An Advance ATM Machine Service: Making Demand Draft through ATM Machine

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Abstract
This paper suggests an advanced ATM machine service by which customer make Demand Draft by ATM (Automatic Teller Machine) machine without the need for a cashier, human clerk or bank teller. This technique can gives strength to the anywhere banking.

Keywords: Banking, Advanced ATM Services, Anytime and anywhere Banking, DD Exit Slot, DD through ATM, Paper Selector.

Introduction
The existing problem with Demand Draft (i.e. DD) which cannot be prepared on the time such as in night or off-days as well as customer cannot get Demand Draft at the spot. This paper suggests an Advanced ATM Service by which customer can make Demand Draft by him self through ATM (Automatic Teller Machine) machine with proper authorization and without the need of a cashier, human clerk or bank teller. This is done by the E-Banking. Finally the objective of this paper is to create an add-on service for the On-Premise ATM Machine so that ATM machine can make Demand Draft. The basic idea is taken from [7] “ATM as video conferencing station”.

1. The Problem with current DD-Making Process
   - Customer has to manually visit the bank in working hours and fills the required form, and he has to wait for some authorization.
   - DD making can be possible in bank working hours only.
   - DD making can not be possible on the time such as in night or off days.
   - Customer cannot get Demand Draft at the spot.
   - Instead of this, many banks are offering Online Demand Drafts, but in this process customer have to wait 8 days after filling online DD request because it deliver by the currier.

2. Benefits of proposed technique
   - Customer becomes free from the rush of the bank.
   - Anytime like in night or off days DD making is possible.
   - From anywhere customer can make DD.
   - Customer can get DD at the spot.
   - It is the better service than online DD.

3. Introduction of ATM Machine (in short ATM)
Now An Automated Teller Machine (ATM) [1] is well known machine, it is a computerized telecommunication device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller. The customer is identifies by inserting an ATM card. Authentication is provided by the customer entering a personal identification number (PIN). Using an ATM, customers can access their bank accounts in order to make cash withdrawals, credit card cash advances, and check their account balances, purchasing, booking tickets, etc. ATM machines are placed not only near or inside the premises of banks, but also in locations such as shopping centers/malls, airports, grocery stores, petrol/gas stations, restaurants, or any place large numbers of people may gather.

According to location there are two types of ATM machine: On-Premise and Off-Premise (also known as On-Site and Off-Site) On-premise ATM machines are typically more advanced, multi-function machines plus it is more expensive. Off-premise machines do work of cashier, so it is typically the cheaper mono-function machine. Figure 1 is showing component of ATM machine. ATM machine has LCD display to show output messages, Card reader to read ATM card, Keypad to enter PIN and amount, Cash Dispenser to dispense case from ATM, printer to print transaction detail over the paper, Camera for security purpose.

![Figure 1: Components of ATM machine.](image)

Demand draft
Demand Draft in the Indian context is essentially a written
order, where a buyer pre-deposits an amount of money in a bank and hands over the ‘written order’ to the seller, so that the seller can ‘demand’ the deposited money from the bank where it way deposited.

**Methodology**

This paper suggests the technique that can implement with minor the change in existing model of ATM Machine.

**Brief Description of the proposed process**

Costumer first login to the system by swapping his ATM card then system will ask for PIN as costumer enters valid PIN system shows various options on screen now user selects **DD Making** then system ask for some detail, as user enters all required details system adds some details with the detail given by the costumer and displays on screen and ask for verification, user when verifies all detail then printing of DD and transaction slip starts and dispense from exit slot. User now has DD and transaction slip

![Figure 2: DD Making process.](image)

**Addition/Modification in existing component of ATM**

**Key Board**

Currently most of the ATM has numeric keypad[1] (as shown in figure 3) but this paper suggesting new keypad like in mobile phone with two key ‘Backspace’ and ‘Blank Space’ (as shown in figure 4) by which customer can enter text data like **Beneficiary Name and Account Number, Branch** etc. just like writing SMS in mobile phone.

![Figure 3: Current numeric keypad](image)

![Figure 4: Proposed alphanumeric keypad](image)

**Printer and Paper Selector**

The aim of this paper is to achieve goal with minor change in the design of existing ATM Machine so that hardware and software cost could not increase.

Here this paper does not suggest to change existing ATM Transaction Slip Printer (as shown in figure 5) and add new printer that can print DD as well as ATM transaction slip.

