

# NATIONAL ISSUES FACING COLLABORATIVE MOBILE MONEY SERVICE PROVISION

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## Abstract

Recently, the developing countries are considering the development of mobile money ecosystems that supports more inclusive financial systems to overcome the high financial exclusion of their population. Such ecosystems can be enabled by facilitating the collaboration between diverse stakeholders from different sectors: financial, telecommunication, regulatory bodies and IT service providers. This development of mobile money ecosystem emphasized on considering existing issues of main stakeholders' and their conflicting interests. The aim of this paper is to understand the existing issues that government needs to resolve when participating in collaborative mobile money ecosystem. The Sudanese national mobile money project was used as case study in this research. Qualitative interpretive interviews were conducted to collect data from different stakeholders in different sectors in Sudan. The data was analyzed using qualitative data analysis approach. The results of the analysis focus on representing the multiple perspectives of stakeholders on each identified government's issue. Findings contribute toward a better understanding of mobile money ecosystem in Sudan from government's perspective. This understanding can facilitate building successful value propositions between mobile money stakeholders which can result in better financial services.

**Keywords:** Mobile money; Collaboration; Sudan; Collaborative service provision; Government issues; Qualitative analysis

## 1.0 INTRODUCTION

Mobile money is the use of mobile phone to access financial services by unbanked users who do not previously connected to formal financial services [1]. In the basic mobile money scenario, users use the stored air time at their mobile phones as electronic money that can be transferred to other users' mobile phones [2]. This electronic money can be used as a substitute for cash. Users need to deal with agents to convert from electronic money to cash (cash in) or vice versa (cash out). These agents are normal retail stores or individuals who are representing the mobile money service provider [3].

In the recent years many mobile money deployments were initiated in different developing countries because mobile phones are highly penetrated between unbanked users unlike any other alternative ICT tools [4-7]. These mobile money deployments provide financial services through a big number of agents near to unbanked customers which improve the access to the financial services. However, access is not the only dimension of financial inclusion. Consequently, many governments in developing countries are paying special interest to provide national wide mobile money ecosystems that can help in reducing the high percentage of financially

excluded populations [8-14]. These ecosystems are referred to as inclusive mobile money ecosystems. mobile money ecosystem is defined as " the networks of organizations and individuals that must be in place to mobile money services to take root, proliferate and go to scale" [15]. Governments in developing countries support initiation of national wide mobile money deployments that is provided collaboratively by multiple stakeholders. Such national deployments will support the other two financial inclusion dimensions: usage and quality. To realize such ecosystems, number of different stakeholders' issues need to be resolved.

In 2011 the Sudanese government represented by the central bank of Sudan (CBOS) declared its new vision about developing a national wide mobile money ecosystem where different stakeholders such as banks, mobile network operators (MNOs), microfinance institutions (MFIs) and other government agencies will participate in. The new suggested ecosystem should provide different roles to each sector to guarantee the support for the scope and scale of the services as well as limiting the competition drawbacks and help in delivering number of financial services with good quality to the biggest number of user as previously supported by different authors [16-18]. However, previous study about the different

stakeholders in mobile money ecosystem in Sudan, [19] shows conflicting interests of different stakeholders and their resistance to the national project due to unconsidered needs and existing issues in collaborative mobile money service provision. Also, the study shows how different stakeholder's issues are isolated and not considers the other stakeholders point of view. More specifically, business-side stakeholders reported that although government is supporting the collaboration initiative, it still hinder the formulation of final business model for the national project [20] Therefore, this paper aims to provide a multi-perspective understanding to the existing government issues that need to be resolved to start the collaborative mobile money ecosystem.

