CAPTURING VALUE FROM M-BANKING

Analysing costs and benefits of m-banking and identifying improvements to increase impact and shorten pay-back time

INTRODUCTION[1][2]

Governments and donors often hail mobile banking as a powerful tool for achieving greater financial inclusion. Many investors and financial institutions believe mobile banking can play an important role in dealing with increased competition by reducing the costs per client, and thus allowing entry into new and hitherto underserved markets.

It is important for banks and microfinance institutions introducing mobile banking to have insight into the real value of this undertaking both for the institution and its clients. In spring 2014, Triple Jump (TJ) partnered with PHB Development (PHB) to assess the business case for m-banking by developing a method to investigate the costs and benefits of existing deployments. We applied this assessment method to Urwego Opportunity Bank (UOB), a microfinance bank in Rwanda that had launched m-banking one year earlier.

The method is a powerful tool to measure progress of an m-banking implementation as well as the impact of the new delivery channel on the institution and its clients. It can be used by financial institutions to identify the main strengths and weaknesses of their deployment. This helps them to focus on the principal improvements and adaptations that are required to shorten the pay-back period of the (often considerable) investment in m-banking.This paper presents the method, how it was applied to UOB, and the lessons that were learned in the process.[3]

THE M-BANKING ASSESSMENT METHOD

We merged a conventional method for development project evaluation with a financial cost-benefit analysis into a diagnostics tool that can be used by microfinance and other financial institutions to assess their m-banking channel.

As a first step we defined the underlying "theory of change". A theory of change is a set of hypotheses about how, in a given context, particular investments build an institution's capacities to achieve certain objectives. Figure 1 shows the theory of change implicit in UOB's investment in m-banking.

Figure 1. Theory of change implicit in UOB's m-banking deployment
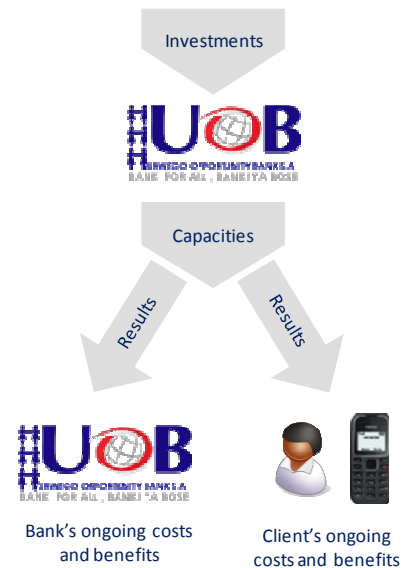
The second step was the construction of a data matrix. This matrix defines the different elements of the theory of change in more detail. For each element it lists a limited set of specific indicators that can be measured over time (see figure 2).

Figure 2. Structure of the matrix used to collect data on UOB's m-banking deployment

Investments in institutional capacity in 6 areas:
• Regulation, Business model and Partnerships
• Distribution
• Business processes and organisation
• Technology
• Products and markets
• Project management

Results for UOB in 6 areas:
• Outreach, portfolio size and savings
• Portfolio quality
• Client retention
• Operational efficiency
• Safety of staff and cash
• Revenues

Results for clients in 6 areas:
• Accessibility
• Convenience and time savings
• Net financial benefits
• Net social benefits
• Safety of members and cash
• Customer service experience

Data collection is the third step, which must be adapted to the circumstances of each institution. Assessing the results of an m-banking deployment on an institution and its clients requires the use of a variety of data collection techniques. This includes both qualitative methods such as interviews and focus group discussions, and quantitative methods such as data extraction and analysis from management information systems, and a survey among a representative sample of clients (see figure 3).

