



Request for Proposal

Branchless Banking

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1. Invitation for Proposal:

- i. The Bank of Punjab (Bank) requests Tender/Bids/Proposal in sealed envelopes for the equipment/application/services mentioned in this document. Proponents applying for bids/proposal should submit two separate sealed envelopes, one containing Technical Proposal and other containing Financial Proposal.
- ii. The Technical Proposal should contain all the bid items without quoting the price and must list support during warranty period. Financial proposal of the bidders not selected on technical basis will not be opened.
- iii. All bids must be accompanied by a call deposit of two percent (2%) of total bid amount in favour of Bank and must be included in financial bid envelop. Bid closing date would be 30 days from the date of advertisement in newspaper by 5:00pm.
- iv. The Bank will not be responsible for any costs or expenses incurred by bidders in connection with the preparation or delivery of bids.
- v. Bidders shall submit Bids, which comply with the Bidding Documents. Alternative Bids will not be considered.
- vi. All prices quoted must include all Taxes applicable, such as GST, Income Tax, etc. Failure to supply items at such prices would lead to cancellation of order & forfeiture of 2% call deposit money.
- vii. Failure to supply items within the stipulated time period will invoke penalty as specified in clause xxii of 'General Instructions for Bidders'. In addition to that, 2% Call Deposit (CDR) amount will be forfeited.
- viii. Please make sure, the company seal/stamp is with you at the time of bid opening.
- ix. Rights reserved by Bank:
 - a. If at any future point of time, it is found that the bidder had made a statement which is factually incorrect, Bank reserves the right to debar the bidder from bidding prospectively for a period to be decided by Bank and take any other action as may be deemed necessary.
 - b. Bank reserves the right to accept or reject any or all Bids without assigning any reasons. Bids may be accepted or rejected in total or in any part thereof.
 - c. Further, Bank shall have the right to cancel the Tender process at any time without assigning any reason, prior to finalization of the bidding process; without thereby incurring any liability to the affected bidder or bidders. Reasons for cancellation will be determined by Bank at its sole discretion.
 - d. The decision of Bank in all matters will be final and binding on all bidders participating in this bid.
- x. Evaluation criteria
 - a. Bank may call for any additional information / document by way of seeking clarification before the finalization of this tender process. It may also conduct visits at the existing customer of the vendors to verify the information or take any other such measure to ascertain the capabilities of the bidder.
 - b. The bidders will be short-listed on the basis of information submitted by them (and verified by Bank

as per its own procedures) in their Technical bids. Subsequently, the financial bids will be opened and compared for selection of the successful bidder based upon package quoted. The entire process will be completely at the discretion of Bank and will be binding on the bidders. Its decision shall be final and no correspondence about the decision shall be entertained by Bank.

- c. In case any amount is quoted in words and figures and there is a discrepancy in the amounts quoted in words and figures, the amount quoted in words will be taken as final.

2. General Terms & Conditions:

- i. A Bid not submitted in conformity with the specifications / terms & conditions shall not be considered by the Bank.
- ii. The Bank reserve the right to modify the Bidding Documents at any time prior to the deadline for submission of bids, on the request of the prospective bidders for any clarification or at its own initiative, for any reason. This amendment shall constitute part of the Bidding Documents. In order to afford the prospective bidders a reasonable time to take the amendments into account in preparing its bid, the Bank may at its discretion extend the deadline.
- iii. The bidder shall prepare one Technical and one Financial Proposal, clearly marking each as "TECHNICAL" and "FINANCIAL". The bidder shall seal the Technical proposal and the Financial proposal separately in an INNER and an OUTER envelope, duly marking the envelopes as "TECHNICAL" and "FINANCIAL". Bid submitted in single envelop will be disqualified.
- iv. The Financial Bid shall comprise of the following:
 - a. The bidder shall complete price schedule clearly for all the items in accordance with the instructions contained in this document.
 - b. The quoted Price shall be inclusive of costs for delivery and installation at the designate sites in Pakistan.
 - c. Financial proposal should contain "Total Cost of Ownership" which should include the price of core system as well as all supporting/surrounding components (i.e. Database licenses, Hardware cost for primary, backup, DR site, middleware application (if required) etc.). Any recommendation from vendor related to additional hardware or application (i.e. active/passive/hot/cold) should be mentioned in the financial proposal as well.
 - d. The quoted Price shall be valid for Ninety (90) days from the closing date of the bids.
 - e. Price shall be quoted in Pak Rupees.
 - f. The bidder shall furnish, as part of its bid, a bid security for the amount of not less than two percent (2%) of the Total Bid Price.
 - g. The bid security shall be denominated in Pak Rupees. It shall be in the form of Call Deposit Receipt (CDR) issued by a scheduled Bank operating in Pakistan.
- v. The Technical Bid shall comprise of the following:
 - a. Bidder's warranty and representation to the satisfaction of the Bank that it has necessary authority and permission from its Principal/Manufacturer for supply and installation of the goods/Software Licenses.
 - b. Documentary evidence that the items are in conformity with the specifications as laid in this document. This may comprise of literature, drawings and data. The Bidder shall also furnish detailed descriptions of the items along with its salient technical and performance features/characteristics.
- vi. The bid not in accordance with the above will be rejected by the Bank as disqualified.
- vii. The bid security may be forfeited:
 - a. if the bidder withdraws its bid during the period of bid validity.

- b. if the bidder does not accept the correction of the Total Bid Price pursuant to Clause xiii.
 - c. if the bidder fails to supply the items within the stipulated time.
- viii. The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the bidder, in which case such corrections shall be authenticated by the person or persons signing the bid.
- ix. The INNER and OUTER envelopes shall:
 - a. be addressed to the following address:

Head - I.T,
Information Technology Division,
The Bank of Punjab
National Tower, 3rd Floor,
28, Egerton Road, Lahore.
Tel. No. 36303946
 - b. bear the following identification:

Proposal for “Branchless Banking”
 - c. The INNER Envelopes will bear the Name and address of the Bidder, in case it is to be returned unopened.
- x. Every Bid shall be scrutinized by the Bank to see that it meets the criteria as laid down in the Bidding Documents, Prior to the detailed evaluation of the same. A substantially responsive bid is one which:
 - a. is accompanied by the acceptable securities;
 - b. meets the major technical criteria specified in the schedule;
 - c. meets the delivery period
 - d. offers clear Price i.e. the bid do not offer an escapable price quotation;
 - e. is otherwise complete and generally in order
 - f. Conforms to all the terms, conditions and specifications of the documents.
- xi. The acceptability of a Bid shall be determined on the basis of the contents of the bid itself, without needing recourse to any extrinsic evidence.
- xii. The Bidder shall not be provided any opportunity to correct the Bid so as to bring it in consonance with the requirements of the Bidding Documents.
- xiii. A Bid found substantially in accordance with the Bidding Documents shall be checked by the Bank for any arithmetic errors. If any discrepancy is found between the unit rate and the total Price resulting from multiplying the unit rate by the quantity, the unit rate as quoted will prevail and the total price shall stand corrected. Unless in the opinion of the Bank, there is an obvious gross misplacement of the decimal point in the unit rate, in such a case the total price as quoted will prevail and the unit rate will be

corrected, and where there is a discrepancy in the total price quoted in the Price Schedule vis-à-vis addition of each item, the total of the itemized prices will govern.

- xiv. The Bid shall be evaluated on the basis of the items referred in the document in the Price Schedule.
 - a. It will be examined in detail whether the items offered by the Bidder comply with the Specifications of the Documents. The Specifications will be compared with the Data submitted in the technical bid.
 - b. It will be examined whether the bidder has the capability to provide after sale services properly.
- xv. Any pressure by a Bidder to influence the Bank in its decision making shall result in the rejection of its bid.
- xvi. The Bank reserves the right to accept or reject any of the bids and to annul the bidding process at any time prior to award of mandate, without thereby incurring any liability to the bidder or any obligation to inform the bidder of the grounds for its action.
- xvii. The Bank will determine to its satisfaction whether the bidder has offered Prices consistent with the current prevailing market Prices.
- xviii. The Bank reserves the right to change the requirement/specifications (functional or non functional), without any change in the unit price or other terms and conditions.
- xix. The Bidder shall be responsible for the supply, delivery, and Installation of items at its own risk and cost at the sites to be specified by the Bank.
- xx. The bid security will be refunded after successful installation of product.
- xxi. Payments by the Bank shall be made subject to Withholding Tax and other Government levies, in accordance with law.
- xxii. If the Bidder fails to deliver any or all of the items within the stipulated time specified, the Bank may deduct from the Bid Price a sum of money equal to the 0.25% of the Bid Value for every day or part of a day between the scheduled delivery date and the actual delivery date(s).
- xxiii. It shall be Bidder's responsibility to seek clearances, permissions etc. from the Government / Departments whatsoever with regard to all matters including sales tax, custom duties, surcharge(s) and any other tax, levy etc. as may be applicable for the time being.
- xxiv. Payment will be made by the Bank, as per payment terms agreed after receipt of 10% Bank Guarantee.
- xxv. The contract will be awarded to the bidder who has technically qualified and is lowest in the price.

3. Functional Requirements:

The following requirements are planned to be implemented on the initial version of the application.

3.1 General Business Requirements

- Ability to deliver a common platform and adapt it to multiple markets and situations.
- Provide a minimum of 1 business case where end to end MFS solution has deployed in the past 24 months.
- Provide list of customers who would accept to conduct site visits , if so requested
- Provide reference list for all of your installations with indication for type of installation
- Support various business model, including (but not limit) to B2C, B2B, B2BB2C. Multi channel support
- Ability for business users to add and remove out of the box features on the fly
- Platform should support flexibility of porting the user interface into a retail kiosk when needed with no customization.
- The ability to roll-out the MFS solution locally in a timely cost-effective way so that they enhance rather than detract from the bottom line
- The ability for business managers and partners to administer and manage user accounts and other aspects of the MFS Solution in response to changing business relationships
- The ability to present existing business applications and at stores as a unified information stream for the benefit of customers, partners and internal bank employees
- The ability to target, format and automatically adapt content for specific users to meet their preferences and business requirements
- Presenting information in the language, format, or medium that is most appropriate to each user
- Providing user-driven personalization
- Leveraging people-to-people matching technologies, to predict user's preferences and offer them additional choices interactively
- Allow bank's branding and the user experience to work together across all online properties
- "MFS solution must support Multiple micro-campaigns:
- Provide the capability to export data to 3rd party Analytics applications for better optimization
- Support for current device form factors (Large - Small screen) and future platforms. Deploy with a single effort at once to multiple devices without business user customization
- Real time sales reporting and business intelligence.
- Provide total number of employees. Mention strength of Technical/Support Staff separately. Total number of local employees (direct employees in Pakistan) including Technical and Support Staff. Provide local partner information (if any) in term of Technical/Support Staff strength separately and company profile.

3.2 Customer Account

- The system shall maintain account numbers in high precision related to decimal values; decimal values should be represented with 4 decimal digits but only use 2 digits for display.

- The system shall provide for a Customer Account which uniquely identifies an entity.
- The system shall maintain customer information that can be used across all accounts. Including, but not limited to:
 - A. Personal information such as address, phone, ID number, and registration date
 - B. Preferences such as biller/payee accounts and international remittance information
- A Customer could have one or many of the following accounts:
 - A. Mobile Wallet accounts
 - B. Link to Mobile Banking accounts
- A Customer Account will normally contain at least one account, which will be in the form of a Mobile Wallet or an interface to a Mobile Banking Account.
- A Customer could use the system to interface with one or many of the following accounts:
 - A. Prepaid accounts
 - B. Credit cards
 - C. Loan or credit accounts
 - D. Insurance
 - E. International remittance account/wallet
 - F. Mobile Wallet
 - G. Mobile Banking accounts
- All The system shall allow for a Card to be associated with one or more of its accounts. (see Cards chapter, below)
- The system shall have the ability to link customer accounts to one or more SIM Cards.