In this paper, a case study on Sudanese mobile money national project is presented and an empirical data was collected to assist in understanding the existing the government's issues that face the collaborative mobile money service provision. Interpretive interviews were used to gather qualitative data by interviewing representatives of main mobile money stakeholders. Then data was systematically analyzed to determine what the main issues are. This paper main contribution is to provide a comprehensive understanding of mobile money ecosystem government's issues in Sudan and to provide recommendations to resolve these issues. This paper organized as follow: Section 2 presents a brief summary of the current Sudanese mobile money situation and highlights for the future national project are introduced. Section 3 provides a description of the research methods used in data collection and analysis are provided. In Section 4, the findings of the analysis are presented and discussed. Finally, conclusions and directions for future work are provided.

## 2.0 CURRENT SITUATION IN SUDAN

Current mobile money practices in Sudan are led by mobile network operators (MNOs) but for limited range of services such as prepaid and postpaid reloads [21]. MNOs uses a franchising business model that involves licensing of trademarks and methods of doing business with a small number of direct agents for cash in and their services used mainly for remittances. MNOs customers are using the current available services from their operators and MNOs reports that the number of transactions done per month is huge compared to other similar deployments in other developing countries due to the unavailability of formal financial services in rural areas and the immigration of many citizens to urban areas leaving their families in their home villages and need to send regular remittances to them [22].

MNOs customers use the scratch cards to cash in but for cash out they have to pay high commissions (up to 10%) in each transaction which considered very high. Moreover, the cash out agents are informal agents where no legal regulations are used to protect

customers. In the current situation, the methods of cash out are not yet standardized. Another issue for the customer is the absent of interoperability between MNOs so transfers must be done within the same network [23].

On the other hand, the banking sector in Sudan is focusing on additive mobile banking models [24] where mobile is used to retain the existing bank customer by providing an additional channel to access customer accounts. The banked customers who are connected to the formal financial system are small compared to the large customer base of the MNOs' customers [25]. The distribution of bank branches in urban areas, not rural one and the requirements for know your customer (NYC) make it difficult to attract the unbanked. Also, the banks are not interested in providing retail financial transactions. Retail financial transactions usually have high transaction processing fees due to its low volume and frequent use [26, 27]. With the possibility of mobile money platform banks may consider to join the new ecosystem for new customer acquisition but will faced with the dominancy of the MNOs with the already existing customers, distribution networks and experience in service provision. In 2011 the MNOs starts a new business with the Sudanese national electricity corporation (NEC) to sells electricity to customers using their mobile phones and this raised a serious issue of money creation, due to the absent of the regulations and standards for mobile money control by central bank of Sudan (CBOS) who starts to realize the importance of developing a speed solution to this problem.

Government interests are represented by two regulating bodies: central bank of Sudan (CBOS) which regulate the banking sector and the national telecommunication corporation (NTC) which regulate the telecommunication sector. In May 2011, CBOS gave an initial approval to build and manage a collaborative mobile money platform. The project main goal is to increase the financial inclusion in the country. Moreover, the new project aims to provide a mobile money ecosystem that is interoperable and consist of all the banks, MNOs, MFIs and any other institutes that willing to enter the market of mobile banking service provision. A steering committee for the national project is initiated. Currently the committee in the phase of defining complete electronic banking and mobile money business model that define each player's role as multiple entities are involved. The basic idea is to keep the overall process same as the current working system where central entity act as a controller (CBOS) and the current switch operator for the banks (EBS) as the executive of the new mobile money platform.

## 3.0 METHODOLOGY

An explorative case study [28] was chosen as a strategy for this research. This choice based on the

nature of mobile money ecosystem for IFS context as it is relatively new and it needs an in-depth investigation. The investigation targets demarcation of the main aspects of collaboration between the main stakeholders and their interrelatedness using multiple sources of evidence. The case design was the single case with multiple embedded design contains mobile money for IFS in developing countries as the overall case context. The research focused on a specific case: "the Sudanese national project for mobile money for inclusive financial systems" as a single case to be studied. The unit of analysis is inter-organizational collaboration practices between main mobile money service providers. The embedded case design was chosen because the nature of this study where collaboration is involving multiple mobile money service providers. Each stakeholder has its needs to be fulfilled as well as the overall national goal (IFS) to be met. So targeting a single national level (Sudan) as a case and embedding multiple units of analysis (collaboration practices in different sectors) enable the researcher from capturing the multiple perspectives of different stakeholders as well as the two level representations.

