CONCEPTION OF A BANKER’S CHEQUE USING ATM INTERFACED WITH TRUSTED THIRD PARTY SERVER

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Abstract- The main aim of this paper is to provide an convenient mechanism for generating a demand draft accepted by any financial institution using Automated Teller Machine (ATM) via a trusted third party server. The intention behind the process of automation of demand draft generation lies not only in the fact of reducing the workload on the financial institution but also to reduce the inter-bank transactions involved in the process of the same. The account number of the beneficiary is essential in this proposed system. The system generates the demand draft in form of a slip from the ATM with a barcode on the slip to identify the transaction by the financial institution and assist during the cancellation. Association of the account number of the beneficiary with any financial institution is mandatory in the proposed system. ATM interface could be used to debit the account of the payee while generating the demand draft and the beneficiary account will be credited only on the receipt of Demand draft from the beneficiary from any financial institution. Proposed system not only automates the process of the demand draft generation but also avoids the underutilization of the existing ATM Terminals.

Keywords- Automated Teller Machine, Demand Draft, Demand Draft Key, Financial Institution.

I. INTRODUCTION

Demand Draft is essential part of the financial services provided by any financial institutions. The main intention of the demand draft is to provide the end user with guaranteed money from the financial institution. The culture of processing a demand draft though slowly fading due to the presence of online fund transfer, but majority of institution prefer a guaranteed form of money transfer through demand draft. The demand draft has to be obtained from the financial institution and has many interbank procedures involved in it. Though the demand draft is not widely accepted currently, many feel that it is far from being extinct. So the need for the automated demand draft generation becomes inevitable. Automated Teller machine (ATM) is a system that is in place to provide the users with instant cash. The ATM is a self-service banking terminal that accepts deposits and dispenses cash at a lightning speed. The idea for an ATM was to simply replace and reduce the workload of the employees in the bank.

The ATM would help reduce banks overheads as mainly the wages would be decreased. This paper deals with the process of combining the process of demand draft generation with the automated teller machine functionalities. The current process of obtaining a Demand Draft from the financial institution is cumbersome and involves a lot of administrative process. The ATM, on the other hand provides a convenient and well established interface to solve these problems associated with the time and other delay in provision of the demand draft. Also the ATM interface is the interface that was originally designed to work as a mini financial institution but due to various reasons like the limited availability of human resources, now functioning as a cash dispensing machine.

Section II deals with the existing system, the current mechanism by which the ATM Terminals work to dispense and accept the deposits of the customers of that financial institution. It is followed by the sections on proposed system and architectural components which briefly describes the proposed mechanism of introduction of the trusted third party application and the internal architecture of the proposed system for generating the demand draft in detail respectively. Section VII deals with modules that are being implemented in the proposed system. It mainly concentrates on the Demand Draft key and Demand Draft generation. It is followed by the phases of the proposed system. The failures that are present in the existing methodology and its remedies are discussed in the section V and VI. The final section deals with the implementation issues of this proposed system and shows the implementation of the current system in detail.

II. EXISTING SYSTEM

Automated Teller Machine, fondly called as Any Time Money is one of the convenient way that was brought into this world as a replacement to the old banking system of the cash withdrawal. The main intention behind the invention of this system is to provide cash to the customers of the bank at the lightning speed when needed. The major sequential operations that are currently involved in the ATM services are as follows, 1. Inserting or Swiping the ATM card in the respective ATM Terminal.
2. Entry of the secret Personal Identification Number (PIN) with respect to the ATM card by the card holder.

3. Transaction selection (Financial aspects like balance enquiry, withdrawal, deposits).

4. Completion of the transaction and termination of the session.

The motivation behind the implementation of the proposed system rests in the fact as follows,

- There is a lack of automated mechanism for the generation of the demand draft. The entire process hinges on the necessity of the customer to go to the financial institutions and then obtain the same. This becomes cumbersome for the customer.

- There is a lot of man power involved in the process of the generation of the demand draft by the financial institution. To avoid the wastage of the resources, the automated process is necessary.