3.3 Customer Registration

- The system shall provide an easy-to-use Customer Registration process with the following capabilities:
- Ability to register a customer using a web browser.
- Ability to register a customer using a Phone interface.
- Ability to customize requirements and screens by market and type of account (KYC documentation, transaction limits, etc.). .
- Ability to generate a temporary PIN and/or other, interim credentials.
- Ability for the customer to receive immediate notification on their mobile phone when the registration process is completed
- Ability for the customer to immediately begin using the system when registration is completed
- Ability to block one account if compliance requirements are not met
- Ability to add additional accounts associated with an existing customer
- Ability to interface with external compliance systems to flag any problems and halt the registration.
- Ability to associate deferent accounts (from different users) in a hierarchical structure for commission earning purposes

- Ability to host and maintain customer, merchant, distributor and retailer mobile wallets. Minor Account opening should also be allowed.
- System should support full account management from account opening, handling of probation and fully active state, whereby probation is temporary state until all required information and documents are provided, account suspension, handling account dormancy, termination and account closure.
- There can be multiple mobile wallet categories/types with different KYC, transactional throughput limits and number of transaction limits applicable/configurable as daily/weekly/monthly/yearly.
- Mobile wallet balance will also be dependent on mobile wallet type/category. Products usage will also be configurable as per mobile wallet type/category.
- The account registration should be based on maker-checker process (configurable as per need) whereby if needed the process will require back office administration for approval. This needs to be configurable whereby it can also allow account to be self registered or based on moderation/authorization from back end.
- The subscriber/merchant registration may or may not require integration with CRM, provisioning platforms for USSD/STK/IVR/WAP and other channels.
- System should support limiting number of debits and credits along with amount that can be debited or credited as per each mobile wallet category/type.
- System should support bulk registration of customers and merchants.
- System should also expose Interface/APIs for account opening and account management.
- System should support direct registration for a wallet just dialing USSD short-code or sending SMS & giving PIN for low profile transaction wallet & also a full GUI based registration process.
- System should have be a configurable option to have Negative Account Balance.
- The registration process or data in registration process has to have integration with reward system (Should be Configurable).
- The registration process can be promotional like “On the Fly” registration where a customer gets points debited to its wallet only if he or she gets registration & a customer can or organization can ask them for registration with an invitation which carries those promotional points or wallet balance which customer gets only when he accepts the registration & get’s registered.
- Data sanity for correct format, length, alphanumeric etc to be built into the bulk registration system.
- System should allow the option of PREPAID with configuration to ON or OFF. This module can have different business rules for different source of fund. Business rules include no cash out for prepaid card transactions and funds and reward points / coupons.

3.4 User Interface

The primary user interface to the system will be through the customer's mobile phone. However, other interface options must also be supported

General

- System should have a personalized GUI to manage its customer, view reports etc. GUI will have MFS logo and a banner in the GUI.
- All combinations of wallets and accounts should be available with configurability.
 - A. Single wallet with single account per customer
 - B. Multiple wallets with single type of account per customer
 - C. Multiple wallets with multiple accounts per customer
- System should keep all options configurable as ON/OFF.

Mobile phone Interface:

- The system shall support minimum one of the following mobile phone interfaces:
 - A. SIM card (STK based application)
 - B. USSD
- The system should support the use of multiple mobile phone interfaces depending on the type of transaction.
- The application shall run on all hand set models which support SIM Toolkit (GSM 11.14)
- The application shall be able to be installed in a 64k or smaller SIM card

Web Interface:

- The system shall provide a configurable way to present different versions of the Web user interface depending on the category of user. For example, the menus, screens, and transactions presented to a customer can be different than what is presented to an agent
- The system shall allow authorized users to do all their transactions via web
- The system shall allow for disabling the option of doing transactions via the web
- The system shall allow authorized users to use all the administrative functionality via web, including but not limited to:
 - A. Registrations
 - B. Adjustments
 - C. View transactions history
 - D. View and execute all alerts and notification functionality
- The system should also have following function on Web-Portal:
 - A. Agent Management (Adding various agent accounts, deleting/Modifying account, checking individual sub agent balance).
 - B. Fraud Management (Checking fraud against daily thresholds, money transfers and PIN changes and Audit trails)
- The system shall allow the generation of reports for a period defined by the user. A report shall include a detail of all transactions in the period, and a summary of debits, credits and personal information of the accountholder

3.5 Mobile Wallet Accounts

The Mobile Wallet allows the user to “store money on their phone”. This is similar to a bank account.

Customers cash in and out of their Mobile Wallet through various methods. They can then perform various transactions using their Mobile Wallet, such as sending money to another user.

General:

- They system shall allow for different types of Mobile Wallet accounts, with different limits and fee schedules
- The system shall process all transactions in real time. No batch processing must be required. No "shadow balances" should be maintained
- The system shall not allow for partial transactions (Only allow transactions where the source account has 100% of the funds available and the destination account has 100% of the limit available
- The system shall allow for certain accounts to have a restriction on the source of funds they can receive (i.e. government grants)
- The system shall allow for certain accounts to be flagged as commission earning accounts. (See MIS reports below)

Balance:

- The system shall maintain the current balance in real-time
- The system shall ensure that the balance never goes negative, or exceeds the customer's credit limit, if so defined

Transaction History:

- The system shall support the capability to store offline archive transaction history for every transaction which enters the system for 5 years. This includes all financial, non-financial, and inquiry transactions. .
- The system shall link and maintain the relevant transaction history (online or archived offline data) for each Mobile Wallet for 5 years

Person to Person Transfer:

- The system shall allow money to be sent from one Mobile Wallet to any other mobile wallet within the system in real time
- The system shall immediately debit the sending Mobile Wallet account of the principle amount plus any fees and taxes
- The system shall validate that the recipient mobile wallet account is valid and able to receive funds before debiting the funds from the sending mobile wallet account.
- The system shall prevent funds from being credited into a Mobile Wallet account if it exceeds any predetermined limit specified for that account.
- They system shall allow for short messages to be sent with every transfer (Messages written by the sender user)

Transfer funds to non wallet accounts within the system (Close Loop)

- The system shall allow money to be sent from one Mobile Wallet to any other type of account within the system in real time. Accounts could be Bank Accounts, Prepaid Card accounts, or Loan accounts.
- The system shall immediately debit the sending Mobile Wallet account of the principle amount plus any fees and taxes.
- The system shall be able to transfer funds from a wallet account to a phone that has no wallet account.

