

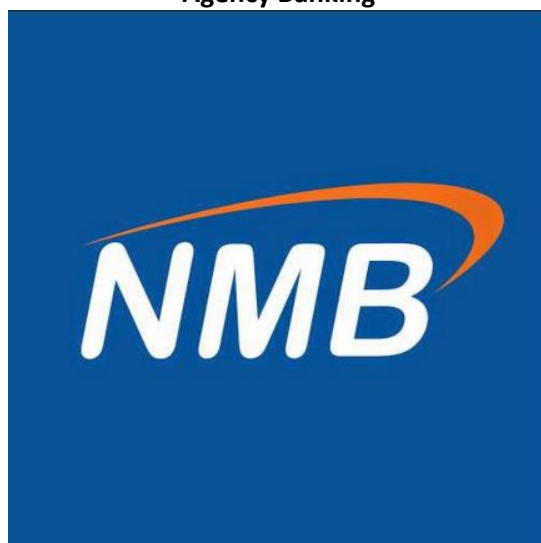


# SOFTWARE GROUP

## **GAP Functional Specification Document**

**National Microfinance Bank**

**Agency Banking**



Version: 1.0  
23 November 2020

## TABLE OF CONTENTS

<b>1</b>	<b>OVERVIEW .....</b>	<b>3</b>
1.1	SOLUTION DESCRIPTION .....	3
1.2	PURPOSE .....	3
1.3	RELATED DOCUMENTS .....	3
1.4	DESIGN REQUIREMENTS.....	4
1.5	LANGUAGE SUPPORT AND CURRENCY.....	4
1.6	NOTIFICATIONS.....	4
1.7	ABBREVIATIONS.....	5
<b>2</b>	<b>SOLUTION .....</b>	<b>6</b>
2.1	FIRST TIME LOGIN.....	6
2.2	MAIN MENU.....	7
<b>3</b>	<b>FUNCTIONAL SPECIFICATION.....</b>	<b>9</b>
3.1	TRANSACTION ON USSD .....	9
3.1.1	GENERAL USSD REQUIREMENTS.....	10
3.1.2	UC-01-FIRST TIME LOGIN .....	11
3.1.3	UC-02-CASH IN .....	12
3.1.4	UC-03-CASH-OUT WITH OTP .....	15
3.1.5	BILL PAYMENTS .....	17
3.1.6	UC-09-PESA FASTA (REMITTANCE-CASH WITHDRAWAL WITH OTP) .....	32
3.1.7	AGENT MENU .....	35
<b>4</b>	<b>CONFIGURATIONS .....</b>	<b>41</b>
4.1.1	PRODUCT CONFIGURATION .....	41
4.1.2	PROJECT CONFIGURATION .....	41
<b>5</b>	<b>INTEGRATIONS.....</b>	<b>42</b>
5.1	API 1.....	42
5.2	API 2.....	42
<b>6</b>	<b>REPORTS.....</b>	<b>43</b>
	<b>LIST OF FIGURES .....</b>	<b>44</b>
	<b>LIST OF TABLES .....</b>	<b>45</b>
	<b>DOCUMENT HISTORY .....</b>	<b>46</b>
	<b>SCOPE SIGN-OFF.....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>

## 1 Overview

NMB Bank is a retail and commercial bank in Tanzania that offers banking services to individuals, small to medium sized businesses, as well as large corporate clients. NMB is looking to acquire SG Agency Banking solutions to be able to manage a number of operational challenges that it has been facing since the establishment of a direct model in 2016.

### 1.1 Solution description

SG Agency Banking is a strategic solution for NMB to shift from a physical POS based model to an M-POS. Agency Banking solution will offer NMB third party agent advanced services to the ones its customers are getting at the moment, such as enabling convenient service delivery to customers while avoiding the cost of branch expansion or ATM investment.

The following is a list of functionalities that is in scope for the agent on USSD channel: Agent Login with PIN, Cash-In to account , Cash withdrawal with OTP, Internal Fund Transfer ,Customer Mini Statement, Customer Balance Enquiry ,Agent Mini Statement (mobile) ,Float Rebalancing ,Agent balance inquiry, Bill Payments with cash and account, Top-Up Air-Time with cash and account ,SMS Receipts, Government Payments with cash and account, Remittance in country – cash withdrawal with secret code. Agent will use same PIN to login across all the channel he has access to.

The following is a list of functionalities that is out of scope on the agent on USSD channel: Transactions including Cash-IN to card, Bill payment with card, Top up airtime with card, Ticket issuing, Buy goods and services, Customer On-boarding for corporate and joint type customers, Customer Bio Enrolment, Agent Login with Bio, Agent Bio Authorization, Customer Bio Authorization, customer loan Request, Complaints Management, Agent Member On-boarding (mobile),Agent Bio Enrolment, Biometrics and Bio Management, Multi-Currency Support, and any other feature not mentioned as part of the scope of this document.


Flexcube as the CBS will be the source of truth for the accounts, account categories, products, and all the transactions. DW will only store agent details, branch names, account numbers, telephone numbers and IMSI.

### 1.2 Purpose

The Functional Specification Document (FSD) details how the various modules and software enhancements involved in this project will work. It is used to capture product configurations and product customizations. The FSD should be reviewed carefully and agreed upon as a correct representation of requirements. While changes to the FSD can be catered for, these will be subject to a change control process and may result to changes in scope and timeline.

### 1.3 Related documents

REF.	DOCUMENT NAME	NOTES
(1)	SOW	

REF.	DOCUMENT NAME	NOTES
(2)	 NMB_Agency Banking_Guide_App Agent USSD Subscription	

**Table 1. Related documents**

#### 1.4 Design Requirements



Brand  
Guideline-01-04-20-

#### 1.5 Language Support and Currency

- English and Swahili is the required language to be implemented on the agency mobile application interface.
- The implementation will support a single currency (Tanzanian Shillings)

#### 1.6 Notifications

This will be provided in a separate document

## 1.7 Abbreviations

ABBREVIATION	DESCRIPTION	DETAILS
NMB	National Microfinance Bank	NMB is a commercial bank in Tanzania. It is licensed by the Bank of Tanzania, the central bank and national banking regulator.
PAP	Platform Administration Portal.	Used to manage the setup, configuration, parameterization and maintenance of the platform, including various system settings, security, organizational structures.
USP	Unified Solution Portal	Used to manage various end-user settings like customer edit and creation, subscription/unsubscription and password reset.
USSD	Unstructured Supplementary Service Data	Communications protocol used by GSM cellular telephones to communicate with the mobile network operator's computers.
MAP	Mobile Application Portal	End-user interface, designed to run on mobile devices and tablets.
SSP	Self-Service Portal	End-user interface, designed to run on WEB browsers.
DW	Digiwave	DigiWave is a comprehensive and powerful digital banking platform based on open standards, with integration, workflow management, and enterprise architecture as core building blocks
CBS	Core Banking system	Centralized system established by a bank, which allows its customers to conduct their business irrespective of the bank's branch.

