MOBILE MONEY SERVICES: A LIQUIDITY THREAT TO UGANDA's COMMERCIAL BANKS.

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ABSTRACT

The purpose of this paper is twofold: (i) to establish whether the growth in mobile commerce in Uganda has disadvantaged commercial banks in way that their liquidity has been indirectly stolen (Pickens, 2009) and (ii)to examine the extent to which Mobile Money services have affected liquidity position of Uganda's commercial banks.

The paper used a cross sectional study design and emphasis was put on quantitative research approach. However, for data analysis, descriptive statistics together with linear regression tests were applied.

Findings indicated that Ugandan commercial banks are in liquidity crisis, a phenomena that has constrained their lending capacity. What is more unfortunate is that the commercial banks' liquidity ratios are falling short of the Bank of Uganda's threshold ratio of 20% representing a ratio of total liquid assets to total deposit liability. Single-handedly, mobile money services account for 36.7% of liquidity variance in Ugandan Commercial Banks.

The study recommends that commercial banks should partner or enter into joint venture with mobile money operators. With such partnership, banks will have effective models to expand their physical reach into poor and rural areas. This arrangement will deliver the required level of proximity and low transaction costs, which are essential in increasing client deposits, a source of liquidity.

More so, commercial banks should take advantage of the products that are not provided by mobile operators. For example, credit or loan facilities and insurance services where banks have competitive advantage over mobile operators should be conveniently provided at a low cost to clients. It is hoped that this will build a strong bond between the client and the bank which guarantees regular flow of cash in or cash out transaction.

Key words: Mobile Money services and Bank Liquidity

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I.   INTRODUCTION

The rapid technological changes, increasingly sophisticated customers and the need for high value service have influenced the new orientation in banking from on counter banking to branchless banking (Dahlberg & Mallet, 2008). The potential for branchless banking is often anchored in the ability of technological innovations to lower the costs of offering financial services through new channels, such as point of sales (POS) devices and mobile phones. These new technologies have become much more affordable in recent years and have catalyzed significant penetration in new markets across the globe. Besides financial institutions, non-banks such as mobile network operators (MNO) have been leading the way in offering financial services through their respective networks. In many developing markets, MNOs have invested in the necessary infrastructure in rural areas that traditional banking services have failed to access with brick and mortar branches (Lyman, Pickens & Porteous, 2008). In particular, the MNOs and their agents provide an interface between the two sides through cash-out (issuing cash on demand) or cash-in (convert cash to notational equivalent) functions providing convertibility between mobile money and cash (Morawczynski & Miscione, 2008).

Increasingly, there is a great excitement about mobile money because people perceive it as the only hope that could help them to ease their financial troubles. First of all, mobile money through an increasingly large mobile phone use base provides a platform that could potentially be leveraged to service the financial needs of the poor (Hughes & Lonie, 2007). This could yield results   in the developing world, where the reach of banking infrastructure is severely limited. It is therefore seen as a big deal if such timely services are extended to groups of people cheaply. Secondly, successful mobile money has the ability to enable and catalyze the development of mobile commerce (Herzberg, 2003) particularly in the developing world. With mobile money services, you need not to appear in the banking hall to effect any payment. In this case, mobile money networks have a potential to deliver the required level of proximity at low transaction costs. However, Maurer (2008) notes that mobile money networks are not equipped to offer the broad range of financial services people want and need. Among other things not offered by MNO are creditor loan facilities, insurance covers and drawing larger amounts above Ugx.6,000,000.

Notwithstanding the above limitation, the growth in mobile telecommunication service is expanding the reach of financial services across the wireless networks in less developed countries, Uganda is no exception. It is however, believed that significant growth in mobile commerce has disadvantaged commercial banks in way that their liquidity has been indirectly stolen (Pickens, 2009). The potential and some existing bank customers are finding it cheaper and convenient to use mobile money services than going to the banks to effect their transactions. By doing this, the commercial banks are deprived of cash that would otherwise be received and used in financial

intermediation. According to Mobile Telecommunication Network (MTN) Uganda's report 2010, close to 2.5 million people have so far registered on the mobile money service. On average, more than UGX 590 billion is transferred on mobile money platform in a month. This money could have been deposited in the banks' coffers to increase their liquidity position. The drastic decline in the number of loan transactions by 15% between July and December, 2011 (Nuwagaba, 2012), is a clear manifestation of liquidity crisis in banks.