Transfer funds from non-wallet accounts within the system (Close Loop)

- The system shall allow money to be received from any non-mobile wallet account within the system to a Mobile Wallet account in real time. (Accounts could be Linked Mobile Banking Accounts). . The system should be able to transfer money to a non-mobile account resulting into opening of a wallet account. Later the recipient should perform the registration to start first transaction.
- The system shall immediately debit the sending Account of the principle amount plus any fees and taxes.
- The system shall prevent funds from being credited into a Mobile Wallet account if it exceeds any predetermined limit specified for that account
- The system shall allow for a real-time connection with specific third party companies who could have the ability credit a specific wallet accounts with funds.

Transfer funds to / from accounts outside of the system

- The system shall allow for transferring money to a Bank Account outside the system by creating a file and exporting it via ftp, sftp or standard IT means (web service, SOAP, ISO message etc)
- The system shall allow for transferring money to any financial institution in the country using local payment networks via an existing and available gateway facility.
- The system shall allow for crediting funds into multiple wallet accounts in a way that the sender does not have to type in a transaction for every recipient account (i.e. bulk, Payroll). This will be done by processing files coming from third parties and crediting wallet accounts real-time

Top up Airtime

- The system shall allow the customer / Agent to purchase airtime credit ("Top-Up") using funds in their mobile wallet, in real time.
 - A. For their own phone
 - B. For another phone (The company should be able to turn this option off)
- The system shall interface to MNO top-up systems as necessary to affect the real-time credit process.
- The system shall notify the customer the status of the top-up request, whether successful or not.

Pay Bills

- The system shall allow the customer to pay bills using funds in their Mobile Wallet account.
- The system should validate the invoice number format before performing the transaction. (validation rules provided by each payee)
- The system should debit the Mobile Wallet account and generate and export a file to an external entity using one of the following file formats:
 - A. File formats - CSV, ASCII text, etc.
 - B. Transmission method – FTP, Web services, SOAP, ISO message etc.

Cash Out

- The system shall reflect the new balance as a result of a withdrawal immediately
- The system shall have the capability to notify the user of a withdrawal via SMS or other means in order to detect fraudulent activity
- The system shall permit the customer to make withdrawals through the Agency Network. (Who will receive a P2P transaction crediting their special account)
- When applicable, the system shall allow the customer to make withdrawals through the ATM/POS Network using an associated Card.
- The system shall prevent funds from being debit into a Mobile Wallet account if it exceeds any predetermined limit specified for that account

Cash In

- The system shall permit the customer to make deposits through the Agent Network (Who will send a P2P transaction debiting their special account)
- The system shall reflect the new balance as a result of a deposit immediately
- The system shall prevent funds from being credited into a Mobile Wallet account if it exceeds any predetermined limit specified for that account

International Remittances (incoming)

- The system shall be able to connect with third party remittance companies to allow funds to be automatically credited to a mobile wallet account
- Assuming that there is an interface with a Remittance company (see business requirements). The system shall be able to receive remittances in local currency.

Adjustments

- The system shall allow for a rich set of adjustment transactions to be performed by customer service representatives as needed. (Using Web user interface).
- The system shall provide various levels of transaction authority so that sensitive transactions require higher authorization levels.
- The system shall provide auditing and control reports detailing adjustment activity.

3.6 Linking to Mobile Banking Accounts

The system shall support a Mobile Banking interface, which is very similar to the Mobile Wallet functionality, but where the underlying account is maintained by a bank.

Source of Fund

- The system should have configurable option to define the usage prioritization of source of fund. There should an overall configuration of defining whether the prioritization will be “on” or “off”. If the prioritization is on then the system should have the option to define the prioritization of each source of fund.
- There should be option to define one source of fund as default like the MFS wallet
- As described above there should be option to define restriction or permission per service/ transaction per source of fund
- There should also be configurable option to define the interoperability among or between the source of fund
- The balance query or balance check for all source of fund should be there from all access channel as required (USSD, SMS, J2ME, IVR, Etc)
- Customer should have the option to link their Bank Card with wallet as source of fund from web or USSD(if possible)
- There should be velocity check for all source of fund (wallet, cards, CBS accounts, etc)

Mobile banking user interface

- The system shall support the following user interfaces for Mobile Banking:
 - A. SIM menu (STK application)
 - B. USSD
 - C. Mobile Apps
 - D. Web portal
- The System shall allow mobile banking user interface to be branded differently than the Mobile Wallet.

Linking to bank accounts

Presently Bank is running a de-centralized Core Banking System (CBS) where every branch has its own CBS.

- The system shall be able to connect real-time with a bank's application using an end-to-end encrypted messages or a VPN network.
- The system shall be able to connect real-time with a bank's application to gather customer information, historical transactions, and balance information.
- The system shall permit easily configuration and/or customization of the message format used to transmit message to/from a bank
- The system shall be able to obtain error or validation messages from a bank application and present them to the customer

User Validation

- The system shall collect and transmit the authentication information and allow a bank application to do the user verification which consists of multiple factors. The system will not store information locally.
- The system shall allow Mobile Banking from having a different PIN than Mobile Wallet

Transactions

- The System must transmit all transactions to the bank in real time, and receive confirmation in real-time. This will be done by calling an API from the bank platform. The system will not store locally any transactional information

Balance

- The system shall obtain the balance by accessing a bank's system in real-time and present it to the user
- The system shall support and identify various balances maintained by the bank, including but not limited to:
 - A. Current Balance
 - B. Available balance

Transaction History

- The system shall allow the customer to query their transaction history by accessing a bank's application.
- The system shall support and identify both cleared and pending transactions.

Transfer funds to other accounts

- The system shall be able to trigger a transfer for a bank account to any other allowed account within "the system", such as a Mobile Wallet or Prepaid account.
- The system shall immediately trigger a debit to the sending Mobile Bank account of the principle amount plus any fees and taxes.

Top-Up Airtime

- The system shall be able to trigger the purchase of airtime credit ("Top-Up") using funds in their bank account, in real time.
 - A. For their own phone
 - B. For another phone (The company should be able to turn this option off)
- The system shall interface to MNO top-up systems as necessary to achieve a real-time credit process
- The system shall notify the customer the status of the top-up request, whether successful or not

Bill payment

- The system shall be able to trigger a bill payment using funds in a bank account.
- The system shall request a bank application for registered Payees and present them to the customer.
- The bank application will handle the Bill settlement payment process.