**Table 2. Abbreviations**

## 2 Solution

This chapter describes solution structures and architecture on high level.

### 2.1 First time login

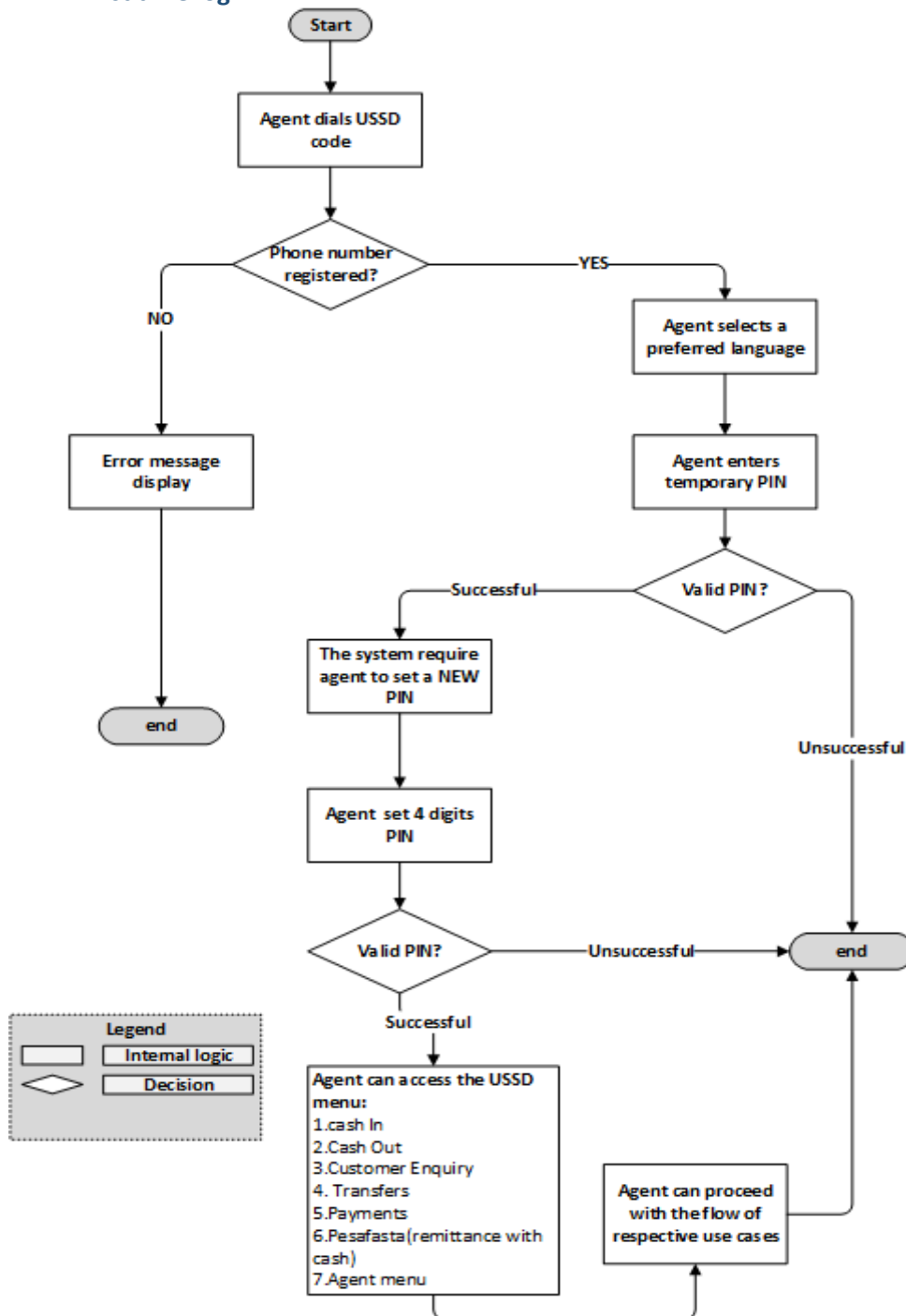


Figure 1. Feature/stream 1

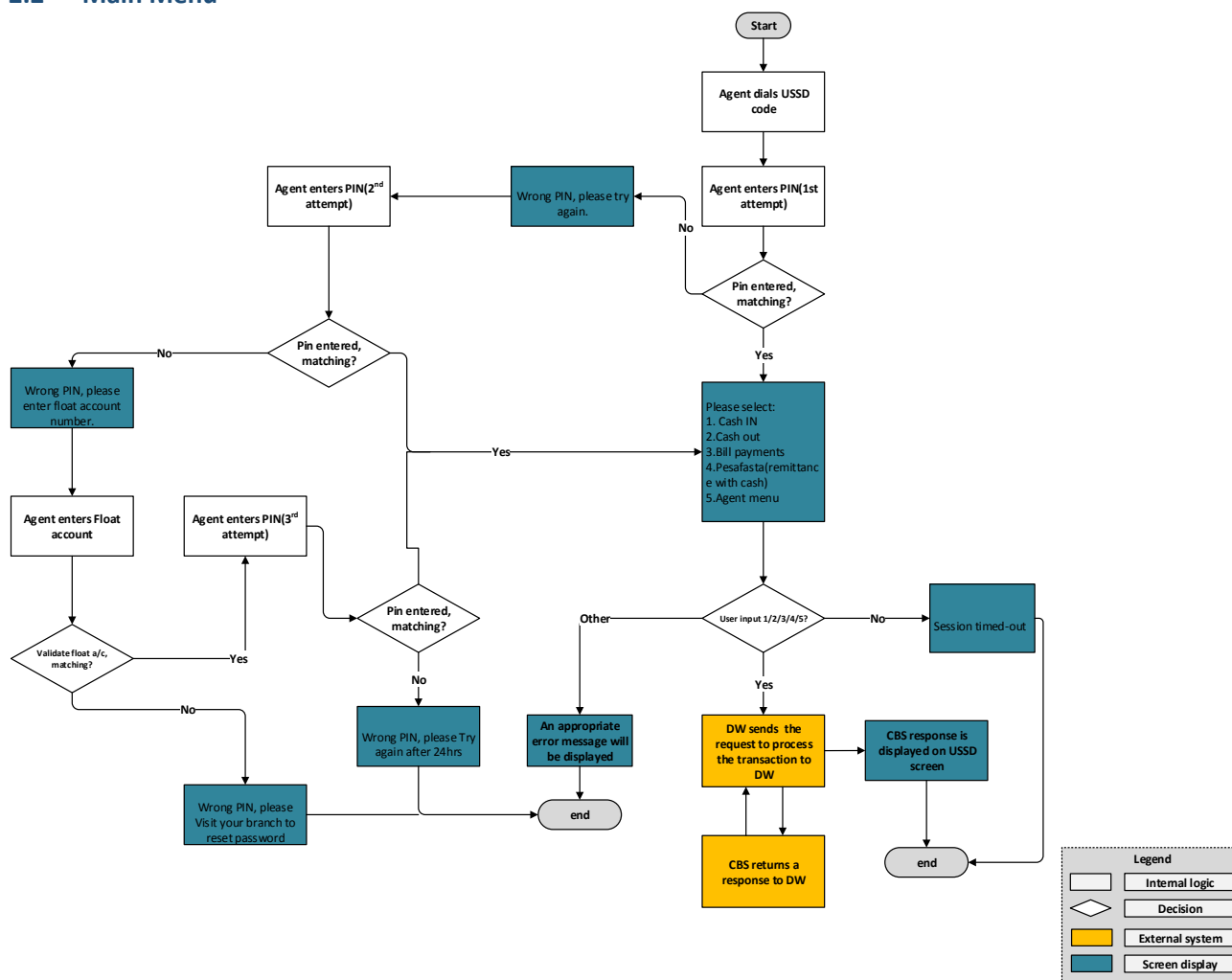
**Note:** IMSI can be saved depending on the information DW will receive from the API

