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An Empirical Study Evaluating the Adoption of Mobile Banking in Sudan

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Abstract

This study is about the revolution of information and communication technology (ICT). It deals with the evolution of banking technology (BT), electronic banking (e-banking) and mobile banking (m-banking) in Sudan. It intends to explore the practice of m-banking in Sudan. The focus is on the availability of adequate infrastructure and on the challenges and risks that face m-banking services in Sudan. The findings showed that although m-banking is believed to be essential, still the services provided are at an infant stage. It is also found that concerned parties are not fully cooperating. This raises risks and constitutes challenges that hinder full utilization of m-banking in Sudan. Based on these results, the main recommendation of the researchers was that regulatory policies should be stated clearly to ensure full collaboration between all concerned parties. This is to support bank managers and decision makers in formulating their strategic plans to deliver competitive services.

Keywords: information and communication technology (ICT), banking technology (BT), e-banking, m-banking, Sudan

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INTRODUCTION

The developments taking place in information and communication technology (ICT) are increasing revolutionary changing banking and financial institutions globally (Hong and Winstion, 2007). Since 1989, the banking industry in Sudan was highly affected by the technology evolution that transformed the way banks deliver their services (Tingari and Abdelrahman, 2010). Electronic channels for providing banking services are becoming common; automated teller machines (ATMs), point of sales (POSs), e-wallets, phones, mobiles and the internet (Tingari and Abdelrahman, 2012). Using ICT constitutes cheap transaction channels for providing banking services. Moreover, it has been also proved that by adopting banking technology (BT), banks can make the global market more realistic (Mahmood and Steve, 2009). *“Mobile banking, which includes contactless payments, financial transfers and account monitoring - all via mobile devices such as smart phones and tablet computers - will be considered in greater depth by the Financial Conduct Authority (FCA) in the full review to be published in the first half of 2014”* (Sudan Vision, 2013).

AIM

The research aims to contribute to the literature of electronic banking (e-banking) and mobile banking (m-banking). It explores the evolution of m-banking and evaluates the experience of its adoption in Sudan. This is to support managers and decision makers in banks in formulating their strategic plans to deliver competitive e-banking services.

EVOLUTION OF E-BANKING AND M-BANKING IN SUDAN

In 60's, BT started by the banks establishing centralized data processing centres. Their roles were to collect the handwritten documents from branches, compile them, generate reports for the bank staff and the central bank, and execute some banking transactions. In the mid-1980s, banks accepted e-based banking products. Later, e-banking became popular. E-banking could be defined to be the provision of banking services by the banks to the customers via electronic channels which include mobile phones (Y, 2001).

E-banking in Sudan

In 1998, The Central Bank of Sudan (CBOS) announced The Comprehensive Banking Policy, and it was launched in 1999. The major aim was to promote the banking sector to adapt to the contemporary international economic developments namely, the wide-range adoption of the economic liberalization policies, the enforcement of the stipulations of the Basle Committee accord and the trend of economic globalization.

To effectively achieve the goals of that policy, detailed annual implementation programmes were drawn in the areas of banking-services automation; BT, liquidity management, banking system development, foreign exchange market, and Islamization of the banking system (Tingari and Abdelrahman, 2010, Central Bank of Sudan, 2001).

In the year 1998, CBOS assigned a committee to study the automation of banking operations, and it recommended the foundation of the following: electronic links of all branches of banks to their head quarters, and of ATMs and the national switch, electronic clearing system, electronic link of CBOS to all the working banks in Sudan, finally a electronic connection to the World Interchange Financial Transfer (SWIFT) (Ammar, 2005).

To adopt e-banking services in Sudan, the company "Electronic Banking Services" was established.

