

Functional requirements:

FR-1 (MUST): The system needs to be able to save user account data (account numbers, names, balances etc).

Justification: This is particularly important for the ATM to be able to provide the users' account details to update during any transactions. There can be no processing of any transaction if account information is not available.

FR-2 (MUST): The system must also include the user authentication which is PIN verification.

Justification: Security plays a major role in any banking system, and the user's PIN will confirm that only the rightful owner of the account can access it.

FR-3 (MUST): It must accept cash withdrawal requests and balance the account.

Justification: The most basic function of an ATM is to dispense cash. The database must adjust account balances to different types of transactions, including withdrawals as the process progresses.

FR-4 (MUST): The system must allow cash deposits and adjust the balance accordingly.

Justification: Customers should be allowed to deposit cash through the ATM and the system should show the account balance accurately for real-time account transactions.

FR-5 (MUST): Account balance inquiries must be possible within the system.

Justification: Customers should be aware of the amount of money in their accounts to transact. This requirement also explain why banking services should be transparent and accountable.

FR-6 (MUST): It must keep record of all transactions in the accounts for a certain period.

Justification: Recording of transactions assist the customer and the bank to keep records of all activities for security purposes, in case of a dispute and for auditing.

FR-7 (MUST): There is the need to transfer money from one account to another within the system.

Justification: Another characteristic of contemporary ATMs is the possibility of funds transfer, i.e. the shift of the amount of money from one account to another.

FR-8 (MUST): It must ensure that there are daily withdrawal restrictions.

Justification: As part of fraud control measures and to provide for cash, banks must set daily limits as to how much cash can be taken away.

FR-9 (SHOULD): Users should be notified through SMS or email after transactions in the system.

Justification: It is a security feature and also offers the user real time information to enable him or her to identify any unauthorized activities.

FR-10 (MUST): The system must enable payment of bills right from the Atm.

Justification: The bill payments are useful to the users since it offers more than one service in the banking system.

FR-11 (SHOULD): It should be able to accommodate multiple currency support and should be able to perform conversion between different currencies.

Justification: For globally located ATMs the multi-currency provides ease in withdrawing and depositing money in preferred currency thereby making the transaction to be more flexible.

FR-12 (MUST): The system needs to control ATM machine stock (cash).

Justification: Cash amount in the machine should needed to also be monitored to make sure sufficient funds are available for withdrawal and to inform the bank when the machine is out of stock.

FR-13 (MUST): Transaction monitoring must be conducted by the bank staff for which the system has to provide reports.

Justification: Writing and reading reports are important among employees of banks with reference to the daily transactions that take place to identify any discrepancy and to check whether the banks are operating within the set financial laws and regulations.

FR-14 (SHOULD): It should also support multiple languages The system should have an ability to support multiple languages.

Justification: Since customers with a range of demographics use ATMs, offering languages increases the total convenience and satisfaction among users.

FR-15 (MUST): The system must keep records and track service requests for the ATM.

Justification: Maintenance tracking guarantees that ATMs are functional hence reducing the possibility of their breakdown and effecting service delivery.

FR-16 (COULD): It could have supported mobile number-based transfers.

Justification: Since the number of people using mobile banking is growing, allowing transfers through the number of a mobile phone is also more convenient and corresponds to the trends in digital banking.

FR-17 (MUST): The system must also provide means of data security where data is encrypted for storage.

Justification: Since financial data is sensitive, it is encrypted to avoid exposing such information to be compromised through hackings among other cases.

FR-18 (MUST): It is necessary that the system should have capability of balance updating in real time.

Justification: The customer should be able to see their balance as soon as there has been any transaction carried out so as to prevent overdrafts.

FR-19 (SHOULD): It should contain a feature to monitor fraudulent activity (such as a number of transactions).

Justification: The various fraud control measures can reduce or eliminate the incidence of unauthorized transactions, and therefore shield the system from various forms of financial crimes to the benefits of both the bank and the customers.

FR-20 (MUST): It must also be capable of storing logs of ATM terminal for purposes of diagnosis and as well for audit.

Justification: ATM logs are required for troubleshooting the system problems and for record keeping for security, regulatory, and accountability purposes.

Non-Functional Requirements:

NFR-1 (MUST): The system must ensure that the ATMs are always available, and the availability of the system should be 99.9% of the time.

Justification: ATMs must be very reliable since customers depend on them to withdraw cash at any one time. High availability increases the satisfaction and the degree of trust of the customers.

NFR-2 (MUST): This is important to make the system be able to continue with the data even in case of power failure or system crash.

Justification: Blackouts or crashes result in loss or corruption of data, which is unallowable in any financial applications. Data integrity using backup or transactional consistency is therefore important.

NFR-3 (SHOULD): The response time of the system should be less than 2 seconds per each transaction.

Justification: This means that slow response time is an inconvenience to users. Since customers prefer fast results in an ATM service, quick transactions are anticipated for the ATM service.

NFR-4 (MUST): The system must meet all the requirements of the banking legislation – for instance, PCI DSS for data security.

Justification: Holding with standards including the Payment Card Industry Data Security Standard (PCI DSS) guarantees that the system is protected and secured to the best standards.

NFR-5 (COULD): The system could be horizontally scalable to accommodate the higher number of transactions in some periods.

Justification: ATMs may experience heavy usage during peak times (e.g., holidays). Horizontal scaling allows the system to handle more transactions by distributing the load across multiple servers, preventing downtime or slowdowns.