3.7 Limits Management

- System needs to provide flexibility of maintaining transaction limits based on amount, number of transactions, channels (ATM, POS, CDM, Internet, VISA/MC/AMEX, Mobile etc) based on daily/monthly/yearly basis.
- These limits will be applicable on different account types/categories.
- System should be able to apply limits on number of debits/credits or amount of debits/credits in a day/month/year based on account type/category.
- System should also be able to apply limits on different entities in a many-to-many model.
- System should allow configuring service wise transaction limits.
- Should also support OTC Customer Limits in addition to account Holders and an admin interface for setting/editing them.

3.8 Notifications and Alerts

General

- The system shall contain a Notification and Alert engine, which interfaces with other components to provide a generalized messaging platform.
- The system shall log all messages sent.
- Transaction specific notifications. Including, but not limited to
 - A. Money transfer received / sent (including confirmation number)
 - B. Remittance received
 - C. Bill payment (including confirmation number)
 - D. Any other change in balance from any type of account. (including confirmation number)
 - E. Transaction amount exceeds a certain threshold, set by the company
 - F. Number of transactions during a period of time (e.g., daily) exceeds a certain threshold, set by the company
- Change in account information, including, but not limited to
 - A. Mailing address
 - B. Email address
 - C. Home phone
 - D. Account access
 - E. Occupation
 - F. First and last name.
- The system shall be easily configured to send an alert when the Balance is below a minimum threshold, set by user or company.

- The system shall notify customers in plain language, when transactions fail, including but not limited to. Messaging shall be table driven
 - A. Due to technical or communication error
 - B. Due to data error (un recognized /closed destiny account)
 - C. Due to limits validation at source and destiny accounts
- The Notification and Alert engine, which sends SMS messages to customers should additionally, have the ability to send messages to email addresses
- The system should have the ability to send notifications and alerts through different communications protocols, depending on the type of message.

3.9 Associated Cards

- The system shall support Cards to be associated with an Account
- The system shall support linking to all common ATM/POS processing networks

3.10 Customer Service Subsystem

- Bank will use their existing CRM and customer trouble resolution system that handles calls, queues, tickets, etc. This section talks about the system that will contain the information the CSRs will use to provide the support.
- The system shall provide a user friendly web interface to allow all Customer Service (CS) Agents to enquire information and perform specific transactions.
- The system shall provide an interface which is configurable at the user or group level. These configurations include, but are not limited to, the following:
 - A. Identify what privileges the user or group has. The system shall provide a method by which the access for each atomic business function, as listed below, can be specified by a user or group.
 - Cannot access
 - Read Only
 - Update
 - Submit for approval
 - Approval authority
- The system shall provide a set of user friendly screens to allow the setup of the customer support functionality. The setup features shall include, but are not limited to, the following.
 - A. Designate multiple levels within the organization
 - B. The system shall allow the ability to create or Reset the username or password of each Customer Service Agent.
- The system shall provide the functionality to allow customer support to properly identify/authenticate the customer.
- The system shall provide the ability to display all customer related mobile wallet accounts at the same time
- The system shall allow a CS Agent with the proper authority to update customer data, enter in

adjustment transactions, etc.

- The system shall allow a CS Agent the appropriate user friendly screens to open, inactivate/activate, close, or re-open an account.
- The system shall provide intuitive and user-friendly screens to allow the customer's account profile to be set up and maintained.
- The system shall provide the ability to restrict access to customer data to specific CSR groups. This restriction can be set by Market, or Product.
- The system shall provide the capability to view customer related activity associated with a vendor, merchant, or partner and segment details into a list.

3.11 Fee Configuration

- The system will provide web based "Fee Configuration ", where all fees are maintained.
- The system shall be able to calculate fees in a any of the following ways, for different types of transactions:
 - A. Percentage
 - B. Fixed amount
 - C. Percentage with minimum amounts
 - D. Hybrid criteria
- The system shall provide a web interface to build fee plans for individual or groups of customers.
- The system shall provide Fees by transaction type.
- The system shall provide Fees by vendor, Bank, or merchant.
- The system shall provide fees based on account type (i.e. M-Banking, M-Wallet).
- The system shall provide Fees by volume, either the volume of a specific transaction or a set of transactions.
- The system shall provide fees based on transaction amounts. Amounts can be calculated using a variety of methods including, but not limited to,
 - A. Amount of a specific transaction for a specific transaction type
 - B. Current total amount for a set of transactions over a period of time (tiered). For example, once a threshold amount of transactions are executed over a month, a different pricing rate may be applied
 - C. Amounts with a specific vendor, partner, or merchant
- The system shall provide fees based on the method used to enter the transaction, such as phone, web, or in person.
- The system shall provide pricing based on time, including, but not limited to
 - A. Time of day
 - B. Day of month
 - C. Specific dates
- The system shall provide pricing rates for high value customers by linking to a Loyalty program.
- The system shall provide an interface to allow business users to define promotions. These promotions include, but are not limited to the following features which may be grouped together

in various combinations to create unique promotional offerings

- A. Discounts for new customers
 - B. Free or reduced fees for a period of time
 - C. Rebates of varying amounts based on criteria included type of account, amount of initial deposit, commitment to keep account, number of services purchased.
- The system shall provide a web interface to build revenue sharing plans on the fees for vendors, merchants, or partners. These plans include, but are not limited to, the following features which may be grouped together in various combinations to create unique revenue sharing plans
 - A. Percentage of total transaction amounts based on total amount of transactions over a specified time frame. The percentage can apply to the total amount (tiered) or can vary for specified amount ranges (banded)
 - B. Percentage of a specific transaction type or set of transaction types based on volume of transactions over a specified time frame. This can be tiered or banded as above
 - C. Specified amount based on total transaction volume over a specified time frame. The total amount may be calculated on a tiered or banded basis.
 - D. Tiers or banded fees may vary between different vendors, merchants, or partners
- The system shall provide the capability to calculate the percentage of fees to collect or send to a merchant, vendor, or partner.
- The System need to support fees flexible for all products and n-tier merchant distribution hierarchy.
- The pricing should be configurable for all products as;
 - A. Flat rate
 - B. Percentage of transaction amount
 - C. Slab based flat rate on amount of transaction
 - D. Slab based percentage of amount of transaction rate applicable of slab based on amount of transaction
 - E. Fee can be applicable on customer, merchant, company of behalf of whom payment is received, any of the 3 or all of the 3 or any other combination needed
 - F. Fee can be charged on channels as well along with product
 - G. Fee can be defined as zero whereby a ledger account can be identified for charging commissions
- System may be able to price products/channels as defined above based on region, city etc where transaction is taking place.
- System should be able to price transaction based on different times in a day and apply charging based on different events/dates such as holidays, weekends, religious holidays, national holidays etc.
- System should support pricing to be configurable for both sending and receiving side.
- System should be able to charge registration and product activation fees, monthly, weekly, daily fees for product as well as account type, subscription fees and possible to charge fees as mark up or discounts
 - A. by percentage

