

Optimized e-Transaction to Have a Secure Safe: E-Wallet

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Abstract-

In this present world people are more emphasising on the data that would support security and large volume of space and also to store confidential, personal, financial information that could be bank's balance details, licence details, authorization details, etc. For this e-Wallet would be the best suggested place to protect the above instructed information. The electronic wallet will not only store the information of money or details of money, instead it will store the e-money for e-transaction. [1] The e-wallet is not stopped as an application to store the personal information or to store e-money for e-transaction, the concept of e-Wallet can make any human to live a life without paper notes, coins and plastic cards. Any person can store his money in his e-Wallet account at his location and then withdraw his money at his destination while travelling. The day has come for the humans to stop the usage of paper notes, coins and cards as their currency. The development of online banking and online e-money transaction is now has reached a level where every single human can have e-money transaction from all over the world. The advancement of e-money transaction is at the usage of e-money without even having the internet or a computer, not even a smart phone. It is possible to have a money transaction without even a bank account.

The cloud computing which can store data and can give data at the request of retrieval has made the e-money deposit and withdrawal as a cakewalk. The concept of e-Wallet has multiple phase in which it is seen. The online banking is not safe because of the visibility of bank account during the transaction of e-money. The e-Wallet has made impact from the shopping, tickets booking till the cab booking and paying for the trip while traveling.

In this research paper the mode of e-money transaction can be categorized by "with internet", "without internet", "banks" and cell phone or smart phone enabled e-transaction.

Keywords--- e-money, Electronic fund transfer, Near field communication, Third party service provider, Biometrics.

I. INTRODUCTION

The usual transaction of electronic money is via internet banking. The bank account holder, an internet banking facility opting customer of the respective bank can operate his account. The bank provides a secure log-in option for a secure transaction.

The online shopping can be done with the help of internet banking. The internet banking user can shop, purchase goods from the online shopping sites and pay for

his purchase via bank account through internet banking. The shopping is made

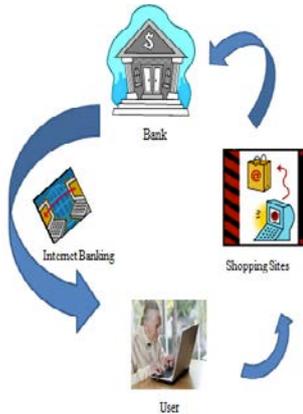


Figure 1: Transactions of e-money

easy and the transaction of money is safe through the online transactions.

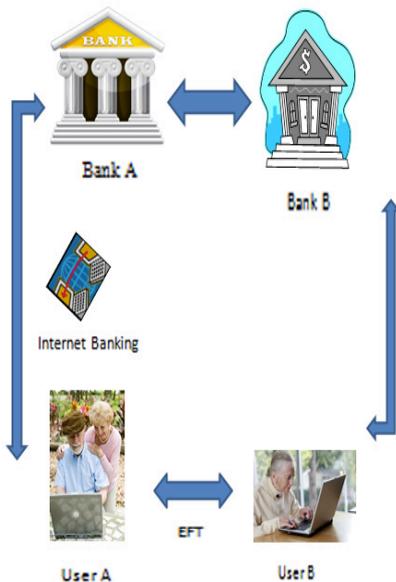


Figure 2: Electronic Fund Transfer

The electronic transaction is a personal money transfer system. The user has all the rights to send and receive money from one bank account to another bank account. The usage of internet banking has made the user of the online banking to comfortably transfer funds from his bank account to the bank account which is

either of the same bank account or any other bank’s account. The banks also use the EFT (Electronic Fund Transfer) to send and receive funds online from one bank to another. [2]

II. TRANSACTION OF E-MONEY IN AN OPTIMISED FORM

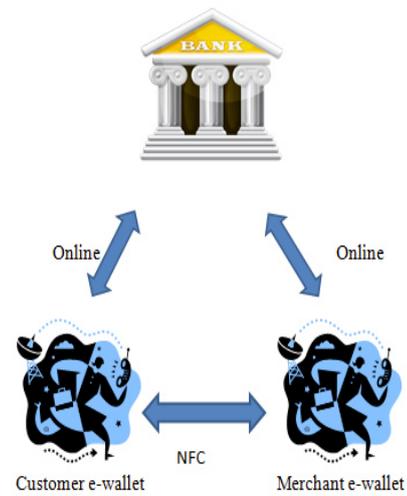


Figure3: Optimisation of e-money transaction

The optimisation of the electronic transaction of money is an art where the bank’s account is not visited often. Instead of using the money from the bank’s account, the usage of e-Wallet is done. The required amount of money is transferred into an e-Wallet and is used for all the online e-money and money transactions.

