived ease of use

Through analyzing these focus group discussions, we have identified factors affecting the degree to which women foodstuff vendors believe that using mobile money services will be free of effort. We found two factors mainly related to the use of mobile phones for processing mobile money transactions. These include code input, and understanding the mobile money platform. PEU was differentiated depending on the type of operation. It

appeared, indeed, that most participants considered deposit and transfer operations easy to process since they didn't require the use of the customer's phone.

Illustration

"For me, deposits are easy because we do not use the phone."

-Retailer, 23 years old, Christian, no education, single

Unlike deposits and transfers, others operations like withdrawal, P2P money transfers,(when a person uses her phone to send money directly to another person's account), and airtime purchasing require inputting a code and having an interaction with the mobile money platform via mobile phone. Most participants with no education—including older women—needed assistance to perform these operations.

Illustration

"Mobile money is difficult; we do not always remember our codes, and there's nobody to tell you what to do when one is withdrawing."

-Semi-wholesaler, 50 years old, animist, no education, married

Implications

Our findings indicate that it is possible for mobile money services to be transformational for women in general. However, to be useful to the women foodstuff vendors, mobile money services must be affordable, convenient, and provide the necessary assurances that could remove their risk aversion. Furthermore, convenience with sales activities' requirements was found to be one of the main determinants of PU, while experience with mobile phones, level of education, and age were also found to affect PEU. For achieving universal adoption of mobile money among women merchants in urban Côte d'Ivoire, we are able to make the following recommendations based on different suggestions of participants:

- improve mobile network reliability

This suggestion has been the most frequently cited during focus group.

“I want my clients receive their money without problems, they have to resolve network problems.”

-Wholesaler, 59 years old, Christian, no education, widow

- increase liquidity in mobile money agencies

Some participants have underlined the fact that mobile money agents didn't always have enough liquidity to perform different transactions (transfers, withdrawals, etc.).

“They have to resolve problems of funds in agencies.”

-Retailer, 25 years old, Muslim, primary school, married

- increase the maximum amount of deposits and transfers

A majority of wholesalers reported that they often had to manage deposits or transfers in which the amounts were above the maximum authorized by mobile money operators.

“In banks, we make deposits up to two million XOF (US$4000), while with mobile money, it is limited.”

-Wholesaler, 27 years old, Animist, secondary school, married

- improve safety
- increase women's awareness of mobile money services
- increase the density of mobile money agencies around and within market
- facilitate access
- reduce costs

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