Despite the prevalent liquidity predicament in the banking sector, scholarly research to empirically establish the level of association between mobile money services and bank liquidity in developing countries is scarce (Maurer, 2008). We therefore, claim that the liquidity constraints currently facing the banks could be attributed to mobile money services that have dominated the informal commercial sector. Insufficient literature in this area is, therefore, a matter of great concern in this study.

II.   LITERATURE REVIEW

Following the diverse trends in branchless banking, comes another huge development known as the "Mobile money". The new model which takes alternative delivery channels to a whole new level provides a paradigm shift in the way more traditional financial institutions operate. The advent of mobile money, a platform which allows people to use their mobile phones like wallets to transfer money, pay for goods and services and conduct banking services, has started to have a transformative effect at a faster pace as previously envisaged (Kulabako, 2010). This platform offers the new services to move money from place to place and present an alternative to the payment systems offered by banks, remittance firms, pawn shops, and others. Mobile money as a facility stores money on the subscriber identity module (SIM) as an identifier as opposed to an account number in the conventional banking sense (Mendes & Alampay, 2007). By complementing services offered by the banking system, such as cash books, automatic teller machine (ATMS), Voice mail/land line interfaces, and internet resources, the mobile platform offers a convenient additional method of managing money without handling cash (Karjahcoto, 2002). In summary, Dahlberg (2008) observes that mobile money services in the developing world enable users to do three things (a) store value (currency) in an account accessible via handset, (b) convert cash in and out of stored value account, (c) transfer stored value between accounts.

According to Sivapragasam (2010) mobile-money services can include but not limited to peer-to-peer (P2P)mobile money transfers, mobile or person-to-business payments for goods and services (bill and retail payments) services. Mobile money services have served as a new delivery channel to replace existing banking to the extent that some people find it worthless to pay a lot of money or travel long distances to put small

amounts into an account. Increasingly, mobile money operators have struggled to find cost effective models to expand their physical reach into poor and rural areas and to handle large volumes of low-income cash transactions traditional banks had left out. The above argument agrees with Maurer's (2008) observation that mobile payment services are becoming increasingly associated with lower-income population groups in developing countries whose level of saving is quite low. Likewise, Birch and Young (2007) observe that M-money services in general offer relative advantages in terms of accessibility, convenience, speed, privacy, cost-effectiveness and control for conducting financial transactions over other money transfers or payment intermediaries such as banks and other financial institutions. In this case, mobile money networks have a potential to deliver the required level of proximity and low transaction costs.

Notwithstanding the above advantages, mobile money services offer an unprecedented opportunity to significantly increase access to financial services and ease the flow of financial transactions within business environment. Other than increasing access to financial services, Radcliffe (2010) argues that M-money reduces risks of loss inherent in handling cash and has also proven to increase savings opportunity in developing countries.

Currently, customers use financial services that they find convenient, reliable and affordable that offers the right balance of liquidity (Mas & Morawczynski, 2009). World Bank report (2009) estimated that 3,5billion people in the world who lacked access to formal banking services are finding their home in convenient cheaper financial services that are being provided by mobile money. Morawczynski and Pickens (2009) further affirm that mobile money networks have been identified by the majority as potential service conduits through which financial services can be extended to unbanked population. In addition, mobile money services have the potential to offer speedier and more cost-effective service delivery than the traditional commercial banks. The drastic increase in the number of people using mobile money could be attributed to above virtues.

Incidentally, the use of mobile money services in the informal commercial sector has been perceived by commercial banks as potential competitors who are threatening banks' survival. Indeed, mobile banking has redefined the competitive landscape of commercial banks in the country posing a threat to the growth and, even, the very survival of banks, according to experts. Initially, competition used to be only within the banks themselves, but now the unmatched outreach of mobile telecommunication companies, their dynamism and capacity to innovate have got the banks thinking hard on how to survive (Sturmius, 2012). It is suspected that significant growth in mobile commerce has disadvantaged the commercial banking sector in way that their liquidity has been indirectly stolen (Pickens, 2009). Majority of bank customers find it cheaper and convenient to use mobile money services to make payments. By doing this, the

commercial banks are deprived of deposits that would otherwise increase liquidity in banks. The drastic decline in number of loan transactions by 15% between July and December, 2011 in Ugandan commercial banks is attributed to reduced liquidity (Nuwagaba, 2012). Nonetheless, this assertion lacks credible empirical evidence in the banking literature.

