Offline Transactions Functionality in eWallets

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Abstract

Background/Objectives: When eWallet server is not responding, user faces many problems including long waiting time to get response from servers, expiration of sessions and lots of frustrations also. This research suggests the idea that how existing mobile phone features like Bluetooth or Messaging (SMS) can do digital money transactions in offline mode (for the time being) at customer end. **Methods:** e-Paycards can be used (Send or receive) with existing functionality of mobile phone like Bluetooth or Messaging to do financial transactions promptly at the time when eWallet server is not responding. Mobile phones mustbe installed and pre-logged-in eWallet application and the application must be secured. **Findings:** e-Paycards can be used by customers and merchants; customer can send these e-Paycards to merchant through Bluetooth and/or Messaging functionality of mobile phone.

Keywords: Offline Transactions in eWallet, Offline Paytm, Offline Mobiquick, Offline Transactions eWallet

1. Introduction

The latest resolution of Indian government to demonetization of currency notes of rupees 500 and rupees 1000 is a fiery factor throughout the country. People had hovered over banks and spent lots of time in queue for their chances to take their daily limit of the amount, and it was an endless ordeal for ordinary citizens. Due to this surprise call from the Prime Minister of INDIA, many persons ran out of cash. The Electronic Wallet companies like paytm, mobiquick etc. had seen the chance for their growth. Lots of people have used these electronic wallets and feel relief over using it. They purchased lots of things through these eWallets, but some time customers cannot do transactions due to unavailability of the server of the wallet company i.e. when eWallet server is not responding. What you can do in this situation? This paper suggests the idea to overcome of this trap.

2. eWallet

It is computer software or mobile application in which digital cash may be stored for use in paying for transactions on the internet[1]

2.1 Items needed for eWallet shown in Figure 1

- Smart Phone
- Application of eWallet (Web/Mobile)
- eWallet server
- Internet connection
- Merchant/Shopping sites
- Your Bank Account

Figure 1. Items needed.

2.2 Steps

- User needs to register himself into the eWallet through eWallet application using his/her Smartphone.
- Transfer desired amount from your bank account to your eWallet,
- Merchant must have also same eWallet.

2.3 Process to Purchase anything through eWallet

- User goes to Merchant site to buy something.
- After purchase the desired items, user needs to scan   the QR code of merchant through eWallet application.
- Fill desired amount to be paid.
- Finally pay the amount with pay or other related button.
- The amount will be transfer from the eWallet account of customer to the eWallet account of the Merchant.

3. Types of eWallets[2-6]

In the view Reserve Bank of India (RBI), there are three types of eWallets and these are:
- Closed eWallets,
- Semiclosed eWallets
- Open eWallets

3.1 Closed eWallets

Closed eWalletsare issued by companies to buy goods and services from them only. These tools do not permit cash withdrawal and/or redemption e.g companies such as Flipkart, Jabong and Make mytrip etc. offer closed eWallets. Mostly these companies functioning as bank account where money gets credited and in case of a refund due to cancellation and/or return of a product or service. This can be seen through Figure 2.

3.2 Semi Closed eWallets

According to Reserve Bank of India, semi closed eWallets can be used to buy goods/services, which includes financial services, at identified merchant sites and/or establishments. These have a specific contract with the issuer of eWallet to accept the payments. Semi closed

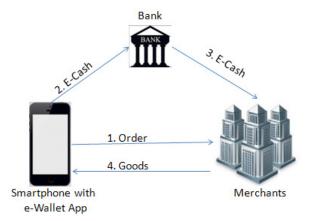eWallets also do not allow cash removal or redemption by the holder of eWallet.

Figure 2. Closed eWallet.

One of the examples of semi closed eWallet is Citrus Payment Solutions Pvt. Ltd's product Citrus Cash application. This wallet can be used not only at multiplexes such as PVR but also to recharge direct-to-home services such as Sun Direct. This can be seen through Figure 3.
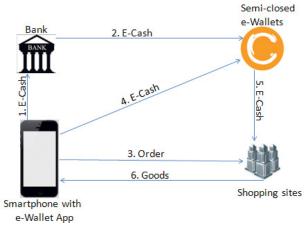

Figure 3. Semi closed eWallet.

