

Card less ATM Cash Withdrawal: A simple and Alternate Approach

Nischaykumar Hegde¹, Sharath K R²

Department of Computer Science
Vivekananda College of Engineering & Technology

Abstract- Automated Teller Machine (ATM) transactions are found safe, reliable and inevitable these days for fulfilling our financial commitments. Traditional approach for using ATM mandates involvement of Debit card. But however, people do experience times when their account lacks balance amount or they forget to carry card and struggle to complete transaction. We know that, parallel to ATM usage, mobile phones' usage has also been an inevitable trend. Establishing a connection between these e-gadgets has ignited a simple and effective approach to withdraw cash without the involvement of debit card which can be referred to as card less cash withdrawal. This work can be even convenient than National Electronic Fund Transfer (NEFT). Our proposed approach addresses the situation via Short Message Service (SMS) using mobile phones, establishing connection to GSM devices for obtaining One-Time Password (OTP) to offer timely service for target beneficiary.

Keywords: ATM, SMS, Debit card, Mobile phones, GSM Device, NEFT, Beneficiary, OTP

I. INTRODUCTION

1.1 THE ADVENT OF THE ATM

In 1967, a Scottish inventor named John Shepherd-Barron had a flash of genius: If vending machines could dispense chocolate bars, why couldn't they dispense cash? [1][2] Barclays, a London bank, loved the idea, and Shepherd-Barron's first ATM was installed in a branch on Enfield High Street not long afterward. Unlike modern ATMs, Shepherd-Barron's did not use plastic cards. Instead, it used paper vouchers printed with radioactive ink [1][2] so that the machine could read them. The customer entered an identification code and took her cash—a maximum of £10 at a time. The first automated banking machine in the U.S. was devised by a Dallas engineer and former professional baseball player named Donald Wetzel [1][2]. Wetzel's machine used plastic cards like the ones we use today. (Instead of radioactive ink, the cards stored account information in magnetic strips.) In September 1969, a Chemical Bank branch on Long Island installed the first of Wetzel's machines.

1.2 THE SPREAD OF ATM

By 1970, dozens of U.S. banks had jumped on the ATM bandwagon [1][2]. To introduce this new machine to consumers, banks used all kinds of advertising tricks. Every 25 minutes during the movies, commercials for the bank touted the advantages of its new cash-dispensing machine. However, it took a corporate gamble and a blizzard for the ATM to win the confidence of American consumers. In 1977, the chairman of Citibank took a huge risk, spending more than \$100 million to install ATMs all over New York City [1][2]. That investment paid off the following January when a huge blizzard hit New York, dumping 17 inches of

snow on the city. Banks were closed for days; meanwhile, ATM use increased by 20 percent. Within days, Citibank had launched its by-now-familiar "The Citi Never Sleeps" ad campaign. Posters and billboards showed customers trudging through snow to get to Citibank ATMs. After that, almost every one of the country's banks followed Citi's lead. The era of the ATM was underway.

1.3 ATM TODAY

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 airline tickets to 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.

II. TRADITIONAL ATM TRANSACTION

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 [3]:

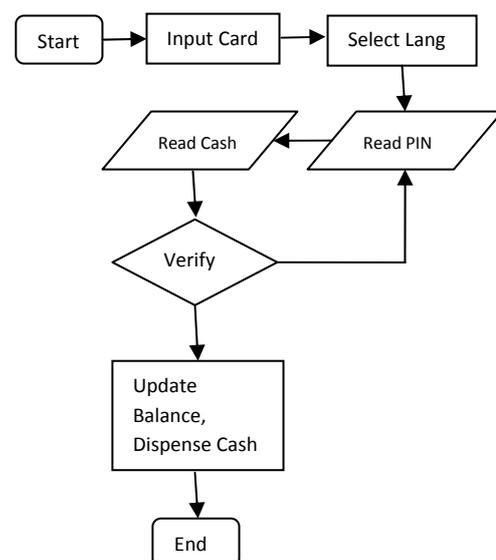


Figure 1 Traditional ATM cash withdrawal process

III. EXISTING CARDLESS ATM WITHDRAWAL PROCESS

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 [6]:

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 with recipient.
- 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 authentication of all these four parameters. The entire amount needs to be withdrawn by the recipient as a one-time transaction
- If there is any mismatch in the details entered by the recipient, the Cardless Cash Withdrawal 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.