- B. by whole amount etc
- C. Bundling transaction package e.g. transfers 5 Tx + payment 5 Tx cost Rs. 50.
- D. or transfer 10 Tx/month cost Rs. 50.
- Online/Offline Splitting of Service Charge & Commission: There should be a configurable option for MFS Provider to deploy online (means in the real time) or offline (means using an interval period) service charge splitting.
- System should be able to calculate TAX VAT associated with service charge and splitted amount should go to respective wallets appropriately. In the same way, commission for channel members can be given in real time or in offline mode.
- For OTC services there can be cases where service charge will be defined as greater than zero in the system and customer will get service charge amount to pay to retailer but the service charge amount will not be deducted from retailer balance.
- All the Pricing mechanisms mentioned in baseline doc should be available at the same time. There might be a combination of pricing mechanism for a service.
- There should be web views where product managers can view operational service charges and commissions.
- Charging in the system has to be modular & event based where bank can define in the system which service or event will be charged & which are free. So any service or function can be charged or free as per definition by us. Even balance check can be charged or free.

3.12 Clearing and Settlement

- The system shall provide net-settlement capabilities between all parties, such as:
 - A. Banks
 - B. Billers
 - C. Merchants
 - D. Internal company accounts (working capital, etc.)
- The system shall support daily settlement.
- The system shall provide net-settlement capabilities between the company and special account holders called Agents:
- The system shall provide online access to all settlement records for all parties at all times.

3.13 Taxes

- The system shall provide a tax subsystem, which properly charges taxes based on all common taxing schemes. This tax rates shall be table-driven and easily changeable by the bank.
- The system shall allow for different tax rates per product, service, jurisdiction, Market, etc.
- The system shall store all taxes collected in individual separate accounts.
- The system shall be able to discount taxes from customers on events such as (cash goes into the account or the cash is going out of the account). This should be configurable by the bank.
- System should provide flexibility of applying and configuring different taxes and duties on transaction price and commissions for e.g. Withholding tax, Federal Excise Duty, Value added

Tax etc.

- These taxes and duties should be configurable for all products, channels and commissions paid at all levels. System should allow tax deduction configurable to be charged to customer, merchant or business.
- System should support Tax and duties waiver to specific customers (i.e. non-profitable organization, government etc). System should also differentiate products that are taxable or non-taxable (Service Tax or GST).
- Rate, type and applications of taxes should be configurable for all financial transactions
- The GST could be charged both on principle transaction amount & transaction service charge.
- System should provide the flexibility to define/setup tax as per government policies

3.14 Compliance Functionality

- The system shall be fully complied with latest branchless banking regulations & guidelines of State Bank of Pakistan.
- The system shall allow permissible activities allow by State Bank of Pakistan. These activities include, but are not limited to:
 - A. Opening and maintaining Branchless Banking A/C
 - B. A/C to A/C funds transfer
 - C. A/C to Person funds transfer
 - D. Person to Person funds transfer
 - E. Cash-in & Cash-out
 - F. Bill Payment
 - G. Merchant Payment
 - H. Loan Disbursement/Repayment
 - I. Remittances
- The system shall include the ability to set limits by a variety of factors, such as customer type, time period, transaction type, etc. These limits include, but are not limited to:
 - A. Balance
 - B. Transaction size
 - C. Daily/Monthly/Yearly velocity & volume (or other periods)
 - D. Cash in/out activity
 - E. Limits can be applied to aggregated transaction activity.
- The system shall have the ability to put a hold to funds of one account (for AML purposes).
- The system shall support industry standard compliance functionality, including but not limited to:
 - A. Anti-Money Laundering
 - B. Combating Financing of Terrorism
 - C. OFAC list checking.

3.15 KYC

- The system shall collect, store and automatically retrieve all legally required KYC information,
- The system should have the capability to interface with the compliance component to check KYC information against OFAC lists, black lists, etc.

3.16 Management Information (Roadmap Requirements)

- The system shall automatically generate required reports on defined periodic basis (such as overnight) so they are instantly available when requested.
- The system shall be able to export detailed transactional information from commission earning flagged accounts.
- The system shall be able to export the hierarchical association structure amongst commission earning flagged accounts.

3.17 NFC compatibility Requirements

- The system shall be able to support the integration for NFC API calls for the Mobile Money Services.

3.18 Interest/Profit

- The system should be able to support interest calculation on following mobile wallets:
 - A. Saving Mobile Wallet Product
 - B. Mobile Wallet Product where Negative Account Balance is allowed
- The system should be able to calculate interest in a any of the following ways, for different types of wallet including but not limited to:
 - A. Flat rate
 - B. Percentage of transaction amount
 - C. Slab based flat rate on amount of transaction
 - D. Slab based percentage of amount of transaction rate applicable of slab based on amount of transaction
- The system shall be able to support all types of interest/profit calculation scheme (i.e. decreasing balance, minimum balance, daily product etc)

3.19 Zakat

- The system shall be able to support zakat deduction on different types of products (i.e. Saving mobile wallet etc) configurable as ON/OFF
- The system shall store all zakat collected in separate accounts.
- System should provide flexibility of applying and configuring zakat on mobile wallet e.g. a customer may be marked zakat deduction OFF by providing zakat declaration certificate etc.

4. Non Functional Requirements:

4.1 Reliability, Availability, Serviceability

- The system shall be engineered for continuous availability. The system will use clustering or other technology to ensure no single point of hardware failure.
- The vendor shall be able to support availability of at least 99.99%
- The system shall log all errors and minor failures, so that they may be analyzed by the company.
- The system shall support SNMP and generate traps to an external Network Management System for any issues detected.