Figure 3. Techniques used to collect data on UOB's m-banking deployment
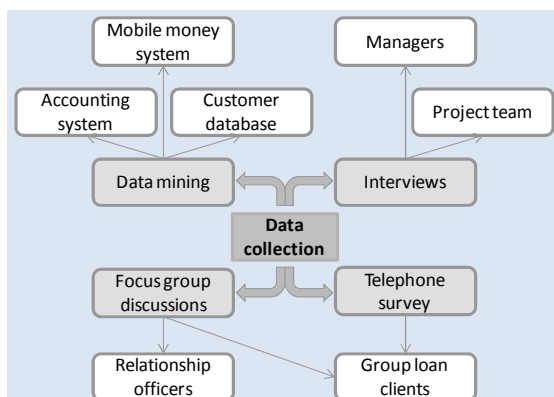
The fourth step is the analysis of the data. Data must not only be summarised, they must also be assessed against a benchmark that reflects the expected level for a completed and successful m-banking deployment. We set benchmarks based on a combination of PHB's experience with the implementation of m-banking projects and emerging standards in the industry. It should be noted that the relative nascent stage of m-banking means the benchmarks are tentative; further assessments using this tool are expected to contribute to the development of better benchmarks. Figure 4 is a snapshot of the diagnostics tool.

Figure 4. Snapshot of the diagnostics tool used to assess UOB's m-banking deployment

	Indicator	Max Score	Actual Score
I	**OUTREACH, PORTFOLIO SIZE AND DEPOSITS**	15	6
I.1	**Change in number of clients**		
	Number of loan clients has increased (1)		
	Number of voluntary deposit clients has increased (1)	5	3
	Number of clients registered for m-banking shows rising trend (1)		
	Proportion of active users of m-banking (<25%:0, 25-50%:1; >50%: 2)		
I.2	**Change in client composition**	3	1
	etc.		
I.3	**Change in use of products**	4	1
I.4	**Change in cross-selling**	3	1
II	**PORTFOLIO QUALITY**	15	5
II.1	**Change in portfolio at risk**		
	PAR > 30 days of m-banking users is better than for non-users (5)	etc.	etc.
	etc.		
III	**CLIENT SATISFACTION AND RETENTION**	15	6
IV	**OPERATIONAL COSTS & EFFICIENCY**	15	5
V	**SAFETY OF STAFF AND CASH**	15	5
VI	**REVENUES**	15	4
	Total Score	90	31

The diagnostics tool analyses the data in three parts:

1. The tool is designed to provide a comprehensive assessment of two different aspects of an m-banking deployment:
   a. Part 1 analyses progress in implementation of the m-banking project (see Figures 1 and 2, change in institutional "Capacity");
   b. Part 2 analyses achievement of the project's envisaged final objectives (see Figures 1 and 2, the desired quantitative and qualitative "Results" for the institution and its clients);
2. The tool includes a Client sub-tool to obtain deeper insight into "Result III. Client Satisfaction and Retention";
3. It also includes a Cost Benefit Analysis sub-tool for obtaining greater detail on "Result IV. Operational costs and efficiency" and "Result VI. Revenues".

The next sections describe the application of the diagnostics tool to UOB's m-banking deployment entitled "mHose" (meaning "banking everywhere").

ASSESSMENT OF UOB'S M-BANKING DEPLOYMENT
Urwego Opportunity Bank was created in July 2007 as a result of a merger between Urwego Community Banking, SA (Urwego) and Opportunity International Bank of Rwanda, SA (OIBR). Originally focused on community bank loans, UOB nowadays offers a range of savings and loan products. Figure 5 shows some of UOB's key indicators at the time of the assessment.

**Figure 5. UOB key indicators December 2013**

- Total assets: RWF 14 billion
- No. of voluntary savings accounts: 120,000
- Average savings balance: RWF 47,500
- No. of loans outstanding: 40,000
- Average loan balance outstanding: RWF 259,000
- PAR > 30 days: 3.86%
- Exchange rate: 1 USD = RWF 677

Progress in m-banking project implementation
UOB started preparations for its m-banking deployment in November 2011, and launched the service in April 2013. Figure 6 summarises the different phases of UOB's m-banking project up to the moment of this evaluation. This took place in March 2014, one year after it was launched on the market. The value of an assessment after a year of implementation is that it allows for the early identification of weaknesses and the definition of areas for improvement. Taking action accordingly can shorten the pay-back period of the investment.
Figure 7 summarises the findings from Part 1 of the diagnostics tool. It shows UOB's progress in implementing the m-banking project. An institution

that has fully developed all the necessary capacities for m-banking would score 100% on each of the six dimensions of the spider.