Electronic Banking Services Company

In July 1999 Electronic Banking Services Co. Ltd (EBS) was established and registered by CBOS as a multi-venture private company. It is a specialist company dedicated towards the introduction of modern BT and solutions to replace traditional methods being used by banks and financial institutions in the Sudan. The company started its operations in May 2000 with the number of objectives (Electronic Banking Services, 2013):

- a) Electronically connecting banks in Sudan.
- b) Provision of electronic payment services in and out of Sudan.
- c) Provision of services and technical consulting to banks in their related field of work. Undertaking ground breaking and innovative projects requiring great efforts and major investments to improve banking operations.
- d) Adoption of standard specifications in software development allowing banks to collaborate and cooperate through an electronic network.
- e) Provision of electronic financial services that require the collaboration of banks in their delivery.

M-banking in Sudan

M-banking in Sudan was firstly adopted in 2009 (Assalam Bank, 2013, Faisal Islamic Bank, 2013).

M-banking services could be categorized to informational m-banking services and interactive m-banking services:

- a) Informational M-banking Services:
These are inquiry services and information provided as short message (sms) via mobile phones. They include:
 - Exchange Rate
 - Balance Inquiry
 - Check Status Inquiry
 - Short Statement
- b) Interactive M-banking Services:
These are services designed to meet needs of bank customers. They include:
 - E-payments
 - Money transfer
 - Account management

Challenges of M-banking in Sudan

The following statements highlight some challenges facing the adoption of m-banking in Sudan as observed and practiced by the researchers and their communities (Abdelrahman, 2013).

Implementing m-banking requires a regulatory framework which presently does not exist in Sudan.

- a) Lack of full co-operation between the concerned parties; literally the banking sector and telecommunication sector in Sudan. Banks in Sudan do not care much to the benefits and advantages of m-banking and mobile payment services to Sudanese community as a whole.
- b) Security issues are not insured nor guaranteed to the dealing parts and customers.

Risk Management and Security of BT in Sudan

In June 2003 Basel Committee on Banking Supervision classified 3 overlapping categories for 14 risk management principles of e-banking (Basel Committee, 2003).

- a) Board and Management Oversight (principles 1 to 3)
- b) Security Controls (principles 4 to 10)
- c) Legal and Reputational Risk Management (principles 11 to 14)

However, all of the above principles issued should be considered by banks in correspondence with the policies issued by CBOS to adopt secure e-banking. In practice those principles are not fully adopted in Sudan. The situation in Sudan is that each bank is responsible to protect its banking transactions under the control and the supervision of The Department of Information Technology (IT) in CBOS. However, each bank issues its own security statement that consists of controls and processes which are updated regularly to meet or exceed banking industry standards (Tingari and Abdelrahman, 2012).

MATERIAL AND METHODS

To conduct the study the researchers considered the population to be the individuals working at the IT departments of the banks in Sudan. A sample of 2 banks (pioneer in providing e-banking services in Sudan) was selected and all the employees in the associated IT departments who have practiced e-banking via mobile devices were chosen to constitute the sample. Sample size = 20. A questionnaire was distributed to them. The answers to the questionnaire constituted the primary data of the research. The data were statistically analyzed to test the research hypotheses. Results were discussed and recommendations provided.

Research Hypotheses

1. M-banking in Sudan lacks efficient infrastructure.
2. In Sudan, concerned parties are not aware of the importance of m-banking.

Questions of the questionnaire

It was of two parts; part I: demographic questions (professionalism, age and experience), part II: a collection of questions whose answers constituted the primary data of the research; they were about m-banking services offered, level of adoption, and volume of transactions, future opportunities, and current challenges. Data collected were tested using different statistical tests; frequencies, percentages, Cronbach's Alpha Test, and Chi Square Tests,

Analysis of Part I of the Questionnaire

Part I of the questionnaire showed that:

- a- All the respondents were IT staff who have practiced e-banking via mobile devices (as intended by the researchers).
- b- 80% of the respondents are 30 years old or elder.
- c- 70% of the respondents working in IT departments for not less than 3 years. Moreover, 50% of the sample have experienced 7 years or more in IT departments.