The Sudanese mobile money national project was chosen as a single case to focus on for the following case selection criteria's [28, 29]: First, few cases in developing countries are applying the mobile money at a national level where multiple stakeholders are involved and the IFS is the goal of the government. Second, the feasibility of accessing the case materials due to the researcher background and previous work experience which enable the access to the top level national committee members and decision makers in the Sudanese context which is not feasible in other countries.

A qualitative approach is used for data collection and analysis. Interviews were the primary source of evidence with two other supportive sources of evidence to realize the data source triangulation as recommended by [28, 29]. The supportive sources were institutional documentation (annual reports, administrative documents and meeting minutes) and archival records (organization charts and website information). Interviews are considered by [30] as the suitable source of evidence in qualitative case studies because it enables the researcher from direct access the participants' interpretations of the current events and actions as well as expressing their goals and other participants views. Consequently, qualitative interview [31] is used as data collection method in this research. The selection of interpretive case was imposed by the necessity to understand the stakeholders' needs in collaborative mobile money ecosystem based on the different involved participants' interpretations. The different interpretations facilitate the shared understanding between stakeholders and highlight the conflicting interests. A mental framework is developed by the researchers and reflected by designing an interview protocol which contains a set of main interviewing

themes. Details of these main themes are provided in Table 1.

In total, 8 case sites representing different involved stakeholders' sectors were selected. Interviewees were selected based on their positions and expertise in different fields and sectors that represent the supply side stakeholders mainly: the financial service provision, Telecommunication, financial services regulatory bodies, IT service provider.

The research adopts an iterative flexible purposeful sampling strategy. Flexible and iterative research designs and sampling support the qualitative research reflexivity and better results [32]. In purposeful sampling strategy, the researcher actively selects the most productive sample that can answer the research questions [33].

To do such a selection a number of criteria's are defined to assist the informant's selection process. The researcher was looking for a key informant sample with specific experiences in mobile money and inclusive finance in general and in the national mobile money projects specifically.

**Table 1** Main Interviewing Themes

Main Theme	Description
Current practices	The current existing practices of mobile money in the institute
Existing barriers	The existing barriers to the current practices
Current activities	The main activities that the institute carry it on to provide money service to its customers
Current products	The current mobile money products or services that the institute provide to its customer
Future opportunities	The institute's future opportunities of mobile money
Expected partners	The expected stakeholders in a national collaborative mobile money service
Expected roles	The institute preferred roles in the national mobile national collaborative mobile money service
Available resource	The strength of the institute in terms of important available resources
resource Needs	The weaknesses of the institute in terms of important needed resources

To identify those key informants a snowballing approach [34] is applied where gatekeeper recommends set of experienced other informants in different sectors who in term become gatekeepers and recommends others. A total of 17 interviews were conducted in 3 months period and faced with obstacles represented in a long time required to prepare for each interview as most of the interviewees were at sensitive and senior positions and always busy and hard to reach. Summary to the interview respondents' profile is shown in Table 2.

The study sample size (8 case sites and 17 respondents) is considered acceptable base on many previous qualitative research sampling guidelines [16-

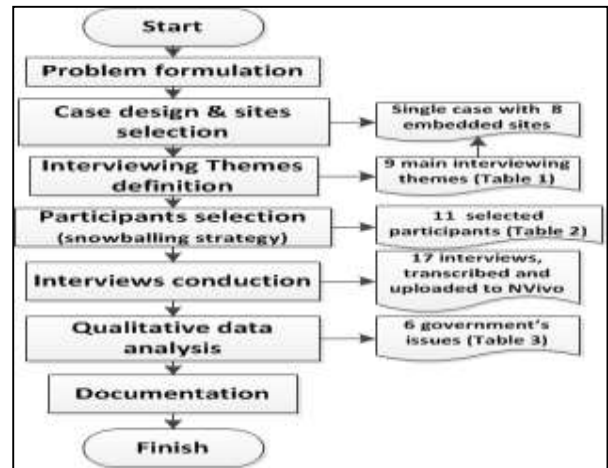
18]. Moreover, Creswell's guideline was followed as the selected sectors in the analysis was represented with a small number of case sites and respondents number were minimizes but the length and depth of the interviews were increased.