## Decisions:

Name	Description
Decision 1: Verify if the phone number is registered for USSD mobile banking in DW	Yes: DW has recognized that the number is registered and is login for the first time on USSD mobile banking No: Number not registered, process ends.
Decision 2: DW validates the PIN	Yes: PIN matching No: PIN not matching, process ends
Decision3: DW validates the new PIN	Yes: The PIN has been set successfully No: Setting the new PIN has failed, process ends

**Table 3. First time login**

## 2.2 Main Menu



**Figure 2. Main Menu**

Decisions:

Name	Description
Decision1: DW validates the PIN	Yes: PIN matching No: PIN not matching, an error message will be displayed. Process ends
Decision2: Agent selects a Financial transaction	Yes: Agent has selected one of the financial transactions on USSD Menu and the request is sent to CBS. No: If the Agent does not select anything for a period of time, the session times out (This will be configured in Digiwave).
Decision 3: DW Validates the float account number	Yes: Agent enters PIN number No: PIN not matching, an error message will be displayed. Process ends

**Table 4. Main menu**



### 3 Functional specification

#### 3.1 Transaction on USSD

List of dependencies
NMB to provide the parameters to be taken into consideration for PIN complexity
NMB to provide SMS receipts template
NMB to provide the required APIs

#	Module	Use Case Name	Use Case Type	Use Case No
	<b>Credentials</b>	Login with PIN	Standard	N/A
		First Time login	Gap	<a href="#">UC-01-</a>
	<b>Transactions</b>	Cash-in	Gap	<a href="#">UC-02-</a>
		Cash-out with secret code(OTP)	Gap	<a href="#">UC-03-</a>
		Bill details inquiry	Gap	<a href="#">UC-04-</a>
		Top up airtime-cash	Gap	<a href="#">UC-05-</a>
		Bill Payments-Cash	Gap	<a href="#">UC-06-</a>
		Bill Payments-DSTV-Cash	Gap	<a href="#">UC-07-</a>
		Government Payments-Cash	Gap	<a href="#">UC-08-</a>
		Pesafasta (Remittance-withdrawal with OTP)	Gap	<a href="#">UC-09-</a>
	<b>Agent menu</b>	Float rebalancing-A/C to A/C	Gap	<a href="#">UC-10-</a>
		Agent Mini Statement (mobile) 5 last transaction	Gap	<a href="#">UC-11-</a>
		Agent Balance enquiry	Gap	<a href="#">UC-12-</a>
		Change language	Standard	N/A
		Change PIN	Standard	N/A
	<b>Transaction Confirmation</b>	SMS Receipts	Standard	N/A

### 3.1.1 General USSD requirements

- DW will host the USSD menu
- A USSD short code will be provided by TRCA(Tanzania Communication Regulatory Authority) unique for NMB to be used by all the MNOs
- All the Agents dialling the USSD short code have to be subscribed for NMB USSD services
- DW will prompt to the customer to enter a minimum of 4 digits PIN to access USSD menu
- USSD session timeout: 60 seconds (Configurable)
- An SMS transaction Receipt will be generated for every financial transaction done via USSD.
- This SMS receipt can be turned on and off per transaction as needed by NMB
- For the USSD screen, the mobile banking system will support '9' for back and '0' for home menu where it is required.
  
- PIN complexity

USSD Menu display:

1. Cash-IN
2. Cash-OUT
3. Bill Payments:
  - a. Top up airtime
  - b. Bill payments
  - c. Government payments
4. Pesafasta (Remittance)
5. Agent menu:
  - a. Agent Float rebalancing
  - b. Agent mini-statement
  - c. Agent Balance enquiry
  - d. Change language
  - e. Change PIN

### 3.1.2 UC-01-First time Login

<b>Title:</b>	<u>First time login</u>
<b>Purpose:</b>	User to set a new PIN, language and Login to access USSD menu
<b>Primary Actors:</b>	Agent  Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>Agent has been successfully subscribed for USSD services in DW</li> <li>Temporary PIN has been sent to the agent after subscription</li> </ul>
<b>Business Rules:</b>	DW will save IMSI to be used as authentication during every login Same Login PIN should be applicable across all the channel
<b>Data Input:</b>	4 digits PIN
<b>Channel:</b>	<i>Mobile USSD</i>
<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>User dials USSD code,</li> <li>DW recognizes that the Customer telephone number is registered and is logging in for the first time after branch registration. A welcome message is displayed and an option for the customer to choose the language on the screen: <ol style="list-style-type: none"> <li>Swahili</li> <li>English</li> </ol> </li> <li>User enters PIN (temporary 4 digits PIN that has been generated and sent to the agent after registration at the Branch)</li> <li>User is prompted to set New PIN</li> <li>User is asked to enter the same PIN again and validates by clicking on OK button</li> <li>If successful, the following message is displayed: "New PIN has been set, Welcome to NMB Agency Banking"</li> <li>User has the option to go to the home page and access the main menu by entering '0'</li> </ol>
<b>Alternative Scenario :</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN".</p> <p>1.b User is able to attempts up to 3 times. In the scenario where the user fails the 1<sup>st</sup>, and the 2<sup>nd</sup> attempt, the user will be prompted to enter their "account number" before attempting the 3<sup>rd</sup> time.</p> <p><i>Note: This is applicable for every login</i></p> <p>1.c If the 3<sup>rd</sup> time attempt to login is not successful but the user entered a correct account number, the user will be locked from accessing the</p>