Contrary to the great threats about the potential for mobile money to deprive banks of their liquidity and intimidate their survival, empirical evidence in the existing literature is limited. Although some studies have addressed issues of consumer willingness to use mobile services (Dahlberg, 2008); Electronic cash: a qualitative assessment of its adoption (Szmigin & Bourne, 1999); opportunities and challenges for mobile based financial services in rural Uganda (Hinman & Matovu, 2010), the influence of mobile money on bank liquidity remains unexplained.

Despite the prevalent liquidity predicament in the banking sector, they are hardly any studies carried out to explain the extent to which mobile money services have affected liquidity of commercial banks in developing nations. The foregoing underlies the need to explore the research gaps arising from the dearth of documented studies in empirical findings on the level of association between mobile money services and liquidity in commercial banks. This research, however, set out to address this evident knowledge gap guided by the following hypothesis.

H1: Liquidity position of commercial banks have been declining
H2: Mobile money services are responsible for the liquidity position in commercial banks

III. METHODOLOGY

This study used a cross-sectional and quantitative research designs to address the research questions covered in this research.

The study population covered both commercial banks and micro-deposit taking institutions (MDIs) in Uganda. In total, there are 23 commercial banks and 5 micro-deposit taking institutions in Uganda. Senior bank managers and clients (who are users of mobile-money facility) of commercial banks together with micro-credit deposit taking institutions, were units of enquiry.

On the basis of Ntoumanis (2001) and Field (2006) guidelines, this study covered a minimum of 5 senior bank managers and 10 clients per institution respectively. Hence, units of enquiry in total was 345 (5x23 + 10 x 23) respondents. Senior bank managers were selected using simple random sampling technique. Likewise, due to difficulties in accessing clients, convenient sampling technique was used to select clients who filled in the questionnaires.

Both secondary and primary sources of data were used. Secondary data generated financial information from financial statements and Mobile money summary reports.

Primary data sources included the respondents who filled in the questionnaires. Structured Questionnaires and document review were used as tools in data collection.

The data collected were edited, classified and coded so as to make it ready for analysis. Thereafter, descriptive and inferential statistics tests were performed to establish population characteristics and the level of association between predictor and criterion variables studied.

Operational measures for this study were obtained from established measurement items by earlier researchers and modifications were made to match the research environment. The study formed scales or measures developed and pre-tested by the researchers based on theoretical definitions and literature.

Liquidity was measured basing on the work of Pandey (2002), Loth (2007) and Kannan, Gupta and Sampal (2003). Specific dimensions included current ratio, quick ratio, cash ratio and cash conversion cycle. Using a five point scale, ranging from 1 = strongly disagree to 5 = strongly agree, respondents were asked to indicate their opinions on items or attributes of liquidity given on the scale.

Specific dimensions included volume of transactions, number of clients served and variety of activities. Using a five point scale, ranging from 1 = strongly disagree to 5 = strongly agree, respondents were asked to indicate their opinions on items or attributes of m-money services given on the scale.

To have meaningful instruments, different tests were carried out to measure the validity and reliability of the instruments. It is during the pilot study that the tests for validity and reliability of the instruments were established.

In this study, the researchers measured content validity and construct validity so as to ensure that the data collected using the instrument should accurately and honestly represent theoretical constructs studied. Instrument is said to be valid if it actually measures what it is supposed to measure (Saunders et al., 2007). The content validity index (CVI) was established by relating the declared valid items to total number of items. Mobile money services and liquidity constructs yielded Content Validity Index (CVI) of .79 and .82 respectively. On the basis of the cut-off points by Amin (2005) and Field (2006), these results signify that the contents of the instrument/questionnaire represented the domain of the constructs studied.

Further tests covered the reliability of the instrument and Cronbach alpha values for mobile money services and liquidity were all above .78, suggesting adequate internal validity. Anastasi (1982) and Nunnally (1978) state that reliability coefficients of .70 or more signify high validity of instruments.