Figure 7. UOB's progress in m-banking project implementation by March 2014
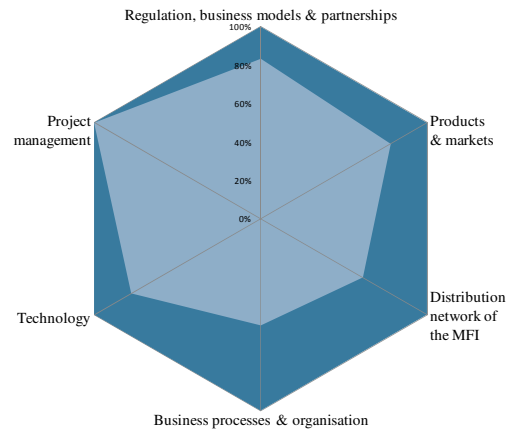
As of March 2014 UOB is generally well advanced in building the necessary capacities for implementing m-banking. It has put in place a strong project management team, a solid partnership with an m-banking provider (mVISA) and an agent network manager (MMC), and the necessary technological changes to interface the m-banking system with its corebanking system. Improvements are still needed in the distribution network (especially agent liquidity management), business processes (especially the group repayment process) and products and markets (in particular the creation of stronger incentives for savings).

Figure 6. Timeline of UOB's m-banking project
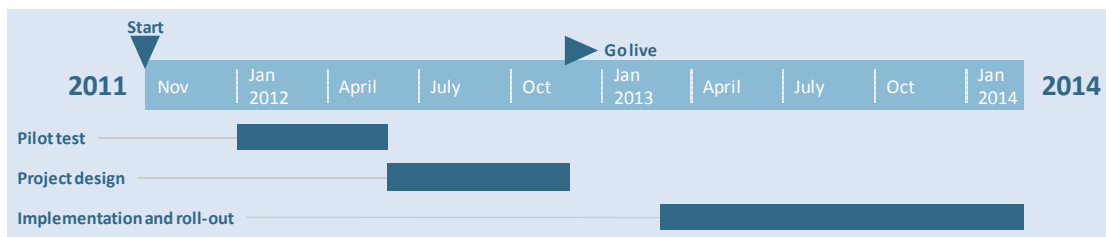
Between March 2013 and February 2014, UOB registered 22,000 mHose clients. This is the equivalent of 46% of the banks' loan clients and 15% of voluntary depositors. 9,000 or 40% of those clients are active mHose users (see figure 8)[4].

Figure 8. UOBs in m-banking outreach by March 2014
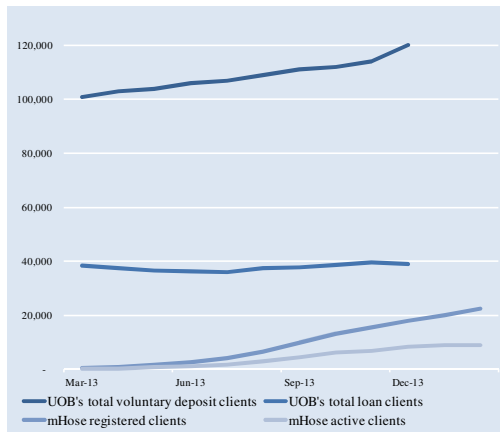
DETAILED COST BENEFIT ANALYSIS
The diagnostics tool includes a sub-tool to analyse the financial costs and benefits of m-banking in greater depth. A distinction was made between the investment costs made before the launch (to a considerable extent capital expenditures, CAPEX) and the costs once the service was up and running (mainly operational costs, OPEX).

Actual Investment Costs
Figure 9 shows UOB's investment in mHose broken down by year and category. As can be seen, the main cost drivers were the development of the necessary IT systems, and staff salaries and consultancy costs during the pilot test and the preparation for launch.

