CARDLESS ATM SIMULATION

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Abstract:

Standing in long lines for ATM withdrawal is a thing of the past. 'Card-less ATM transactions' is a new area being experimented to leverage smartphones as a solution. Card-less ATMs can make use of either Access Code sent via NFC technology or SMS or QR code to carry out the process. Generally, the options displayed to the users in the ATM are sometimes redundant and very less used. To avoid these steps, only the *essential steps* are embedded into the application where the user gets to prefill the options and withdraw money within. Additionally, the application would suggest the nearest ATM to the user by incorporating maps API.

1. Introduction:

Today, there are almost 2 million ATMs around the globe. Although use of the machines has declined in recent years, likely because more people make purchases using credit and debit cards instead of cash, the ATM continues to have a place in modern culture. Today's machines sell everything from movie tickets to medicine [1][2]. But the only compulsion is debit card usage for all transactions. We are proposing a method which completely foils this restriction. User of this service will be able to offer timely service to the beneficiary. The remainder of this paper has been organized as follows: Traditional ATM transactions shown in the next section followed by existing card less ATM withdrawal process, proposed card less ATM withdrawal scenario is presented followed by conclusion and remarks.

2. Traditional ATM Transactions:

As stated earlier, ATM transactions are all card based. Users have to authenticate themselves using debit card. Because of this compulsion sometimes few transactions never used to complete in the absence of this card. Card based traditional ATM transaction flow is shown below.

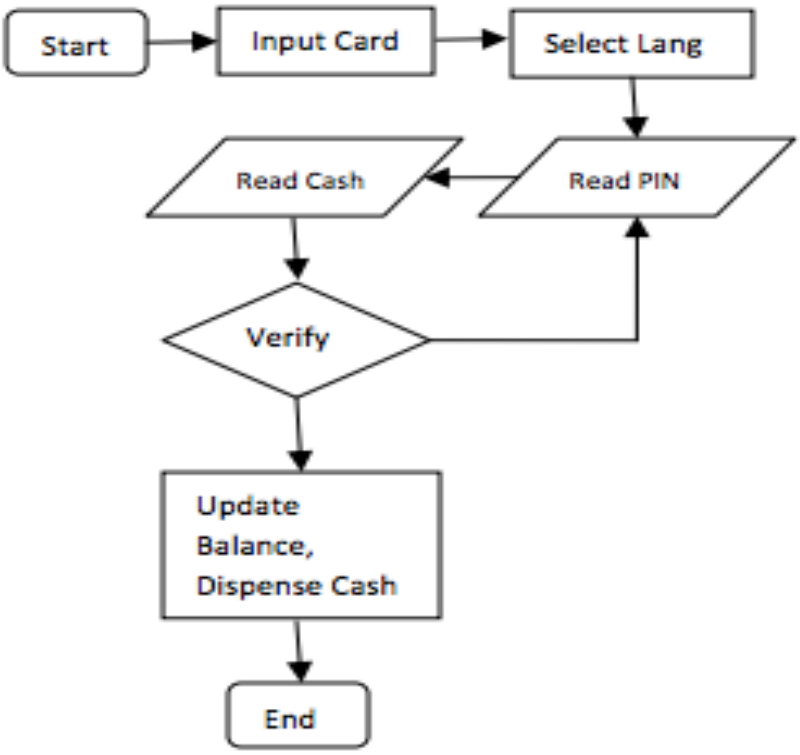


Figure 1 Traditional ATM cash withdrawal process

3. Existing Cardless ATM withdrawal process:

In India, ICICI Bank Ltd. has been successful in implementing card less ATM cash withdrawal up to certain extent as it involves few complex and tedious formalities. Entire cash withdrawal process is bound by few set of restrictions i.e., need of an iMobile app, n-dimensional authentications, etc., which most of the times cannot be bared by end users. The overall process is depicted as below.

Step 1: Request for Card less Cash Withdrawal at iMobile

- Log in to iMobile application with four digit login pin number
- Click on fund transfer option and then click on Cardless Cash
- Add a Payee
- Go to 'manage payee' section and select 'add Cardless Cash Withdrawal payee'
- Enter recipient mobile number, name and address
- Confirm recipient registration by entering Unique Registration Number (URN) received on your registered mobile number
- Create Cardless Cash Withdrawal transaction
- Go to 'Fund Transfer' section and select 'Cardless Cash Withdrawal'
- Select an account to make a payment and select Cardless Cash Withdrawal recipient from the registered recipient list
- Enter transaction amount

- Authenticate transaction using your debit card grid
- Your selected account will get debited.

Step 2: SMS from ICICI Bank

- You will receive a unique 4-digit code on your mobile from ICICI Bank
- Please share the 4-digit code with recipient
  The recipient will also receive a SMS with a unique 6-digit code on their mobile phone from ICICI Bank.