- The ATM terminals installed in the various parts around the globe in different countries is underutilized. So improve the utilization rate of these terminals, this system s being proposed. The process of inter-bank transactions for the Demand draft transaction process is huge and so the main aim of the system not only lie in the above points but also lie in the point of making the entire transaction (inter-bank) simple and with less wastage of resources.

III. PROPOSED SYSTEM

The ATM card and the PIN that is being currently being used by the system is necessary along with the user Mobile number registered officially with the financial institutions that provide the user with the ATM card. From the globally known fact that estimates that almost all the populations who have their ATM card are also the user of at least a mobile, this technique is being proposed. The user inserts the ATM card into the recognizing terminal. The terminal now senses for its validity. Then the terminal does not ask for the PIN number to be entered, instead sends the one time Demand Draft key (Dk) to the user officially registered mobile number. Thus the issue that is pertaining to the eaves dropping is now solved as the Dk is sent to only the officially registered mobile of the customers.

Also the Dk is time dependent, i.e., the Dk generated expires five minutes and provision of one time regeneration of the password is also available in adverse case of the non-reception of the Dk to the registered mobile. The mobile once misplaced shall be brought to the notice to the respective financial institution by the card holder so that the option of change of the mobile number might also be provided. There is a unique back end computation of the Dk with the help of the trusted third party applications so that after this phase only the PIN number is asked to be entered by the customers. Once the Dk is validated, the account number of the beneficiary is requested. The account number is validated and then the name of the beneficiary is extracted with the help of the account number from the third party server. Then the amount for which the demand draft to be taken is requested and then amount entered is checked for limits and then the Demand draft with barcode is generated.

IV. ARCHITECTURAL COMPONENTS

The functional units of the proposed system contain the different stand-alone modules which are needed to be interfaced in proper fashion to obtain the desired functioning of the automated demand draft generation process. Architecture depicts the various stand-alone modules which have their specific functionalities which could be efficiently utilized by providing the requisite coordination among each other's. The necessary components are just needed to be added to the existing system, such as the Trusted Third Party Application, so that the Existing ATM Terminal components need not be discarded to incorporate the proposed system features. The figure 1 shows the entire internal architecture of the proposed model with the help of the third party application. It consists of the three tiers of application involved and interacting within each other. The first tier is tier 0 which represents the tier responsible for storing all the account number and mobile number information. Tier 1 is the validation module which deals with the demand draft key generation and the account number validation.
verified in the tier 2 and thus helping in the demand draft generation process.

V. FAILURES IN THE EXISTING MODEL

There was one major proposed system in the demand draft automated issue process but has to make the modifications in the existing ATM infrastructure. Another burden (mainly financial) was laid on the institutions. The main failures associated with the existing model is as follows,

- Customer has to manually visit the financial institution in the working hours and fills the required form, waiting for some authorization whether the limit has been exceeded or not.
- Also the Demand draft must be taken only during the bank hours and the Demand draft availability at any instance of time is not possible.
- Also the huge involvement of interbank transaction charges and manpower with respect to the issuance of the demand draft.

VI. REMEDIES TO THE FAILURES

The main remedy to the failure lies in the fact as follows,

1. The main process of reduction in the inter-bank charges and the human resources involved in the process of demand draft generation is now eliminated.
2. Also the process of the main aim of 24*7 availability of ATM and the process of Demand Draft generation adds to its benefit.
3. The issue of the non-availability of the particular financial institution in the place of the beneficiary is also eliminated as ATM allowed providing the demand draft at the any place of interest. The debit happens once the beneficiary provides the ATM generated DD in any branch of their respective financial institutions.

VII. MODULES IN THE PROPOSED SYSTEM

Tier 0 - Trusted Third Party Application has a warehouse of only the Mobile number and ATM account number of the customers’ which is helpful in the recognition of the valid ATM account Number of the user and transmitting the Dk to the respective mobile number of the user and also called Dk Generation Component. Any mechanism of fraudulent action is being restricted by the Dk generation component as the session is established between the bank application and the ATM terminal only after the Dk along with the beneficiary account number is validated and verified. The steps followed are explained as below,