3.3 Open eWallets

Open eWallets can be used to purchase goods and/or services from merchants, which includes financial services e.g. funds transfer at merchant locations and/or Point Of Sale (POS) terminals that acceptsthe cards, and also cash withdrawal at ATMs or business correspondents. These types of eWallets can only be issued by banks only.

Examples of open eWallets are Vodafone India Ltd. owned M-pesa in association with ICICI Bank Ltd. Shown in Figure 4.

4. Problem with Existing System

Now a day's eWallet is very handy application. It has some advantages and disadvantages.

When customer is purchasing some items and about to pay the amount but at the same time lost the eWallet connectivity or eWallet is not responding. Then customer has to wait until server responds or needs to return the items to the merchant.
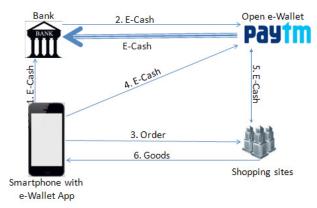

Figure 4. Open eWallet.

5. Solutions of above Problem

This paper put some light on the solution of the problems faced by customers.

5.1 Through Bluetooth

Bluetooth is known as a standard of the short-range wireless technology interconnections of mobile phones, computers, and other electronic devices.

ePaycard is an electronic secured message which contains the account/mobile number of customer, account/mobile number of merchant and amount to be transferred.

5.1.1 Steps to be followed by Customers

- Open Bluetooth of Smartphone.
- Open application of eWallet. (it must be pre-logged
- in as user does not have to re-login)
- Scan the QR code of merchant.
- Add desired amount.
- Select option e-Paycard, and create it.
- Select Send option as Bluetooth.
- Scan the Device for Bluetooth.
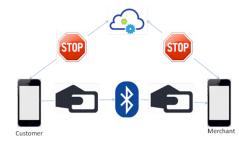- Tap on Send button.

This can be seen through Figure 5.

Figure 5. Sharing e-Paycards through Bluetooth.

5.1.2 On the Later Stage Merchant Side

As shown in Figure 6, Merchant needs to perform below steps

- Confirm that eWallet app. Is having e-Paycard sent by customer
- Confirm the internet connection is available.
- Tab on the e-Paycard.
- eWallet app will validate the e-Paycard and if found valid then transfer feed amounts from customer's account to merchant's account.

Figure 6. App having ePaycard.

5.2 Through SMS

As shown in Figure 7, in this scenario, user will send the e-Paycard through SMS service of mobile.

5.2.1 Customer has to follow below steps

- Open application of eWallet (it must be pre-logged-in as user does not re-log in)
- Scan the QR code of merchant
- Add desired amount
- Select option e-Paycard and create it.
- Select Send option as SMS.
- Tap on Send button.

5.2.2 Merchant has to perform below steps

- Confirm that device have SMS as e-Paycard sent by customer.

- Open application of eWallet.
- Go to Import option.
- Select e-Paycard from SMS.
- Application will search all messages and found and show app e-Paycard
- Tab on the e-Paycard.
- eWallet app will validate the e-Paycard and if found valid then transfer respected amount from customer account to merchant's account.
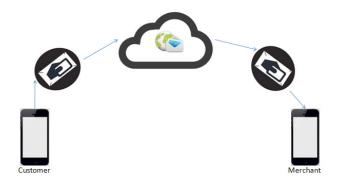

Figure 7. Sharing e-Paycards through SMS.

6. Preconditions

- Customer having pre-logged-in eWallet app.
- eWallet app must be highly secured i.e. it must not be mocked or reverse engineered.
- ePaycard must be highly secured (with 128 bit recommended).

- Application must have message level security, so that ePaycard can not be mishandled.

7. Conclusions

eWallet companies can incorporate the existing functionalities of mobile phones like Bluetooth or messaging to pay or receive digital payments. Because customers are familiar with SMS and Bluetooth, so it will be easy for customers to learn payment through SMS and Bluetooth. These will benefit the customers and business.

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