To ensure the ease and comfort of the interviewees, all the interviews conducted using Arabic language (Arabic is the Sudanese national language) to avoid the loss of important meaning and expression.

**Table 2** Included stakeholders interviewing profile

Respondent Position	#Interviews	# Supportive evidence	Stakeholder
Project manager Information technology director	1	4	Regulators
General manager	2		
Business solution specialist Business planning and Strategy-Senior Manager	1	3	MNOs
Information security specialist	1		
Products & services senior manager	1		
Business development director	1		
Switch manager-it department	3	2	Banks
Switch manager-it department	1		
General Manager Main gatekeeper	4	3	Switching Operator
<b>Total</b>	<b>17</b>	<b>12</b>	

During the data collection phase, interviews were transcribed then uploaded in NNivo 10 which was used as an assistive computerized qualitative analysis tool. The data reduction and display were continues and iterative where the researcher codes the interviews' transcripts following a descriptive coding process. Then thematic coding is applied to categorize the identified stakeholders' needs and other related issues. The final stage of the analysis was carried on a relational analysis of these categories were their interrelation is identified. The results of the analysis process are described in the following section. Figure 1 summarizes the step-by-step process of this research as it reported in this paper.



**Figure 1** Research process summary

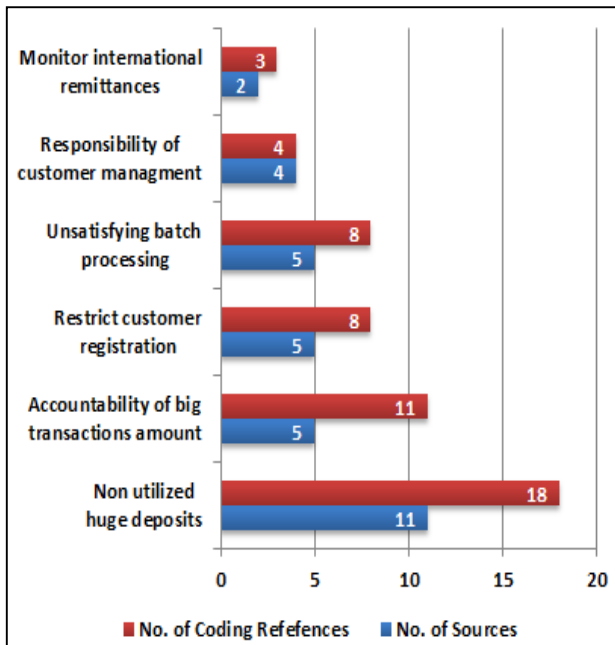
During the interviews and whenever the issue is discussed the researcher ask the interviewee to suggest a possible way to resolve the issue based on their experiences, Later at the thematic analysis process relations between each identified issue and its possible solutions are formulated. Then the researcher used these possible solutions as a base for a set of recommendations which discussed in details in Section 4.2.

## 4.0 RESULTS AND DISCUSSION

### 4.1 Findings

The qualitative data analysis identified six government issues that need to be considered before implementing the collaboration process in the future. These issues are non-utilized huge deposits, accountability of big transactions amount, strict customer registration procedures, unsatisfying batch processing, the responsibility of customer management and monitoring international remittances. These issues are discussed in descending order according to their NVivo's referencing frequency. Figure 2 graphically summarizes the different government issues ordered based on their number of sources and number of coding references that provided by NVivo software. Number of sources summarizes the number of NVivo's sources –interview or institutional document- that the issue mentioned in.