Based on the results of part I of the questionnaire, the researchers assumed that the elements of the sample are mature enough to consider the importance of the research. Moreover, Cronbach's Alpha test was carried out to estimate sample reliability. The resulting value was 0.882 which is a highly accepted.

Analysis and Results of Part II of the Questionnaire

To test research hypotheses 14 questions were set to constitute part II of the questionnaire. The questions are designed as headings of the tables (1-14) that illustrate the answers.

TABLE 1 Do you think that m-banking is important to the Sudanese community?

	Number of Respondents	Percentage %
Yes	20	100.0
No	0	00.0

Table 1 illustrates that all the respondents (100%) believe that the mobile is important to Sudanese community. This was a good sign for the researchers to feel the importance of the topic.

TABLE 2 From a technology point of view, what do you think is the best way for m-banking?

Options	Number of Respondents	Percentage %
SMS	8	40
Interactive internet browser	5	25
Both Options	7	35
Total	20	100.0

Table 2 illustrates that 40% of respondents believe that the best way to offer m-banking services is via SMS. This indicates that employees might not all well aware with the importance of interactive m-banking, or the mobile phones they use are not all smart (or can access internet).

TABLE 3 What do you believe is the potential value of m-banking?

Options	Number of Respondents	Percentages %
Acts as a channel for unbanked individuals	6	30
Improves customer services	10	50
Reaching all types of customers	3	15
All the above	1	5
Total	20	100

Table 3 illustrates that 30% of the respondents believes the m-banking is a new banking channel for non-banked individuals, 50% of the respondents believe that m-banking improves customer services. It is also concluded that m-banking is of a potential value to the whole community.

TABLE 4 As a banker, who will benefit most from m-banking?

Options	Number of Respondents	Percentage %
Customers	8	40
Banks	8	40
Economy	2	10
Vendors	2	10
Total	20	100

Table 4 illustrates that all respondents (100%) agreed that m-banking benefits different sectors. Customers and banks (most and equal respondents = 40%), economy and vendors (equal respondents =10%).

TABLE 5 According to your knowledge, which of the following options is of less importance when using m-banking in Sudan?

Options	Number of Respondents	Percentage %
Security	14	70
Cost	6	30
Total	20	100

Table 5 illustrates that 70% of the respondents do not care much about security issues in m-banking. The researchers believe that this is due to the lack of clearly integrated regulatory policies.

TABLE 6 According to your knowledge, how does m-banking promotes your bank?

Options	Number of Respondents	Percentage %
Increases revenue	3	15
Retains and attracts customers	10	50
Promotes bank image	5	25
All the above	2	10
Total	20	100

Table 6 illustrates that 50% of respondents shows that m-banking helps banks to retain and attract customers where 25% considered that m-banking promotes banks market image. These percentages are adequate to tell that m-banking promotes banks in different aspects.

TABLE 7 To your opinion, when will m-banking become the main transaction channel in Sudanese banks?

Options	Number of Respondents	Percentage %
By 2015	4	20
By 2020	13	65
By 2025	2	10
Beyond 2025	1	5
Total	20	100

Table 7 illustrates that most of the respondents (65%) believes that m-banking services will be the main transaction channel after the year 2025. This could be after setting and practicing regulatory policies of m-banking in Sudan. Also mobile technology becomes more essential over the years.

TABLE 8 How can you assess your bank’s strategy for adopting m-banking?

Options	Number of Respondents	Percentage %
Fair and progressing	19	95
Good	1	5
Total	20	100.0

Table 8 illustrates 95% of the respondents assessed their banks’ strategies for adopting m-banking services as being fair.

TABLE 9 To your opinion, what is the best managerial strategy for adopting m-banking in your bank?

