Empowering Small Time Merchant (s)-Using Digital Wallet/IMPS Method

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ABSTRACT

Payment collection system forms the core of any business. Different types of software, hardware and other technologies have been introduced for paying bills electronically, with banking industry introducing technologies like ATMs, Debit Cards, Credit Cards, Mobile Banking, IMPS, Merchant payments, digital wallet. In spite of all the advancements made, the payment collection system still remains a Herculean task. This research paper focuses on the study of current bank centric mobile payments app and the proposed model. With the advent of M-commerce, the payment collection systems are also being moved to mobile devices. After the introduction of the digital wallet, there is a drastic change in the payment collections, however the current payment collection system in our country is yet to reach the masses. In most of the cases, merchants/vendors are bound to visit the customers multiple time to collect the fee/charges in the form of cash. For example a newspaper or milk vendor may visit customer multiple times to collect their service charges/fee. In today’s world of technology with latest advancements, where different type of facilities like IMPS* PULL, digital wallet are available for customer, the same could be used to avoid the delay in payment receipt and such transactions being made cashless transactions. This will also ensure secure transaction and provide ‘End to End’ security to both vendor & customer and same can be recorded digitally for future reference. Our objective is to explore a user friendly mobile payment fee collection system, which would enable to collect fee/service charges from different modes like IMPS, digital wallet in real time. NPCI launched IMPS merchant payments (IMPS PULL/PUSH) during 2012. The proposed model extends the services from IMPS PULL model.

Keywords- Mobile Payments, IMPS – Immediate Money Payment System, IMPS PULL, Digital Wallet, MMID-Mobile Money Identifier, NPCI - National Payments Corporation Of India, IFSC – Indian Financial Service Code

1. INTRODUCTION

Mobile commerce has become an integral part of today’s financial eco-system and it is one of the fastest growing sector. As per the RBI report, in India, a total 35.53 million of customers use mobile banking for their transaction, which includes a total of Rs 22,438 crore ($3.7 billion) during the year ended March 31, 2014. The total no of transactions initiated by the mobile banking customers was 53.30 Million in 2012-13. If e-transaction are considered, Mobile banking transactions contribute to the majority of e-transaction. Typical payment system has witnessed a lot of changes from Branch Banking to electronic transaction i.e. in the form of ATM cum Debit Card, Credit Card and many more. With the introduction of IMPS and Mobile banking, many of the customers are migrating towards mobile payments which happen in real time and provides ease of doing the transaction at
any time of the day. As the penetration of Internet and mobiles & hand held devices continues to increase, it has resulted in more products and services offerings from various merchants.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Users (Million)</th>
<th>Volume (Million)</th>
<th>Value (Billion Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>5.96</td>
<td>6.85</td>
<td>6.14</td>
</tr>
<tr>
<td>2011-12</td>
<td>12.96</td>
<td>25.56</td>
<td>18.21</td>
</tr>
<tr>
<td></td>
<td>(117.45%)</td>
<td>(273.139%)</td>
<td>(196.58%)</td>
</tr>
<tr>
<td>2012-13</td>
<td>22.51</td>
<td>53.30</td>
<td>59.90</td>
</tr>
<tr>
<td></td>
<td>(73.69%)</td>
<td>(108.53%)</td>
<td>(228.94%)</td>
</tr>
</tbody>
</table>

Note: figures in brackets indicate the growth over the previous year.

**Fig. 1** Growth in Number of user and transactions

**Fig. 2** Technological development in financial/Payments system in India

### 1.1 General Terms

Digital wallet is similar to the electronic version of physical wallet which allows to do exchange of money, which increases the speed of payment.

IMPS PULL type transaction uses immediate payment service concept.

V-Quick Pay is based on the Bar code scanning of product and is a payment collection method.

Mobile Commerce: Mobile commerce involves the routing of funds for products and services availed using a secured mobile channel.

Mobile Banking: Mobile banking (M-Banking, SMS Banking) is used for doing balance checks, transactions and bill payments etc. using a mobile phone.

M-payment (mobile payment): It is a point-of-sale payment made through a mobile device, such as a cellular.
2. OBJECTIVE OF THE STUDY

Objective of the study to design and develop a model to ease the payment collection digitally.

- To study the different mobile payment systems
- To find out the challenges with existing mobile payment systems and improving the same.
- Minimize hard cash & unbanked money transaction.
- Simplified and minimize existing mobile payment systems.
- Minimize the number of stakeholders
- To increase the confidence level of user, by showing the real time settlement process.
- To design, develop and implement the common trusted software for payment collection using mobile.
- To Support bank centric model and government regulatory guidelines.

The main purpose of our study is to understand existing model, the associated documentation, Government & RBI regulation and its implementation in existing mobile payment system. In today's payment collection system mainly two actors are involved, Merchant or Vendor and Consumer. After a stipulated time, merchant approaches consumer for monthly or weekly payment. Most of the time, due to unavailability of the ready hard cash with consumer, merchant (could be a small vendor like a newspaper hawker) has to visit multiple times. Or some time consumer transfers the fund electronically to merchant account. However, this transfer is not getting reflected to merchant account immediately, which doesn’t give confidence to merchant, which in turn prompts in making use of hard cash. The below architecture diagram shows the current working model.