In the following paragraphs details about each identified issue is presented with the support of quotes from the case data. Whenever applicable multiple quotes are used to highlight the different stakeholder's perspective on specific government's issue. To keep the identity of respondents anonymous labeled are used to reflect the sector but not the identity of each respondent such as RESP-REG-A represent an opinion from the first respondent representing the regulator and RES-MNO-B represent an opinion of the second respondent representing the MNOs.



**Figure 2** Summary of government's issues based on NVivo number of coding references

### Non-utilized huge deposits:

This issue relates to the big cash mass in the hands of MNOs created by selling prepaid airtime in advance to the MNOs trade partners. In the current mobile money situation, there are no regulations that allow the MNOs to invest this huge cash mass. Consequently, neither the government nor the MNOs make proper use of it in terms of investment to support the overall country economy or make revenue. In addition, sometimes MNOs use this cash mass as a tool to force banks to provide them with financial related facilities as highlighted by RESP-REG-A:

*"The MNOs are actually are taking deposits but cannot do anything with it and the country also does not take advantage of this huge deposits, and, therefore, they have a huge amount of money but they cannot contribute to the microfinance which supposed to be a priority of the country they cannot contribute in any other investment"*

### Accountability of big transaction amounts:

Regulators are very concerned with the security of the transactions of big amounts and need to protect both the customer rights and the national economy by providing suitable security measures and specialized fraud and risk handling techniques as mentioned by RESP-REG-B:

*"We have security issues, so far no thread of security with small funds generally in step one but in the future we are going to use large funds which must convey the security requirements such as national security infrastructures appropriate for the mobile*

*payment, at least, you Speaks About PKI (public key infrastructure) for instance"*

In addition, MNOs are not interested in bearing the burden of big transactions amount and it sees it as a speciality of financial institutions.

### Restrict customer registration:

The government's financial regulator is concerned about the registration of mobile money customers. While banks have to follow a classic know your customer (KYC) rules, MNOs, on the other hand, relax their customer registration and depend on the physical location of the SIM because they do not need strict regulations as the amounts are small. Enforcing a KYC rule in mobile money service may result in less customer adoption due to inability of simple customers to provide the required documents which a concern to the other MNOs such as RESP-MNO-D:

*"The regulator main concern is with respect to customer registration and definitely, we will offer service only to registered customers in terms of information, this part of the challenges to the mobile money service in Sudan currently because there are 24 or 26 SIM million but not all of them registered their SIM consequently they will not be able to prove themselves to conduct any financial transaction. This is the concern of the regulatory NTC."*

### Unsatisfying batch processing:

Minimizing the cash-out is a network need which involves convincing merchants to accept e-money as a mean of payment. To convince merchants, regulators addressed the merchant's complaint about the current batch processing technique followed by switch operator to process the POS payments. Batch processing resulted in a late reflection of merchant transactions to their account. Other stakeholders suggested solving this problem by introducing credit services in the new system as mentioned by RESP-SWT-A:

*"There is a problem of batch processing at the point of sale (POS) where the merchant does not reach him his money, until the end of the day, and therefore, he doesn't prefer to use it. To earn the merchants trust and building confidence in the system and activate the payments through the POS this point must be overdone by allowing immediate treatment instantaneous by the switch"*.

### Responsibility of customer management:

The main question that regulators need to answer is "Who will handle customers complaints and disputes?" This was a concern of many stakeholders as customer management, in this case, may need multiple stakeholders' interventions. The MNOs concern is about losing their customers trusts as they are the first complaint line for customers. Switching service may not be prepared to handle such big

number of customers so there is a need for the MNOs experience and already existing customer service platforms as highlighted by RESP-REG-:

*"There is one question still not answered: if a problem happened who is going to answer? Where is the call center (MNO, EBS, CBOS or who)? This, if does not answer probably, will lead to failure. The customer will discover that he cannot solve his problems and he will lose the trust in the system from day 1. this is a big issue because the mentality of the customer is different and even a small amount is very important to him so no way to accept a try and error customer handling service it must be developed from day one".*