Options	Number of Respondents	Percentage %
A solution from an external vendor	12	60
An outsource	6	30
In-house development	2	10
Total	20	100.0

Table 9 illustrates that 60% of the respondents believes that the best managerial strategy for adopting m-banking could only be set by external vendors. This might reflect that senior bankers are not professional in setting strategies for the adoption of m-banking.

TABLE 10 If m-banking would be more popular in future, what would be the reasons?

Options	Number of Respondents	Percentage %
More customers' acceptance	15	75
More profitable	3	15
Ease of use	2	10
Total	20	100.0

Table 10 illustrates 75% of the respondents agreed that customers’ acceptance is an important factor that could popularize m-banking in the Sudan. Results of tables 9 and 10 conclude that m-banking could be popular in Sudan if it is secure and accepted by people.

TABLE 11 M-banking will overcome existing challenges and will succeed in Sudan?

Options	Number of Respondents	Percentage %
Agree	16	80
I don't know	4	20
Total	20	100

Table 11 illustrates that 80% of the respondents agree that m-banking in Sudan will succeed in the future. Their opinion is optimistic.

TABLE 12 Does your bank provide m-banking services via professional service providers?

Options	Number of Respondents	Percentage %
Yes	16	80
No	4	20
Total	20	100.0

Table 12 illustrates that 80% of the respondents agreed that m-banking services are provided by external providers. This might enhance competency in providing competitive services.

TABLE 13 What are the difficulties you probably face during the time of providing m-banking?

Options	Number of Respondents	Percentage %
Network problems	5	25.0
Customers' unawareness	13	65.0
Customers' unacceptance	2	10.0
Total	20	100.0

Table 13 illustrates that 65% of the respondents face problems related to the customers' unawareness of using m-banking, and that 25% of the respondents face networks problems. This implies that the network should be enhanced to meet the demands of the banks, and that the society is not well aware with m-banking services.

Testing Research Hypotheses

Hypothesis 1: 'M-banking in Sudan lacks efficient infrastructure'. Associated questions were illustrated in tables; 5, 7, 10, 11, 11, and 13. A Chi-square test was carried to the questions. The results showed different values ranging from 0.89 to 1.00. This implies that hypothesis 1 is accepted.

Hypothesis 2: 'In Sudan, concerned parties are not aware of the importance of m-banking'. Associated questions were illustrated in tables; 2, 3, 4, 6, 9, 12, and 13. A Chi-square test was carried to the questions. The results showed different values ranging from 0.61 to 1.00. This implies that hypothesis 2 is accepted.

CONCLUSION

The results of the research analysis were as follows:

- 35 % of the sample believes that both SMS and interactive browsers are accepted options to deliver m-banking services.
- 50 % of the sample believes that m-banking improves customer services.
- 40% of the sample believes that both customers and banks benefit equally from m-banking. Moreover, 50% of them agreed that it retains and attracts customers
- 70 % of the sample believes that m-banking in Sudan is not secure.
- 65% of the sample expects that by 2020 m-banking could become the main transaction channel in Sudanese banks
- 95% of the sample believes that the strategies of m-banking adopted by their banks are fair and progressing.
- 60% of the sample believes that better managerial strategies for adopting e-banking could be set by external vendors.
- 80% of the sample agreed that current m-banking services are provided by professional service providers.
- 65% of the sample believes the current problems of delivering m-banking are due to the unawareness of customers, 25% believes that it is due to the weakness in networking, 10% believes that it is because m-banking is not accepted by many customers.

Based on the findings researchers recommended that to fully adopt m-banking and to deliver more efficient, satisfactory and secure services, the following points are to be considered:

- Solution of network problems should be a priority.
- Regulatory policies should be stated to ensure full collaboration of all concerned parties.
- Societies in Sudan should always be updated with new e-banking and m-banking services.

Moreover, the following topics were recommended for future research:

Testing the acceptance of m-banking services in Sudan using the technology acceptance model (TAM)

M-banking for poor people in Sudan.

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