III. E-WALLET IN CELL PHONES WITH THE HELP OF “E-WALLET APPLICATION”

The installation of an e-wallet application in a smartphone or a tablet will make the smart phone

or a tablet as an “Electronic Wallet”.

The process of installation is as the same installation process as any other application of a smart phone. Once the establishment of the e-Wallet application is successful, the application will have access to the credit cards and debits of all the bank accounts of

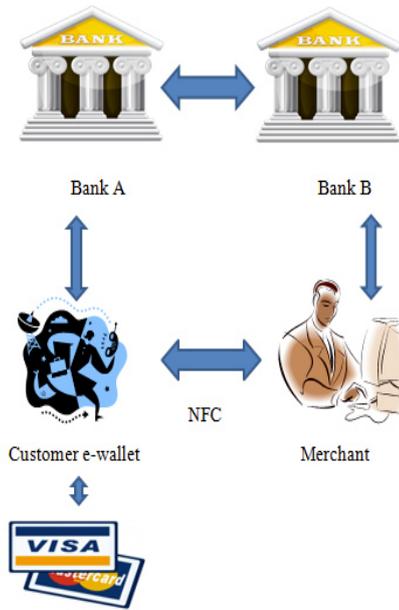


Figure4: E-wallet in cell phones with the help of “E-wallet Application”

the user as instructed in the profile.

The user of the “e-Wallet application” from a smart phone or a tablet can store the required amount of money from the bank account via online banking, similarly the credit cards and debit cards can be linked to the “e-Wallet application” account profile.

The user of such an e-Wallet can shop commodities from the merchants and pay for his shopping without using paper notes or the plastic cards. The

customer can send his money from the e-wallet and the merchants can receive the electronic money via near field communication (NFC) device.

The e-Wallet application has the ability to offer the user to choose between the bank accounts of the user and choose between the cards (i.e. debit, credit) of the user. The user can choose the account from which the money has to be paid from to the merchant. The user can choose the cards so that the credits can also be used instead of the money from the bank’s saving account.^[3]

IV. AUTOFILL OF ON-LINE SHOPPING SITES BY E-WALLET APPLICATION.

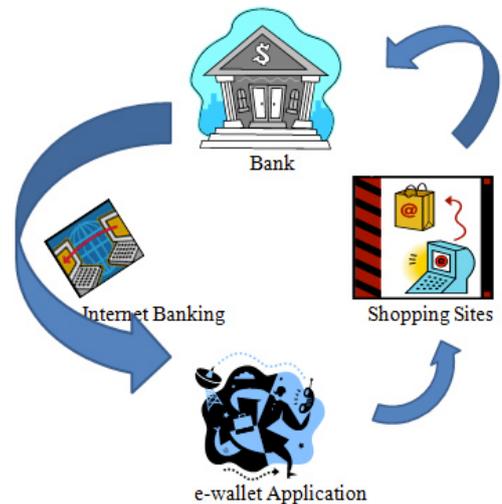


Figure5: Autofill of on-line shopping sites by e- wallet application.

A user of the e-Wallet application can shop from the online websites and can pay his payments from his e-Wallet instead of paying from the bank’s account via net banking.

The advantages of e-Wallet application paying the shopping sites is that the secure payments. The error free transfer of e-money from the e-Wallet to the merchant site is done with the help of e-wallet application. The e-Wallet application will fill in the shopping websites secure payment page and with the permission of the user the payments will be paid to the merchant’s web sites.

As per the e-Wallet Application user’s choice the money is selected for payments, the money refers to the money in the e-wallet or credit.

V. USAGE OF E-WALLET IN WEB APPLICATIONS



Figure6: Usage of e-wallet in web applications.

The concept of e-Wallets has evolved from application to an web application. This development made the usage of electronic wallet a much more easy of access and popular.

The web application of “e-Wallet” is made to be available on the special

websites where the transaction of money is in the high rate. Most of the shopping websites have electronic wallet application as a special facility in their website.

The websites are providing the e-Wallet facility, so that the customer can have money in e-Wallet and use the “e-Wallet” transactions without a smart phone or tablet with a e-Wallet application installed in it.