Figure 9. UOBs investments in m-banking (RWF)
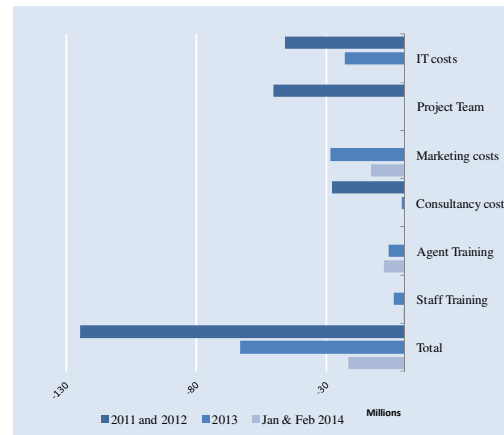
Between November 2011 and March 2014 UOB invested a total of about 210 million Rwandan francs (RWF), equal to USD 320,000[5], in the development of its capacities to deliver m-banking. While this is a substantial investment, it is relatively small compared to UOB's overall balance sheet, which reached RWF 14 billion (USD 22 million) at the end of 2013.

Operational Costs & Benefits
Over time, the main expected operational expenditures (OPEX) of m-banking are transaction costs paid to third parties. The principal expected benefits from m-banking are net gains in efficiency and the impact from growth in deposits, and to a lesser extent customer fees.

Figure 10 shows the net benefits of mHose broken down into these three components. As can be seen, the total net benefits of m-banking for UOB were still negative during the first year reaching -/- RWF 110 million (USD 170,000).

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[4] Active customers are defined as those having completed at least one financial transaction via m-banking in the past month. This is a high percentage compared to average mobile money activity rates worldwide, which are typically around 20%.

[5] Conversion based on average exchange rate of 650 RWF per USD.

Figure 10. UOBs operational costs and benefits from m-banking in year 1 (RWF)
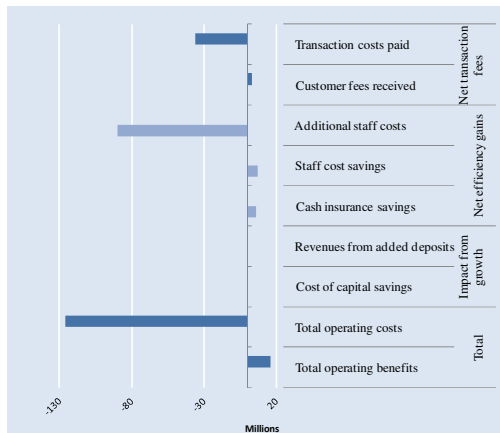
As was to be expected, UOB's net transaction fees were negative. It was UOB's decision to keep customer fees as low as possible and also the competitive environment for mobile services in Rwanda determines the transaction costs UOB has to pay (mainly fees paid to the mobile banking service provider, the agent network manager and agents).

The bank had expected to be able to recover part of the net transaction fees via net gains in efficiency and via the impact from growth in deposits on its revenue. However, as Figure 10 shows, during the first year the net effect of m-banking on efficiency was actually negative, because of the need for a dedicated mHose team. Also, as mentioned above, there was no measurable effect of m-banking on deposits during the deployment's first year.

These results are not unusual: UOB is still in the ramp-up phase, during which savings and transaction volumes need to grow to reach a critical mass enabling the institution to reap the benefits of m-banking. This is also a phase where careful monitoring is of great value to adjust the approach based on actual results and thus shorten the investment's payback time as well as increase impact.

The following sections provide an overview of the results for UOB from a broader perspective than only the financial cost and benefits. Subsequently, the in-depth analysis of the effect of mHose on clients is presented. This is followed by a set of conclusions on

changes that UOB needs to make to improve results and reduce the payback time of the investment it has made in m-banking.

RESULTS OF THE M-BANKING PROJECT FOR UOB

The spider in Figure 11 gives an overview of the results of the m-banking project for UOB. It is a visual representation of the analysis conducted using Part 2 of the diagnostics tool (Figure 4).