	<p>USSD channel for 24hrs(Configurable).The following message is displayed: "Incorrect PIN,your access to this channel is temporary locked".</p> <p><i>Note: This is applicable for every login</i></p> <p>1.d If the 3<sup>rd</sup> time attempt to login is not successful and the user entered a wrong account number, the user will be locked from accessing the USSD channel and will be required to visit the Bank. The following message is displayed: "Incorrect PIN, your access to this channel is locked, Please contact your branch".</p> <p><i>Note: This is applicable for every login</i></p> <p>2.a If DW does not recognize the telephone number, an appropriate error message will be displayed as follows:" Phone number not registered. Contact NMB Office"</p> <p>3.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>5.a If failed to set a new PIN, the following message is displayed: "New PIN registration failed, please try again".</p>
<b>Result:</b>	<p>user's New Pin and default language are set</p> <p>User has successfully logged in USSD mobile banking</p>

### 3.1.3 UC-02-Cash IN

<b>Title:</b>	<u>Cash IN</u>
<b>Purpose:</b>	<p>Customer to deposit funds to his own NMB bank account via an agent</p> <p>Customer to deposit funds by third party to NMB bank account via an agent</p>
<b>Primary Actors:</b>	<p>Agent</p> <p>Operator</p>

<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• CBS is available</li> <li>• User mobile number is subscribed for USSD services</li> <li>• User has successfully logged via USSD code</li> <li>• User has sufficient funds in his float account</li> <li>• User has permission to perform this type of transaction</li> <li>• Transaction fees and commission configured in DW</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• DW will save IMSI to be used as authentication during every login</li> <li>• Same Login PIN should be applicable across all the channel</li> <li>• DW will check whether the Account number is customer's account number not a float account</li> </ul>
<b>Data Input:</b>	Account number
<b>Channel:</b>	<i>Mobile USSD</i>
<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>1. User dials USSD code and enters their 4-digit PIN, a USSD menu is displayed</li> <li>2. User selects the option of "Cash IN" on the displayed USSD menu.</li> <li>3. A screen is displayed, agent enters the recipient account number and clicks OK button</li> <li>4. User enters the amount and clicks OK. Transactions fee will be calculated and applied as configured in DW.</li> <li>5. User enters depositor mobile number and click on 'OK' to proceed (DW will only check and validate the format of the mobile number)</li> <li>6. The transaction details are displayed as a Confirmation Message: Transactions details are displayed on the screen as follows: "Customer's name, Customer's A/c: xxxxxx, Deposit Amount:xxxxx, fee:xxx".User is given the option to input "1" to Confirm, "2" to Cancel, "9" to navigate back and "0" to access Home Menu.</li> <li>7. User selects "1" to confirm the transaction details</li> <li>8. DW will check if the agent is within the transaction limits set in DW</li> <li>9. If successful,DW sends a request to CBS to debit the agent float account and credit Customer's account</li> <li>10. If successful, CBS will return a positive response and a successful message will be displayed on the user's screen.</li> <li>11. Agent's float account is debited, Customer's account is credited.The customer receives confirmation with the transaction details and transaction Reference Number through an SMS.</li> <li>12. A confirmation message of the transaction details will be displayed on the agent's screen</li> </ol>

<b>Alternative Scenario:</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>4.a If User enters a wrong account number, a message will be displayed on the screen: "Invalid account number"</p> <p>6.a If User enters a wrong mobile number, a message will be displayed on the screen: "Invalid mobile number"</p> <p>8.a. If agent has exceeded his transaction limits; a message is displayed respectively: "You have exceeded your transaction limits"</p> <p>9.a If the agent has Insufficient funds in his account; a message is displayed: "insufficient funds"</p> <p>9.b If CBS is not available,an error message will be displayed on as follows: "CBS is not available"</p> <p>9.c If network is not available, an appropriate message will be displayed</p>
<b>Result:</b>	<p>Agent's float account is debited, and the Customer's account is credited. Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW( As set up for this type of transaction in DW)</p> <p>A confirmation SMS with the transaction details is sent to the agent and the recipient mobile number</p> <p>A sms receipt is sent to depositor mobile number only if different from the recipient mobile number</p>

### 3.1.4 UC-03-Cash-out with OTP

<b>Title:</b>	Cash out with OTP
<b>Purpose:</b>	NMB Customer is able to withdraw money through an agent when connectivity is low
<b>Primary Actors:</b>	Agent
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User mobile number is subscribed for USSD services</li> <li>• Customer is registered in the CBS</li> <li>• Customer has an active NMB account</li> <li>• Agent is registered and has permission to perform this type of transaction</li> <li>• Transaction fees and commission configured in DW</li> </ul>
<b>Business Rules:</b>	DW will save IMSI to be used as authentication during every login Same Login PIN should be applicable across all the channel
<b>Data Input:</b>	OTP
<b>Channel:</b>	<i>Mobile-USSD</i>

**Main Scenario:**

1. User dials the short code number and enters their 4-digit PIN, a USSD menu is displayed
2. User enters a number that represent "Cash-out" from the transaction menu
3. User is required to enter Customer's account number
4. User enters customer's account number and clicks "Ok" to proceed
5. User enters withdrawal Amount and clicks on "Ok" button to proceed. If there is any fee configured for this transaction it will be calculated in DW and included in the transaction.
6. Transactions details are displayed on the screen as follows: " Customer's name, Customer's A/c: xxxxxx, withdrawal Amount:xxxxx, fee:xxx" User is given the option to input "1" to Confirm, "2" to Cancel, "9" to navigate back and "0" to access Home Menu.
7. User selects "1" to confirm the transaction, and Immediately the customer receives an OTP code on his mobile number as follows: "Please confirm *Withdrawal Amount xxxxxx from your account Number xxxxxx with OTP code:xxxx*"
8. User is required to enter an OTP code on the screen display
9. User enters OTP code received from the customer and clicks "Ok" to proceed
10. DW will check if the agent is within the transaction limits set in DW.
11. If successful, DW will send a request to CBS to credit the customer's account.
12. If successful, a confirmation message will be displayed and receipt will be printed
13. The customer receives confirmation with the transaction details and transaction Reference Number through an SMS.
14. A confirmation message will be displayed on the agent's screen