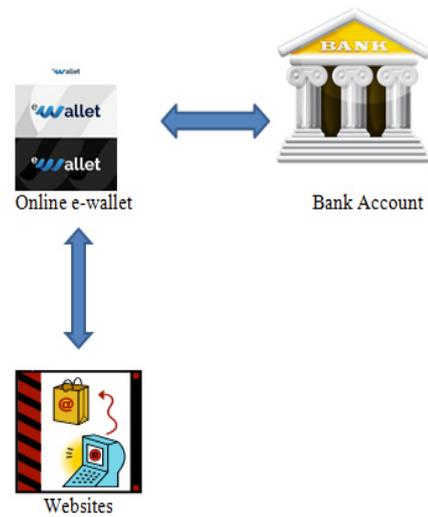


Figure7: Online e-wallet used as an wallet.

The online e-Wallets are available to use inside the shopping sites and also the ones which provides an online safe for the electronic money transaction. The online shopping sites provide electronic wallet to store the e-money in it, few shopping sites makes the user of the e-Wallet to use that e-Wallet money transaction only in their respective websites and is not to be used by the other websites.

The shopping websites providing an e-Wallet facility having the same procedure, a profile and user account. The safety feature of e-Wallet is that

the money in the e-Wallet is the only money which is shown to the websites the big amount of money which is in the bank account is never shown to any websites.

The required small amount of money is kept in the e-Wallet and the online money transaction is always carried on the e-Wallet's e-money. The big amount of money in the bank's account is safe from the hackers and unknown, untrusted websites.^[4]

VI. USAGE OF E-WALLET WITHOUT A SMARTPHONE, INTERNET OR A BANKACCOUNT

Creation of a E-wallet without a bank account

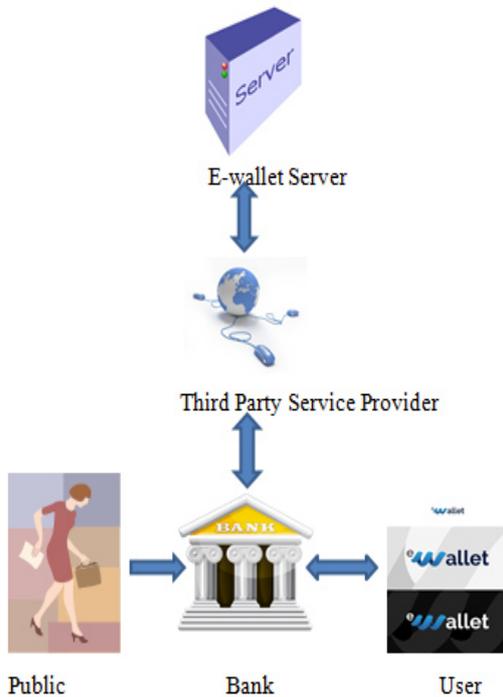


Figure8: Usage of “e-wallet” without a smart phone, internet or even a bank account.

Finally, we are here to see an electronic wallet without a bank account, smart phone or even internet.

This can be achieved by any common man by just going to a bank that is providing an electronic wallet facility and registering him into the bank's electronic wallet adoption.

The common man gets a bank's e-Wallet by using his unique id such as ADHAR CARD, PAN CARD.

The procedure for the creation of the e-Wallet is same as that of any profile file filling procedure. The unique identification id is the main constraint. The other supporting information is the mobile number and the mail id.

With the usage of this e-Wallet, the user can stay without any paper notes such as currency notes. The user of this e-Wallet can travel from one place to another without carrying money which is extra with him.

Once the creation of e-Wallet is done, the user of the e-Wallet can store the money in the e-Wallet and can withdraw money in any other place with the help of a bank ATM.

The bank's e-Wallet has a time span for storing of e-money in it. The banks have limitations in storing the money. As we all know this is not a bank account such as a “saving bank account” or a “current bank account”.

The banks charge the customers for this facility of providing an e-Wallet. The service charge is based on the service opted and the third party service providers.

The use of the e-Wallet can enable the user to send money from his e-Wallet to any valid phone number via bank's

ATM, application and accounts of bank.

The services can include a sender, receiver, third party service provider and the retailer.

The e-Wallet electronic storage of money is similar to cloud computing, here the money is stored for a particular amount of time and the transaction is helped by the third party service providers.