Figure 11. Results of m-banking for UOB
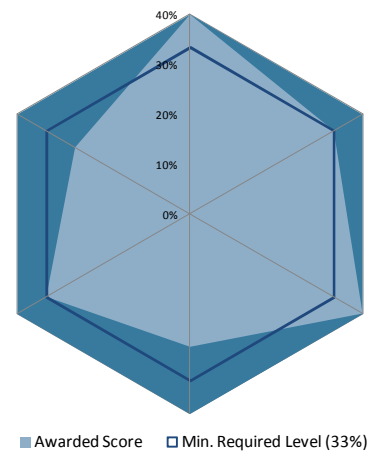
An institution with a mature m-banking programme would be expected to score 100% on each of the six dimensions of the spider. A score of 33% can be considered a minimum required level after one year of implementation.

As can be seen in Figures 11 and 12, as of March 2014 mHose has generated somewhat positive results for UOB in two areas: "Outreach" scores lightly positive because of the growth of mHose subscribers and "Satisfaction of clients" increased, be it only marginally (see below for further details).

Results in two other areas are generally neutral: perceived safety of money and staff improved and there is no harmful effect on portfolio quality.

Finally outcomes are below expectations in two areas: (i) mHose has caused an initial increase in operational costs, and positive efficiency gains have only just started to become visible; and (ii) revenues are lagging behind because mHose has not yet had

any visible effect on client deposits. Figure 12 gives more detail on the findings.

Figure 12. Disaggregated results of m-banking for UOB

Indicator	negative	Impact neutral	positive
OUTREACH, PORTFOLIO SIZE AND DEPOSITS			
Change in number of clients			▇
Change in client composition		▇	
Change in use of products	▇		
Change in cross-selling		▇	
PORTFOLIO QUALITY			
Change in Portfolio Quality			▇
CLIENT SATISFACTION AND RETENTION			
Change in client retention		▇	
Change in client satisfaction - call centre use		▇	
Change in client satisfaction - outcome of client survey			▇
OPERATIONAL COSTS & EFFICIENCY			
Change in specific operational efficiency			▇
Change in overall staff productivity	▇		
Change in periodic costs of partnerships	▇		
Change in transaction costs	▇		
Change in staff costs		▇	
Change in other costs			▇
SAFETY OF STAFF AND CASH			
Perception of safety			▇
Transport of cash by Loan officers and clients			▇
Number of Fraud cases (all fraud cases)		▇	
Cost of fraud cases (all fraud cases)		▇	
REVENUES			
Change in deposit base	▇		
Change in costs of capital		▇	
Change in net income from additional insurance sold		▇	

The results so far are partly due to a set of complex external circumstances, and partly due to a number of decisions that UOB took for the roll-out in the first year and the fact that they are still in the ramp-up phase.

Circumstances that are either outside UOB's control or take time to resolve include include erratic mobile network availability, the challenges of text message management, and issues related to agent liquidity and viability.

Decisions that influenced the results include the following:

- Safety of money and staff: UOB encouraged clients to move from giving cash to fellow group members or UOB staff to depositing cash at agents. This reduced the risks of theft and fraud.
- Satisfaction of clients: UOB encouraged clients to move from weekly or biweekly meetings to monthly meetings. For most clients the time

savings that came with mHose outweighed the drawbacks and intermittent reliability of the service.

- Outreach: UOB only actively rolled out mHose to existing loan clients during the first year. It did not yet actively roll out mHose to new clients nor to new geographical areas. It is therefore logical that mHose has not yet led to increased outreach. A gradual and phased roll-out approach is often necessary in an m-banking deployment, because the complexity of the endeavor.
- Portfolio quality: UOB has rolled out mHose mostly to group loan clients. Staff and clients complain that the reduced need for group meetings resulting from m-banking makes it more difficult to resolve group delinquency.
- Efficiency: UOB has created a 9 person team dedicated to mHose. The savings made by the dismissal of 2 and reassignment of 2.5 junior back office staff are not enough to compensate for the costs of the mHose team. Future cost savings and efficiency gains are expected.
- Revenues: To promote access, UOB has set customer fees considerably below transaction costs. This limits its income from fees. In addition, it has not yet actively promoted mHose for savings. As mHose has not yet resulted in added deposits, added revenues from the lending out of such deposits is thus far negligible.