1. The ATM Card is inserted into the ATM terminal by the user.
2. Once the ATM terminal senses the presence of the ATM Card, the session is established between the ATM Terminal and the trusted third party application. So no session primarily is established between the ATM terminal and the financial institution’s server reducing the possibility of fraudulent actions to a greater level.
3. Tier 0 is first initiated by this session request and the session thus is verified to be true by validating the ATM Card number sensed by the terminal from the warehouse of the account number. Once the validation is successful, the interaction between the tiers happens and thus the Tier 0 is consulted by the Tier -1, validation module to generate the Pk and to validate the beneficiary account number.
4. The tier 0 interaction again happens to retrieve the mobile number of the ATM Card holder and the Dk generated is thus transmitted to the user mobile retrieved. Meanwhile the account number of the beneficiary is validated.
5. There are two separate repository designed, one which acts as a configured warehouse for the Dk generation which is provided by the financial institutions comprising of the mobile number and the Account number of the customer. Second repository is dynamic in nature which contains the Account and mobile number along with the Dk generated and the beneficiary account number which acts as the session establishment between the bank application and the ATM terminal. It is also called the Temporary Warehouse Instance. The respective account entry in the temporary instance of the warehouse is kept active for exactly five minutes from the generation of the Dk. In such cases the suspect for fraudulent action is sensed dynamically and the corresponding account number of such happening is deactivated for next 24 hours denying any further service. Also the update on the warehouse on behalf of request by financial institutions on change of the mobile number is also entertained. As these third party repositories does not have the PIN number associated with the ATM Card and any financial control, the secrecy between the financial institution and the customer is not given up along with the double tier authentication also made possible.
6. It is followed by the progress of the beneficiary account number validation and the amount to be debited for DD.
**VIII. PHASES IN THE PROPOSED SYSTEM**

Customer must be given an ATM Card by the financial institutions and can make use of it in the ATM terminal where the session first is established between the ATM terminal and trusted third party Application Vendor. Thus the Dk Generator generates as soon as the ATM Card recognizing terminal validates the card and the customer mobile is sent with the Dk generated at the third Party application. If the Dk is wrongly entered thrice or the request for new generation of Dk exceeds the limit allowed the corresponding account is temporarily blocked for 24 hours suspecting suspicious activities. Else only after the Dk validation session transfer happens i.e., the existing mechanism of secure session establishment between bank application and the ATM terminal is facilitated. Session Establishment with the trusted third party server. Before a transaction takes place, one of the first things the ATM terminals must do is to establish a session (one-time) between the ATM terminal and the Third Party Application. This is done by sending the first token of the ATM card account number. This is then followed by the messaging of the Pk to the customer mobile number. This time while user provides the DK. Validation Module. Once session is established, the Dk is forwarded only to the registered mobile, account number of the beneficiar is requested and the steps followed are explained as below,

1. Interaction with the tier 0 happens to retrieve the account number of the beneficiar (of the same or different financial institution) that has been stored.

2. Another main intention is to obtain the time duration for which the Dk will be available and thus determining the time at which the instance created should be destroyed and no longer be used. Now the communication happens between this temporary instance created and the ATM terminal for the receipt of the information for the validation purpose.

3. The account number request (benificiary) is popped up in the screen and the Dk is sent to the mobile. Both the inputs are requested from the user. So there is no need to change the numeric keypads in the ATM.

4. The entry of the Pk and the account number followed by the transfer of the process control and session control to the Demand Draft generation happens. Only after the validation. Now the mane of the beneficiar is extracted and the amount for Demand Draft is requested, thus finally the Demand Draft is generated.

**IX. IMPLEMENTATION ISSUES**

The system is implemented using RESTful web services in java and the following figures indicates the exposed web services. The primary reason for implementation using RESTful web services is that REST is stateless, which means the server doesn’t have to store the state of clients which reduces huge load on servers. Also, REST is cleaner than SOAP. The server is not burdened with maintaining the state. Client has to do the same that server does in a legacy systems. Safe encapsulation of Legacy systems which would not provide any financial losses to the institution.
CONCLUSION

This paper mainly deals with the automated generation of the demand draft and thus making all the inter-bank transactions easy and simple.

This technique does not burden the ATM Terminal with any infrastructural changes, thereby reducing the major financial and human workload on the financial institutions.

REFERENCES


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