IV. PROPOSED CARDLESS ATM CASH WITHDRAWAL SCENARIO

The existing method of card less cash withdrawal can be a bit complex for a layman. 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. Bank's server will have a GSM Device attached in order to receive and process SMSs. Detailed scenario is shown considering two ideal cases and goes as follows:

CASE 1: Withdrawing for self

Step1: User has to send an SMS comprising of a "keyword" (priority defined by the bank) followed by his 16-digit debit card number and amount to be withdrawn to the Server number specified by the bank.

Ex: WDW 1234567898765432 500 to 53553

Step2: A confirmation message will be sent to the user mentioning an OTP to complete the transaction.

Step3: User will now chose appropriate option going to the nearest ATM of that bank for accomplishing the transaction within the specified time (5 minutes) [4]

CASE 2: Withdrawal for others

In this case, Step 1 & 2 remains the same but the only change is that user forwards the obtained OTP to the beneficiary via SMS.

Outline of the proposed work has been shown in the below figure.

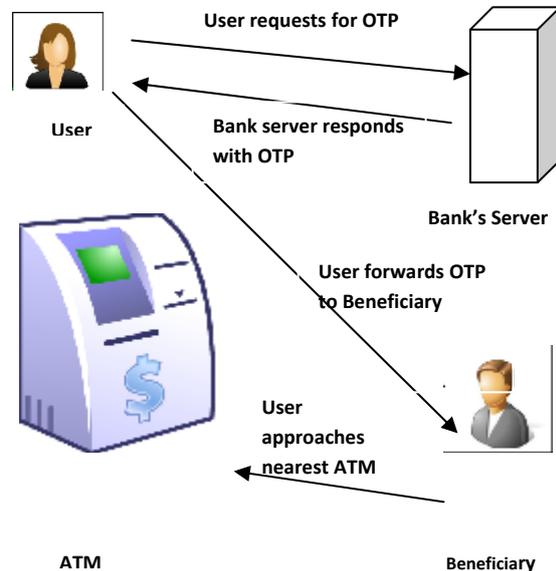


Figure 2 Beneficiary accomplishing card less ATM cash withdrawal

Below screenshot shows how user interacts with the machine after he receives SMS containing OTP for accomplishing card less cash withdrawal.

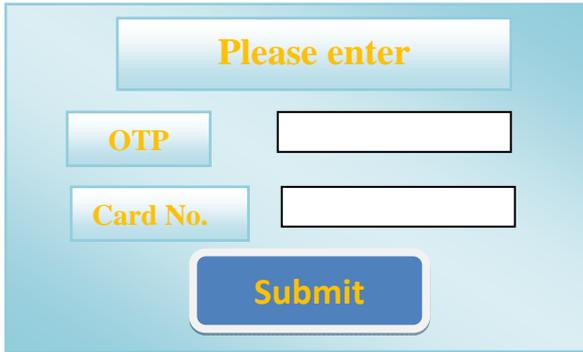


Figure 3 Screenshot of the ATM screen for card less withdraw option

V. ADVANTAGES OF PROPOSED METHOD

There are several fine grain advantages in our proposed method as compared to the existing one. Few of them can be stated as follows:

- a) Withdrawal process can be accomplished by either parties (i.e., account holder or the beneficiary), depends on who has obtained the OTP
- b) Overall process is simple and effective compared to the existing method.
- c) Very less interaction with the ATM but with a formal approach
- d) Cash withdrawal limit privilege remains the same for users and beneficiary

CONCLUSIONS

We know that One –Time – Passwords 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. As compared to the existing method defined by ICICI bank ltd, 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.

REFERENCES

- [1] James J Mc Andrews, “The Evolution of Shared ATM Networks”, Business Review, May/ June 1991
- [2] “Automated Teller Machines”, History.com Staff Website Name History.com Year Published 2010 Title Automated Teller Machines URL:<http://www.history.com/topics/inventions/automated-teller-machines> Access Date December 30, 2015 Publisher A+E Networks
- [3] <https://hikmahgatra.wordpress.com/2013/06/02/flowchat-how-to-withdraw-money-at-atm/>. Access Date December 30, 2015 Publisher A+E Networks
- [4] Tzu-Chang Yeh, Haiso-Yun Shen, Jing-Jang Hwan, “ A Secure One – Time Password Authentication Scheme Using Smart Cards”, IEICE Transactions on communications, Vol E-85 B No. 11, pp 2515 – 2518
- [5] Edward E. Kelley, Wappingers Falls, NY (US); Franco Motika, Hopewell Junction, NY (US), “secure cell phone for ATM Transactions”, US 2006/0200410 A1 Feb 13, 2007
- [6] <http://www.icicibank.com/Personal-Banking/faq/detail.page?identifier=faqs-smsncash-20140705122700831>, Access Date December 20, 2015