4.2 Security

- The system will support financial transaction processing and as such requires the highest level of end-to-end security.
- The system shall maintain a user PIN for each customer.
 - A. The system shall require the PIN to be structured in such a way as defined by the bank.
 - B. The system shall encrypt the PIN in such a way that it may never be displayed or determined.
 - C. The system shall allow Customer Service to reset the PIN, and then require the customer to change the PIN on first use
- The system shall allow a secondary layer of security (user-generated password) to the customer.
- Transactions performed on the public domain must be done within a secure socket layer (SSL) environment
- The system shall use high level encryption scheme (i.e. 3DES etc) when transmitting data over communications facilities.
- The system shall log all customer logons, logoffs, and failed access attempts.
- The system shall disable a customer's access if an invalid PIN or password is supplied in excess of a company-defined limit
- The system shall not allow concurrent multiple logins to the same account.
- The application performs double checks in the form of creator and authorizer of changes to assure these activities are correct, before they are accepted by the system:
 - A. - For changes/transactions of operational data
 - B. - For administrative changes/transactions
- All end user should be allocated a unique user account - user account which should be for the sole use of an individual
- The system must provide an access control mechanism to be able to show which data entities / transactions any particular individuals may read, modify or execute (given a user account)
- For obtaining access to another systems and DBMS the application or its service does not utilize accounts with high privileged (administrators) access rights.
- The application has module to manage user groups or profiles, their access rights with different

access control levels (i.e. admin, developer, super-user, end-user) according to 'user-privileges' and user roles / job descriptions.

- Secure Account/Password creation: The creation of initial passwords is performed automatically. The passwords are not visible to anyone (including the administrator) and end users are forced to change it after first login to the application.
- The number of unsuccessful log-on attempts must be limited to, at most, to x attempts per session; afterwards the application will terminate. (number of attempts shall be configurable by the bank)
- The system must provide the capability to detect multiple logons from the same user account and if enabled; restrict users to one session at a time.
- There are no hard coded or shared sensitive parameters like user account and passwords, IP address within the application code. If that is the case passwords cannot appear in plain text in any file i.e. it must be protected.
- The system must provide single sign-in for all application (i.e. user can logon to different interfaces (mobile or web) by using same security credentials.
- Password policy : Application/ System should provide module to set up the bank's passwords policy which should be enforced automatically:
 - A. - All PIN's should have a min. length of 4 characters and to be checked against a password history to reject 5 recently used PIN's
 - B. PINs shall expire after a lifetime configurable by the system administrator meaning that the user is forced to change every X days (X is set by the administrator).

4.3 Performance

- The system shall be vertically scalable to support up to tens of millions of customers, with sub-second response time.
- The system shall be scalable horizontally (using multiple servers) if desired with minimal overhead.
- The system shall leverage multiple processors and generally be built using multi-threading techniques.
- System should time out settings so that it doesn't wait indefinitely for external nodes to respond.

4.4 Audit And Control

- All transactions shall be time stamped.
- The system shall support value date as well as transaction date.
- The system shall keep detailed audit and control information.
- The system shall log all transactions, messages, and changes in a form suitable for research, inquiry, debugging, etc. configurable as ON/OFF for each option.
- The system shall identify all transactions with a unique transaction ID.
- The system shall log the origin of all messages and transactions.
- The system shall be capable of comprehensively managing risks and detecting/preventing fraud.

- This system shall be capable for managing review of all audit and transactional logs for troubleshooting and tracing an activity.
- Maintaining Audit trail for each activity being performed in the system
- Logging should be configurable and should be for all user transaction level and system transaction level.
- Logging levels should also be configurable.
- This module will be responsible for managing review of all audit and transactional logs, flagged transaction logs for troubleshooting and tracing an activity."

4.5 Technology

- The system shall provide all computer user interfaces using a web browser.
 - A. No client-side code should be necessary
 - B. The system shall support all common browsers
- The system shall run on Commercial Off-The-Shelf (COTS) hardware, preferably:
 - A. UNIX servers, such as Sun and IBM
 - B. Intel servers, such as SUN, Dell, IBM, and HP
- The system shall support database replication or an equivalent technique.
- The system shall interface with common MNO systems, such as SMSCs, Top-up/prepaid billing systems, etc.
- The system shall have a set of APIs for it to interface with different systems and applications.

4.6 Experience

- The vendor must have experience of 1 business case where end to end MFS solution has deployed in the past 24 months.
- The vendor must have experience to provide consultation related to:
 - A. Getting approval from regulatory bodies
 - B. Making relationship with Telco(s)
 - C. Setting up Agent network

5. Implementation Requirements:

5.1 Operational Procedures

- The Vendor shall prepare effective backup and recovery plans to support and maintain a stable and reliable operating environment in automated mode. The plan should state:
 - A. - Backup frequency of database and/or files
 - B. - Recycle procedure of the backup; and
 - C. - Recovery procedure in the event of system failure
 - D. - Daily/weekly/monthly/yearly preventive maintenance procedure and activities
 - E. - Housekeeping for growing logs
 - F. - Up to date patch are installed
 - G. - All relevant log files and traces
 - H. - User access control system
 - I. - Configuration properties
- The system shall provide web-based Administration Tools requirements to manage:-
 - A. Authentication with username, password and roles
 - B. Manage users ID and groups with different roles, example read-only, edit-mode, limited viewing, etc.
 - C. Troubleshooting
 - D. Retrieve transaction data
 - E. Review reports
 - F. Customer Care Access
- Verify and compile the license expiry date.
- All test and pre-production data/scripts/programs should be removed from the production servers.
- Vendor to ensure proactive bug fixing, delivery of maintenance release and software update.
- Weekly and Monthly support meeting to review on the performance. Tracking mechanism to focus on critical permanent fix and repetitive faults.
- The vendor shall provide Monitoring Tools for application, DB and HW faults and performance
- The system shall support the capability to extract reporting/statistical raw data in a text file with format defined by the bank to be exported to a third party data warehousing/reporting tool (e.g. crystal report).
- Provide periodic Reporting based on the reports stated in SLA. Examples include but not limited to:
 - A. Service Availability
 - B. Response Time
 - C. Service success rate
 - D. Monthly Vendor Call out (e.g. cases brought forward from previous month / to next month)
 - E. Service Performance Summary (% of target achieved/ failed)

- The system shall support reporting & analysis based on real time data

5.2 Infrastructure

- The system shall support servers, workstation, network switches, load balancers and system components within industry standard.
- The vendor shall provide clear labelling of all racks, servers, workstations, subsystems, cables at both ends, connectors and ports

5.3 Server and Storage

- The System proposal shall provide the sizing calculation of the servers.
- The system shall provide hardening of operating system and software, example disabling all processes, services and ports that are not in used for security reasons.