![Figure 5: Current printer of ATM Machine with ATM Slip Roll](image)

This paper proposed a new device ‘**Paper Selector**’ (shown in figure 6), by the addition this new device **ATM slip printer** becomes able to print **Transaction Slip** as well as **DD**. Block diagram of printing device is shown in figure 4. In this figure we have a roll of paper for transaction slip and a stack of paper for DD, both papers are running over the roller and inserted into **Paper Selector**.

![Figure 6: Suggested printer with Paper Selector.](image)

**Paper Selector** has two roller sets say roller set 1 and roller set 2 and an instruction translator. **Instruction translator** receives two types of instructions that are “forward paper of transaction slip” and “forward paper of DD” form system and find what is to be done. Paper selector can be in one of the three stages

1. Idle position, see figure 7(a)
2. DD paper forwarding, see figure 7(b)
3. Transaction Slip forwarding, see figure 7(c)

![Figure 7(a): idle position of paper selector.](image)

![Figure 7(b): DD paper forwarding.](image)
In *idle position* both roller sets remains stop.

In the case of **DD paper forwarding**, when printer get instruction to print Demand Draft at the same time instruction translator receive “forward paper of DD” and then the roller set 2 runs and send paper from DD paper stack to the printer and at the same time roller set 1 remains stop. Now printer simply prints details of DD over the received paper.

In the case of **Transaction slip forwarding**, when printer get instruction to print Transaction slip at the same time instruction translator receive “forward paper of Transaction Slip” and then the roller set 1 runs and send paper from ATM Slip roll to the printer. Roller set 2 remains stop. Now printer simply prints details of transaction over the received paper.

**Demand Draft**

**Information needed to make DD**

By the simple GUI user enters DD amount, Beneficiary Name, Payable Branch, Code of Branch through alphanumeric keypad just like typing an SMS on mobile phone.

**Paper for DD**

This paper suggest new layout for DD. Why we change the layout of DD? The answer is, first, Paper target is to make minor change in existing system. To use existing printer we have to change layout of DD from Landscape to portrait. Now DD can print with the existing ATM Transaction-Slip-Printer. Second, width of paper of DD must be same as the ATM Transaction Slip so that it can print by the printer and can exit from ATM Transaction Slip exit slot new slot is not required. All the security issues [2] like DD number, MICR number and Transaction code etc. is still available on the DD, suggested sample layout of DD is shown in figure 6.

Only two differences are between off-line DD and ATM generated DD, first, ATM generated DD has ATM Identification Number [3], Associated Branch of Bank [3], ATM Location [3] to recognize ATM that has printed this DD. Second, it has a digital signature for authentication.

**DD Layout**

In figure 8, Proposed DD divided into 4 areas First area has: First area has Date, Time, Issuing ATM ID, Branch Name, Code Number, Phone Number to which ATM is Associated (Cancellation of DD is only done in bank to which ATM machine is associate). Second area has: Beneficiary Name, DD Amount (in Number and Word). Third area has: Drawee Branch Name and Drawee Branch Code Number. Fourth area has: All security issues [3] (as per the requirement of bank) like DD Number, MICR Number and Transaction Code, Authority Digital Signature, etc.

**Transaction Slip**

Proposed sample transaction slip is shown in figure 9. It has: Date, Time, Issuing ATM ID, Branch Name, Branch Code Number, Debit Card Number, transaction Number, Beneficiary Name(in very short), DD Number, DD Amount, Deducted DD making Charge, security code, Available A/C Balance. And A massage “Note: In case of cancellation of DD card holder must present personally with any ID card, this slip and DD in original”. With all these suggested information some space is still for the other information that is as per requirement of bank.
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Figure 9: Sample ATM transactions slip.

DD Exiting Slot
As per discussion ATM Transaction-slip printer will print DD so the DD can exit from the slip-exit slot of ATM. There is no need of new exit slot.

DD Making Process
The DD making process is illustrated in following algorithm.