The system here uses the 5-digit “one time PIN” for the user to withdraw the money from the ATM without the ATM card.

VII. WITHDRAWAL OF MONEY FROM E-WALLET

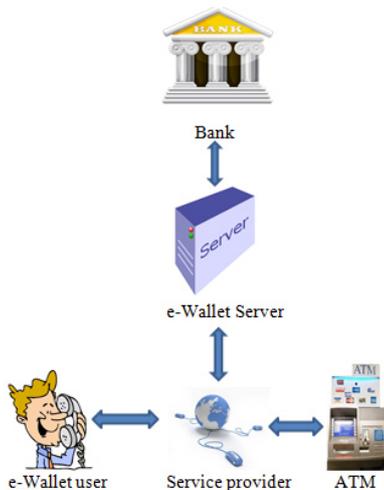


Figure 9: Withdrawal of money from e-Wallet

Once the common man enters the bank gets his electronic wallet, stores money and becomes a successful user of e-wallet.

The user of e-Wallet can now withdraw his money from any ATM by help of the third party

service provider and the one time PIN.

The user with an e-wallet account shall call the respected third party service provider and gets his onetime password for his transaction and at his nearest ATM he/she will have a transaction without card and gets the desired amount to use.

The sending money, receiving money, knowing the status of the e-wallet, has its own service charges from the third party service providers.

VIII. ACCESSING OF E-WALLET BY CALLING THE THIRD PARTY SERVICE PROVIDER

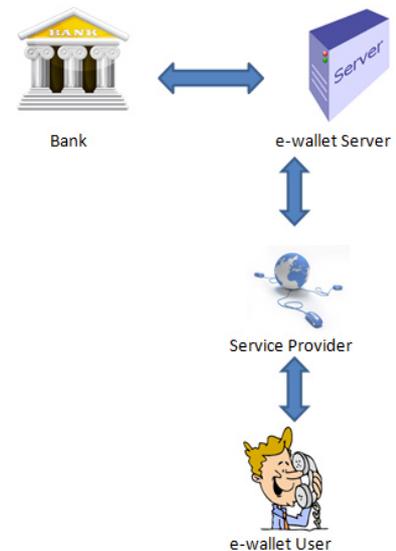


Figure10: Using E-wallet By calling.

Once the e-Wallet account has been created by a bank to the user or the customer through the user or the customer through the standard registration process, the user of the E-wallet will be able to access his e-

wallet account by calling the third party service provider.

The third party service providers will have a toll-free number, by which the user of the e-wallet can call the third party service provider and access the e-wallet account by calling the third party service provider, the user of e-wallet can know the balance amount in his e-wallet, has all the rights to send money to any merchants e-wallet, shop any product and pay the merchant by asking the service provider to transfer the money from the user e-Wallet to merchant e-wallet.

The third party service provider will do the user’s money transfer task and reporting of the balance task with a service charge based on the task done by the third party service provider.

The procedure of sending money from one e-wallet to another e-Wallet can be done by the third party service provider with the request of SMS from the e-wallet user. Depending on the third party service provider the request format and the SMS format for each request defer from one another. The third party service provides will use the security mechanism of mobile number, unique identification number and security questions to provide the e-Wallet information to the e-Wallet customers on call. The profile information will be asked by the third party service provides in order to answer the query of the customer.

IX. E-WALLET USER SENDING MONEY TO A NON E-WALLET USER

Finally the optimisation of electronic money transaction can reach a level where even a non e-Wallet account

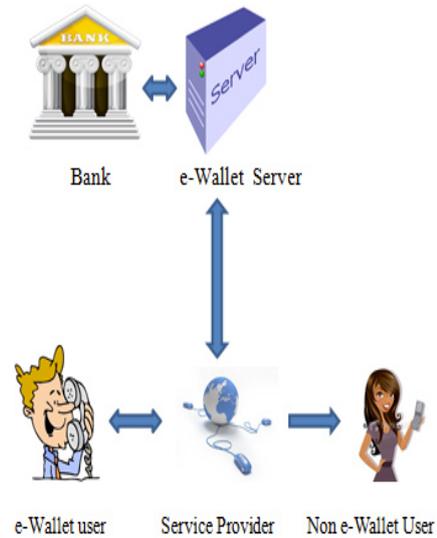


Figure 11: e-Wallet user sending money to a non e-wallet user.

holder can get into money transaction without a bank account, internet, smartphone, e-Wallet account.