<b>Alternative Scenario:</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>5.a If User has entered an invalid customer account number an error message will be displayed: "Invalid Customer's account"</p> <p>10.a If OTP validation fails display an error message: " Wrong OTP"</p> <p>11.a If agent has exceeded his transaction limits; a message is displayed respectively: "You have exceeded your transaction limits"</p> <p>12.a If CBS is not available, an error message will be displayed on as follows: " CBS is not available"</p> <p>12.b If the customer's account does not have enough balance, an error message will be displayed "Insufficient balance"</p> <p>12.c If network is not available, an appropriate message will be displayed</p>
<b>Result:</b>	<p>Customer's account is debited with the amount and Customer receives the amount in cash. Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW</p> <p>Customer receives a confirmation SMS with the transaction details</p>

### 3.1.5 Bill Payments

#### 3.1.5.1 UC-04- Bill details enquiry

<b>Title:</b>	Bill details enquiry
<b>Purpose:</b>	DW to enquire Bill details before confirming the payment
<b>Primary Actors:</b>	Operator Agent manager
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User has logged in USSD session successfully</li> <li>• User has permission to perform transaction</li> <li>• Established integration with NMB gateway successfully with DW</li> </ul>

	<ul style="list-style-type: none"> <li>Customer's meter number/control number/Bill number is valid</li> </ul>
<b>Business Rules:</b>	Payment serves both bank and non-bank customer
<b>Data Input:</b>	Control number
<b>Channel:</b>	<i>USSD</i>
<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>User selects "Bill payment" on the list of transaction</li> <li>User selects a Biller category among the listed, screen is displayed</li> <li>User enters a Control number or a Meter number, or Bill number depending what has been selected on step 3 and clicks "Ok" button.</li> <li>DW will send a request to NMB gateway. If successful, NMB gateway will respond to DW with the bill details (Details will differ from biller to biller). The gateway will also inform DW the bill payment status if it's partial or full/exact payment</li> <li>Bill details will be displayed on the screen, User clicks on "OK" button.</li> <li>Process continues as per <a href="#">UC-05,UC-06,UC-07,UC-08</a></li> </ol>
<b>Alternative Scenario:</b>	<p>5.a If NMB gateway is not available, an appropriate message will be displayed: " System not available"</p> <p>6.a User has the option to click on cancel button and returned to step 3 of basic workflow</p>
<b>Result:</b>	Bill details will be displayed on the screen

### 3.1.5.2 UC-05-Top up airtime-cash

<b>Title:</b>	<u>Top-up airtime with cash</u>
<b>Purpose:</b>	Customer to top up airtime with cash via agent
<b>Primary Actors:</b>	Agent Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>Valid Customer phone number</li> <li>Transaction fees and commission configured in DW</li> <li>Established integration with the MNOs</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>DW will save IMSI to be used as authentication during every login</li> <li>Same Login PIN should be applicable across all the channel</li> </ul>
<b>Data Input:</b>	Amount Telephone number
<b>Channel:</b>	<i>Mobile USSD</i>

<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>1. User dials USSD code and enters their 4-digit PIN, a USSD menu is displayed</li> <li>2. User enters a number representing "Payments" in the USSD menu</li> <li>3. Under "Bill Payments", User enters a number representing "Top-up airtime"</li> <li>4. User selects a particular MNO from the list: <ol style="list-style-type: none"> <li>a. Vodacom,</li> <li>b. Tigo,</li> <li>c. Zantel,</li> <li>d. Airtel,</li> <li>e. Halotel,</li> <li>f. TTCL</li> </ol> </li> <li>5. User enters Customer top-up mobile number and clicks OK to proceed(DW will only check and validate the format of the mobile number)</li> <li>6. User enters the amount and clicks on OK to proceed. If there is any fee configured for this transaction it will be calculated in DW and included in the transaction.</li> <li>7. Confirmation Message for Top-Up will be displayed as follows: "Top up airtime for phone number: 255 xxxxxxxx, amount: xxx". Agent is given the option to enter "1" to Confirm, "2" to Cancel, "9" to navigate back and "0" to access Home Menu.</li> <li>8. User enters "1" to confirm, DW will check if the agent is within the transaction limits set in DW</li> <li>9. DW sends the request to CBS to DW will send a request to CBS to debit the agent's float account and credit the MNO's GL account</li> <li>10. If successful, CBS returns a successful response to DW.A successful message will be displayed on the user's screen</li> <li>11. NMB Gateway will update MNO's system with payment details and customer mobile number loaded with airtime</li> <li>12. DW sends SMS to the SMS Gateway and Customer receives an SMS notification to confirm the airtime top-up.</li> </ol>
<b>Alternative Scenario:</b>	<ol style="list-style-type: none"> <li>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</li> <li>7.a If User enters a wrong mobile number, a message will be displayed: "Invalid mobile number".</li> <li>10.a if the Agent has exceeded is transaction limits; a message is displayed respectively: "You have exceeded your transaction limits"</li> <li>11.a If the agent has Insufficient funds in his account, a message is displayed respectively: "insufficient funds"</li> </ol>

	<p>11.b If the CBS is not responding, a message will be displayed: “CBS not available”</p> <p>12.c If network is not available, an appropriate message will be displayed</p>
<b>Result:</b>	<p>Agent’s float account is debited with the amount and the customer’s mobile number is topped-up with airtime. Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW</p> <p>Customer receives a confirmation notification of the top up airtime amount that has been loaded on their mobile number</p>

### 3.1.5.3 UC-06-Bill payments with Cash

<b>Title:</b>	Bill payments
<b>Purpose:</b>	Customer to pay for bills through an agent with an option to pay with cash

<b>Primary Actors:</b>	Agent Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User has permission to perform this transaction</li> <li>• User's float account has sufficient funds, when payment is done in cash mode</li> <li>• Established integration with aggregators</li> <li>• Customer's meter number/meter is valid</li> <li>• Transaction fees and commission configured in DW</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• DW will save IMSI to be used as authentication during every login</li> <li>• Same Login PIN should be applicable across all the channel</li> <li>• NMB gateway will communicate to DW whether the payable amount is Fixed(Full payment) or partial payment</li> </ul>
<b>Data Input:</b>	Meter number or bill number
<b>Channel:</b>	<i>Mobile USSD</i>

**Main Scenario:**

1. User dials USSD code and enters their 4-digit PIN, a USSD menu is displayed
2. User enters a number representing "Payments" in the USSD menu
3. User enters a number representing "Bill payment" in the USSD menu
4. User is given an option to choose a Biller category from the listed on the screen:
  - a. Prepaid:
    - i. Electricity
    - ii. Insurance
    - iii. Travel
    - iv. University
  - b. TV subscription
5. User selects a prepaid biller from the listed on the screen
7. User enters Customer's bill number (For electricity it will be a Meter number). Bill details will be displayed on the screen, User clicks on "OK" button.
6. User enters customer's mobile number(For the sms receipt-DW will only check and validate the format of the mobile number)
7. User enters amount. If there is any fee configured for this transaction it will be calculated in DW and included in the transaction.
8. User clicks on OK, a Confirmation Message for bill payment will be displayed. User is given the option to input "1" to Confirm, "2" to Cancel, "9" to navigate back and "0" to access Home Menu.
9. User enters "1" to confirm,DW will Check if the agent is within the transaction limits set in DW
10. If successful,DW will send the request to CBS to debit the agent's float account and credit the Biller GL account.
11. CBS returns a successful response to DW.A successful message will be displayed on the user's screen
12. NMB Gateway will update the biller system with payment details
13. Customer receives an SMS receipt with the bill payment details.