### **Monitor international remittances:**

Currently, MNOs have one international network that enables its customer to transfer airtime internationally. The regulator has concerns about the possibility of money laundry and complex dispute handling which needs to be regulated and monitored to avoid possible risks. In the future, international payment methods have to be considered as mentioned by RESP-REG-C:

*"There is a global concern about the money laundry and these issues; this imposes that CBOS must have a mean for monitoring the national money flow which can be done by a centralized solution".*

## **4.2 Discussion**

The identified issues in section 4.1 in this paper represent important issues identified by different stakeholders as issues that government involved into. Implications of these issues range from affecting the national economy, losing the customer trust and obstructing the national interoperable system establishment. this section of the paper discusses possible recommendations that can help in resolving some of these issues and provide suggestions for possible value propositions that may handle them.

First, to resolve the non-utilized huge deposits issue government is recommended to encourage the MNOs by providing a set of regulations that allow them to benefits from their already existing huge deposits. This way government will eliminate the current MNOs' practice of selecting the partnerships with banks based on non-ethical bases. After implementing the new suggested regulations, these huge deposits will enter the formal financial system and could be invested so it can benefit the national economy as well as the MNOs.

To resolve the accountability of big transaction amounts and the restrict customer registration issues segmentation of customer registration is recommended. Customer segmentation refers to define a different segment of customers based on the amount and type of their transactions. This relaxes the registration procedures and the KYC requirements to the lower segments of customers (low transaction amount) and increases it for the higher segments. The segmentation of customer registration helps in

avoiding the restricted customer registration procedure which can result in fewer customers adopting the m-money service.

To resolve the unsatisfying batch processing issue, the government can set regulations that enable instant credit advice procedure to replace the batch or offline processing. This will encourage the merchants to accept and use mobile money as a mean of payment which will minimize the need for cash out procedure. This also will results in increasing the access and usage dimensions of the IFS.

The issue of responsibility of customer management is very sensitive and important issue because failure to handle the customer may result in the losing of customer trust. Losing customer trust can affect the whole mobile money service. To avoid such failure, stakeholders are recommended to collaborate and accept a unified customer service that managed by MNOs. MNOs were selected because the already have the resources and experience to handle the customers. And they already have the customer trust. This will reduce the cost and risk of customer management.

Value propositions for intermediation of funds minimizing the cash out are recommended because they can generate a number of benefits and resolve existing issues. For government regulators, it resolves their concern about accountability of big cash amounts and the possibility of illegal money creation. In addition to the benefits to the national economy resulting from utilization of the previously non-utilized huge deposit.

Finally, a gradual implementation of the m-money national project is recommended. This gradual implementation can start by a partnership between different stakeholders to gain customer trust and increase usability. Two different stages are suggested for this implementation. (1) The initial stage where simple financial services are provided. (2) The advance stage where sophisticated financial services are designed and implemented by different stakeholders based on their specialization. These future services are value added services (VAS) that provided using the already existing collaborative platform and can enable IFS by increasing the usage to financial services as well improving the quality of these services.

## **5.0 CONCLUSION**

This study focuses on understanding the national issues facing collaborative provision of mobile money platform. The study discussed set of issues that can form a base for possible recommended value exchanges that can guide the collaboration process between different stakeholders. The study identified the national issues that hinder the participation in national interoperable system and suggests possible recommendations that can help in resolving some of these issues.

Future work will focus on translating the findings of this paper into an action plan to the telecommunication regulator regarding future implementation of the collaborative mobile money service provision policy. Moreover, the relationships between the identified needs and other collaboration aspects such as expected benefits and existing issues must be studied to enable the complete definition of the possible value propositions between different stakeholders. Also future work will use the service science and value network concepts to design business to business (B2B) collaboration that can grantee value co-creation between different stakeholders and means for governing and controlling their interactions. Also, the value network modeling techniques and analysis approaches can be used to create a set of mobile money reference models that can be used in the similar development of future mobile money ecosystems.

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