Algorithm DD-Making
Input: ATM Card and PIN, Beneficiary Name, DD Amount, Payable Branch Name and code.
Output: Printed DD and transaction Slip
Step 1: User login by swapping his ATM card and entering PIN
Step 2: System display option window.
Step 3: User selects DD Making option from various options.
Step 4: screen display DD Making window and ask for entering details
Step 5: User enters Beneficiary Name, DD Amount, Payable Branch Name and code of Branch.
Step 6: Screen displays all entered information with Date, Time, Issuing ATM ID, Branch Name, Branch Code, DD Number, DD Amount, and Deducted Charge. Ask for confirmation.
Step 5: If user presses ‘yes’ // either by pressing side button or touching screen
    If AC-Balance >= DD Amount + DD Making Charge
        Screen display ‘Pay?’
        If user select ‘yes’
            System display “DD Making is started, Please wait!” and system sends a signal to the paper selector.
            If papers for DD and slip are available
                AC Balance = AC Balance – (DD Amount + DD Charges)
                Display “DD is printing, collect it from exit slot”.
                Paper selector sends paper to the printer.
                As printer received paper and detail of DD it just prints all following details on received paper:
                - Current Date and Time
                - Issuing ATM ID, Branch Name, Code, Address where ATM is associated
                - Authority Digital Signature
                - Amount in digit and words for example if DD amount is Rs. 2563/- Then it is Rs.|Two|Five|SIX|THREE|ONLY in word
                - Other security issues
            else Display “Paper for DD is not available” and exit.
        else Display “Transaction cancels by the user” and exit.
    else Display “Account balance is not enough” and exit.
    Display “Collect Transaction Slip”
else goto step 4 // user wants some editing
Step 6: Exit

DD CANCELLATION PROCESS
Algorithm DD-Cancellation
Input: Card holder must be present personally in bank with any ID card, ATM Card, ATM transaction slip for DD and original Demand Draft.
Output: Refund DD amount.
Step 1: Authenticate Customer by any ID proof and ATM card.
Step 2: Authenticate DD by the security issues
     Then goto step 5 else exit.
Step 4: Original DD and ATM receipt collected by the bank correspondent.
Step 5: Make a credit equal to DD Amount - DD Cancellation charge.
Step 6: Exit

DD Modification Process
Algorithm DD-Modification
Input: Card holder must be present personally in bank with any ID card, ATM Card, ATM transaction slip for DD and original Demand Draft.
Output: Refund DD amount.
Step 1: Customer have to cancel current DD as discussed in Algorithm DD-Cancellation
Step 2: Remake DD from ATM.
Signing Authority
In manual case Branch Manager is the Signing Authority that can sign over the DD. But in case of DD making form ATM Machine, Two questions are arising first, who is the Signing Authority? And second, how he/she can sign over the DD?. The answer of the first question is still Signing Authority is Branch Manager of branch where ATM machine is associated. Answer of second question is Proxy Blind Signature Schemes [5].

D. Chaum [5] introduced the concept of Blind Signature scheme in 1982. Using this schemes one user can obtained the signature of another on any given message, without revealing any in formation about the message or its signature. This scheme also ensures untractability and unlinkability. In 1996 Mambo et al [6] introduced the concept of proxy signature. In this scheme an original signer delegates his signing authority to another (proxy) signer in such a way that the proxy signer can sign any message on behalf of the original signer and the verifier can verify and distinguish between normal (original) signature and proxy signature.

In proposed method, we use the concept of "Proxy Blind Signature Schemes [5]". See figure 10, Branch Manager M of any Branch B has its own signature given/verified by the Central Security System of concern financial institution. ‘n’ ATM machines A1, A2, ..., An are associated with this branch B. Each machine has its own proxy blind signature generated by the signature of Branch Manager M. When a customer makes DD form any ATM Machine Ai then the proxy signature of that ATM Machine printed over the DD in the form of Barcode.

During authentication, this barcode (proxy signature on DD) is used to authenticate proxy signature of ATM Machine Ai i.e signature of M.

Application
• DD is the popular [4] Payment Instruments in India over the cheque, because A cheque is not a cash, as it does not assume the finality of payment. The funds may not be available with the drawer or the drawer may have withdrawn funds from his bank account in the interim leading to the possibility of the cheque being dishonoured on presentation.
• Cheque is not always acceptable in several business transactions particularly where the drawer and the payee are not known to each other then there is use of DD.
• DD is a popular medium to pay examination fee.
• Because of these advantages, implementation of proposed technique is beneficial.

Conclusions and Future Scope
In this paper, we present our approach of making demand draft from ATM machine for improving anytime/anywhere banking. Proposed approach involves using of paper selector so that existing printer can print DD as well. New layout of DD seems difficult in first view but you know this is the printed material and it can print portrait beside landscape on same cost. These minor changes are not expensive. For authentication of DD we are using digital proxy signature. In cancellation of DD we suggested remaking of DD because once DD has printed no editing is allowed. Transaction of DD making is similar to withdraw amount equals to DD amount plus DD making charges and transaction of DD cancellation is similar to deposit amount equals to DD amount minus DD cancellation charges. Refund of the cancellation can not be given to the customer in cash; it is automatically credited in the account of customer as in the railway ticket cancellation. This prevents the fraud. All security related to transaction is unchanged. Digital signature of signing authority is the area for future work.

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