Common method bias was addressed in this study by (i) collecting data from at least five senior managers of each bank and (ii) sourcing most of the data relating to the dependent variable from banks' published financial data. This approach is supported by Podsakoff, Mackenzie & YeonLee (2003). Potential effects of response pattern biases were reduced by incorporating negatively worded items on the questionnaire (Hinken 1995 & Drasgow & Idaszak, 1987). The logic is that

negatively worded items are like cognitive "speed bumps" that require respondents to engage in a more controlled, as opposed to automatically cognitive processing (Hinken, 1995)

Data were checked, cleaned and aggregated to a firm level using name of the bank as a breaking variable (Field, 2006). Completed questionnaires were further checked for missing values and inconsistencies in responses given by the respondents. Simple frequency runs were made to screen the data so as to identify missing values. Data were analyzed using linear regressions together with descriptive statistics.

IV. RESULTS

A. Sample Characteristics

Data from 25 out of 28 targeted commercial banks representing 89% response rate were received. Of these, 92% were from central, 5 % from western, and 3 % form eastern regions of Uganda. The majority (95%) of commercial banks' capital structure consists of Equity and Loans and their average capital size was greater than 10 billion Uganda shillings. The larger percentage (80%) of the firms has been operating for more than 15 years. The mean scores of liquidity and mobile money services were established as 2.32 and 3.5 and standard deviations of .57 to .61 respectively. Given that the standard deviations are small compared to mean values, it is true the computed means highly represent the observed data. In effect, the calculated averages are a good replica of reality (Field, 2006 & Saunders et al., 2007).

Liquidity *position of commercial banks*

Review of relevant documents and study results indicate that the commercial banks' liquidity has been on decline and falls short of the Bank of Uganda's cut-off point of 20% of liquid assets to total deposits liabilities. The trend analysis of banks' liquidity, based on financial reports for the previous 12 months indicates that banks' financial position is deteriorating. Figure 1 which clearly gives industry liquidity trends of the selected commercial banks in Uganda indicates that the trend is actually declining.

Figure 1: Source: Commercial Banks' Financial Reports 20011
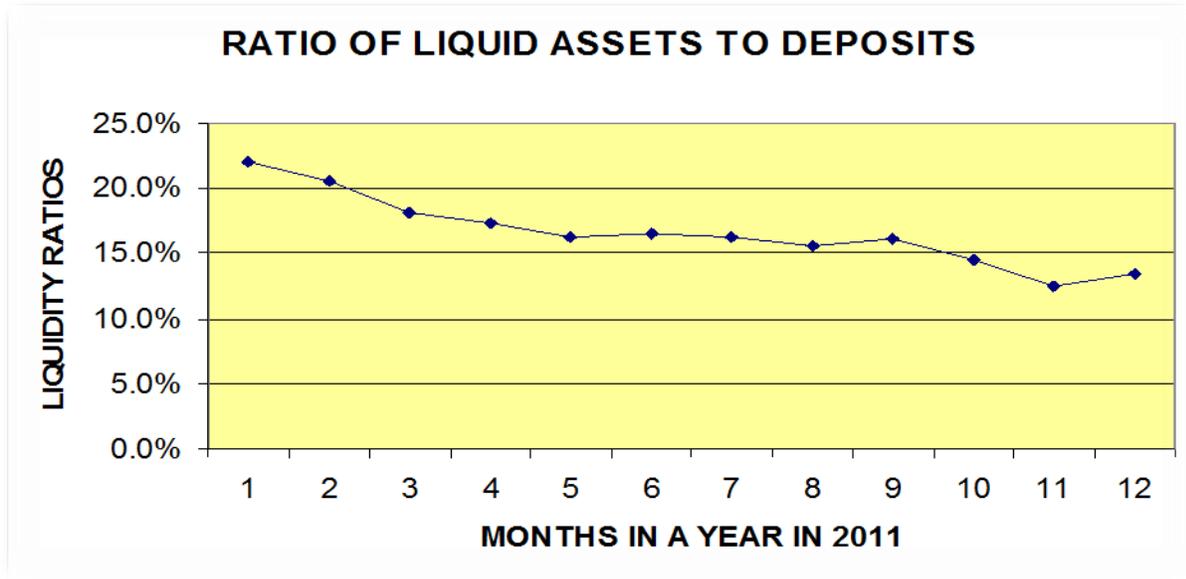
According to Bank of Uganda Statutory Instruments 2005 No 46(Financial Institutions (Liquidity) Regulation, 2005), Commercial banks' liquid assets should not be less than 20% of total deposit liabilities. However, from the graph, it is self evident that on average, the ratio of Liquid assets to deposit liabilities is below the Central Bank of Uganda's cut-off ratio of 20%. To make matters worse, the trend continued to deteriorate in the year 2011.