The user of the e-Wallet can send money to a non e-Wallet user with the help of the third party service provider, the service has its own service charge and procedure to transfer the money. The user of the “e-Wallet can transfer money to a non e-Wallet user by calling the third party service provider on the tool-free numbers of the third party service provider.

Once the e-Wallet user call the third party service provider, the verification is done. Once the conformation of the caller as an e-Wallet user is successful

then the service provider will request for the query from the e-Wallet user. The e-Wallet user can provide the money transfer information to the third party service provider with the amount of which to be transferred and the valid phone number of the person to whom the money has to be transferred.

When the third party service provider gets the amount and the phone number for which the amount to be transferred, the procedure of electronic money to a non e-Wallet user starts.

The service provider with conformation and verified data and permission from the e-Wallet user, the third party service provider will send an SMS to the mobile number regarding the money transfer. The text will contain a one-time user id and password, using this user id and password the non e-Wallet user can go to his nearest ATM of the bank and use this one-time user id and one-time password for a card less transaction in an ATM and withdraw the money from the ATM.^[5]

X. PROBLEMS IN THE TRADITIONAL ELECTRONIC TRANSACTION OF E-MONEY WITHOUT USING “E-WALLET”

- The person with an online banking account was able to do an electronic money transaction and the rest was not able to carry out online money transaction, but with an “e-Wallet” a person without

even a bank account can do electronic transaction of money.

- While accessing an banking website or a payment section of a shopping site there are chances of eves dropping from an hackers. The hacker try to hack the user name and the password from the website page, the result of that is a bank account with zero balance.

When the hacker hack’s the account he will be able to transfer the huge amount of money from the user’s bank account. Hence the user’s account balance will be zero after hacking the account.

But while using an “e-Wallet”, the user of the “e-Wallet will store only a limited amount of money in his wallet. If in case the “e-Wallet” is hacked by a hacker then the loss will be a small amount of money, not the whole bank’s account deposit of the user.

- In an online banking or shopping at an untrusting site the credit card number and the details will be provided, which will lead to information leakage where the credit card number can be used by the untrusting fake sites to transfer the money from the bank account and miss use. By using an “e-Wallet” no credit card number will be provided to any website or sites and if in case of any leak of information the extent of loss will be minimal because e-Wallet will have very small amount of money and will not show the bank account.

XI. SECURED FEATURES OF E-WALLET FOR A CONFIDENT PROMISING USE OF E-WALLET IN DAY TO DAY LIFE

- The encryption of user credentials by the application where the user information is completely protected.
- Authentication can be with biometrics, where the untrusted merchant's devices can be allowed to have a transaction with the user's finger print.
- The third party assurance for the maintenance of server, user can rely on the third party service providers.
- The bank account visibility and the account balance visibility are very less. The user is the only person to know the balance.
- The time for transaction is very less, user can have fast e-money transaction with e-Wallet.

XII. THE CHALLENGES

- User has problems at the payment field, the application of e-Wallet sometimes recognizes the incorrect fields and fills in the websites while shopping at merchant's site with the help of the e-Wallet application installed in the user's smart phone or tablet.

It is solved by the “electronic commerce modelling language” by setting merchants check out form's structures and configurations

- The near communication has less security while having the transaction of money from the customer to merchant e-Wallets.

- If the ration of customer using the e-Wallet does not increases then the merchant using the devices of e-Wallet, application, money spend on the infrastructure will be in failure of investment. Hence merchants will be in loss due to less due to less usage of e-Wallet by customers.
- The e-Wallet user should treat the e-Wallet as cash and it is there responsivity of the e-Wallet user to keep the optional e-Wallet PIN and cell phone safe.

By clearing the bugs from these concept which is done with the usage of e-Wallet, an efficiency can be achieved.

XIII. CONCLUSION

The e-Wallet may fail if the knowledge of e-Wallet is not spread across. Only if the users of the e-Wallet increase then the concept of e-Wallet will be a great success. The devices for e-transaction, applications of e-Wallet and the banks with third party service providers will be the only hope for a good paper less currency transaction of money. The online banking is showing the bank account so it's dangerous for the account user for e-transaction. The most of the merchants are using e-Wallet and giving promotional offers on usage.^[6] The concept is growing across and will never decreases in the future. The more emphasis is needed for the non-bank account usage of e-Wallet, which is a great success in Africa.

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