<b>Alternative Scenario :</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>5.a If User enters a wrong Bill number or meter number, a message will be displayed: "Invalid bill number" or Invalid meter number</p> <p>6.a If User enters a wrong mobile number, a message will be displayed: "Invalid mobile number"</p> <p>13.a If Agent has exceeded his transaction limits; a message is displayed respectively: "You have exceeded your transaction limits"</p> <p>14.a If user has Insufficient funds in his account; a message is displayed: " insufficient funds"</p> <p>14.b If the CBS is not responding, a message will be displayed: "CBS not available"</p> <p>14.c If network is not available, an appropriate message will be displayed</p>
<b>Result:</b>	<p>Agent's float account is debited of the amount and Biller's account is credited. Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW</p> <p>Customer receives an sms receipt with transaction payment details</p>

#### 3.1.5.4 UC-07-Bill payments –TV subscription payment with cash

<b>Title:</b>	Bill payments-TV subscription payment with cash
<b>Purpose:</b>	Customer to pay for bills through an agent with an option to pay TV subscription with cash
<b>Primary Actors:</b>	Agent Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• Agent has permission to perform this transaction</li> <li>• Agent's float account has sufficient funds, when payment is done in cash mode</li> <li>• Transaction fees and commission configured in DW</li> </ul>



	<ul style="list-style-type: none"> <li>• Established integration with service providers</li> <li>• Customer's card number is valid</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• DW will save IMSI to be used as authentication during every login</li> <li>• Same Login PIN should be applicable across all the channel</li> <li>• NMB gateway will communicate to DW whether the payable amount is Fixed(Full payment) or partial payment</li> </ul>
<b>Data Input:</b>	Customer's card number
<b>Channel:</b>	<i>Mobile USSD</i>

**Main Scenario:**

1. User dials USSD code and enters their 4-digit PIN, a USSD menu is displayed
2. User enters a number representing "Payments" in the USSD menu
3. User enters a number representing "Bill payment" in the USSD menu
4. User is given an option to choose a Utility category from the listed on the screen:
  - a. Prepaid-Electricity
  - b. TV subscription:
    - i. DSTV
    - ii. ZUKU
    - iii. AZAM
5. User selects TV subscription option on the screen
6. A list of packages will be displayed on the screen
7. User selects a package, a screen displays a fixed amount to be paid and it varies depending on the package.
8. User enter customer's card number. Bill details will be displayed on the screen, User clicks on "OK" button.
8. User enters amount. If there is any fee configured for this transaction it will be calculated in DW and included in the transaction.
9. User enters customer mobile number (For the sms receipt-DW will only check and validate the format of the mobile number)
10. User clicks on OK, a Confirmation Message for bill payment details will be displayed on the screen. User is given the option to input "1" to Confirm, "2" to Cancel, "9" to navigate back and "0" to access Home Menu.
11. User enters "1" to confirm, DW will Check if the agent is within the transaction limits set in DW
12. If successful, DW will send the request to CBS to debit the agent's float account and credit the respective GL account.
13. If CBS returns a successful response to DW. A successful message will be displayed on the user's screen
14. NMB Gateway will update the TV system with payment details
15. Customer receives an SMS receipt with the bill payment details.

<b>Alternative Scenario:</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>8.a If User enters a wrong customer's card number, a message will be displayed: "Invalid customer's card number"</p> <p>12.a If agent enters a wrong mobile number, a message will be displayed: "Invalid mobile number"</p> <p>14.a Agent has exceeded his transaction limits; a message is displayed respectively: "You have exceeded your transaction limits"</p> <p>15.a If agent has Insufficient funds in his account; a message is displayed: "insufficient funds"</p> <p>15.b If the CBS is not responding, a message will be displayed: "CBS not available"</p> <p>15.c If network is not available, an appropriate message will be displayed</p>
<b>Result:</b>	<p>Agent's float account is debited of the amount and the respective GL biller account is credited. Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW</p> <p>Customer receives an sms receipt with payment details</p>

### 3.1.5.5 UC-08-Government Payments-Cash

<b>Title:</b>	Government payment
<b>Purpose:</b>	Customer to be able to make government payments through an agent with an option to pay with cash or with customer's account
<b>Primary Actors:</b>	Agent Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User has successfully logged into the USSD platform</li> <li>• User has permission to perform this type of transaction</li> <li>• Transaction fees and commission configured in DW</li> <li>• User has sufficient funds in his float account</li> <li>• Established integration with NMB gateway</li> </ul>

<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• DW will save IMSI to be used as authentication during every login</li> <li>• Same Login PIN should be applicable across all the channel</li> <li>• NMB gateway will communicate to DW whether the payable amount is Fixed(Full payment) or partial payment</li> </ul>
<b>Data Input:</b>	Control number  Mobile number
<b>Channel:</b>	<i>Mobile USSD</i>

**Main Scenario:**

1. User dials USSD code and enters their 4-digit PIN, a USSD menu is displayed
2. User enters a number representing "Payments" in the USSD menu
3. User enters a number representing "Government Payment " option on USSD sub-menu
9. User enters Control number and clicks on "OK", Bill details will be displayed on the screen, User clicks on "OK" button.
4. A screen will be displayed a Fixed amount(Full payment) to be paid
5. User enters the amount and clicks " Ok" to proceed.If there is any fee configured for this transaction it will be calculated in DW and included in the transaction.
6. User enters customer mobile number(For the sms receipt-DW will only check and validate the format of the mobile number)
7. A confirmation message displayed on the screen required the agent to Confirm the transaction by pressing "1", "2" to Cancel, "9" to navigate back and "0" to access Home Menu.
8. Agent confirms the transaction by entering "1" and clicking "Ok" to proceed,DW will check if the agent is within the transaction limits set in DW
9. If successful, DW will send a request to CBS to debited the agent float account and credit the Government GL account
10. If successful, CBS returns a successful response to DW. A successful message will be displayed on the user's screen
11. NMB Gateway will update the government system with payment details
12. Customer receives an SMS receipt with the bill payment details.