DETAILED CLIENT ANALYSIS

The diagnostics tool includes a sub-tool to analyse the effect of m-banking on clients. Figure 13 summarises the findings from focus group discussions[6] and a telephone survey[7] among UOB's clients.

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[6] Nine focus group discussions (FGDs) were held with 82 clients and 16 Relationship Officers. FGDs are a great tool for generating an inventory of issues, and for getting an in-depth understanding. However, the FGD participants do not constitute a representative sample. Therefore, it is not possible to draw conclusions on the relative importance of the different issues.

[7] A telephone survey was conducted on a stratified random sample of 240 mHose registered clients, divided into urban and rural users and non-users. Telephone surveys can only be used for getting answers to a small number of simple questions. The short duration of interviews makes it difficult to establish causality. Findings must therefore be interpreted with care.

Figure 13. Results of m-banking for clients

Indicator	negative	Impact neutral	positive
ACCESSIBILITY			
Access for existing clients to existing and additional financial services	▰		▰
Access for new clients to financial services		▰	
CONVENIENCE AND TIME SAVINGS			
Transparency of information on repayment	▰		▰
Transparency of information on account balance		▰	▰
Convenience of place for cash transactions		▰	▰
Flexibility on when to deposit cash and speed of cash transactions			▰
Convenience of place and time for loan repayment transactions			▰
Speed of resolving repayment problems	▰		
NET FINANCIAL BENEFITS			
Time for doing business			▰
Transport cost savings		▰	
Savings on penalties for arriving late at meeting			▰
Interest on savings		▰	
Insurance coverage		▰	
Affordability of transactions	▰		
Savings on penalty interest (for delinquents)	▰		
Savings on telephone costs (for committee)	▰		
NET SOCIAL BENEFITS			
Social connectedness through phone			▰
Peace and trust among group members			▰
Opportunities for social interaction and group dynamics	▰		
SAFETY OF MEMBERS AND CASH			
Perception of safety			▰
Transport of cash by Loan officers and clients			▰
CUSTOMER SERVICE EXPERIENCE			
Change in income from transactions	▰		▰
Change in deposit base	▰		▰

As can be seen, clients identified clear benefits of mHose in terms of safety and appreciated the time savings. In other areas, however, their experience was mixed. Depending on the area, they experienced positive effects, no effects, negative effects or a combination of effects.

- Accessibility: mHose gave many clients access to a wider variety of products such as a savings account and insurance. However, access became more difficult for a small proportion of clients. This included people with very little or no education, and those who, for a variety of reasons, did not have their own mobile phone.
- Convenience and time savings: Most clients loved the fact that they no longer had to spend hours in meetings every week. However, whether they saved time in practice depended on the proper functioning of agents, the mobile network and the system.
- Net financial benefits: Clients were very happy about the fact that they could spend the time gained working in their business making money. What many did not like was the fact that they had to pay for withdrawing cash when using an agent.

- Net social benefits: The reduced need for spending time in group meetings just watching others pay was much appreciated. However, clients missed the social benefits of group meetings. They complained particularly strongly about the greater difficulties to resolve their fellow members' repayment problems.
- Safety of members and cash: Most clients felt that mHose reduced their risk by reducing their need to transport cash or entrust their money to the Committee.
- Customer service experience: Agents and a call centre made it easier for clients to obtain information and resolve problems. However, clients' customer service experience differed depending on the actual knowledge and availability of these new venues.

RECOMMENDATIONS FROM THE DIAGNOSIS OF UOB

As mentioned above, the value of conducting a diagnosis during the ramp-up phase of an m-banking deployment is that it allows for the early identification of weaknesses and the definition of areas for improvement.