In a related case, the calculated mean value of 2.32 further indicates that commercial banks' liquidity position is quite low. This finding is further supported by Figure 2 showing the position of each of commercial the bank's liquidity position. Accordingly, it is true that most of the banks' liquidity positions are below the cut-off point, a trend that is against the statutory requirements of the Bank of Uganda.

Figure 2: Individual commercial Banks' liquidity positions based on mean values
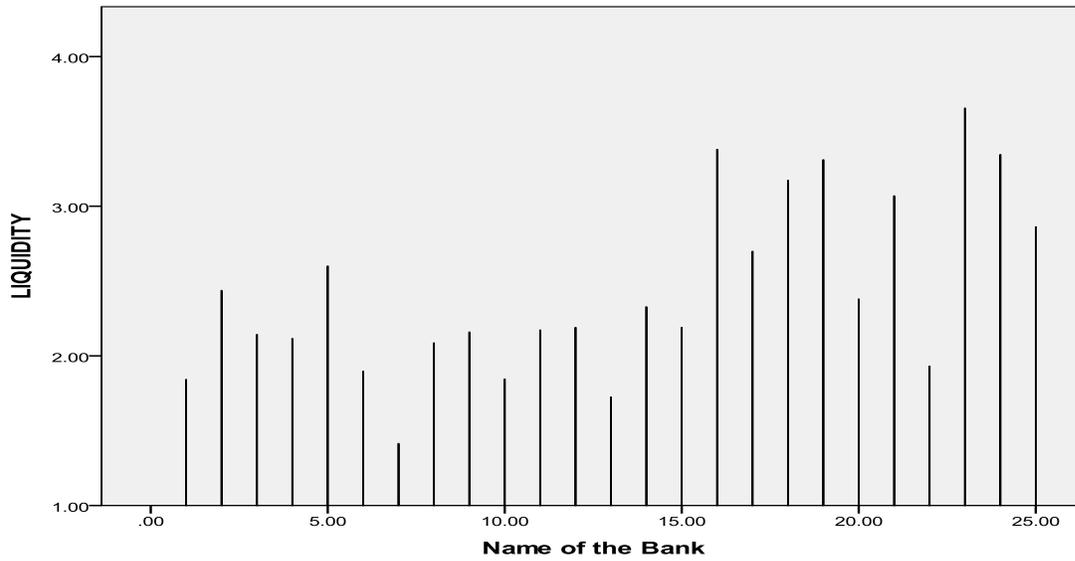
From Figure2 above, each line represents the bank's mean value based on the Likert scale anchored on scales of 1-representing strongly disagree and 5 – strongly agree. Out of the studied 25 commercial banks, 15 banks' liquidity position is below the average.

B. Correlation and Regression analyses

Regression results presented in Table I indicate that mobile money services have a substantive and significant inverse relationship with bank liquidity($r = -.606$, $p< 0.01$). This depicts that increasing use of mobile money services is highly associated with decreases in bank liquidity. According to the results in the table, a change in mobile money services usage results into a reduction of liquidity by -0.811 as indicated by un-standardized Beta value.

In a related case, results have indicated that mobile money services predict up to 36.7% of variance of liquidity position in Ugandan commercial banks. This finding signifies that mobile money services account for only 36.7% and the balance of 63.3% is explained by other factors not addressed by this study.

Table I: **Linear Regression of Liquidity on Mobile Money Services**

	Unstandardized Coefficients		Standardized Coefficients			R-Square
	B	Std. Error	Beta	t	Sig.	.367
(Constant)	.034	.684		.050	.961	
MMONEY	-.811	.222	-.606	-3.650	.001	0.001

a. Dependent Variable: LIQUIDITY

V. DISCUSSION AND CONCLUSION

Basing on the results above, it is apparent that liquidity position of commercial banks is deteriorating. There is a corroborative evidence as per results obtained that the trend of liquidity levels of Ugandan commercial banks is not promising. For example, the liquidity trends given in Figure 1 are in agreement with the liquidity mean value of 2.32 generated from analysis. These results clearly indicate that the banks' liquidity is adversely affected. What is even more disheartening is that the ratio of liquid assets to total deposits liability is below the Bank of Uganda's cut-off point of 20 percent (BOU's Financial Institutions Regulation, 2005). The deteriorating liquidity trends in these banks can therefore; explain the drastic decline in the number of loan transactions by 15% between July and December, 2011 as earlier pointed out by Nuwagaba in 2012.