![Existing Payment Collection System Diagram](image_url)

**Fig. 3 Existing Payment Collection System**

3. PROPOSED MODEL FOR PAYMENT COLLECTION

In order to confirm the payment in real time and gain the confidence of the Merchant, we propose a Merchant Mobile Payment App, which have multiple options of payment collection. Payment can be collected through

i. Through digital wallet of the consumer
ii. Through IMPS using IFSC code and Account No of the consumer
iii. Through MMID and Mobile No of the consumer

A mobile app will be developed and pre-configured with merchant details like Mobile no, account no and other minimal KYC. Merchant approaches to consumer for monthly/weekly collection of service charge. Merchant can request for immediate payment. Here consumer have multiple option to pay online using Merchant mobile app configured at merchant mobile.
3.1 Proposed Model Option I (Payment collection using digital wallet)

In case consumer has digital wallet, merchant will capture the basic details like amount payable, Mobile no and email id of the consumer in mobile app.

On receipt of these basic details, a request from mobile app will be sent to acquiring bank payment server and intern payment server will authenticate the details with digital wallet service provider of consumer, in case found correct, the requested amount will be blocked and an OTP will be delivered to the consumer registered mobile no.

On receipt of the OTP to consumer, a screen to enter the OTP will be displayed to the merchant mobile app, on successful validation of the OTP, bank payment server will send the debit request to digital wallet and success response will be sent to both merchant and consumer. In addition to the message displayed, individual message regarding the transaction confirmation will be delivered to merchant and consumer.

At any point of the merchant has an option to view their collection through interactive MIS available in mobile application. The expected time to complete the transaction may vary from 60 sec to 100 sec.

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**Fig. 4 Architecture of Proposed Model Option I**
3.2 Proposed Model Option II (Payment collection using IFSC code and account number)

In case consumer doesn’t hold any digital wallet account, he has the flexibility to select option ii, pay using Account no and IFSC code. In this case Merchant capture the details like amount payable, account no of the consumer and IFSC code and click on payment, bank payment server will capture all the required details and form this as IMPS P2A transaction and forward the request to NPCI, intern NPCI will send the request to beneficiary bank [identified from IFSC code]. Beneficiary bank validate the data and delivered an OTP for the transaction to consumer registered mobile no. As soon as the OTP is delivered to the consumer mobile no, screen will be displayed to the merchant app to enter the OTP. On click of ok, bank server will sent a debit request to NPCI, intern NPCI will send a debit request to beneficiary/acquiring bank to do the transaction. On successful transaction bank server will receive the response from the NPCI and confirm the payment and send the SMS to both Merchant and consumer. This is the one of the futuristic as there is some changes required in message format and specification.
**Fig. 6** Architecture of Proposed Model Option ii

**Fig. 7** Process flow diagram of payment model option II
3.3 Proposed Model Option III
In case consumer would like to initiate payment using Mobile no and MMID. In such case Merchant capture the details like amount payable, mobile no and MMID and click on payment, bank payment server will capture all the required details and form this as IMPS P2P transaction with additional identifier(to differentiate the transaction) and forward the request to NPCI, intern NPCI will send the request to beneficiary bank. Beneficiary bank validate the data and delivered an OTP for the transaction to consumer registered mobile no. As soon as the OTP is delivered to the consumer mobile no, screen will be displayed to the merchant app to enter the OTP. On click of ok, bank server will sent a request to NPCI, intern NPCI will send a request to acquiring bank and do the transaction. On successful transaction bank server will receive the response from the NPCI and confirm the payment and send the SMS to both Merchant and consumer.

![Fig. 8 Architecture of Proposed Payment Model Option iii](image-url)

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4. SECURITY ISSUES AND STAKEHOLDERS

In order to secure the transaction from fraudulent, all the transactional request and response will follow PCI–DSS compliance. Data exchange at each terminal will follow encryption and decryption technology. As the transaction is getting performed with the help of different entity, There are many different stockholder involved in this business model.

i. Merchant
ii. Consumer
iii. Merchant bank or acquiring bank
iv. Consumer bank of issuing bank
v. Digital wallet service provider
vi. Mobile network operator
vii. Regulatory body like RBI, NPCI

Each of the stockholder my try to maximize their financial or non-financial profit.

Merchant expectation
i. Faster transaction time
ii. Low cost in using the system
iii. Integration with existing payment system
iv. Real time status of the payment system
v. Customize as per his requirement

Consumer expectation
i. Security and privacy
ii. Personalized service
iii. Anywhere any time transaction
iv. Anonymity of payments like cash
v. Interoperability between different bank or different service provider

**Bank expectation**

i. More number of e transaction, less cash transaction
ii. Exceptional branding of bank
iii. Payment application designed by the bank
iv. Customer loyalty

**Regulation**

i. Electronic transaction
ii. All transaction should be captured in the balance sheet
iii. No hard cash involved
iv. Proposed standard to be followed

5. **BUSINESS MODEL AND FUTURE PROSPECT**

The idea behind these proposed architectures have emerged due to our day-to-day interaction with NPCI on various occasions. There has been a need for understanding and formulating an accounting system for the payments of minimal amount which is innumerable in number and constitutes a big amount from considering all households in an economy. For e.g. the true potential of the small transactions like newspaper payment, laundry payment to a small vendor/hawker which happens using cash can be routed through mobile channel. Still a viable and sustainable Business model can be built to address and account all such transactions happening across us every second.

**CONCLUSION**

We are slowly moving into a world where things are becoming more virtual with every passing day and the introduction of digital systems and e-commerce has given boost to this idea. In the current century the technology use is not only limited to provide the ease of use rather empowering the people. As an estimate close to 60 percent of our population has mobile access and most of the government schemes are also utilizing the mobile telephony and infrastructure. The same is also reflected in our honorable Prime Minister’s “Digital India” campaign. We can say in this area of business “Sky is the Limit” and we are yet to realize the true potential of mobile technology.

**REFERENCES**

6. www.idrbt.ac.in/PDFs/BTA-2012/IDRBT030812S.pdf
11. http://www.allresearchjournal.com