The assessment we undertook has allowed for the identification of the principal areas in which UOB needs to make improvements in order to achieve better results and speed up progress towards cost recovery. These include, in particular:
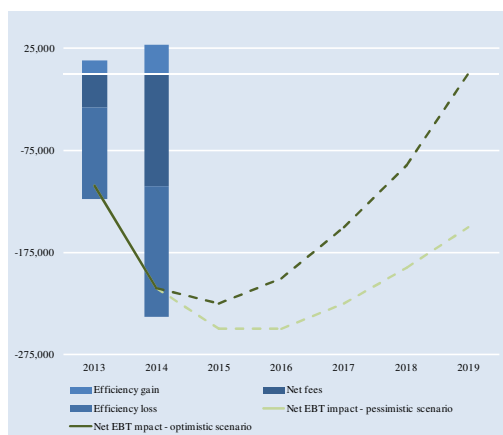
- The resolution of issues related to agents' liquidity and viability: supporting agents to spread transactions over the day and providing them more options to manage liquidity will result in better client service and foster increased usage of mHose;
- The adaptation of the group lending methodology to make sure it works with mHose: streamlining the repayment process to ensure a good information flow for groups and UOB staff will result in time savings for Relationship officers and therefore increased productivity;
- The active promotion of savings: systematic and active promotion of the benefits offered by the savings account and the insurance policy will result in increased usage and help building the deposit base. This includes the roll-out to new clients and easier acount opening;

- The development of <u>alternative facilities for disbursement in rural areas</u> to be able to roll-out UOB mHose in new geographical areas.

Furthermore, while UOB has no control over mobile network coverage, regular consultation with mobile network operators is likely to help improve network coverage and reliability in the areas it serves.

UOB's original projections foresaw break-even[8] at the end of the third year. Figure 14[9] shows actual operational costs and benefits for 2013, and more realistic projections for 2014. The projections are based on the findings from the diagnostic of the first year, and inputs from UOB on its plans for 2014[10]. The continuous line in figure 14 indicates the likely net impact of m-banking on earnings before tax (EBT).

Figure 14. Results of m-banking for UOB

It is clear from the diagnostic that the net financial impact of UOB's m-banking deployment has been more negative than originally projected. The original projections did not take into account the need to

take on and pay a dedicated m-banking management team. They also overestimated the speed at which efficiency gains and deposit growth would be realised. The project is therefore unlikely to break even by the end of the third year.

The dashed lines in Figure 14 indicate two possible scenarios for the next few years. In case UOB does not take specific action in the identified areas then only a slow reversal of the trend is expected ('pessimistic scenario').

A more optimistic scenario could result to the extent that the diagnostic's recommendations listed above are further detailed and implemented. A well-operating agent network will be a necessary condition for this to happen. In addition, streamlining the group loan repayment process in combination with measures to increase deposits will have the biggest impact on UOB's bottom line.

CONCLUSIONS ON THE M-BANKING DIAGNOSTICS TOOL

The M-banking diagnostics tool described in this paper constitutes a comprehensive and structured method for assessing an ongoing m-banking deployment. When used during the ramp-up phase of an m-banking implementation, it allows to measure results against the original assumptions made for the deployment as well as against benchmarks for a mature deployment. An early diagnosis and identification of areas for improvement allows a financial institution to identify and prioritize the key actions required to bring forward the moment where the costs of the new delivery channel are outweighed by the benefits for the institution and its clients.

Figure 15. Additional considerations on M-banking and financial inclusion

Mobile banking is often considered a powerful tool for financial inclusion. While mHose's contribution to this goal has so far been limited, it has considerable potential.

To exploit this, UOB needs to:
- <u>Actively plan for rolling out its services to more difficult to reach areas.</u> This requires the development of strong partnerships with institutions with a presence in remote areas, which can act as agents for all services including disbursements.
- <u>Study ways to make mHose accessible to the most vulnerable</u> including the illiterate and those without a telephone. UOB should closely follow the development of technology such as voice-operated menus, and other methods for deepening outreach.

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[8] It should be noted that that UOB's original projections were limited to operational costs and benefits, and so are the revised projections presented here. They do not take into account the investments that were necessary to build the bank's m-banking capacity.

[9] The findings from the one year diagnostic provide insufficient basis for multi-year projections. The dashed lines have been drawn for illustrative purposes only.

[10] The projections for 2014 are based on current targets for numbers of active mobile customers and the size of the project team. They assume similar cost savings on data entry staff and cash insurance as in the previous year.