5.4 Integration Responsibilities

- The Vendor shall describe all dependencies to bank, including all equipment, tools and support for installation, integration, test and acceptance of the System.
- The Vendor shall integrate with the following systems.
 - A. Local payment switch (1-link)
 - B. Bank Core Banking System (for mobile banking)
 - C. Integration with other supporting system e.g. SMS gate way, CRM etc
- For multiple connections, the system must support Multiple IPs for 1 Large Account.
- The system must be able to originate and terminate using the same connection.
- The system must have active-active connection for all the connection.
- The system must have detail logs for each transaction to and from any interface. With exception for sensitive information such as pin
- The system must be able to show the connection utilization (in message per second).
- The client or application must use unique transaction ID for all transaction sending, including all segments of long message with an option of sequential or non-sequential transaction id (configurable)
- The System shall provide network connectivity to all the systems within the proposed platform.
- The System shall support TCP/IP protocol.
- The system shall support Gigabit Ethernet interface.
- System and network should be properly segmented: Public access (DMZ), front-end system, and back-end system whichever deem fit.
- The system shall be multi-tiered if deem necessary to improve security, performance, scalability and availability.
- The system network shall be fully redundant and supports minimum 2 network ports per virtual or physical server instance.
- The proposal shall include load balancer and any other network equipment where deem

necessary.

- The System shall generate CSV or other standard EDI output format for ftp file transfers
- The System shall provide support for SNMP v2 and above for integration with bank's network management monitoring system.
- The System shall allow alerts to be triggered based on customized criteria.

5.5 Project implementation plan

- The Vendor shall propose a project implementation plan, including but not limited to the items below, and with all dependencies indicated, as well as all participation from the bank has indicated.
- The implementation plan should be detail and in Gantt-chart form reflecting the chronological sequence of activities required for systems implementation commencing from the date of contract through systems acceptance. Estimated start and completion date for each activity shall be included.
- Vendor shall submit their approach and methodology for the system implementation.
- The following activities, among others, shall be covered in the project implementation plan
 - A. Project awarded
 - B. Project kick-off
 - C. Site requirements and preparation
 - D. User Requirement study and sign off
 - E. Specification of interfaces, Design
 - F. Hardware/software acquisition and installation
 - G. Implementation/development
 - H. Integration
 - I. User training
 - J. Documentation, User guides, including approval time
 - K. Test phases – User Acceptance test (including load performance test and necessary simulation tools)
 - L. Stability periods / pilot run/ soft launch
 - M. Cut over to production , rollout and migration
 - N. Contractual Date of Delivery
 - O. Warranty Periods – post implementation support and review
 - P. Regular status meetings
- For any major event on the project implementation plan, the following shall be described:
 - A. Site
 - B. Process
 - C. Prerequisite
 - D. Bank involvement (# of participants, competency)
 - E. Vendor involvement
 - F. Deliverable

- For any major event on the project implementation plan, possible impact to other systems and services shall be described.
- Project staffing organization chart of the Vendor's implementation team, explaining the roles and responsibilities of each resource
- The Vendor(s) must appoint a responsible project manager at its own cost for the project with the authority to make necessary decisions for the progress of the project;

5.6 Training

- For each of the training courses offered, the Vendor shall state
 - A. a description of key modules
 - B. target audience
 - C. experience level, prerequisites
 - D. proposed timing
 - E. practical arrangements (duration, preferred location, etc)
 - F. the max size of class
 - G. on-site or off-site training
- The vendor shall provide comprehensive classroom and hands-on training to the bank.
- The vendor shall provide all materials, equipment, and facilities needed for all training sessions.
- Training costs shall be addressed in the Commercial Proposal.
 - A. Mandatory training
 - B. O&M training for a minimum of 8 persons
 - C. Troubleshooting training for level 1 & 2, including all relevant system administrations
- Planning department training on system capacity monitoring, capacity planning and system sizing
- Developers training on development, implementation and maintenance
- End User Training
- To provide slides and training materials for merchants, agents, dealers/ distributors' trainers purposes
- The CS training module shall include training in using the System and CS Care GUI training
- All training documentation shall be made available for the bank in soft copy following training sessions.

6. Glossary:

3DES	Triple DES (Data Encryption Standard)
AMEX	American Express
AML	Anti Money Laundering
API	Application Programming Interface
ATM	Automated Teller Machine
B2B	Business to Business
B2C	Business to Consumer
CBS	Core Banking System
CDM	Cash Deposit Machine
COTS	Commercial Off-The-Shelf
CRM	Customer Relationship Management
CS	Customer Service
CSR	Customer Service Representative
CSV	Comma Separated Value
DB	Database
DES	Data Encryption Standard
DMBS	Database Management System
DMZ	Demilitarized Zone
DR	Disaster Recovery
DRS	Disaster Recovery Site
FTP	File Transfer Protocol
GSM	Global System for Mobile
GST	General Sales Tax
GUI	Graphical User Interface
HW	Hardware
ISO	International Organization for Standardization
IVR	Interactive voice response
J2ME	Java 2 Platform, Micro Edition
KYC	Know Your Customer
MC	Master Card
MFS	Mobile Financial Service
MNO	Mobile Network Operator
NFC	Near Field Communication
O&M	Operations & Maintenance
OFAC	Office of Foreign Assets Control
OTC	Over the Counter
P2P	Person to Person
PIN	Personal Identification Number
POS	Point of Sale
SFTP	SSH File Transfer Protocol
SIM	Subscriber Identity Module
SLA	Service Level Agreement

SMS	Short Message Service
SMSc	Short Message Service Center
SNMP	Simple Network Management Protocol
SOAP	Simple Object Access Protocol
SSL	Secure Sockets Layer
STK	SIM Toolkit
TCP/IP	Transmission Control Protocol/Internet Protocol
USSD	Unstructured Supplementary Service Data
VAT	Value Added Tax
VPN	Virtual Private Network
WAP	Wireless Application Protocol
WHT	Withholding Tax

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