Step 3: Cash withdrawal from ICICI Bank ATM by recipient

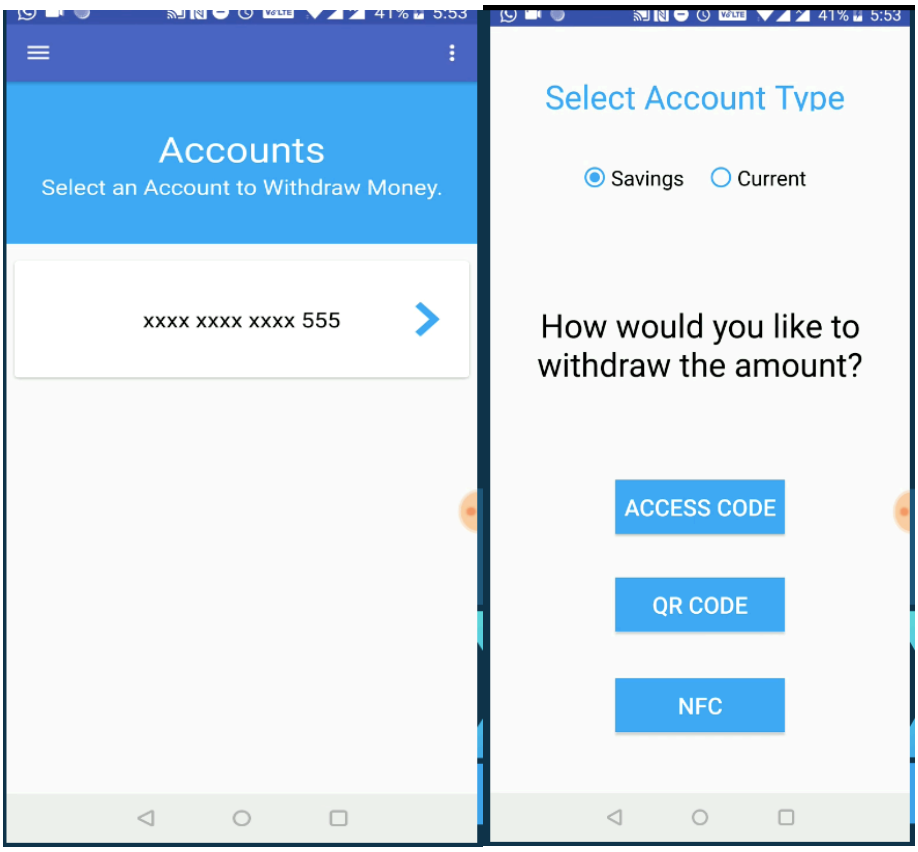
- You will receive a unique 4-digit code on your mobile from ICICI Bank. Please share the same
- Recipient has to visit a specified ICICI Bank ATM and enter the following details:
- The recipient mobile number
- The 4-digit code (as received by the sender)
- The 6-digit code (as received by the recipient)
- The amount to be withdrawn (in INR)
- Cash will be dispensed on successful entire amount needs to be withdrawn by the recipient as a one-time transaction
- If there is any mismatch in the details entered by transaction will be blocked and the amount will be returned to the sender's account

Limits: Sender limit - Rs. 10,000 per transaction and INR 25,000 per beneficiary per month.

4. Proposed Functionalities/Modules:

The existing method of card less cash withdrawal can be a bit complex for a layman. Redundant steps are involved which is not user friendly, long lines near ATM machines. Our proposed approach does not involve too much of formalities and restrictions as compared to the existing one. It will be made clear as we proceed with the description for our proposed work. Every bank account holder will have his mobile phone number registered with the bank account [5]. This alone is sufficient to prove identification and authentication.

1. Users fill in the options:
    - To choose from different accounts
    - To choose from NFC, SMS or QR code.
    - To find the nearest ATM with cash.



2. Other is Simulation of the ATM i.e. reading NFC/ displaying the barcode.
    - Prompt the user to choose an option: 'SMS/QR Code'
    - For SMS module, display a screen for the user to enter Access Code
    - For QR Code module, display a QR code for the User's app to scan
    - Display the transaction message.

The user's android application will have an OTP verification done prior to registering. Only the account holders with mobile number linked to their accounts will be able to access the application. Once the user is verified, he will be able to set a screen lock for the application. He can look for the nearest ATMs in his device as the application is integrated with Google Maps. He can prefill the required options like, card account type and amount.

Access Code :

On selecting Access Code, the bank servers generate a unique access code in the application which the user will be prompted to enter on the ATM machine screen. Once the access code is verified, the user can view the transaction details in his mobile and will be saved in the history.

QR Code:

After reaching ATM machine, the user will select QR code option in his application, which opens a camera and will be able to scan the QR code that is available on the ATM Machine. Once the QR code is

recognized, the transaction is done and the transaction message will appear on mobile as well as on the ATM screen.

NFC :

After reaching the nearest ATM machine, the user can select the NFC option and bring his android device near the NFC chip on the ATM Machine and once the message is received by the ATM then the transaction is success and the money will be dispensed from the machine.

5. Advantages of Proposed Method:

This approach helps the User to reduce the Transaction time for ATM withdrawals. The application is beneficial in:

1. Transaction can happen without card. Therefore this helps in cases when customer forgets the card, prevents loss of the card or theft of card and personal information at fake ATMs.
2. Withdrawal process can be accomplished by either parties (i.e., account holder or the beneficiary), depends on who has obtained the OTP.
3. Improved security and customer experience.

6. Conclusions

We know that One –Time – Passwords, QR codes and NFC are becoming trend setters in the business domains. We have proposed a style of cash withdrawal without the involvement of debit card that can be accomplished using OTP via SMS or QR code scanning or Android beam technology. As compared to the existing methods, our method is simple and effective and would definitely be preferred by all kinds of users. As of now, the proposed method deals with the withdrawal process in the same bank but can be extended for inter – branch transactions.

7. References

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