<b>Alternative Scenario 1:</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>4.a If agent enters a wrong "Control number", a message will be displayed: "Invalid control number"</p> <p>5.a If an user enters a "control number" that has a predefined amount, the agent will be prompted to enter a predefined amount displayed on the screen(the system will validate if the predefined amount is equal to what the agent has entered).</p> <p>9.a If agent enters a wrong mobile number, a message will be displayed: "Invalid mobile number"</p> <p>11.a If Agent has exceeded his transaction limits; a message is displayed respectively: "You have exceeded your transaction limits"</p> <p>12.a If agent has Insufficient funds in his account; a message is displayed: " insufficient funds"</p> <p>12.b If the CBS is not responding, a message will be displayed: "CBS not available"</p> <p>12.c If network is not available, an appropriate message will be displayed</p>
<b>Result:</b>	<p>Agent's float account has been debited and Government's account has been credited. Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW</p> <p>Customer receives an SMS receipt of the transaction details</p>

<b>Alternative Scenario:</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>3.a If user enters an invalid customer source account number. an error message will be displayed on the screen: "Invalid account number"</p> <p>8.a If user enters an invalid customer recipient account number. an error message will be displayed on the screen: "Invalid account number"</p> <p>16.a If agent enters an invalid OTP account, an appropriate error message will displayed on the screen</p> <p>17. a If Agent has exceeded his transaction limits; a message is displayed respectively: "You have exceeded your transaction limits"</p> <p>18.a If the customer source account has Insufficient funds in his account; an appropriate message is displayed: "insufficient funds"</p> <p>18.b If the CBS is not responding, a message will be displayed: "CBS not available"</p> <p>18.c If network is not available, an appropriate message will be displayed</p>
<b>Result:</b>	<p>Source account is debited and Recipient account is credited. Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW</p> <p>An sms notification is sent to both the source customer and recipient customer with the transaction details on their mobile number</p>

### 3.1.6 UC-09-Pesa Fasta (Remittance-Cash withdrawal with OTP)

<b>Title:</b>	Pesafasta(Remittance-Cash withdrawal with OTP)
<b>Purpose:</b>	To enable Non-customer to receive and withdraw funds via an agent
<b>Primary Actors:</b>	Agent Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User's mobile number is registered for USSD services</li> <li>• User is registered and has permission to perform this type of transaction</li> <li>• Customer initiated withdrawal from NMB Mobile banking application and amount funds credited to suspense account</li> <li>• Mobile number tagged to this transaction has received an OTP/secret code</li> <li>• Transaction fees and commission configured in DW</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• DW will save IMSI to be used as authentication during every login</li> <li>• Same Login PIN should be applicable across all the channel</li> </ul>
<b>Data Input:</b>	OTP
<b>Channel:</b>	<i>Mobile-USSD</i>



<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>1. User dials the short code and enters their 4-digit PIN, USSD menu is displayed</li> <li>2. USSD menu is displayed on the screen.</li> <li>3. User enters a number representing “Pesafasta” from the menu.</li> <li>4. A screen requesting for an OTP/secret code is displayed, User request OTP/Secret code from the customer</li> <li>5. User enters the OTP code,</li> <li>6. If the OTP code is valid, the system will display the amount and sender's phone number on the screen. If there is any fee configured for this transaction it will be calculated in DW and included in the transaction.</li> <li>7. User is given the option to enter “1” to Confirm, “2” to Cancel, “9” to navigate back and “0” to access Home Menu.</li> <li>8. User enters “1” to confirm the transaction</li> <li>9. DW will check if the agent is within the transaction limits set in DW</li> <li>10. If successful, DW will send a request to CBS to debit the suspense account and credit the agent’s float account</li> <li>11. If successful, CBS returns a successful response to DW. A successful message will be displayed on the user's screen</li> <li>12. A confirmation sms receipt is sent to the customer-sender mobile number with the transaction details.</li> <li>13. User hands over the amount in cash to the Customer-receiver</li> </ol>
<b>Alternative Scenario:</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: “Incorrect PIN”</p> <p>4.a If user enters an invalid OTP account, an appropriate error message will be displayed on the screen: “Invalid OTP”</p> <p>7.a If Agent has exceeded his transaction limits; a message is displayed respectively: “You have exceeded your transaction limits”</p> <p>7.b If the customer source account has Insufficient funds in his account; an appropriate message is displayed: “insufficient funds”</p> <p>7.c If the CBS is not responding, a message will be displayed: “CBS not available”</p>

	7.d If network is not available, an appropriate message will be displayed
<b>Result:</b>	<p>Sender customer account has been debited with amount and User has handover over the amount in cash to the Receiver customer</p> <p>Fee and Commission amount is accrued in respective GL accounts for this transaction as per configuration in DW</p> <p>sms confirmation of the transaction is sent to the customer(sender) mobile number.</p>

### 3.1.7 Agent menu

#### 3.1.7.1 UC-10-Float Rebalancing among agents

<b>Title:</b>	Float rebalancing among agents
<b>Purpose:</b>	Agent to send to float to other agents
<b>Primary Actors:</b>	Agent
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User has successfully logged into USSD application</li> <li>• User has sufficient float in their account to cover the transaction</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• DW will save IMSI to be used as authentication during every login</li> <li>• Same Login PIN should be applicable across all the channel</li> <li>• DW will check to confirm that the account numbers are float account not customer's account</li> <li>• No fee or commission will be charged on this transaction</li> </ul>
<b>Data Input:</b>	Agent float Account number
<b>Channel:</b>	<i>Mobile USSD</i>
<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>1. User dials USSD code and enters their 4-digit PIN, USSD menu is displayed</li> <li>2. User enters a number representing "Agent menu" on the displayed USSD menu</li> <li>3. User enters a number representing "Float rebalancing" on the displayed USSD menu</li> <li>4. User selects a number corresponding to their float account(Source float account)</li> <li>5. User enters recipient float account number</li> <li>6. Recipient float account number and corresponding Agent name is displayed on the screen</li> </ol>

	<ol style="list-style-type: none"> <li>7. User is given the option to enter “1” to confirm the source account or enter “2” to go back to the previous screen and input another account</li> <li>8. User enters “1” to confirm Recipient float account</li> <li>9. User enters amount and clicks OK</li> <li>10. The transaction details are displayed as a Confirmation Message. Agent is given the option to input “1” to Confirm, “2” to Cancel, “9” to navigate back and “0” to access Home Menu.</li> <li>11. User selects “1” to confirm</li> <li>12. DW sends the request to CBS to debit the source float account balance and credit the recipient float account</li> <li>13. If successful, CBS returns a successful response to DW. A successful message will be displayed on the user's screen</li> <li>14. A confirmation sms receipt is sent to the source Agent's mobile number and recipient Agent mobile number</li> </ol>
<b>Alternative Scenario:</b>	<p>1.a If user enters a wrong PIN, the following message is displayed: “Incorrect PIN”</p> <p>6.a If user enters an invalid recipient float account. an error message will be displayed on the screen</p> <p>13. a If the agent source float account has Insufficient funds in his account; an appropriate message is displayed: “insufficient funds”</p> <p>13.b If the CBS is not responding, a message will be displayed: “CBS not available”</p> <p>13.c If network is not available, an appropriate message will be displayed: “Network is not available”</p>
<b>Result:</b>	<p>Source account is debited and Recipient account is credited, An sms notification is sent to both the source agent and recipient agent with the transaction details on their mobile number</p>