In the same vein, linear regression model has indicated that mobile money services are inversely related to liquidity levels of commercial banks. This signifies that the increase in the use of mobile money services by the clients (jointly served by banks and mobile firms) is associated with reduced bank cash deposits, which indirectly impacts negatively on liquidity position of the banks. The fact that mobile money predicts 36.7% of variance in bank liquidity, is substantial enough to cause imbalances and hence, liquidity crisis in the banks. This finding is supported by Pickens (2009) assertion that significant growth in mobile commerce has disadvantaged commercial banks in a way that their liquidity has been indirectly stolen. Likewise, World Bank report (2009) estimated that 3,5billion people in the world who lacked access to formal banking services are finding their home in convenient cheaper financial services that are being provided by mobile money. Morawczynski and Pickens (2009) further affirm that mobile money networks have been identified by the majority as potential service conduits through which financial services can be extended to unbanked population. These corroborative findings signify that the introduction of mobile money operations is threatening the survival of commercial banks in Uganda.

What is crucial in the current financial sector is to ensure that the high value services at low cost are conveniently extended to the client. In this case, service providers that provide or offer relative advantages in terms of accessibility, convenience, speed, privacy and cost-effectiveness are assured of the ready market. This point of view is consistent with Morawczynski et al. (2009) who argue that customers use financial services that they find convenient, reliable and affordable. Owing to the above findings, it is fairly enough to make a tentative conclusion that mobile commerce has contributed to the liquidity crisis of Ugandan commercial banks. This, therefore, renders support to hypotheses H1 and H2, earlier stated in this study.

Resulting from the foregoing discussion, the study confirms that Ugandan commercial banks are in liquidity crisis, a phenomena that has constrained their lending capacity. What is more unfortunate is that the commercial banks' liquidity ratios are falling short

of the Bank of Uganda's cut-off points. Single-handedly, mobile money services account for 36.7% of liquidity variance in Ugandan Commercial Banks. Although 63.3% is explained by factors outside the scope of this study, the explained 36.7% is sizeable to explain the impact on banks' liquidity. It is therefore true that mobile money has negatively contributed to the liquidity position of commercial banks in Uganda. Henceforth, providers of mobile money services should now be seen as competitors in the financial sector by commercial banks, who strive to serve the clientele base.

Fundamentally, commercial banks should realize that the way forward is to reorganize and remobilize clients through the provision of high value economic services which grant reasonable convenience to clients. This strategy is hoped to increase bank deposits, which are the sources of bank liquidity.

Recommendations to management

It has been established that what influences clients' savings/ deposits is the level of proximity and cost effectiveness of a service. Currently, people are not willing to invest significant time and resources – including the cost of travel and lost earnings from leaving business untended –just to save or deposit a small amount of money in an account. Since it is costly for banks to take such services closer to the clients but mobile money providers can through their outlets, it is recommended that commercial banks should partner or enter into joint venture with mobile money operators. With such partnership, banks will have effective models to expand their physical reach into poor and rural areas. This arrangement will deliver the required level of proximity and low transaction costs, which are essential in increasing client deposits, a source of liquidity. In this case, banks and mobile operators should endavour to work together in order for both to enjoy economies of scale and scope. The most basic common bank-mobile operator partnership model is where the bank issues the mobile money account to a client. The account should help clients to send, receive and store money electronically using mobile money interface.

Besides, where the accounts are held externally to the mobile money operator, the most prevalent model is for banks to use mobile money to receive funds from the public, whether as loan repayments or deposits, using a standard bill payment model. This move will enable banks to increase their liquidity through increased deposits.

More so, commercial banks should take advantage of the products that are not provided by mobile operators. For example, credit or loan facilities and insurance services where banks have competitive advantage over mobile operators should be conveniently provided at a low cost to clients. It is hoped that this will build strong bond between the client and the bank which guarantees regular flow of cash in or cash out transaction.

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