### 3.1.7.2 UC-11-Agent mini statement

<b>Title:</b>	<u>Agent Mini-statement</u>
<b>Purpose:</b>	User to view last 5 transactions on the Mini statement
<b>Primary Actors:</b>	Agent Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User is registered and active (not blocked) for USSD services</li> <li>• User has an active float account</li> <li>• User has an active mobile number</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• Same Login PIN should be applicable across all the channel</li> <li>• DW will check to confirm that the account numbers are float account not customer's account</li> </ul>
<b>Data Input:</b>	Float Account number
<b>Channel:</b>	Mobile USSD

<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>1. User dials USSD code</li> <li>2. User enters their 4-digit PIN, USSD menu is displayed</li> <li>3. User selects the number that represents Account information on the displayed USSD menu</li> <li>4. User selects the number that represents Mini statement from the menu displayed on the screen</li> <li>5. User selects the number that represents float Account number for which a statement will be displayed and clicks OK confirm</li> <li>6. DW sends the request of account mini statement to CBS</li> <li>7. CBS returns a response back to DW with the last 5 transactions executed from any channel.</li> <li>8. If Successful, the last 5 transactions are displayed on USSD</li> <li>9. User is able to view by date the amount credited or debited from the correspond banking account <ol style="list-style-type: none"> <li>a. Transaction Date</li> <li>b. Amount debited/credited</li> </ol> </li> <li>10. User has the option to go to the home page and access the main menu by entering 0 or go Back to the previous page by entering '9'</li> </ol>
<b>Alternative Scenario:</b>	<p>2.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>7.a If the CBS is not responding, a message will be displayed: "System not available"</p> <p>7.b If network is not available, an appropriate message will be displayed: "Network is not available"</p>
<b>Result:</b>	<p>5 last transactions are displayed on the screen</p>

### 3.1.7.3 UC-12-Agent Balance enquiry

<b>Title:</b>	<u>Balance enquiry</u>
<b>Purpose:</b>	User to enquire account balance
<b>Primary Actors:</b>	Agent Operator
<b>Pre-Conditions:</b>	<ul style="list-style-type: none"> <li>• User is registered and active (not blocked) for USSD services</li> <li>• User has an active float account</li> <li>• User has an active mobile number</li> </ul>
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• Same Login PIN should be applicable across all the channel</li> <li>• DW will check to confirm that the account numbers are float account not customer's account</li> </ul>
<b>Data Input:</b>	Float Account number
<b>Channel:</b>	Mobile USSD

<b>Main Scenario:</b>	<ol style="list-style-type: none"> <li>1. User dials USSD code</li> <li>2. User enters their 4-digit PIN,</li> <li>3. User selects a number that represents Account enquiry on the display USSD menu</li> <li>4. User selects the number that represents Balance enquiry from menu</li> <li>5. User selects the number that represents the float Account number and clicks OK to confirm.</li> <li>6. DW sends a request for the float's account balance to the CBS</li> <li>7. CBS returns a successful response back to DW with the float account balance</li> <li>8. Account balance information is displayed on the screen: <ol style="list-style-type: none"> <li>a. Float Account number</li> <li>b. Actual Amount and Available Amount</li> </ol> </li> <li>9. User has the option to go to the home page and access the main menu by entering '0' or go Back to the previous page by entering '9'</li> </ol>
<b>Alternative Scenario:</b>	<p>2.a If user enters a wrong PIN, the following message is displayed: "Incorrect PIN"</p> <p>7.a If the CBS is not responding, a message will be displayed: "System not available"</p> <p>7.b If network is not available, an appropriate message will be displayed: "Network is not available"</p>
<b>Result:</b>	<p>User can view customer's account balance</p>



## **4 Configurations**

### **4.1.1 Product configuration**

### **4.1.2 Project configuration**

## **5 Integrations**

### **5.1 API 1**

### **5.2 API 2**

An integration with an MNO will be required as the 3rd party service provider SMS Gateway, MNO-APIs for m-wallet and USSD Gateway for this phase. The list of MNO includes:

- Vodacom,
- Tigo,
- Zantel,
- Airtel,
- Halotel,
- TTCL

An integration with 3rd party such 3rd party services providers such as DSTV,ZUKU,AZAM as well as NMB gateway will be required.

## 6 Reports

No customization will be required on reports, NMB requires the following standard reports transactions on USSD

The following reports, along with DW standard reports will be available to NMB and will be produced during banking days and not on weekends or holidays:

1. All USSD Transactions report



Transactions  
Report.Updated.xls»

2. Agent USSD subscription report



Mobile banking  
registration report.x

3. Agent Block/unblock report



Mobilebanking  
USSD Block-Unblock

4. Audit trail report



Audit log  
report.xlsx

## List of Figures

<b>FIGURE 1.</b>	<b>FIRST TIME LOGIN.....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>
<b>FIGURE 2.</b>	<b>MAIN MENU.....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>

## List of Tables

<b>TABLE 1.</b>	<b>RELATED DOCUMENTS .....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>
<b>TABLE 2.</b>	<b>ABBREVIATIONS.....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>
<b>TABLE 3.</b>	<b>FIRST TIME LOGIN .....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>
<b>TABLE 4.</b>	<b>MAIN MENU .....</b>	<b>8</b>

**Document history**

Version	Date	Author	Description
1.0 draft1	21-Sep-20	Melissa Nakumugisha	Initial FSD Draft
1.0 draft2	23-Oct-20	Melissa Nakumugisha	FSD Draft2

**SCOPE SIGN-OFF**

NAME	POSITION	SIGNATURE AND DATE
<b>NMB</b>		
<b>Erick Moyo</b>	Manager: Agency Banking Support	
<b>James Manyama</b>	Senior Manager Channels	
<b>Aloyse Maro</b>	Head Retail Products and Channels	
<b>Filbert Mponzi</b>	Chief Retail Banking	

<b>SOFTWARE GROUP</b>		
PROJECT ROLE	NAME	SIGNATURE AND DATE
<b>Business Analyst</b>	Melissa Nakumugisha	
<b>Project Manger</b>	Charles Mbatia	
<b>Product Manager</b>	Josephine Njoroge	
<b>Technical Delivery Mgr</b>		